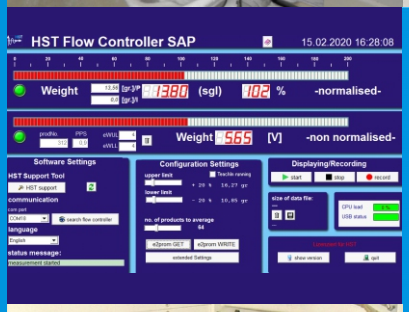
Sensor Equipment for Production and Quality Control

Sensors & Sensor Systems

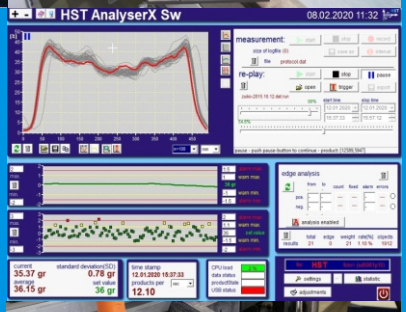


HOSSBACH

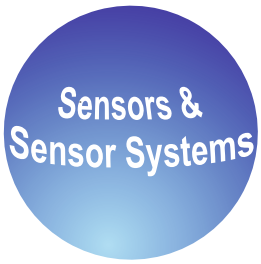
Sensor Technologie

Germany

HST



CATALOGUE 2025



HOSSBACH Sensor Technologie

HOSSBACH Sensor Technologie Heinrich-Stranka-Str. 3-5 D-90765 Fuerth Germany
Tel . xx49 (0)911 37677529 Fax. xx49 (0)911 37677528

URL : www.hst-hossbach.de e-mail : info@hst-hossbach.de

company owner : Dipl.-Phys. Dieter Hossbach tax. no. : 216/231/00070 VAT no. : DE 132549610
bank: Sparkasse Erlangen account owner : Hossbach Sensor Technologie
for national money transfer : account no : 11082086 bank code :763 500 00
for international money transfer : BIC :BYLADEM1ERH IBAN : DE 09763500000011082086

Table of contents

Table of contents

Sensor Equipment for Production and Quality Control

Detection
Counting
Quantity Measurement
Weight Control
Flow Control
Position Control
Weight Deviation
Weight Distribution
Package-Weight Control
Mass Change
Double Detection
Overlaps

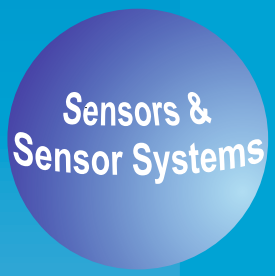
Objects
Products
Defectives
Details
enclosed & invisible
transparent
without contrast
intermittently aligned
sporadic
endless
Outline
Size

Sensors & Sensor Systems

Statistics
Visualisation
Histograms
Documentation
Event-Triggering
Protocoling
Recording & Re-Play
Weight Distribution Profiles
Spreadsheet Data
On-Line & Off-Line

Granulates
Powder
Labels
Textiles
Coatings
Non-Wovens
Cotton Wool
Pulp & Paper
Card-Boards
Fluids
Glue
Metal
Foils
Cellulose
Layers
Tapes
Contents
Pollution

Sensors & Sensor Systems



=

+ Enhancing Quality

+ Saving Money

+ Supporting Engineering

+ Supporting Purchasing

+ Supporting Decisions

=

Being Competitive

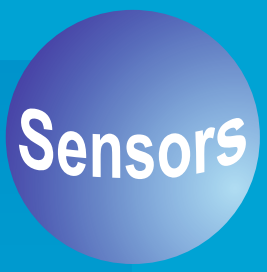
Sensors & Sensor Systems standard

Sensors & Sensor Systems special

Hossbach Sensor Technologie offers :

- standard sensor equipment described in this catalogue
- on-site support
- state-of-the-art sensors & sensor systems
- research and development, individual sensor solutions
- feasibility studies

Advantages of the Sensors



QMS Sensors 70 ...

- measure the mass of materials
- detect objects, defects, structures
- evaluate weight quantities and distribution
- are independent of light, colour, transparency, contrast, insensitive towards pollution in wide range
- measure materials and objects in contact or without contact
- detect objects, also on carriers or enclosed
- have unique evaluation electronics
- are very sensitive and fast
- operate by giving switching or analog signals
- easily to interface to external control units
- brings poduct quality to an even higer level with HST control and visualisation systems

Info : QMS70 & MDS70 Sensors

Sensor Overview

single sided sensor

foil detection
fleece detection
glue control
defect detection
overlap detection
shape control

dimensions : 60 x 20 x 100 mm

single sided sensor

foil detection
object detection
glue control
defect detection

dimensions : 200 x 20 x 100 mm

U-shaped sensor

label control
foil detection
fleece detection
overlap detection

dimensions : 60 x 20 x 100 mm
gap height : 3 mm

U-shaped sensor

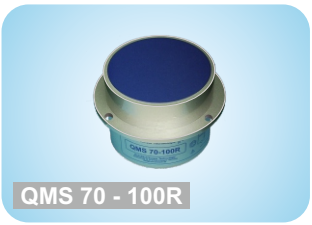
adhesive tape detection
foil detection
material control
fleece detection
defect detection

dimensions : 173 x 50 x 80 mm
gap height : 10mm

U-shaped sensor

adhesive tape detection
thin foil detection
material control
fleece detection
defect detection

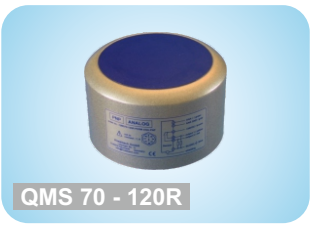
dimensions : 173 x 50 x 80 mm
gap height : 8mm



single sided, round sensor

fluids control
fluid filling control

dimensions : ⌀ 105 x 65 mm



single sided, round sensor

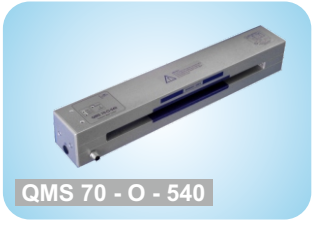
non-woven web control
textile web control

dimensions : ⌀ 120 x 60 mm

single sided sensor

granulate flow control
SAP flow control
powder flow control

dimensions : 160 x 90 x 100 mm



O-shaped sensor

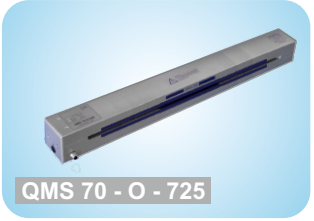
non-woven web control
cellulose web control
textile web control
weight and weight distribution control

dimensions : 540 x 80 x 80 mm
gap height : 20mm

O-shaped sensor

non-woven web control
cellulose web control
textile web control
weight control

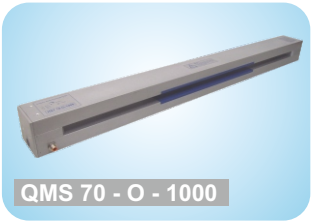
dimensions : 600 x 80 x 80 mm
gap height : 20 mm



O-shaped sensor

non-woven web control
cellulose web control
textile web control
weight control

dimensions : 725 x 70 x 80 mm
gap height : 10 mm



O-shaped sensor

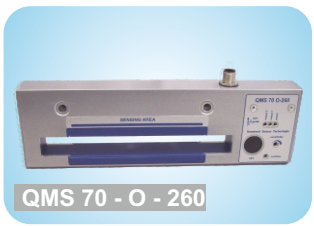
non-woven web control
cellulose web control
textile web control
weight control

dimensions : 1000 x 80 x 80 mm
gap height : 20 mm

E-shaped sensor

foil control
fleece control
glue control
weight control

dimensions : 210 x 100 x 50 mm
gap height : 6 (8 / 10) mm



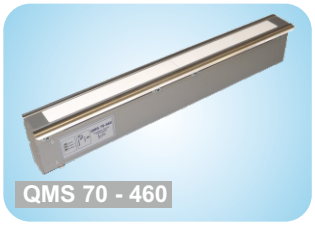
O-shaped sensor

folding control
fleece detection
defect detection
overlap detection
shape control

gap height : 20 mm
dimensions : 80 x 30 x 260 mm

Info : QMS70 & MDS70 Sensors

Sensor Overview



single sided sensor

small object detection
glue control
defectives/hole detection

dimensions : 80 x 30 x 470 mm

U-shaped sensor

web control
basis weight detection
fleece detection
overlap detection

dimensions :270 x 60 x 40 mm
gap height : 12 mm

O-shaped sensor

granulate pulse control
mass distribution control

dimensions :123 x 188 x 240 mm
gap height : 17 or 37 mm

E-shaped sensor

cotton wool control
cellulose web control
textile web control
weight control

dimensions : 300 x 200 x 150 mm
gap height : 40 mm

U-shaped sensor

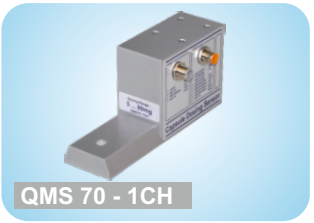
filter rod control
wetness detection
defectives detection

dimensions : 115 x 80 x 50 mm

U-shaped sensor

non-woven web control
cellulose web control
textile web control
weight and weight distribution control
sanitary napkin control

dimensions : 230 x 80 x 50 mm



Dosing sensor

100% dosing control
measures powder,granulate, pellets
filling of capsules, cartidges, vials
Dosing quantities 1...1000 mg+

dimensions : 176 x 84 x 50 mm
Channel height: 18 mm

transmitter-receiver sensor

metal detector
metallic layer control
blister counter

transmitter : ø 30 x 195 mm
receiver : ø 40 x 170 mm

O-shaped sensor

metal detector
foreign body control
metallic product detection

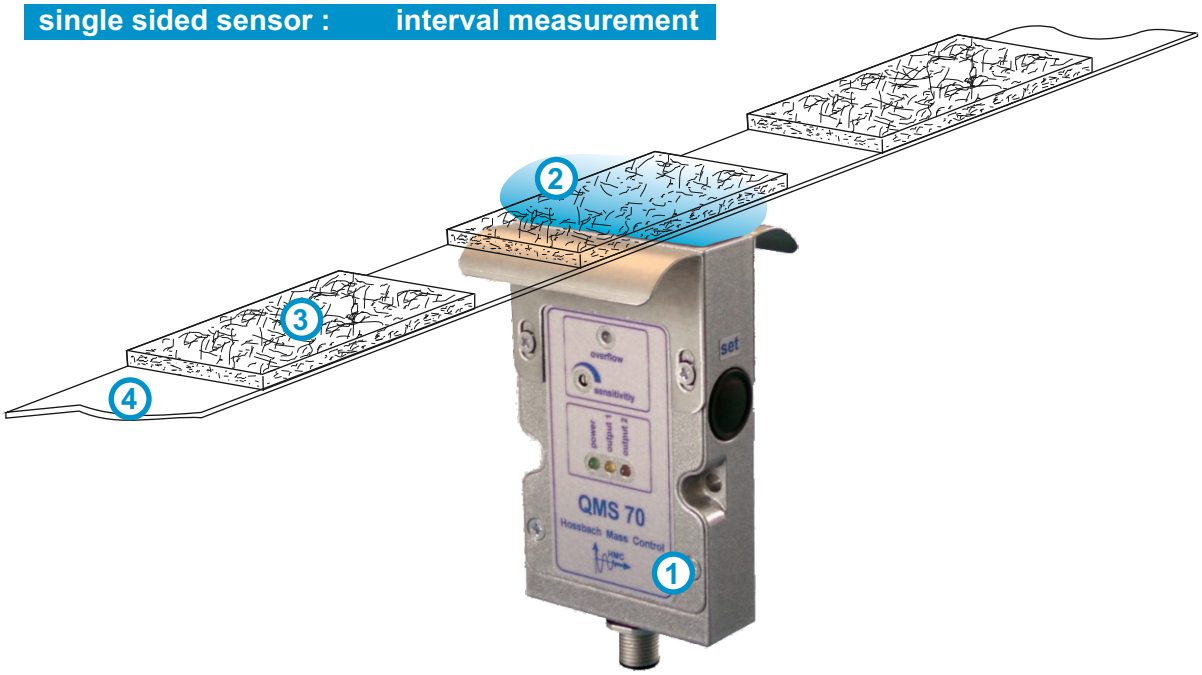
dimensions : 640 x 100 x 160 mm
gap height : 20 mm

Customized sensor

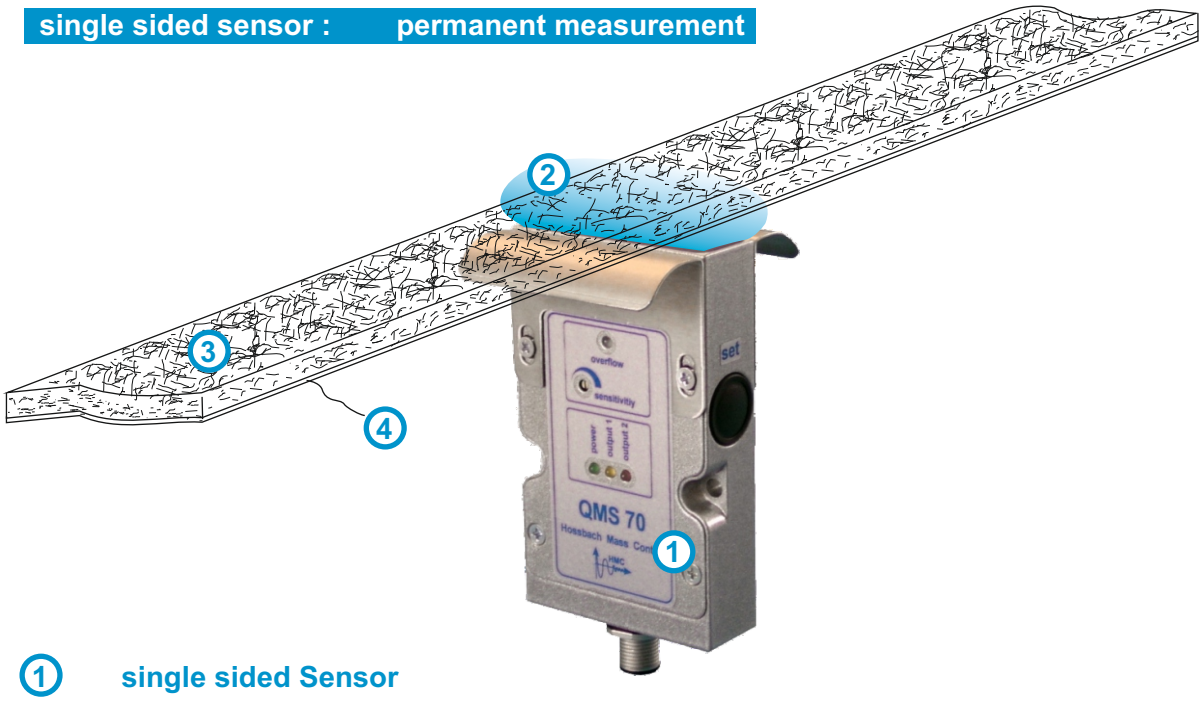
special designed sensor
for many applications

Sensor Operation

single sided sensor : interval measurement



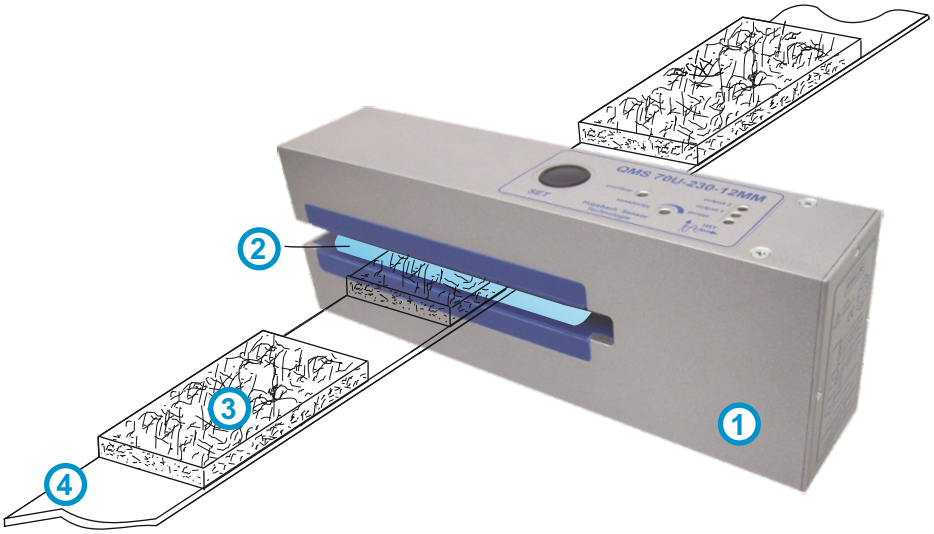
single sided sensor : permanent measurement



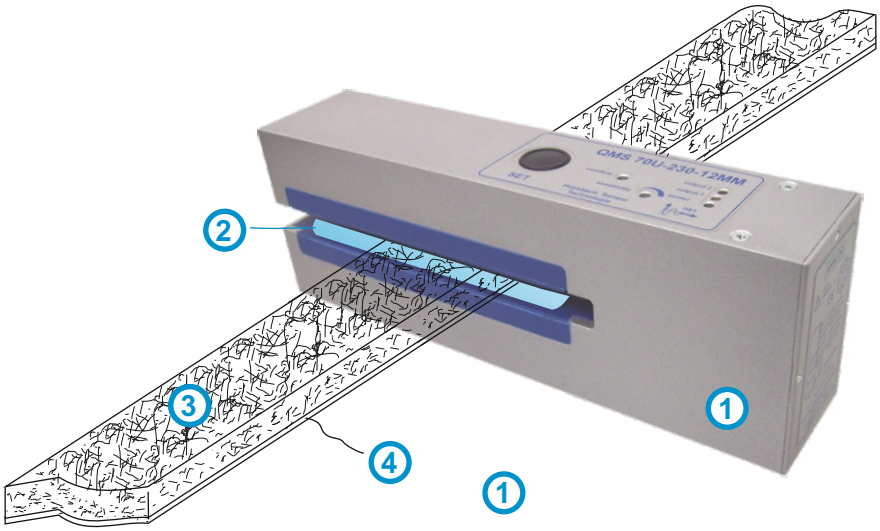
1. single sided Sensor
2. electric sensor field
3. object, material, product to be measured
4. carrier

Sensor Operation

U - shaped sensor : interval measurement



U - shaped sensor : permanent measurement

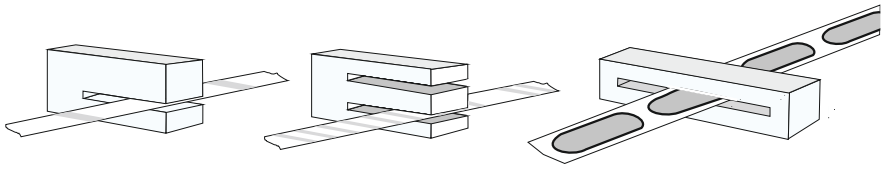


1. U-shaped Sensor
2. electric sensor field
3. object, material, product to be measured
4. carrier

Order Specification

interval measurement + switching output : QMSxxx-INT-PNP

operation : detection at no contact - intermittent tara -



"U" shaped sensor | "E" shaped sensor | "O" shaped sensor

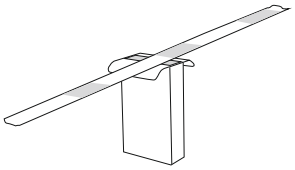
QMS 70U...
QMS 70-O...
QMS 70E...

INT

PNP

interval measurement + switching output : QMSxxx-INT-PNP

operation : detection at contact - intermittent tara -



single sided sensor

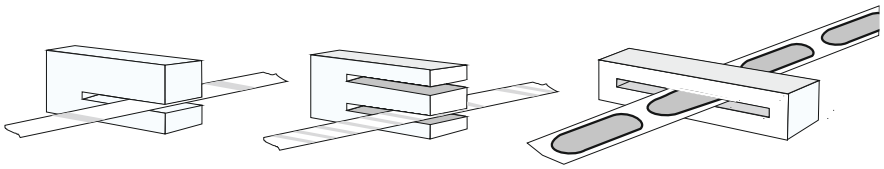
QMS 70...

INT

PNP

interval measurement + analog output : QMSxxx-INT-ANA

operation : quantity evaluation at no contact - intermittent tara -



"U" shaped sensor | "E" shaped sensor | "O" shaped sensor

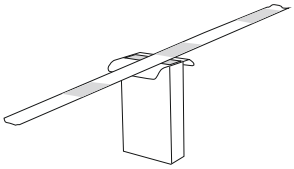
QMS 70U...
QMS 70-O...
QMS 70E...

INT

ANA

interval measurement + analog output : QMSxxx-INT-ANA

operation : quantity evaluation at contact - intermittent tara -



single sided sensor

QMS 70...

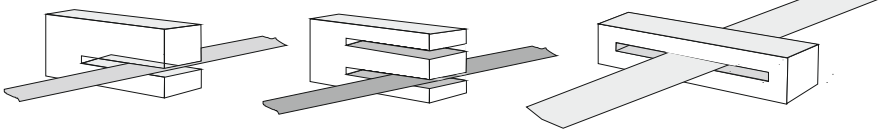
INT

ANA

Order Specification

permanent measurement + analog output : QMSxxx-PERM-ANA

operation : detection at no contact - no tara -



"U" shaped sensor | "E" shaped sensor | "O" shaped sensor

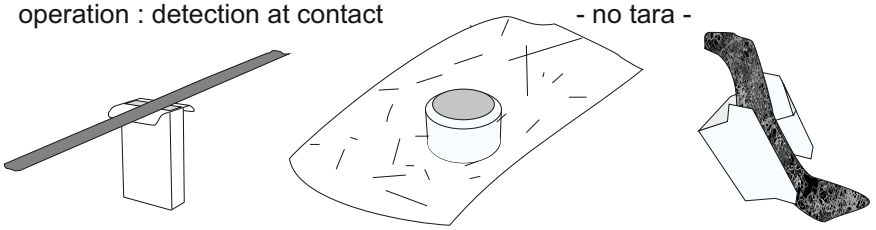
QMS 70... *)
QMS 70U...
QMS 70-O...
QMS 70E...

PERM

ANA

permanent measurement + analog output : QMSxxx-PERM-ANA

operation : detection at contact - no tara -



single sided sensor | single sided round, moveable sensor | single sided flow sensor

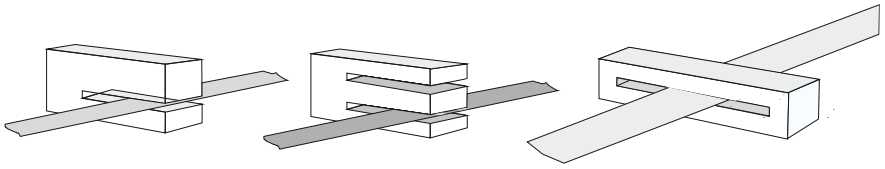
QMS 70...
QMS 70-120R
QMS 70-SAP

PERM

ANA

permanent measurement + analog output + tara : QMSxxx-PERM-ANA-TARA

operation : detection at no contact - controlled tara -



"U" shaped sensor | "E" shaped sensor | "O" shaped sensor

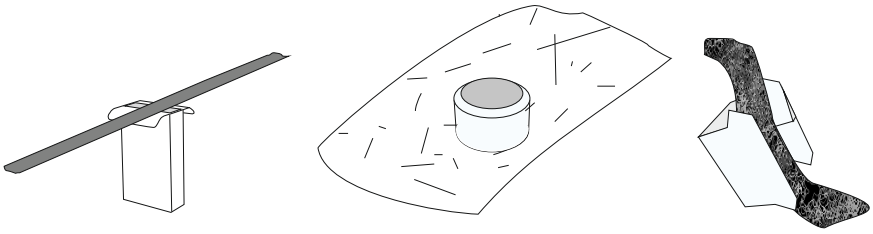
QMS 70... *)
QMS 70U...
QMS 70-O...
QMS 70E...

PERM

ANA

permanent measurement + analog output + tara : QMSxxx-PERM-ANA-TARA

operation : detection at contact - controlled tara -



single sided sensor | single sided round, moveable sensor | single sided flow sensor

QMS 70...
QMS 70-120R
QMS 70-SAP

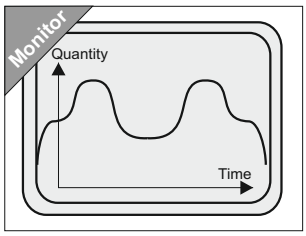
PERM

ANA

TARA

Sensor Operation Modes : Permanent & Interval Measurement

Sensors Internal Measuring Signals

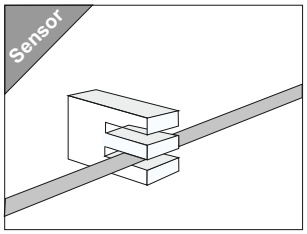


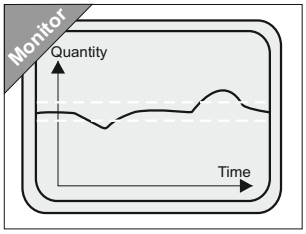
What could we see...

if we would make the measuring signals of the QMS sensors visible on a monitor of an oscilloscope ?
We would see a signal curve, that is more or less varying with time.
The sensor evaluates at any time an analog signal, which is proportional to the mass of the material or object just being in the sensor field.

Permanent Measurement

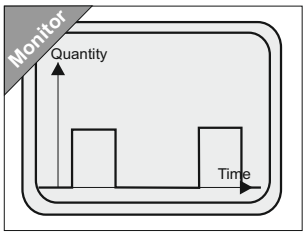
for endless stripes, webs, coatings etc.





Analog sensor output

using a QMS 70 xxx sensor with analog output the sensor outputs a voltage, which is proportional to the mass quantity of the material, which is just in the sensing area.



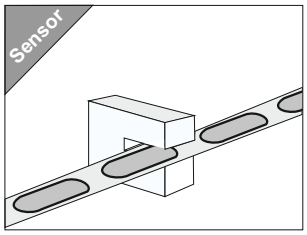
Switching sensor output

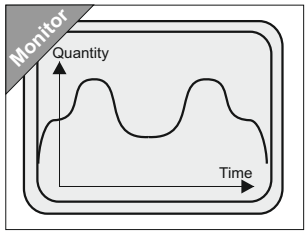
a QMS 70 xxx sensor with switching outputs activates its outputs as soon as the mass quantity just being in the sensing area undergoes or exceeds preset limits.

- The sensor is auto-taring (zeroing), when no material is in the sensor field.
  Or the sensor is not at all auto-calibrating (zeroing)..
  This effects the selection of sensor version and sensor type.

Interval Measurement

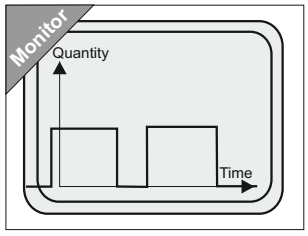
for intermittently aligned objects, products, materials etc.





Analog sensor output

using a QMS 70 xxx sensor with analog output the sensor outputs a voltage, which is proportional to the mass quantity of the material, which is just in the sensing area.



Switching sensor output

QMS 70 xxx sensors , as version for detection of intermittently aligned objects output signals as long as a discrete object is in the sensing area.

- The sensor is auto-taring (zeroing), when no material is in the sensor field, i.e. between the products.
  Or the sensor is not at all auto-calibrating (zeroing).
  This effects the selection of sensor version and sensor type.

Info : QMS70 Sensors

Order Specification

General Order Specification Key :

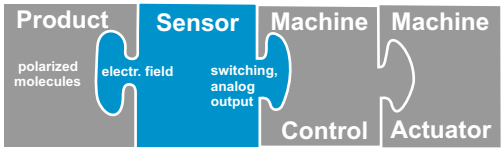
sensor name	measuring mode 1	output 1	output 2	measuring mode 2
QMS70-xxx	INT or PERM	PNP or ANA	blank or PNP	blank or TARA

Order Specification Key : examples

QMS70-	INT-	PNP		
QMS70U-170-	INT-	ANA		
QMS70R-120-	PERM-	ANA-		
QMS70-O-540-	INT-	ANA-	PNP	
QMS70-SAP-	PERM-	ANA-		TARA

Sensor Integration

Operation as Stand-Alone Sensor :

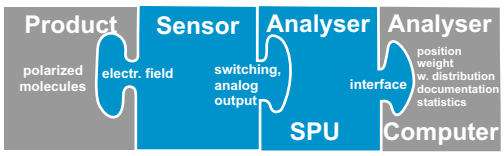


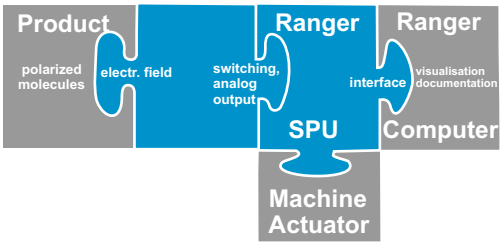
Hossbach equipment

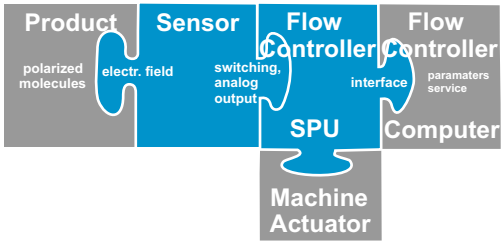
machine line device

sensors operate directly with production line components

Operation as Component of a Sensor System :







Hossbach equipment

machine line device

sensors delivers measuring data to the inspection or control unit and interacts either or indirectly production line components

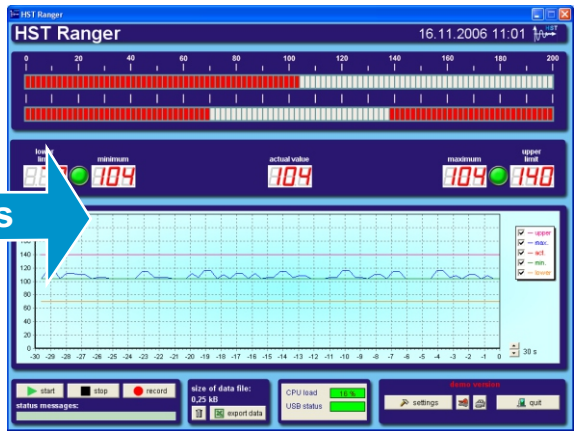
Advantages of Sensors Systems

HST Sensor Systems ...

- are solutions for quality and production control
- support enhancing quality, saving money, engineering, purchasing, finding decisions
- are either mobile or stationary inspection or control systems
- operate with or without PC
- visualise and control also invisible, thin, voluminous, objects, materials and products
- used for controlling whole product or parts of them
- are versatile due to a wide range of sensors
- are versatile due to high sophisticated software
- operate on-line, during production
- allow off-line analysis based on protocoled and documented data

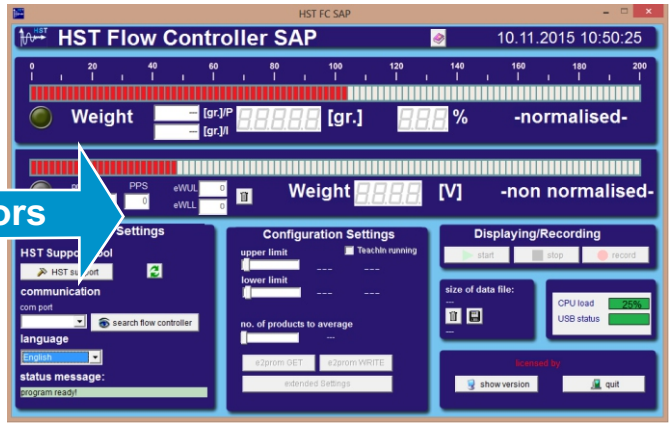
Sensor System Overview

HST Ranger



The HST Ranger is a smart and versatile stationary control system for endless, continous objects and materials. It controls, that the weight, density, volume or mass flow of the material being in the sensing area of the sensor is in a pre-set range, i.e. between a pre-set lower and a pre-set upper limit. If not, the referring switching output gets activated. Thanks to its big 100-element bar-graph indicators, the status of measurement can be seen over a long distance. Out of the QMS70 sensor series, the sensor, that fits to the application best, can be chosen and easily connected to the control unit. Additionally to the above described basic system, consisting of the control unit and the sensor the HST Ranger Software Package enables user, to visualise the measurement data in an extended way and record measurement data over hours. The measurement values can be calibrated to real physical ones, representing the exact weight quantities. The time diagram displays the values over a pre-set time span. Parameters can be set for different bar-graph visualisation modes, or for averaging the measurement values.

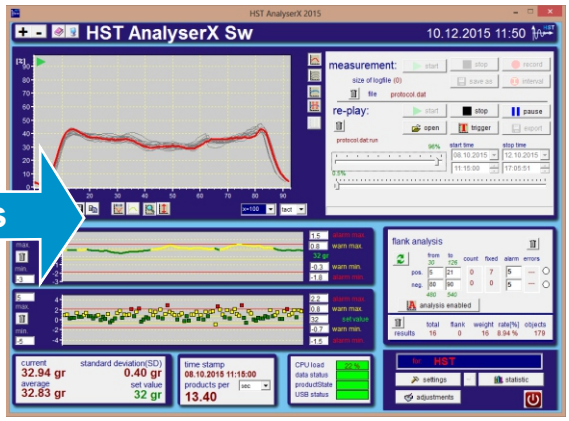
HST Flow Controller



The HST Flow Controller is a versatile control system for both intermittently aligned, measured substances objects, materials whole products and continuous, permanent, endless materials, coatings, webs etc. Versatility is achieved by the possibility to interface a wide range of sensors -standing for a wide range of applications-, to run different program versions - meeting the different kinds of evaluations best - and to operate as a part of a simple or complex inspection/control system.
The HST Flow Controller is handled extremely easily. Pushing a button or applying a 24V signal will initiate the teach-in procedure. After that the HST Flow Controller is calibrated, the measuring results are normalized on a 100% scale basis shown as figures on the display and on a 10V/20mA scale basis output as voltages/currents. The control function is activated according the pre-set thresholds for upper and lower limit and according the referring switching outputs.
The USB interface allows to connect HST Flow Controller to a PC for visualisation, configuration and data logging.

Sensor System Overview

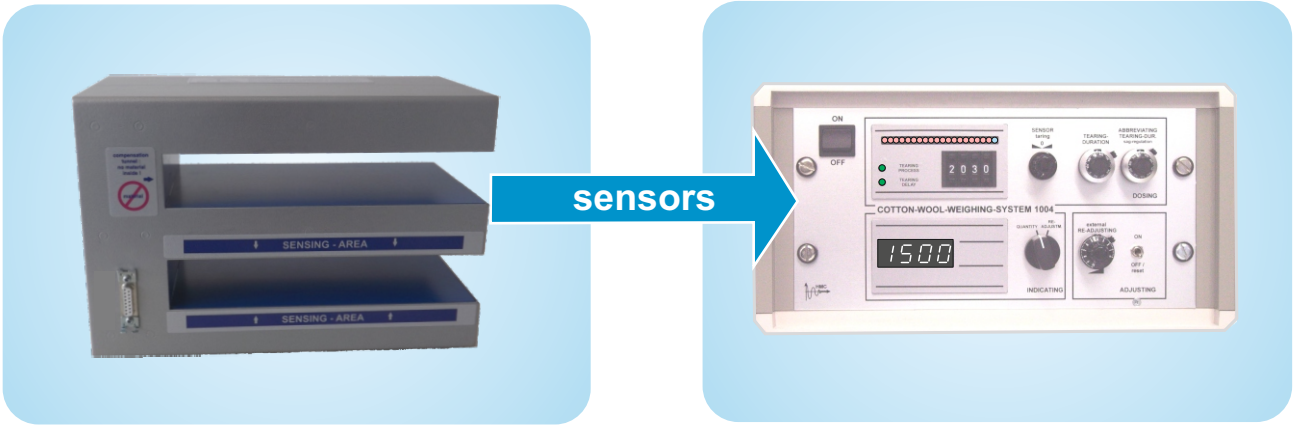
HST Analyser



The HST Analyser 1006 is a multi-functional mobile inspection system for intermittently aligned or measured objects, materials and whole products. Mobility is achieved by the possibility to connect different kinds of sensors at different locations to the signal processing unit. Loading the parameter sets guaranties an instantaneous operation for the referring application. To avoid an repetitive and elaborate installation an interface housing can be installed at each location, where inspection should be take place. The SPU is automatically connected after being inserted into the interface housing. The PC is connected via USB cable.
Inspection of the product and the production process is performed by single and average weight evaluation, weight distribution, floating weight distribution, histograms, position control, statistics and wide-ranging protocoling and documentation. Weight-distribution data are either directly available for spread-sheet programs by the “copy and paste” function or by using data files. Video recorder like features enable user to display, to record or to re-play measurement data.

Sensor System Overview

HST Cotton Wool Weighing System



The HST Cotton Wool Weighing System is a on-line weighing system for continuous webs to be dosed for packaging purposes. The weight evaluation is independent of thickness, width and density fluctuations. Speed variations are met by using the tachometer functionality.
Additionally to the weight determination the HST Cotton Wool Weighing System controls the tearing procedure and the feeding of material webs consisting e.g. of cotton wool. Tearing and feeding are controlled the way, that the material web does not get jammed and thinned out.
During operation occurring weight deviation can be cancelled either manually by a remote control, or half- or full-automatically by using an external balance with referring signal outputs.
The HST Cotton Wool Weighing System is easily integrated in older or new packaging machines. The sensor is located just before the tearing device. The Control Unit is located in reach of the operator.

Features

Enhancing Production Quality

The following discourse can only give an impression, how precious sensor systems like e.g. the HST Analyser or the HST Profiler are. These system support users to find out the reasons, why their product is not fabricated the way it should be or it confirms the requested product quality. In both cases, the HST Systems gives the important information to act at once, at the next machine stop, machine standstill, machine overhauling or not at all for the time being. The objective inspection relates to :

- **quality of raw material**
- **quality of the whole products**
- **weight continuity**
- **weight distribution along the product, along the web**
- **material holes, overlaps, foreign bodies**
- **position, phasing, synchronising, timing**
- **timing of cutting processes**
- **transport of products and product parts**
- **production performance**
- **production continuity**
- **new product design**
- **suitability of production processes**
- **machine parts to be overhauled**
- **defectives of machine parts**
- **performance comparison of different machines and processes**
- **statistical calculations**
- **protocoling of the production data**
- **many other criteria**

Many quality aspects, that up to now could only be explained by experience or interpreted philosophically, can now be confirmed or disproved by objective tools, the HST Sensor Systems. They bring people together. The plant manager gets an even deeper specialised know-how, whereas the machine operator is also enabled to think on a higher level.

Saving Money

Enhancing quality and saving money are two sides of the same coin, as soon as the HST Sensor Systems are used. When the HST Sensor Systems have indicated, how to get the production process more constant, how to minimize deviations, fluctuations and all the negative influences, the tolerance range of the product weight will be minimized. The result is

- **saving money by reducing material costs**

Minimizing weight dissipation may concern the whole fabricated product or only components the product is made of. The HST Sensor Systems make evident at once, when the produced products no longer meet the quality demands. This helps to

- **save money by reducing rejects**
- **save money by reducing queries**

No matter, if the HST Sensor Systems tell the operator, when something is not going well during production, or informs the plant manager, that important activities have to be initiated, the HST Sensor Systems help to

- **save money by avoiding damages**
- **save money by making decisions in time**
- **save time**

Features

Supporting Engineering

The HST Analyser and the HST Profiler are not only designed to visualize on-line products and production processes at several locations of production lines. They also are tremendous inspection/control tools supporting engineering and product designing. Summarized the HST Analyser and the HST Profiler support:

- **product modification and design**
- **optimizing production processes**
- **bringing production lines into operation**
- **development of production lines**
- **development of machine parts of production lines**

The engineering process is systematically supported until the goal is attained.

Supporting Purchasing

The HST Analyser 1006 delivers analysed, protocoled and documented results, which contain much information far beyond on-line measurements of objects, materials and products. The HST Analyser 1006 helps finding out criteria, that fulfill quality, production related and monetary aspects and therefore provides assistance for the

- **choice of the suitable raw material**
- **choice of the best raw material deliverer**
- **choice of the best machine (part) deliverer**
- **handling queries**
- **pricing negotiations**

Supporting Decisions

The HST Analyser and the HST Profiler bring people together. The operator sees immediately how the production runs. The quality manager gets all the information needed to check product quality. The plant manager receives the overview of all aspects. With such a widely shared knowledge of the state of production processes right decisions can be made concerning :

- **quality level**
- **productivity**
- **time scheduling**
- **investments**

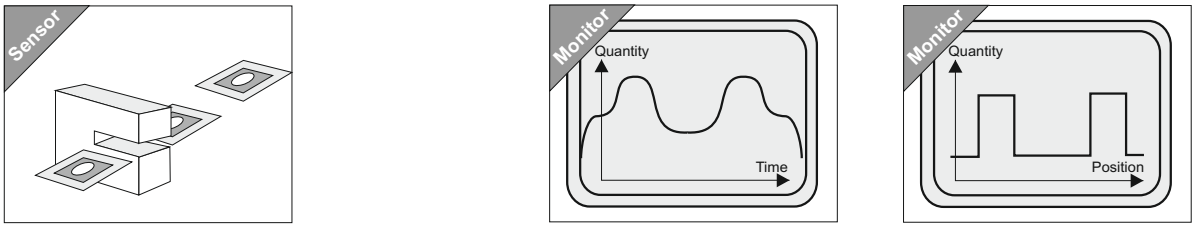
The HST Analyser and the HST Profiler deliver important information crucial for decisions, which up to now have often been based on experience and subjective opinions.

Being Competitive

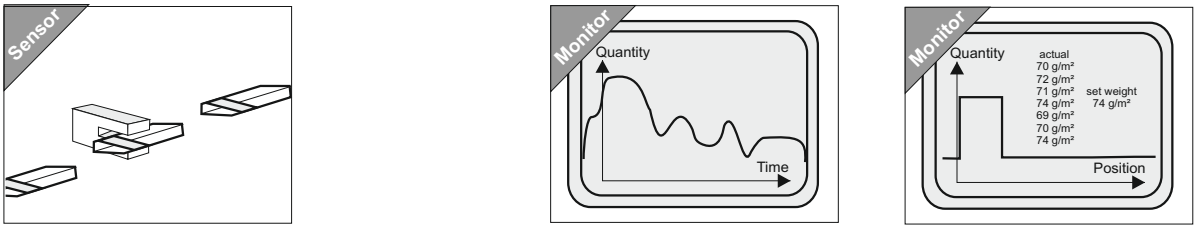
All the chapters above describe the great advantages and the usefulness of the HST Analyser and the HST Profiler. If we summarize its overall potentials, we realize that this new inspection and control technology makes a company more competitive by :

- **being on the top of quality**
- **being on the bottom of the product price scale**
- **being flexible concerning new products**
- **having a staff with important understanding**

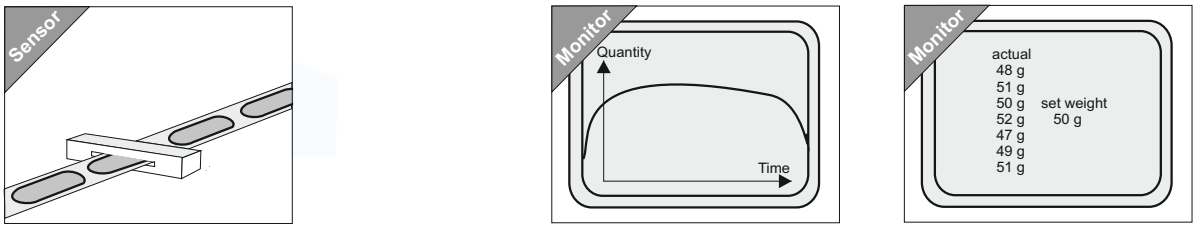
HST Sensor Systems Applications



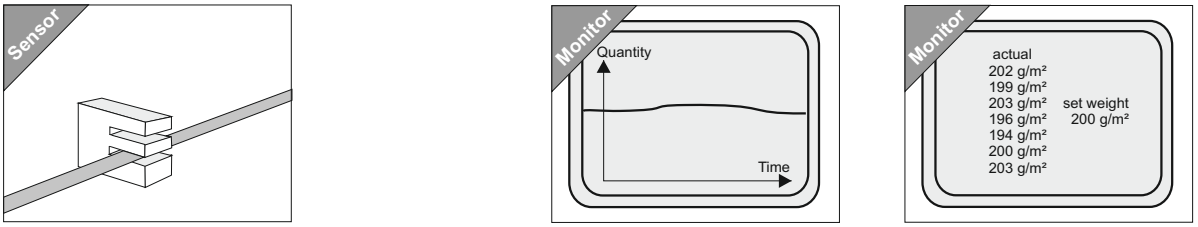
Generating mass profiles of multi-layer cardboards, inspection of correct alignment.



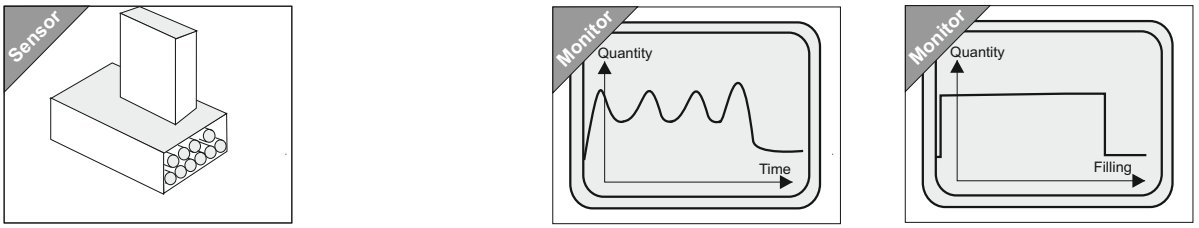
Generating mass profiles of multi-wall paper objects, inspection of correct alignment, applicated glue quantity



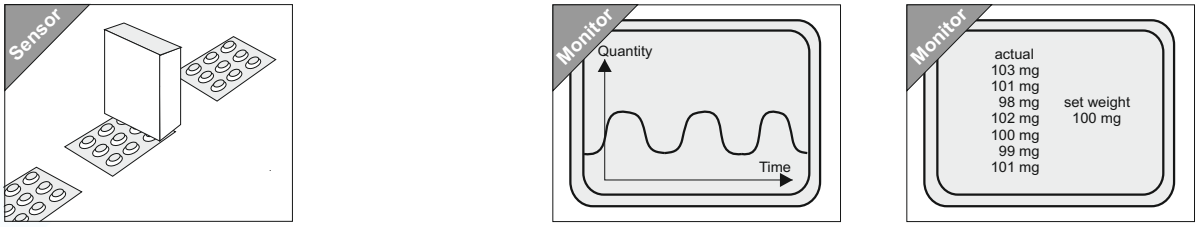
Generating mass profiles of nonwoven pads, alignment of weight quantity and homogenous distribution, measured through foil carrier



Generating mass profiles of endless nonwoven web, control of weight and homogenous material distribution



Generating mass profile of packaged rods, inspection of filling



Generating mass profile of blister packaged pills, inspection of presence and quantity

Table of contents

QMS 70... Sensors

mass quantity sensitive

fast on-line operation

stand alone or system operation

=

+ Defect Detection

+ Weight Control

+ Minimizing Rejects

+ Saving Resources

=

Being Competitive

Sensor for Production and Quality Control

Sensor

QMS 70

Hossbach Sensor Technologie

QMS 70

Features :

- single sided sensor for contact operation
- detection and control of thin products, materials and objects
- object detection also through carriers and enclosing materials
- auto-adjust functionality
- operation either as stand-alone sensor or in combination with visualisation and control units
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 100 x 60 x 20mm

Description :

The QMS 70 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70 is designed for materials, products, product parts - hereafter denoted as objects - really difficult to be detected or to be determined by weight. These objects may be intermittently aligned and either fixed on carriers or enclosed in paper or foils. The objects themselves may be made of any thin non-metallic materials, adhesive tapes, glue, cellulose, textiles etc.

The single sided sensor with its sensing area at the top enables detection and weight quantity control of thin objects. The objects or materials are in contact with the sensor top and are guided by two steel plates. Detection or weight quantity measurement may be performed through carriers like paper, foil or fleece webs. For that the objects and materials to be measured may be enclosed or be on the opposite side of the web.

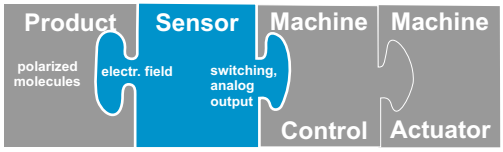
The QMS 70 is offered as a complete detection sensor unit with a switching output. Otherwise the QMS 70 version with analog output enables the interconnection to control and inspection systems like the HST Ranger and HST Analyser.

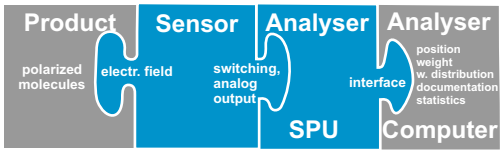
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent

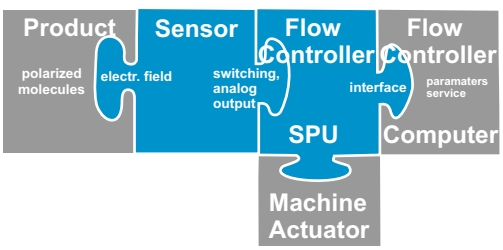
Building Blocks :

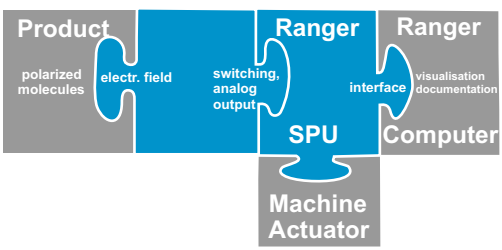
Hossbach equipment

machine line device





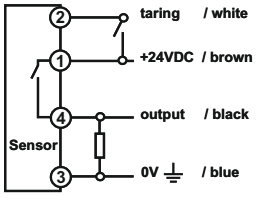




Plug Connections : switching output (standard version)

Sensor version : switching output, PNP

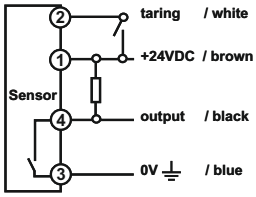
sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"0V/24V"	black



PNP

Sensor version : switching output, NPN

sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"24V/0V"	black

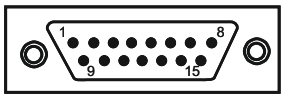


NPN

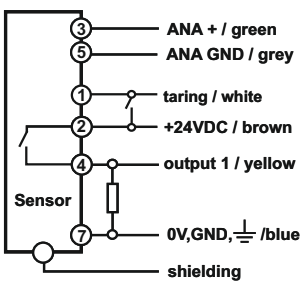
Plug Connections : analog output plus PNP switching outputs

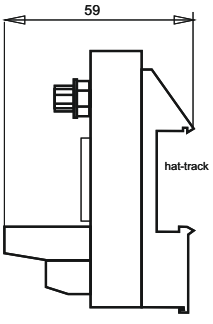
8-pin male M12 sensor connector

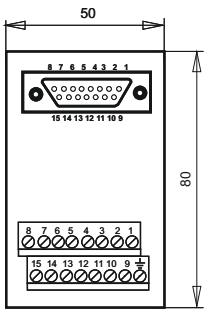
15 pin male SUB-D sensor cable connector **)



sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	switching output, PNP
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	not to connect
	shielding	blanc	housing	shielding
	don't use pin 6,8		don't use pin 1,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70

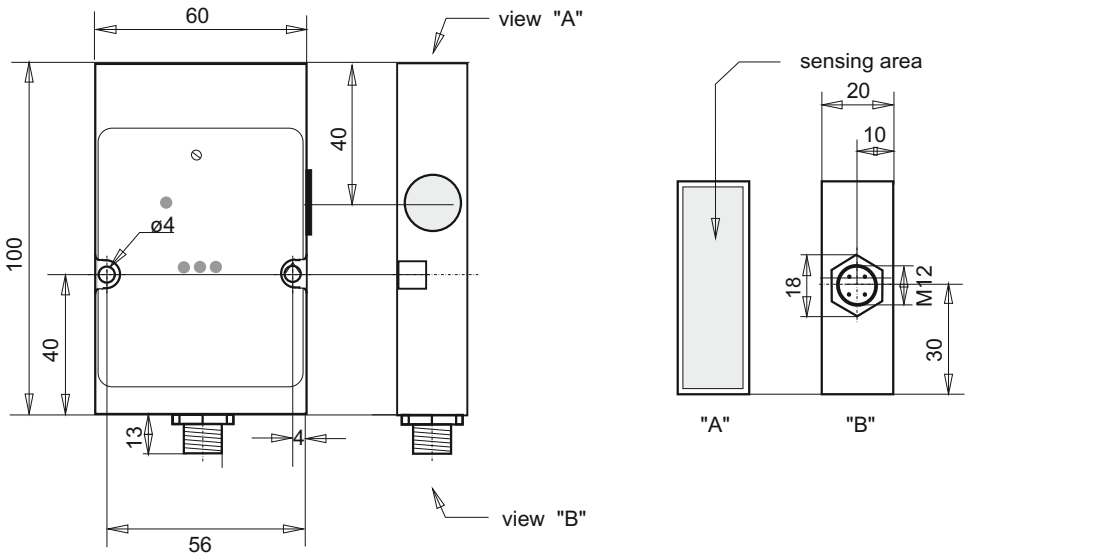
Technical Data :

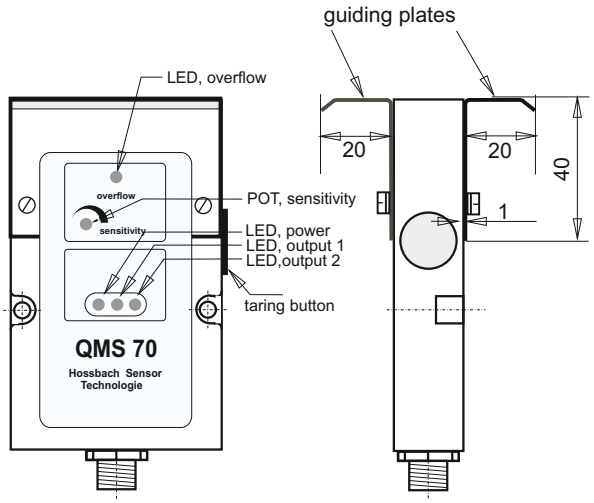
sensitivity :	high	external taring :	by ext. signal, 24V or push button (INT version)	weight :	typ. 230 gr.
measurement mode :	interval, permanent	output :	switching output, 24V/20mA	operation temperature range :	0...40° C
lowest detectable weight quantity :	< 1 mg	operation voltage :	+24VDC +- 10%, 50mA typ.	storage temperature range :	0...50°C
accuracy : (INT-version)	1...3 % RSD reachable	mounting :	2 holes 4 mm, or 2 pre-drilled bolt holes, M5 on bottom side	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
evaluation time :	< 1ms	dimension :	100 x 60 x 20 mm	protection type :	IP 50
active sensor area :	approx. 54 x 14 mm				CE

Order Data :

sensor version		order no.
QMS 70 -standard version-	for interval measurement with switching output, pnp	**QMS70-INT-PNP**
QMS 70	for interval measurement with analog output 0...10V	**QMS70-INT-ANA**
QMS 70	for permanent measurement with analog output 0...10V	**QMS70-PERM-ANA**
QMS 70	any sensor version available with ceramic electrode	**QMS70- ... - ceramic**
QMS 70	any sensor version available with SUB-D15 connector cable and adapter box	**QMS70- ... - SUBD**
all sensors including 5m connection cable		

Dimension : [mm]





variations due to sensor version

Sensor for Production and Quality Control

Sensor

QMS 70 - DED

Hossbach Sensor Technologie

QMS 70 - DED

Features :

- single sided sensor for contact or contact-free operation
- position control by detecting up to two different edges in one product (e.g. edge of foil cover and edge of enclosed content)
- object detection also through carriers and enclosing materials
- auto-adjust functionality
- operation either as stand-alone sensor or in combination with visualisation and control units
- switching output version with two PNP-signals
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 100 x 60 x 20mm

Description :

The QMS 70-DED is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-DED was designed for materials, products, product parts - hereafter denoted as objects - really difficult to be detected or to be determined by weight. These objects may be intermittently aligned and either fixed on carriers or separately enclosed in paper or foils. The objects themselves may be made of any non-metallic materials, adhesive tapes, glue, cellulose, textiles etc.

The single sided sensor with its sensing area at the top enables detection of changes in product composition as edges. The small electrode enables the sharp detection of short sections, like the beginning of a tubular bag or any kind of foil/paper/non-woven or fabric at the beginning of a product. As soon as this part enters the sensing area, the QMS70-DED activates its first PNP switching output.
The second PNP switching output is activated, in the very moment the material composition changes and another component enters the sensing area.

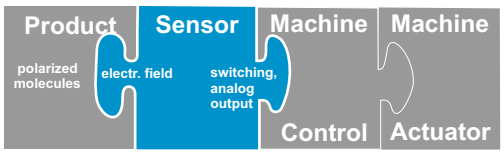
As the thresholds for the switching outputs can be selected freely, the QMS70-DED covers a very wide range of materials from thin foils to voluminous objects. By using the analog output signal, the thresholds can be set very precisely.

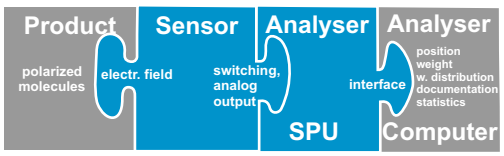
The objects or materials can be guided in contact with the sensor electrode or moved in a constant distance (<1mm) above the sensor electrode.
Pollution and abrasion have no effect on sensor operation in a very wide extent.

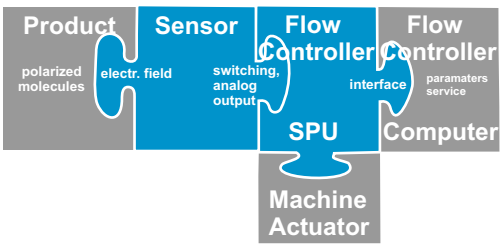
Building Blocks :

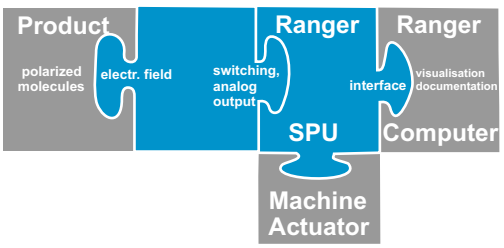
Hossbach equipment

machine line device



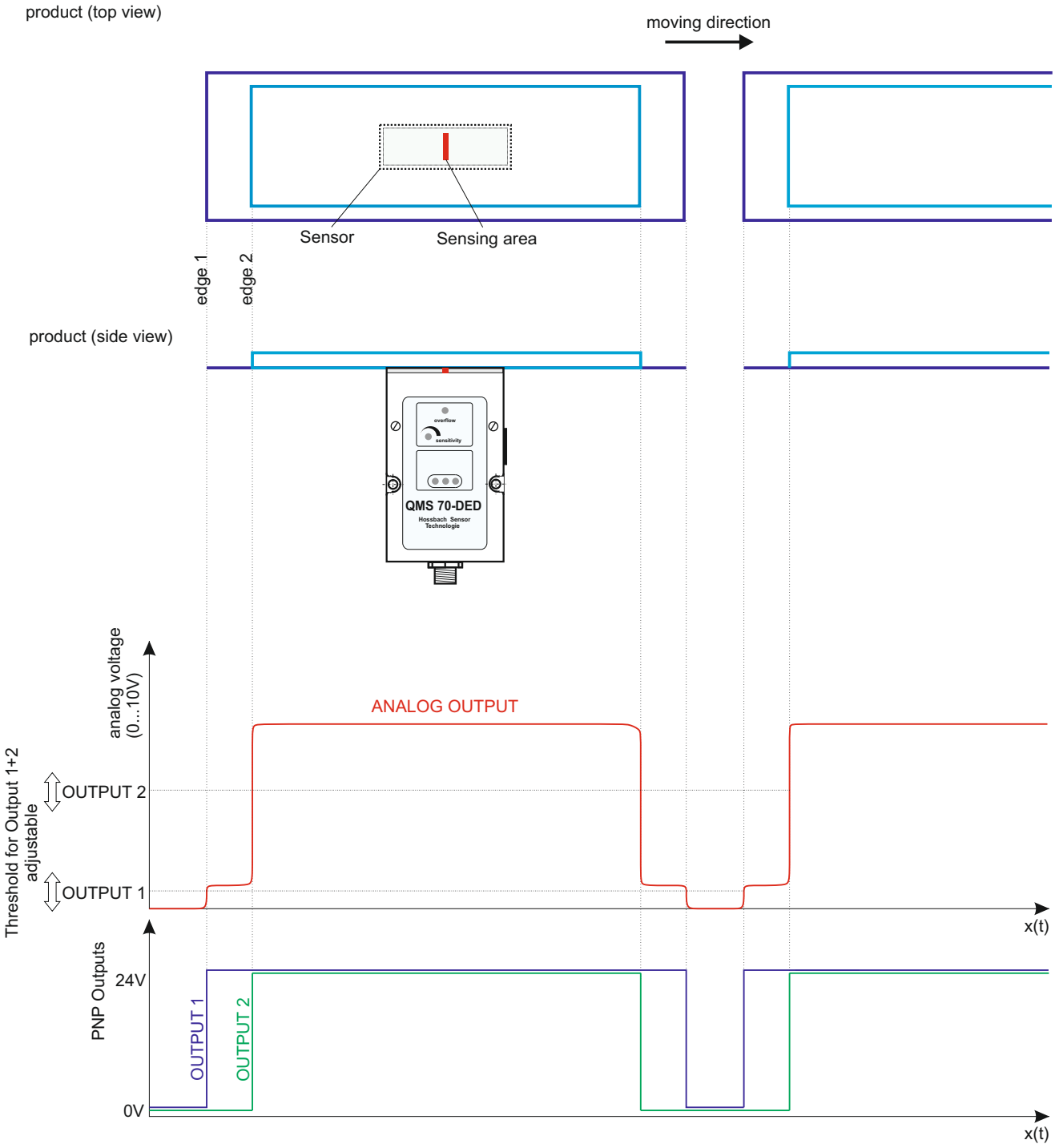






Description (operation) :

Due to its slim design, the QMS70-DED can fit in small areas below the product. Here it is installed in a distance or in contact to the product. While the product passes the sensing area of the sensor, the sensor "scans" the amount of material which is just above the sensing area. Proportional to this amount, the sensor gives an analog output signal. The digital PNP-switching outputs are activated, as soon as the analog output reaches the pre-set value (threshold). By that edges or changes in products are detected very sharply.

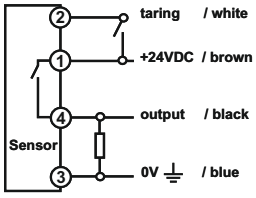


Plug Connections : switching output

Sensor version : switching output, PNP

sensor version switching ouput

4 pin	female connector		cable
pin 1	power supply	+24V	brown
pin 2	taring input	+24V	white
pin 3	power supply	0V/GND	blue
pin 4	switching output	"0V/24V"	black

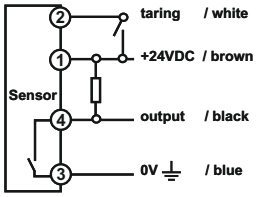


PNP

Sensor version : switching output, NPN

sensor version switching ouput

4 pin	female connector		cable
pin 1	power supply	+24V	brown
pin 2	taring input	+24V	white
pin 3	power supply	0V/GND	blue
pin 4	switching output	"24V/0V"	black

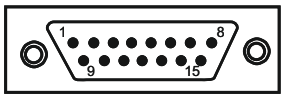


NPN

Plug Connections : analog output plus 2 PNP switching outputs (standard version)

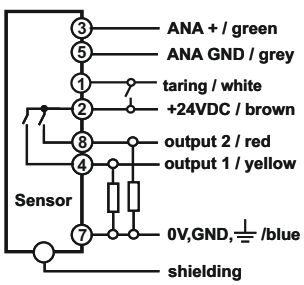
8-pin male M12 sensor connector

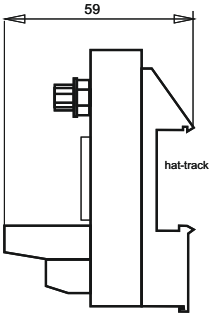
15 pin male SUB-D sensor cable connector **)

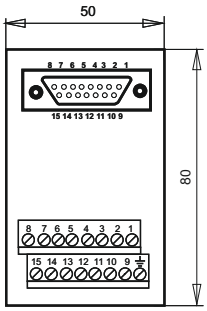


sensor version sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	switching output 1
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	switching output 2
shielding	blanc	housing	shielding
don't use pin 6		don't use pin 1,6,7,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 - DED

Technical Data :

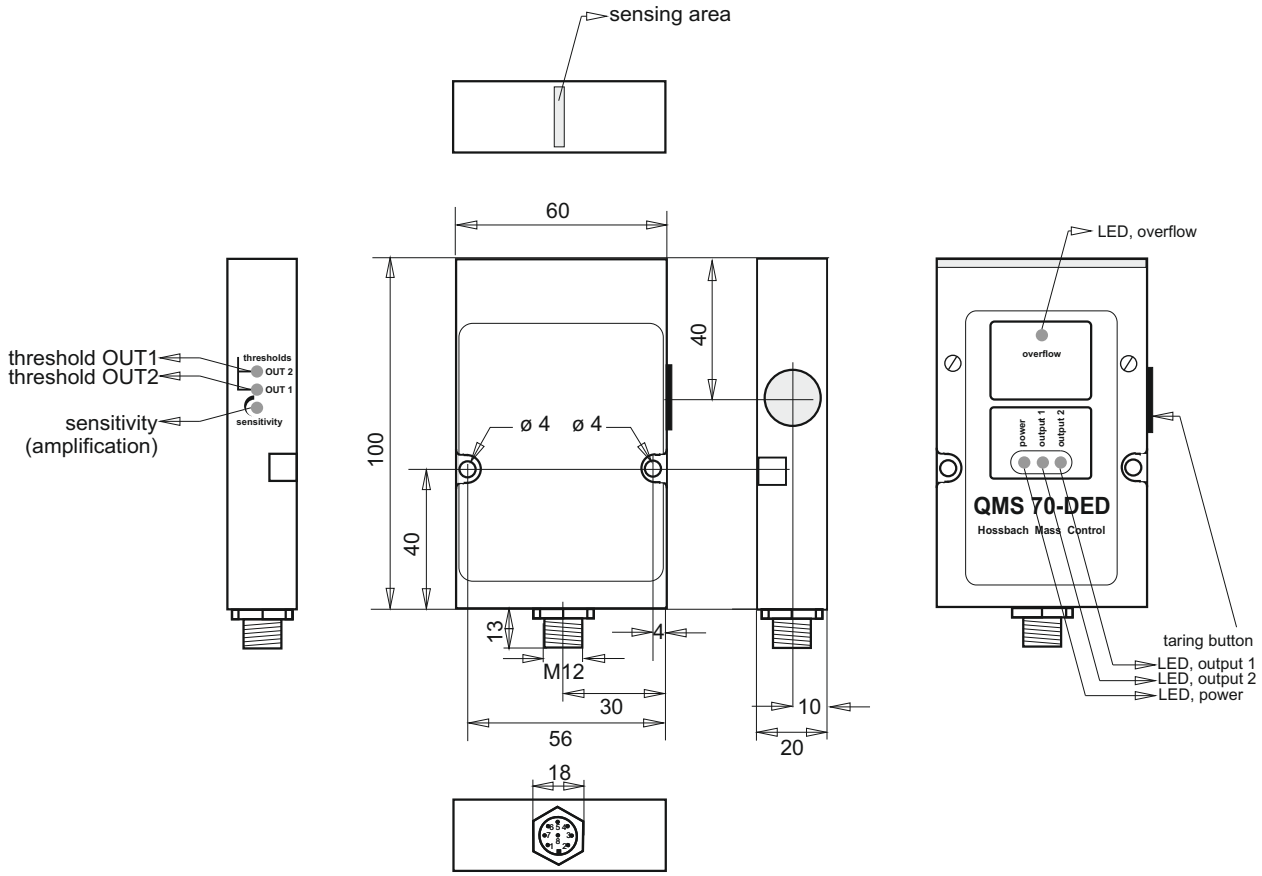
sensitivity :	high	external taring :	by ext. signal, 24V or push button (INT version)	weight :	typ. 230 gr.
measurement mode :	interval	output :	two switching output, 24V/20mA one analog output (0...10V)	operation temperature range :	0...40° C
lowest detectable weight quantity :	< 1 mg	operation voltage :	+24VDC +- 10%, 50mA typ.	storage temperature range :	0...50°C
accuracy : (INT-version)	1...3 % RSD reachable	mounting :	2 holes 4 mm	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
evaluation time :	< 1ms	dimension :	100 x 60 x 20 mm	protection type	IP 50
active sensor area :	approx. 1 x 14 mm				CE

Order Data :

sensor version		order no.
QMS 70-DED -standard version-	for interval measurement with analog output 0...10V and two switching outputs, PNP	**QMS70-DED-INT-ANA-2PNP**
QMS 70-DED	for interval measurement with two switching outputs, PNP	**QMS70-DED-INT-2PNP**
QMS 70-DED	any sensor version available with ceramic electrode	**QMS70-DED- ... - ceramic**
QMS 70-DED	any sensor version available with SUB-D connecter cable and adapter box	**QMS70-DED- ... - SUBD**

sensors including 5m connection cable

Dimension : [mm]



features varies depending on sensor version

Sensor for Production and Quality Control

Sensor

QMS 70 - 40 - CT1

Hossbach Sensor Technologie

QMS 70 - 40 - CT1

Features :

- single sided sensor for contact-free operation
- detection of components in enclosed boxes
- detection of the presence of massive components as bottles
- detection of the presence of the filling inside bottles
- easy adjustment, if needed at all
- independent of environmental influences in a wide range
- two analog outputs:
  tareable: 0...10V
  not tareable (-10)...**0**...10V (optional)
- +24VDC +/- 10% operation voltage
- sensitivity adjustable in a very wide range
  by 3-Step Selector Switch or by potentiometer screw
  or
  in 8 steps by three BCD-coded input signals (AMP8)
- robust aluminium housing 150x80x40 mm³

Description :

The QMS70-40-CT1 is a unique sensor for detecting enclosed objects and contents in a folded boxes.
Through its slim design it can be installed in between coveyor belts or within any other transportation device.

This sensor covers a wide field of operation. On the one side, it can detect the presence of objects, as bottles or containers and also distinguish, whether the container is full, half filled or empty.

The QMS70-40-CT1 can be used also for the detection of booklets or protection sheets, which are positioned in between the bottle/object and the sensor at the bottom of the box.

For measuring other components in the box, which are located on the top side of the box, the sensor simply can be installed at the top of the box.
Here it could detect components, which are attached directly to the box or are located under the surface of the box.

The biggest advantage of this sensor in comparison to optical sensors is that it can measure inside closed and sealed boxes due to its capability to measure through any non-metallic/conductive material. It is also insensitive towards lighting conditions and does not need optical accessibility to the object to be detected.

Also in comparison to gravimetrical balance the QMS70-40-CT1 has the advantage, that this sensor does not require any change in production dynamic or machine setup, as it can be installed within the machine while requiring only very little space.

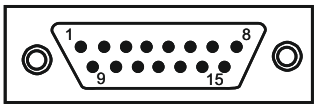
A general advantage is its ability for high-speed operation. It operates reliably even at tested speeds of 300 products per second (18.000 products per minute)

In an extended version the QMS70-40-CT1 is available as "AMP8"-version, with 8 amplification (sensitivity) levels, which can be set by the machine control over 3 BCD-coded inputs.

Sensor version : analog output, optional two analog outputs and two digital outputs

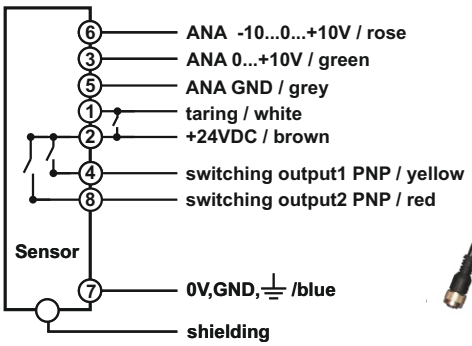
8-pin male M12 sensor connector

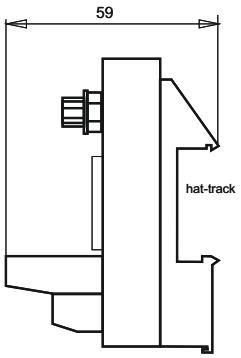
15 pin male SUB-D sensor cable connector (optional)

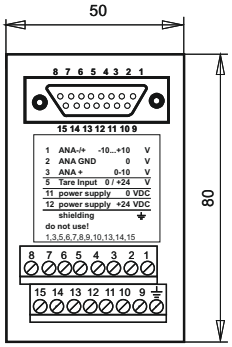


sensor version sensor+profiler

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V (tareable)
pin 4	yellow	pin 4	switching output 1 PNP (+24V) ***)
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	analog output -10...0...+10V (not tareable)***)
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	switching output 2 PNP (+24V) ***)
shielding	blanc	pin 11	shielding
		don't use pin 6, 7, 9, 10, 13, 14, 15 *) only active for "interval measuring" sensor version **) only with optional SUB-D connector plug ***) second analog / switching outputs: optional features	







(SUB-D adapter box optional)

QMS 70 - 40 - CT1

Technical Data :

sensitivity :	high for interval measurement	inputs :	taring by ext. signal, 24V or push button optional: 3 BCD-coded inputs for sensitivity setting	operation temperature range :	0...40° C
measurement mode :	interval or permanent	outputs :	analog outputs, tareable: 0...+10V optional: non-tareable -10...0...+10V switching outputs (PNP, 24V)	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	operation voltage :	+24VDC +- 10% 30mA typ.	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy :	<3%RSD depending on material quantity, material characteristics and product guiding	mounting :	2 x 2 M5 threads	protection type :	IP 40
evaluation time :	< 1ms	dimension :	150 x80 x40 mm	warm-up duration :	typ. 30 minutes
achievable longitudinal resolution:	20 mm	weight :	typ. 550 gr.		
active sensor area :	appr. 20 x 25 mm	amplification: (sensitivity)	set by screw potentiometer or 3-step selector switch optional: 8 steps, BCD-coded		

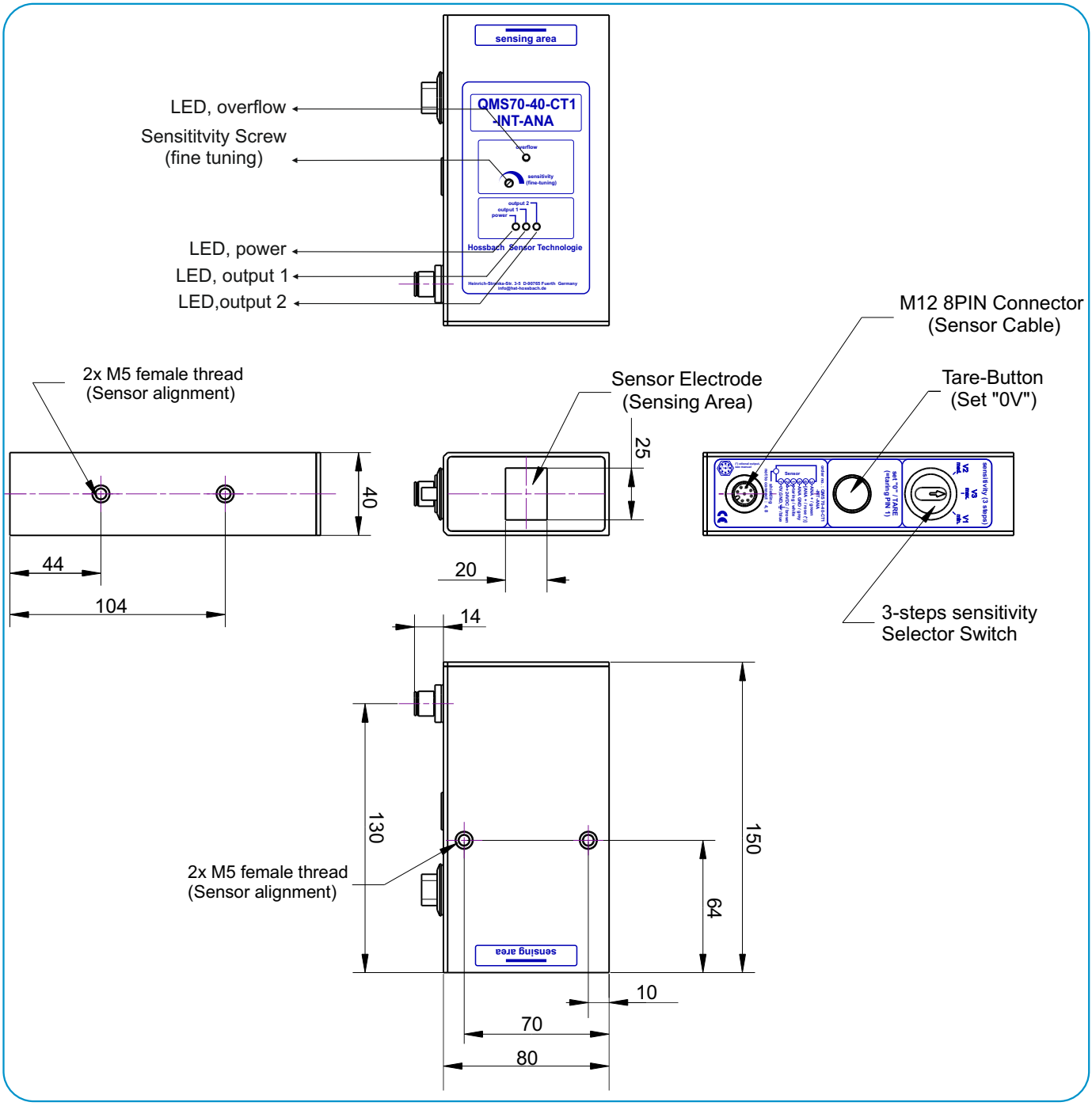
Order Data :

sensor version		order no.
QMS 70-40-CT1	for interval measurement with one analog signal outputs	**QMS70-40-CT1-INT-ANA**
QMS 70-40-CT1	for interval measurement with two analog signal outputs and two switching output (PNP)	**QMS70-40-CT1-INT-2ANA-2PNP**
QMS 70-40-CT1	any sensor version with BCD-coded amplification (sensitivity) setting	**QMS70-40-CT1-...-AMP8**
(customized sensor versions on request)		

sensor including 5m connection cable plus optional adapter box

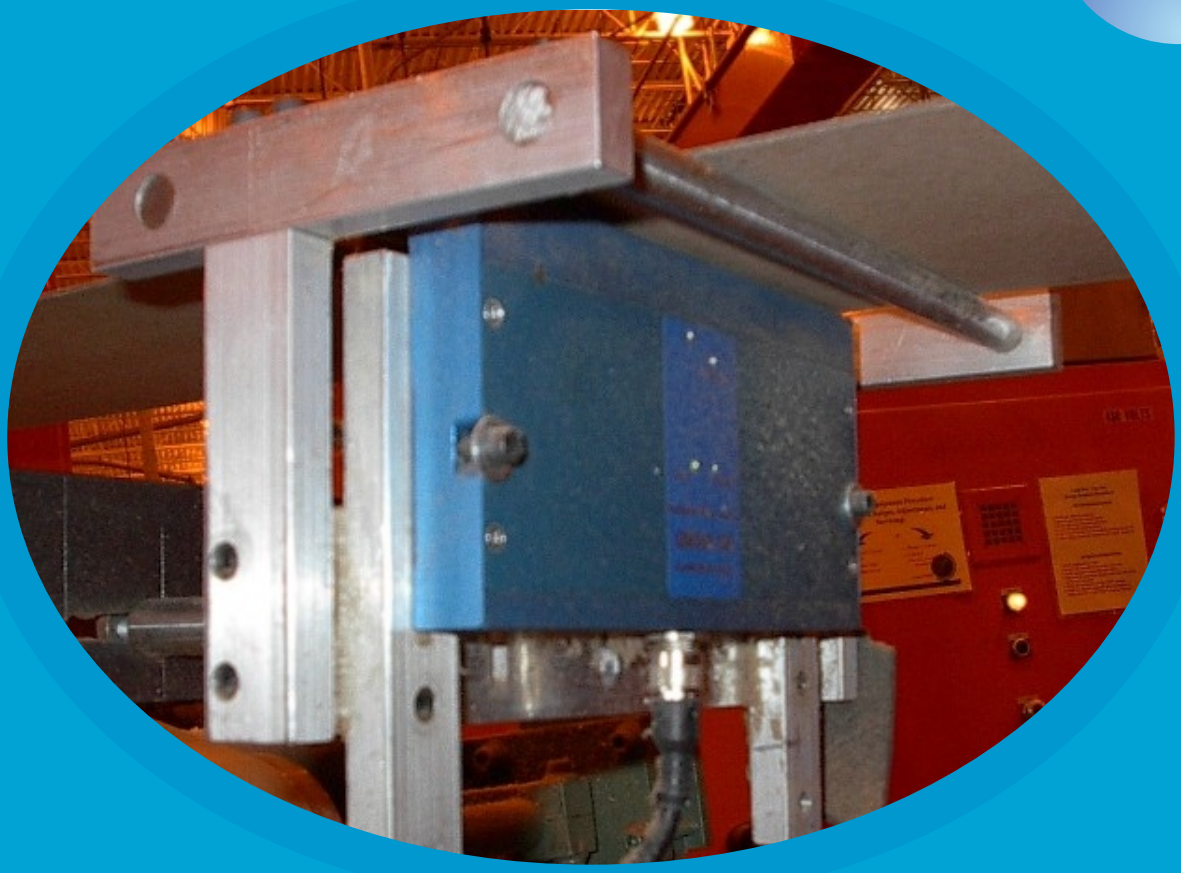
QMS 70 - 40 - CT1

Dimension : [mm]



Sensor for Production and Quality Control

Sensor



QMS 70-180

Hossbach Sensor Technologie

QMS 70 - 180

Features :

- wide, single sided sensor for contact and non-contact operation
- detection and control of thin and voluminous products, materials and objects
- object detection also through carriers and enclosing materials
- auto-adjust functionality
- operation either as stand-alone sensor or in combination with visualisation and control units
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 100 x 180 x 20mm

Description :

The QMS 70-180 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-180 is designed for materials, products, product parts - hereafter denoted as objects - really difficult to be detected or to be determined by weight. These objects may be intermittently aligned and either fixed on carriers or enclosed in paper or foils. The objects themselves may be made of any thin non-metallic materials, adhesive tapes, glue, cellulose, textiles etc.

The single sided sensor with its wide sensing area at the top enables detection and weight quantity control of thin objects or coatings.The objects or materials are guided just above the sensor electrode. Detection or weight quantity measurement may be performed through carriers like paper, foil or fleece webs. For that the objects and materials to be measured may be enclosed or be on the opposite side of the web.

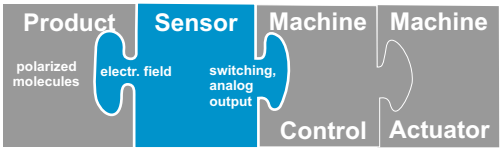
The QMS 70-180 is offered as a complete detection sensor unit with a switching output. Otherwise the QMS 70-180 version with analog output enables the interconnection to control and inspection systems like the HST Ranger and HST Analyser.

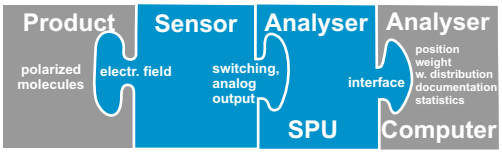
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent.

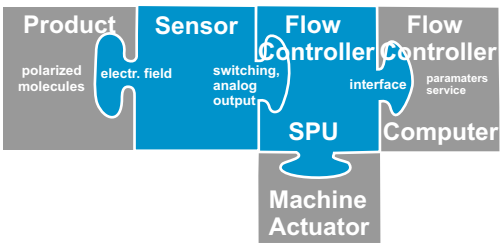
Building Blocks :

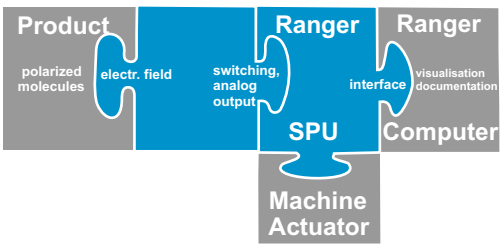
Hossbach equipment

machine line device





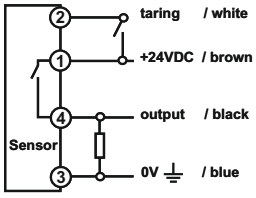




Plug Connections : switching output

Sensor version : switching output, PNP

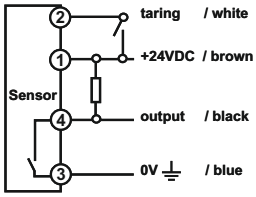
sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"0V/24V"	black



PNP

Sensor version : switching output, NPN

sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"24V/0V"	black

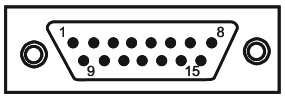


NPN

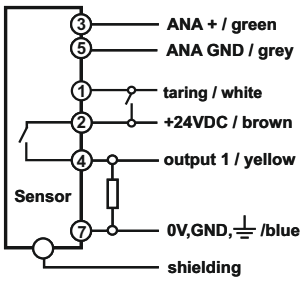
Plug Connections : analog output plus 1 PNP switching outputs (standard version)

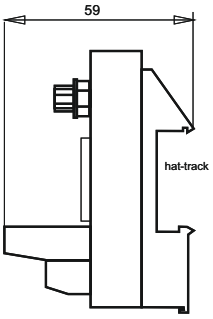
8-pin male M12 sensor connector

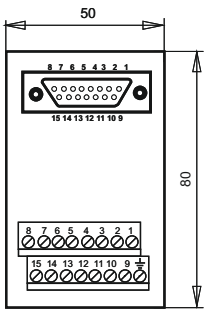
15 pin male SUB-D sensor cable connector **)



sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	switching output, PNP
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	not to connect
	shielding	blanc	housing	shielding
	don't use pin 6, 8		don't use pin 1,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







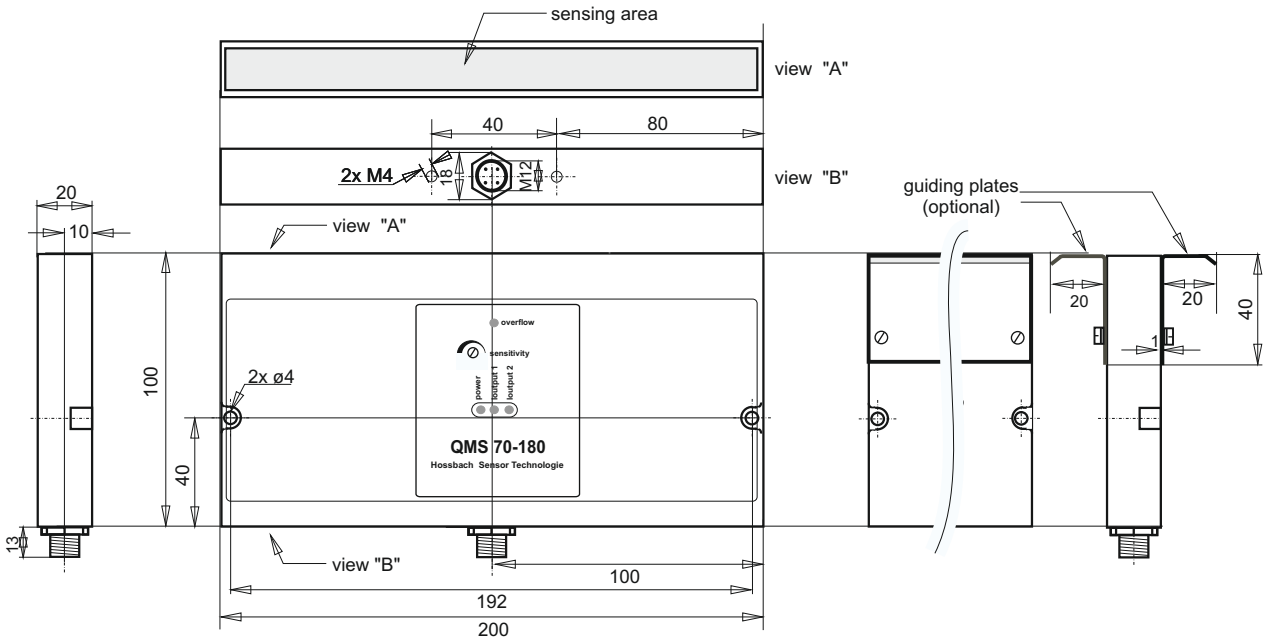
Technical Data :

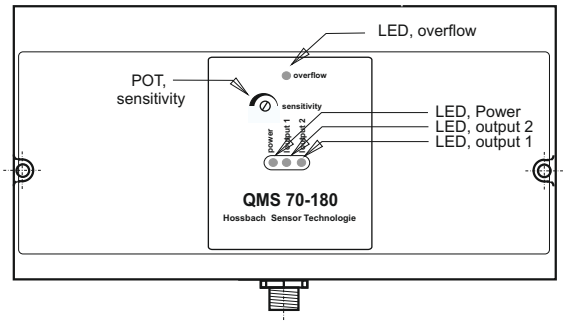
sensitivity :	high for interval measurement	external taring :	by ext. signal, 24V or push button (INT, TARA versions)	weight :	typ. 450 gr.
measurement mode :	interval, permanent	output :	switching output, 24V/20mA or analog output 0...10V	operation temperature range :	0...40° C
lowest detectable weight quantity :	< 1 mg	operation voltage :	+24VDC +- 10%, 50 mA typ.	storage temperature range :	0...50°C
accuracy : (INT-version)	1...3 % RSD reachable	mounting :	2 holes 4 mm or 2 pre-drilled bolt holes, M5 on bottom side	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
evaluation time :	< 1 msec.	dimension :	180 x 100 x 20 mm	protection type	IP 50
active sensor area :	174 x 14 mm				CE

Order Data :

sensor version		order no.
QMS 70-180	for interval measurement with switching output, pnp	**QMS70-180-INT-PNP**
QMS 70-180	for interval measurement with analog output 0...10V	**QMS70-180-INT-ANA**
QMS 70-180	for permanent measurement with switching output, pnp	**QMS70-180-PERM-PNP**
QMS 70-180	for permanent measurement with analog output 0...10V	**QMS70-180-PERM-ANA**
QMS 70-180	for permanent measurement with analog output 0...10V, TARA	**QMS70-180-PERM-ANA-TARA**
QMS 70-180	any sensor version available with SUB-D15 connector cable and adapter box	**QMS70-180- ... - SUBD**
sensors including 5m connection cable		

Dimension : [mm]





variations due to sensor version

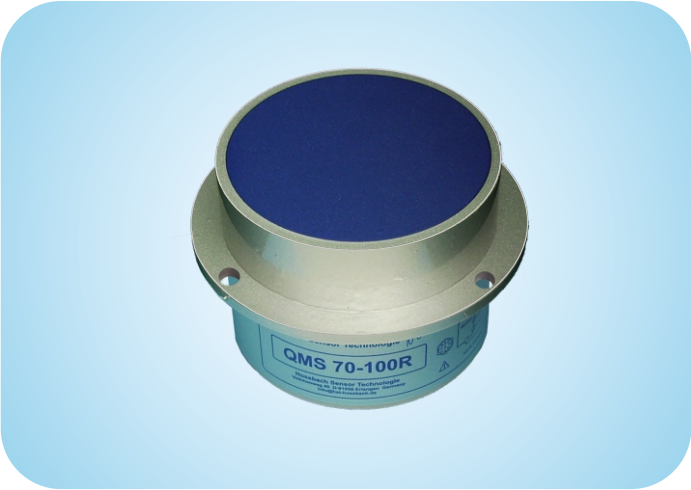
Sensor for Production and Quality Control

Sensor

QMS 70-100R

Hossbach Sensor Technologie

QMS 70 - 100R



Features :

- sensor for fluid measurements
- measurement of containers, glasses, vials etc. and filled fluid quantities
- object to be measured are moved over the sensor
- long term stability due to self calibrating
- switching output version for stand alone operation
- analog output 0...+10V version
- operations with control and analysing units like HST Flow Controller and HST Analyser
- +24VDC +/- 10% operation voltage
- robust aluminium housing ø130 x 85 mm, tubus ø105 x 85 mm

Description :

The sensor QMS 70-100R is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The big single sided sensor, i. e. sensing area at the top enables weight measurement of fluids just being or already filled up in containers. The measurements may be used for checking the presence of fluids or controlling the filling process.

The demands for the ”presence of fluid” application may be covered by the sensor version with a switching output as well as the filling of a distinct preset quantity. The switching output is activated as soon as the fluid or a preset fluid quantity is detected.

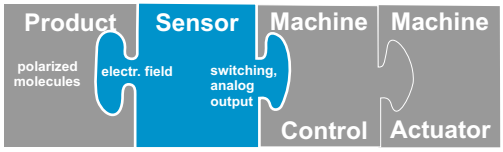
Using the sensor with analogue output enables more sophisticated applications. Due to the analogue output, that delivers sensor signals between 0 and 10V proportional to the quantity measured two principal applications exist: The use of the analogue voltage by the external machine control unit or by a controlling or analysing unit from Hossbach Sensor Technologie. The best solution for controlling the filling process is achieved, when the HST Flow Controller is used. Due to its “teach” performance the filling process is calibrated and defined in a very useful way, that obviates the need for complicated calibrations by an external machine control unit.

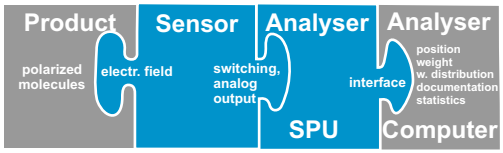
Because of its little space requirement, the QMS 70-100R is easily integrated in filling stations or filling machines.

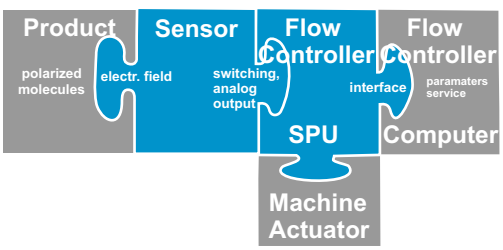
Building Blocks :

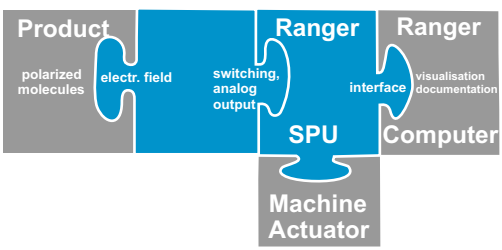
Hossbach equipment

machine line device





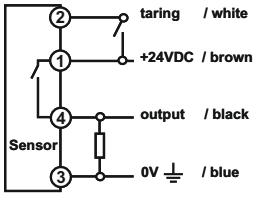




Plug Connections : switching output

Sensor version : switching output, PNP

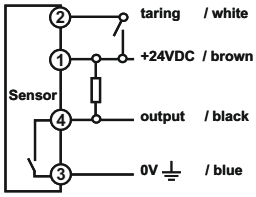
sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"0V/24V"	black



PNP

Sensor version : switching output, NPN

sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"24V/0V"	black

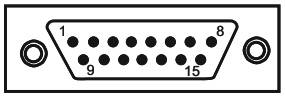


NPN

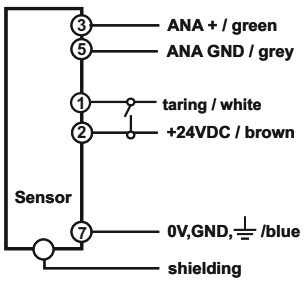
Plug Connections : analog output

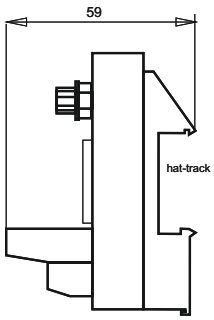
8-pin male M12 sensor connector

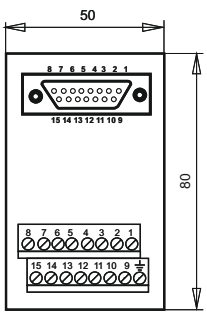
15 pin male SUB-D sensor cable connector **)



sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	not to connect
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	not to connect
	shielding	blanc	housing	shielding
	don't use pin 6,4,8		don't use pin 1,4,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 - 100R

Technical Data :

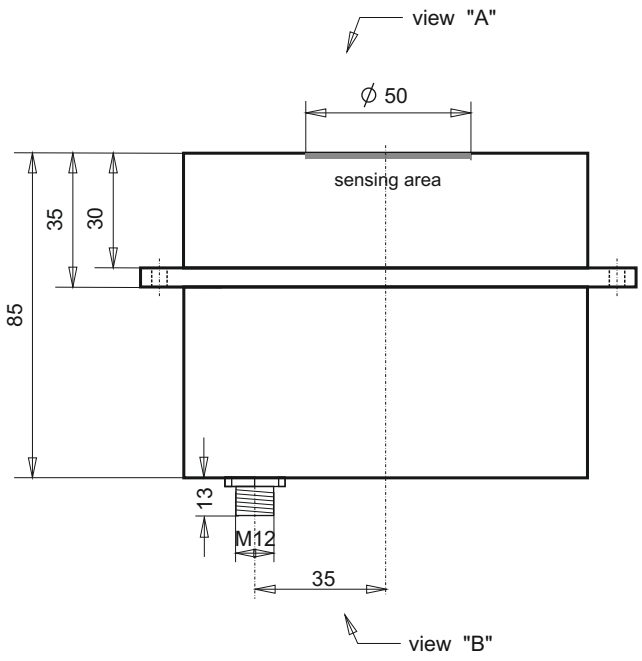
sensitivity :	high	external taring : (interval version)	automatically or by external 24V signal or push button	dimension :	ø 130 x 85 mm, tubus : 105,9 x 85 mm
measurement mode :	permanent, interval	output : (digital version)	switching output, 24V/20mA	weight :	typ. 1000 gr.
lowest detectable weight quantity :	< 0,01 ml	output : (analog version)	analog output 0 ... 10V	operation temperature range :	0...40° C
accuracy : (INT-version)	1...3 % RSD reachable	operation voltage :	+24VDC +- 10% 50mA typ.	storage temperature range :	0...50°C
evaluation time :	< 1ms	mounting :	4 lateral holes, ø 4mm	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
active sensor area :	ø 50 mm			protection type	IP 60 CE

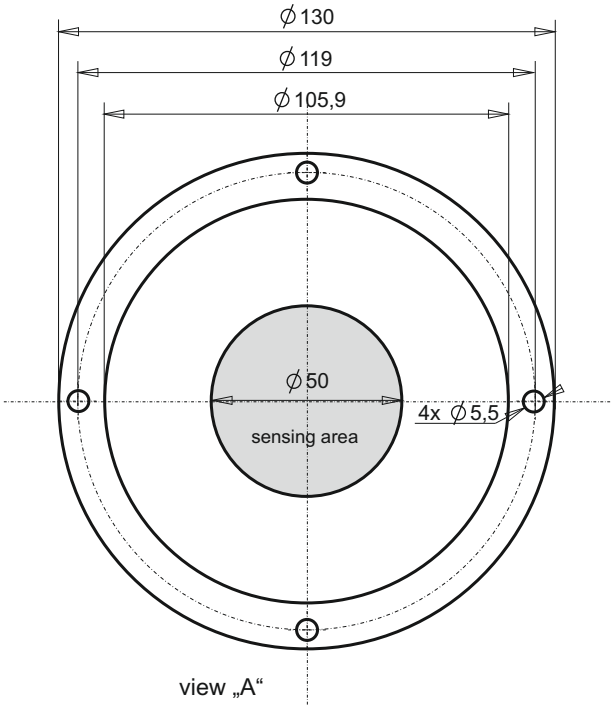
Order Data :

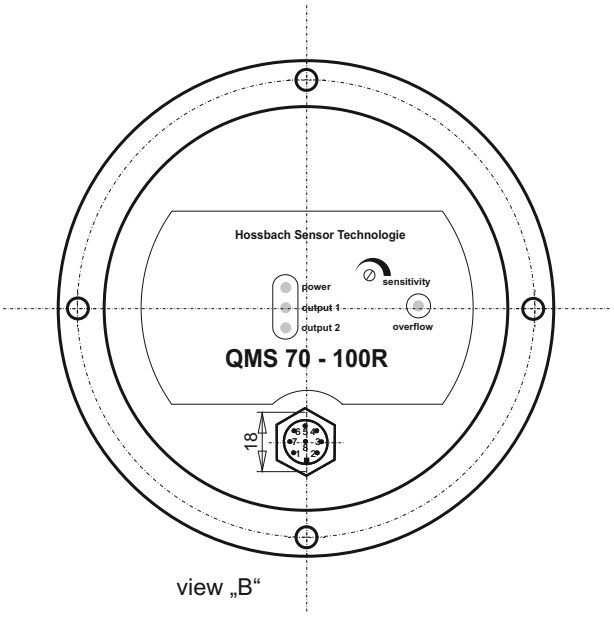
sensor version	order no.
QMS 70-100R -standard version- for interval measurement with analog output 0...10V	**QMS 70-100R-INT-ANA**
QMS 70-100R for interval measurement with switching output, PNP	**QMS 70-100R-INT-PNP**
QMS 70-100R for permanent measurement with switching output, PNP	**QMS 70-100R-PERM-PNP**
QMS 70-100R for permanent measurement with analog output 0...10V	**QMS 70-100R-PERM-ANA**
QMS 70-100R any sensor version available with ceramic electrode	**QMS 70-100R-...-ceramic**
QMS 70-100R any sensor version available with SUBD-connector cable and adapter box	**QMS 70-100R-...-SUBD**

sensors including 5m connection cable

Dimension : [mm]

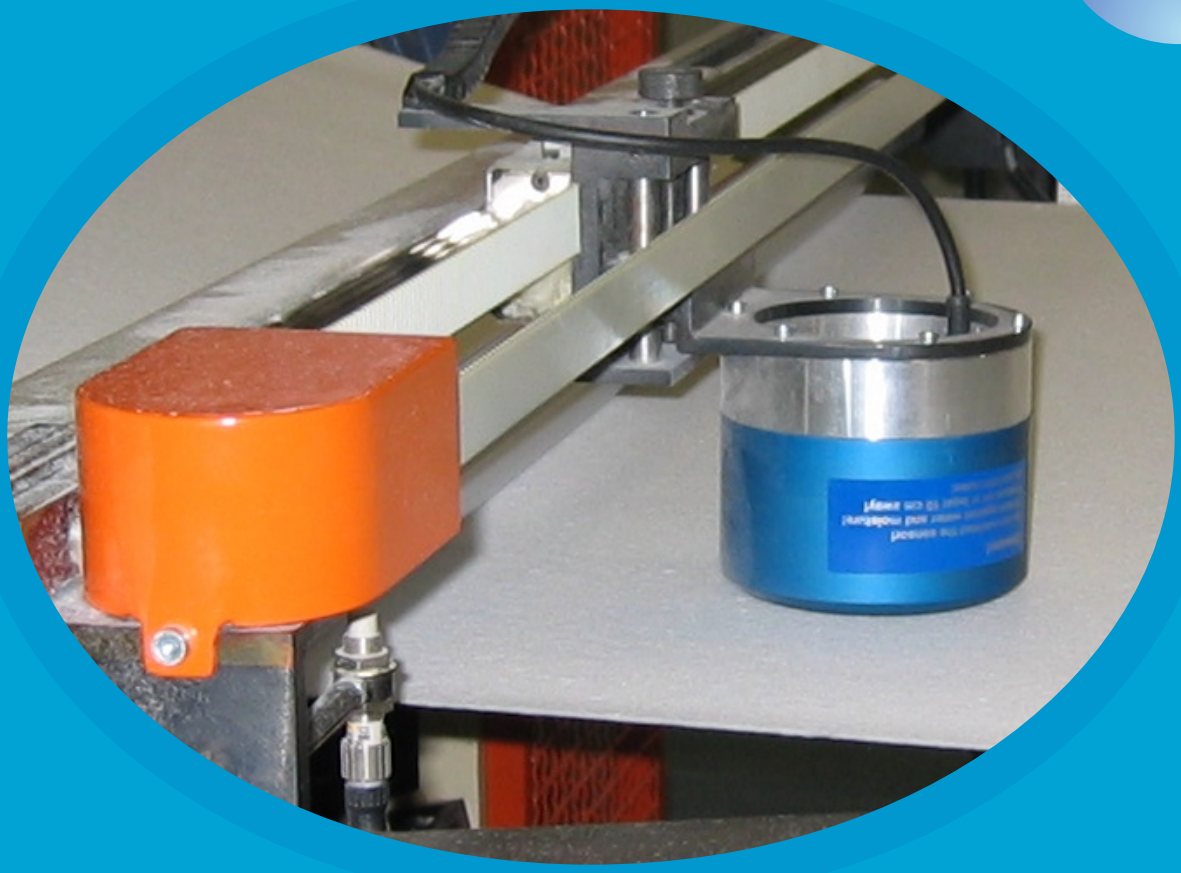






Sensor for Production and Quality Control

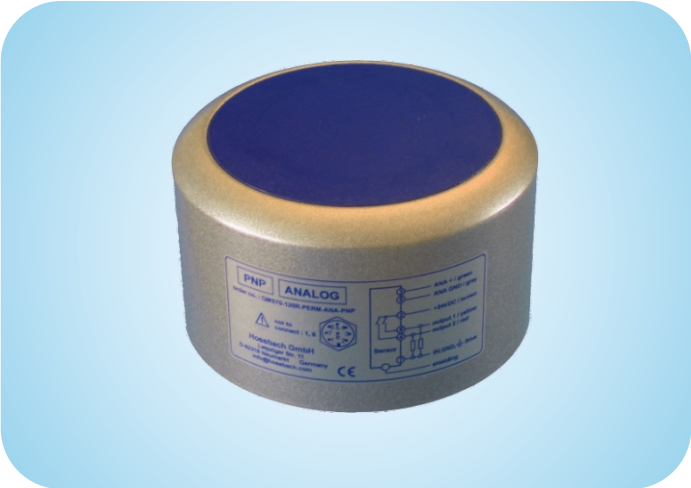
Sensor



QMS 70-120R

Hossbach Sensor Technologie

QMS 70 - 120R



Features :

- single sided round sensor for contact operation
- operation as web traversing sensor
- detection of thin and voluminous, intermittently aligned objects or endless material
- object detection also through carriers and enclosing materials
- operation either as stand-alone sensor or in combination with visualization and control units
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing ø120 x 70 mm

Description :

The QMS 70-120R is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The big single sided sensor, i. e. sensing area at the top, enables weight measurement of voluminous and continuous materials. The QMS 70-120R and the referring HST Control and Inspection System replaces the weight control systems based on X-ray measurement technics. The QMS 70-120R needs no expensive maintenance and no precautions X-ray based control systems need.

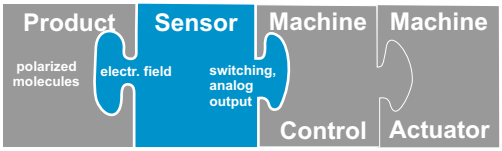
Thanks to its construction the QMS 70-120R can be used for weight controlling of endless cellulose or textile webs, where the sensor gets traversed over the webs by motor or pneumatically. At each locations the sensor outputs an analog voltage, which is proportional to the mass, weight just measured. The measurement voltages can be directed to inspection and control systems, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. The qualitative information and data concern production, machine and material etc. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

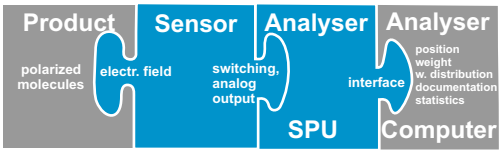
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent

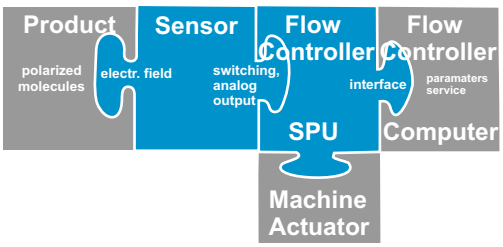
Building Blocks :

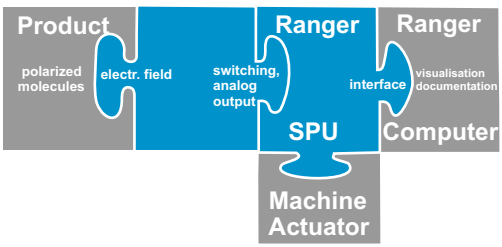
Hossbach equipment

machine line device





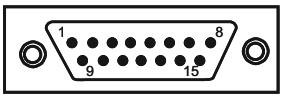




Plug Connections : **analog output plus 1 PNP switching output**

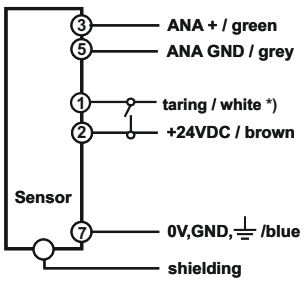
8-pin male M12 sensor connector

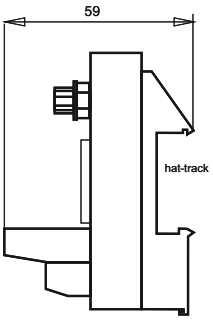
15 pin male SUB-D sensor cable connector **)

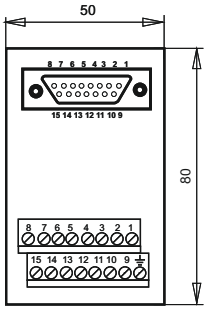


sensor version
sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	not to connect
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	not to connect
shielding	blanc	housing	shielding
don't use pin 4,6,8		don't use pin 1,4,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 - 120R

Technical Data :

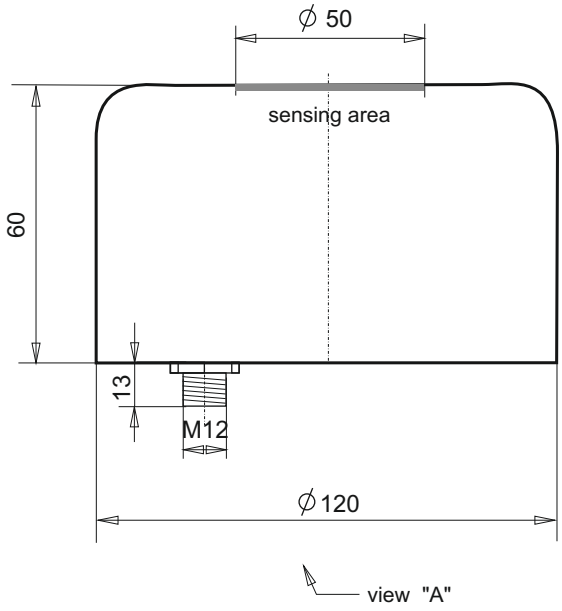
sensitivity :	high	external taring :	automatically or by external 24V signal or push button (TARA version)	operation temperature range :	0...40° C
measurement mode :	permanent			storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	output :	analog output 0 ... 10V	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	operation voltage :	+24VDC +- 10% 50mA typ.	protection type	IP 60
evaluation time :	< 1ms	mounting :	6 pre-drilled bolt holes, M4 on bottom side		
active sensor area :	ø 50 mm	dimension :	ø 120 x 60 mm		
		weight :	typ. 1100 gr.		CE

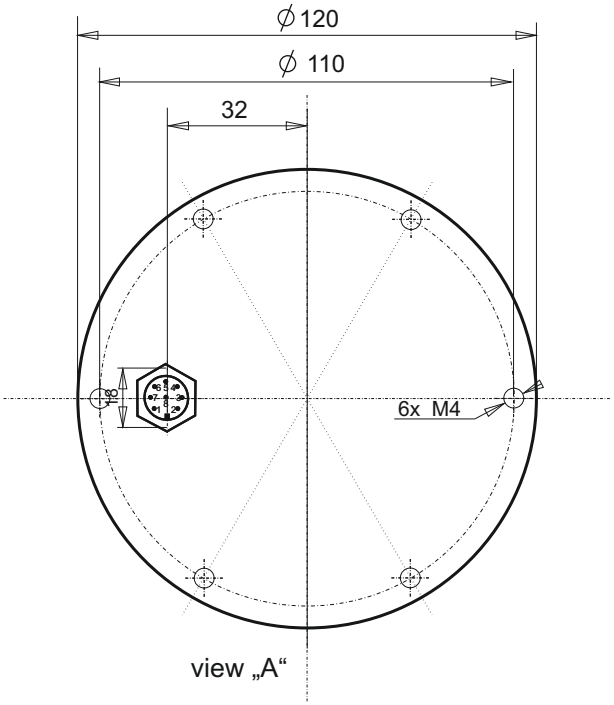
Order Data :

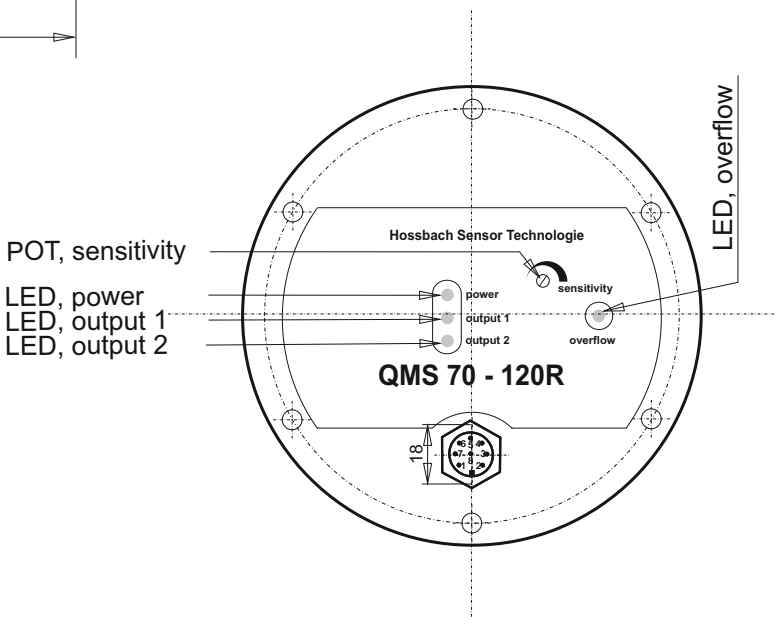
sensor version		order no.
QMS 70-120R -standard version-	for permanent measurement with analog output 0...10V, TARA	**QMS 70-120R-PERM-ANA-TARA**
QMS 70-120R	for permanent measurement with analog output 0...10V	**QMS 70-120R-PERM-ANA**
QMS 70-120R	for operation with HST Control Units (HST Flow Controller, Ranger, Analyser)	**QMS 70-120R-SYSTEM**
QMS 70-120R	any sensor version available with ceramic electrode	**QMS 70-120R-...-ceramic**
QMS 70-120R	any sensor version available with SUBD-connector cable and adapter box	**QMS 70-120R-...-SUBD**

sensors including 5m connection cable

Dimension : [mm]







variations due to sensor version

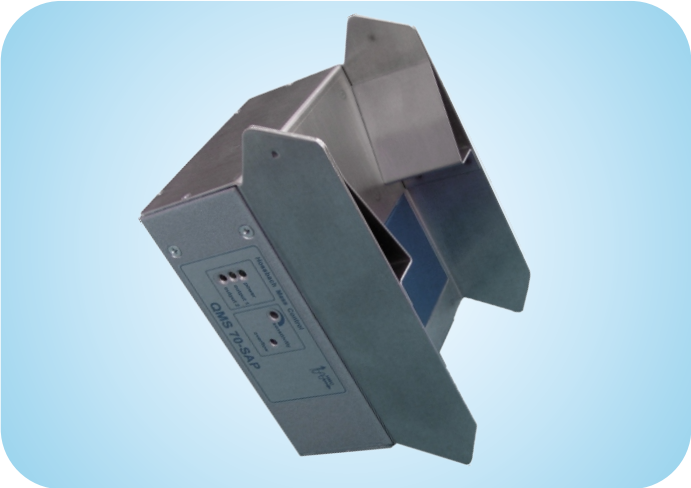
Sensor for Production and Quality Control

Sensor

QMS 70 - SAP

Hossbach Sensor Technologie

QMS 70 - SAP



Features :

- single sided sensor for material flow measurement
- sensor for control of granulate, powder and tablets
- optimized material flow guiding and measurement
- replaces or controls common, expensive balances
- operation either as stand-alone sensor or in with visualization and control units
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing, size 162 x 91x 104mm
- abrasion resistant stainless steel slide and ceramic electrode

Description :

The QMS 70-SAP is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70 - SAP covers solutions of a wide range of applications, where flowing materials like powder, granulate, SAP, tablets should be controlled for weight before they get packaged, added to or mixed with other materials.

The QMS 70-SAP controls or replaces expensive balances or is an optimal supplement to screw conveyers. Due to the measuring principle and the high measuring rate, the QMS 70 - SAP gives instantaneously many information about the quantity and continuity of the mass-flow to the user right before material get processed, filled, mixed etc.The QMS 70-SAP enables user to react at once, when the material flow is curbed or interrupted by any reason. By the way also material is economised while the demands for product quality are met automatically.

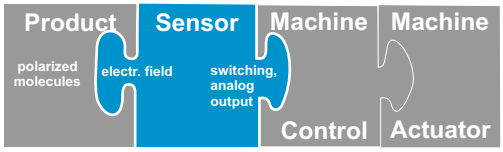
The QMS 70-SAP outputs an analog signal 0...10V, that can be connected to external control units or to control and inspection systems built up with the HST Ranger and HST Analyser etc. to derive and evaluate important qualitative and quantitative information and data. Among the qualitative information and data are variation due to feeding, weighing, dosing processing taking place before the material flows over the sensing area of the sensor. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data important for instantaneous reaction or later analysis.

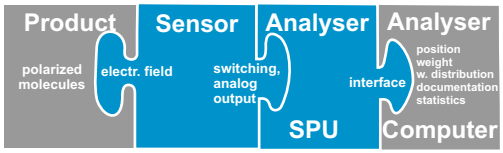
Example for Application see p.230

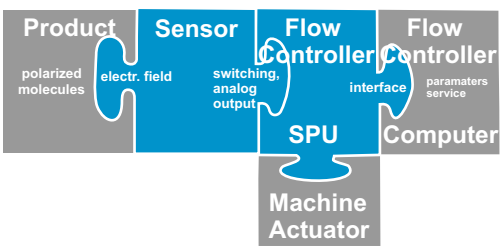
Building Blocks :

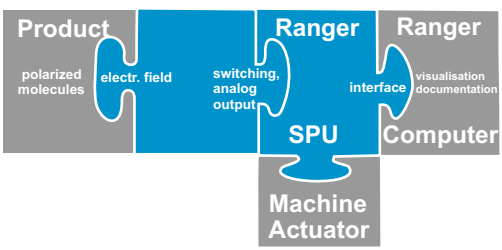
Hossbach equipment

machine line device





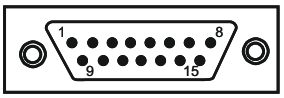




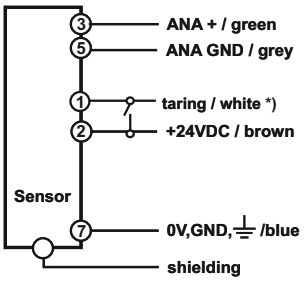
Plug Connections : **analog output**

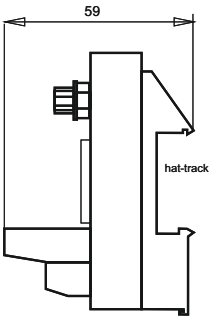
8-pin male M12 sensor connector

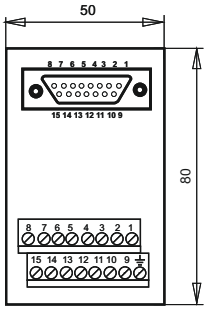
15 pin male SUB-D sensor cable connector **)



sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	not to connect
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	not to connect
	shielding	blanc	housing	shielding
	don't use pin 4, 6, 8		don't use pin 1,4,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 - SAP

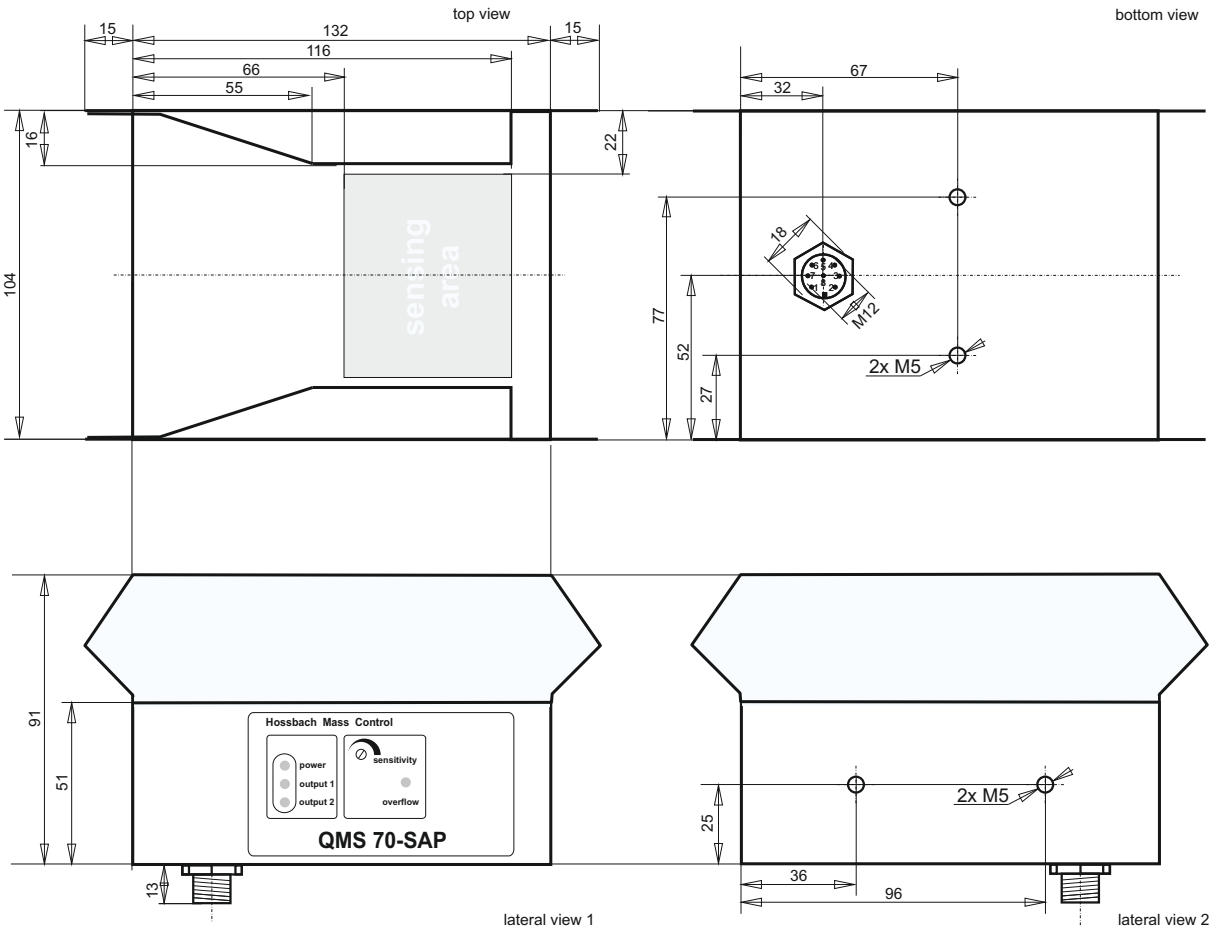
Technical Data :

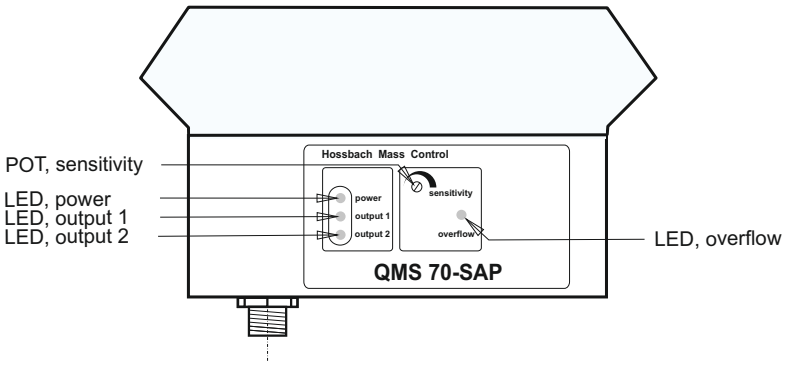
sensitivity :	high	external taring :	automatically or by external 24V signal or push button (TARA version)	weight :	900 gr. 1250 gr. incl. 5m cable
measurement mode :	permanent, auto-taring	output :	analog voltage output 0...10V	operation temperature range :	10°C ...40° C
lowest detectable weight quantity :	< 10 mg	operation voltage :	+24VDC +- 10% 50mA typ.	storage temperature range :	0°C ...50°C
accuracy : (INT-version)	1...3 % RSD reachable	mounting :	4 pre-drilled bolt holes, M5, two on the bottom side, two on a lateral side	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
evaluation time :	< 1ms	dimension :	162 x 91 x 104 mm	protection type	IP 60
active sensing area :	approx. 50 x 50 mm				CE
measurement by :	single sided electrode				

Order Data :

sensor version	order no.
QMS 70-SAP for permanent measurement with analog output 0...10V, tareable	**QMS70-SAP-PERM-ANA-TARA**
QMS 70-SAP for permanent measurement with analog output 0...10V, non-tareable	**QMS70-SAP-PERM-ANA-TARA**
QMS 70-SAP any sensor version available with SUBD-connector cable and adapter box	**QMS70-SAP-...-SUBD**
sensors including 5m connection	

Dimension : [mm]

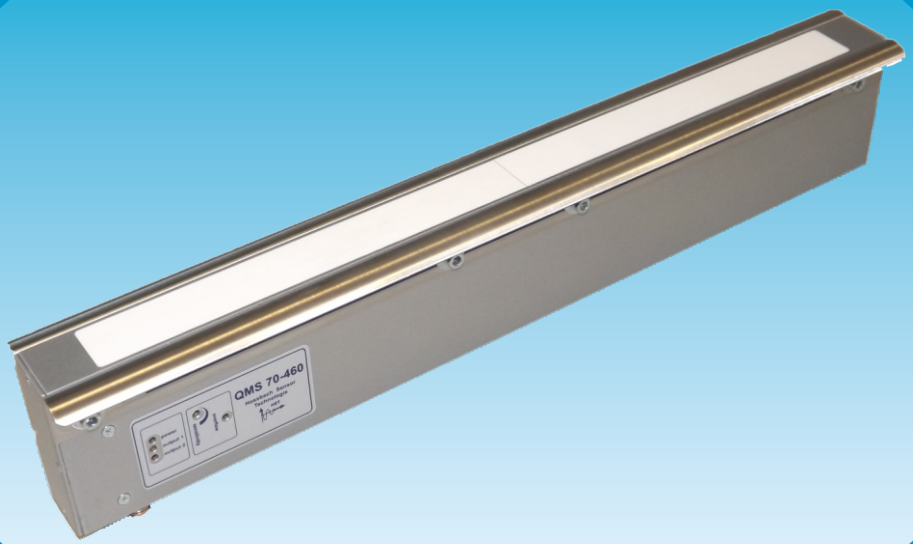




variations due to sensor version

Sensor for Production and Quality Control

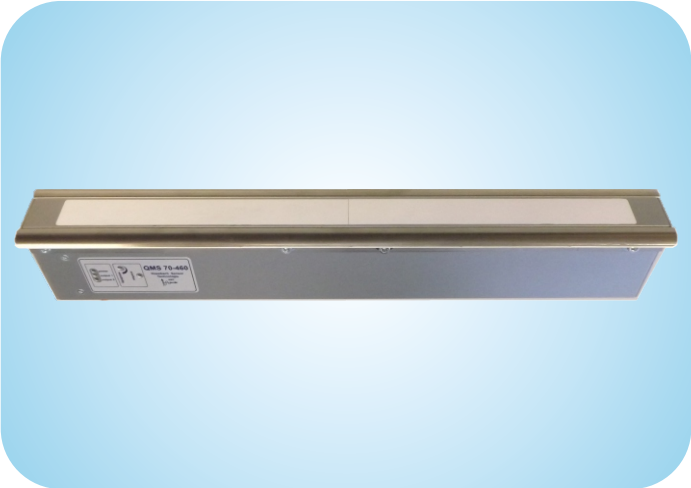
Sensor



QMS 70-460

Hossbach Sensor Technologie

QMS 70 - 460



Features :

- Single sided sensor for contact operation
- inspection or control of continuous or intermittently aligned products made of thin layers
- stand alone operation or preferable operation within the HST sensor systems
- wide sensing area, compact sensor housing
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 460 x 30 x 80 mm
- abrasive resistant guiding plates and ceramic electrode
- available as QMS70-850 version with 735mm and QMS70-200 with 130mm electrode width

Description :

The QMS 70-460 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-460 covers solutions of a wide range of applications, where thin, non-metallised objects, products and materials having little weight are to be inspected or controlled.
The QMS 70-460 is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.

The QMS 70-460 was designed for detecting smallest particles on a product, like glue lumps, foreign objects or cut remainings.

The QMS 70-460 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.

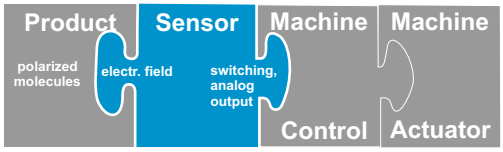
The QMS 70-460 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. Among the qualitative information and data are production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

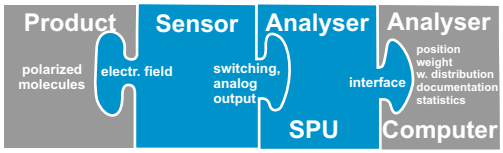
Example for Application see p. 220

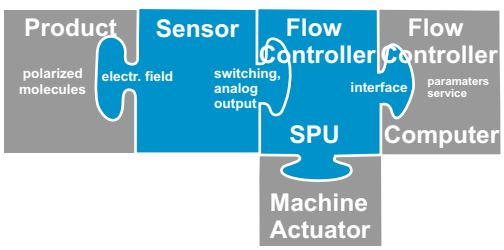
Building Blocks :

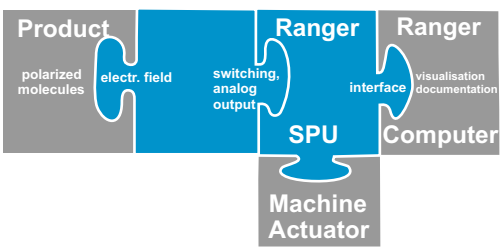
Hossbach equipment

machine line device





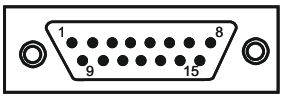




Plug Connections : **analog output**

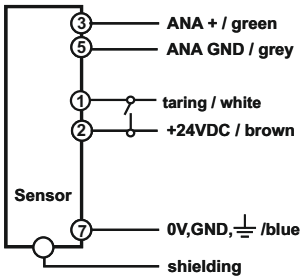
8-pin male M12 sensor connector

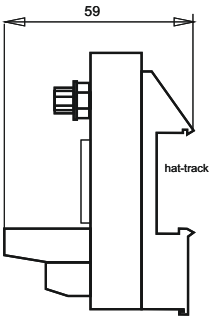
15 pin male SUB-D sensor cable connector **)

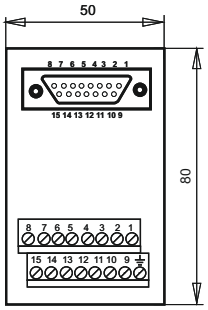


sensor version
sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	not to connect
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	not to connect
shielding	blanc	housing	shielding
don't use pin 4, 6, 8		don't use pin 1,4,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 - 460

Technical Data :

sensitivity :	very high	external taring :	automatically or by external 24V signal	operation temperature range :	0...40° C
measurement mode :	intermittent, permanent	output :	analog output 0...10V,	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	operation voltage :	+24VDC +- 10% 50mA typ.	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	mounting :	4 pre-drilled bolt holes, 2x M6 on bottom side, 2x M6 on lateral side	protection type	IP 60
evaluation time :	< 1ms				
active sensor area :	approx. 380 x 15 mm 735 x 15 (QMS70-850) 130 x 15 (QMS70-200)	dimension :	460/850/200 x 80 x 30 mm		
		weight :	typ. 1100/2100/500 gr.		CE

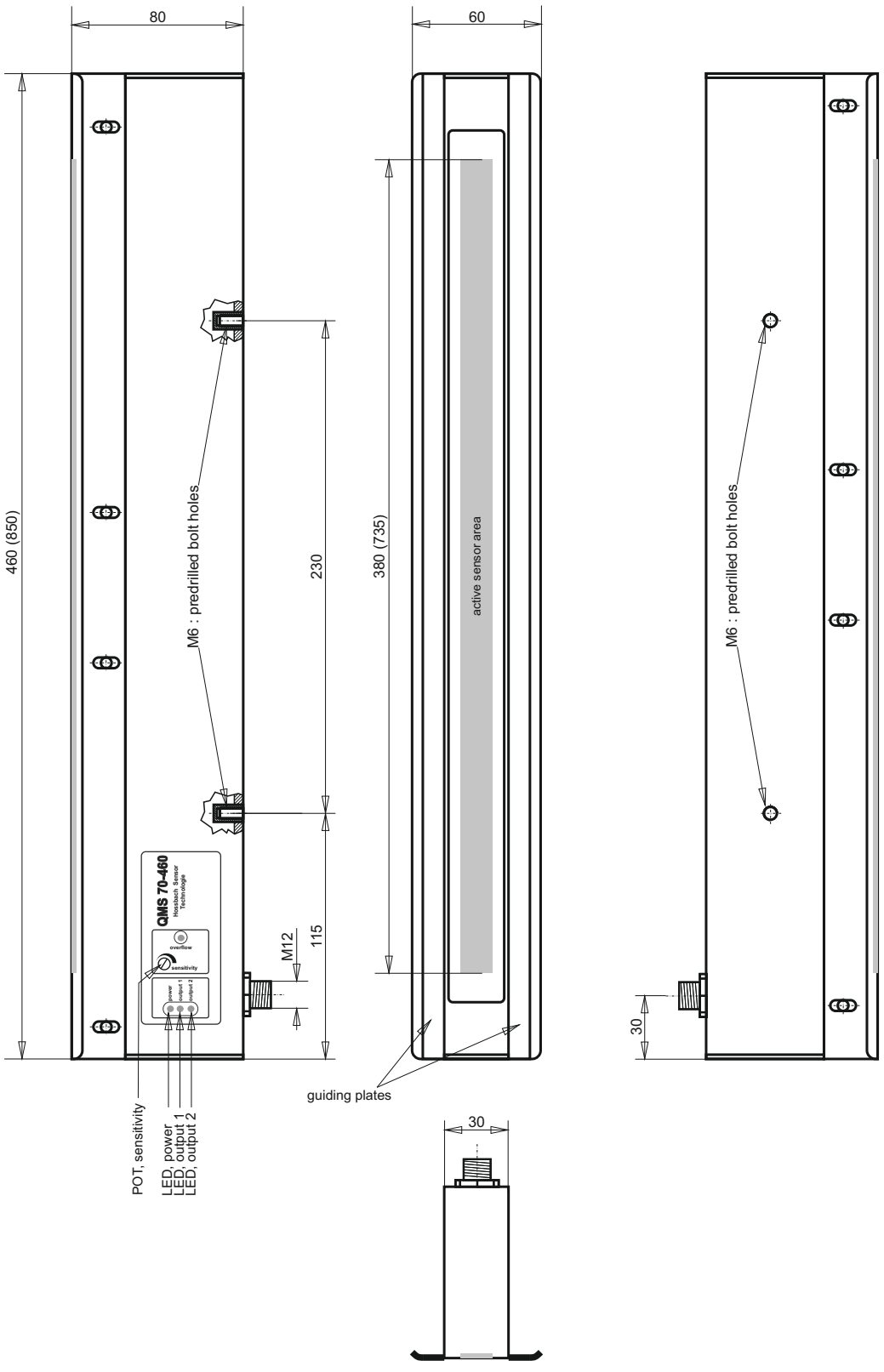
Order Data :

sensor version		order no.
QMS 70-460 **QMS 70-850** **QMS 70-200**	for interval measurement with analog output 0...10V	**QMS 70-460-INT-ANA-[380MM]** *) **QMS 70-850-INT-ANA-[735MM]** *) **QMS 70-200-INT-ANA-[130MM]** *)
QMS 70-460 **QMS 70-850** **QMS 70-200**	for operation with HST Control Units (HST Flow Controller, Ranger, Analyser)	**QMS 70-460-SYSTEM-[380MM]** *) **QMS 70-850-SYSTEM-[735MM]** *) **QMS 70-200-SYSTEM-[130MM]** *)
QMS 70-460 **QMS 70-850** **QMS 70-200**	any sensor version available with SUBD cable connector and adapter box	**QMS 70-460-...-SUBD-[380MM]** *) **QMS 70-850-...-SUBD-[735MM]** *) **QMS 70-200-...-SUBD-[130MM]** *)

sensor including 5m connection cable

*) width of measurement area (sensor electrode), standard 380mm for QMS70-460; standard 750mm for QMS70-850, 130mm for QMS70-200. Variations on request

Dimension : [mm]



variations due to sensor version

Sensor for Production and Quality Control

Sensor

QMS 70U-20

Hossbach Sensor Technologie

QMS 70U - 20

Features :

- U-shaped sensor for contactless operation
- detection and control of objects like labels
- object detection also through carriers and enclosing materials
- easy adjustment
- independent of environmental influences in a wide range
- switching output +24V
- analog output 0...+10V
- +24VDC +/- 10% operation voltage
- robust aluminium housing 100x60x20mm

Description :

The QMS 70U-20 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. QMS 70U-20 is designed for materials, products, product parts - hereafter denoted as objects - really difficult to be detected. These objects are intermittently aligned and either fixed on carriers or enclosed in paper or foils. The objects themselves may be made of any non-metallic or metallic substances, like labels, adhesive tapes, magnetic stripes etc.

The single objects may pass the sensing area either sporadically or intermittently aligned. Due to the small sensor gap the thickness of the objects may vary from a fractional amount of 1mm to 2mm. As the carrier or enclosure material is continuous and constant the sensor zeroes the carrier and enclosure material and concentrates only on the objects to be detected.

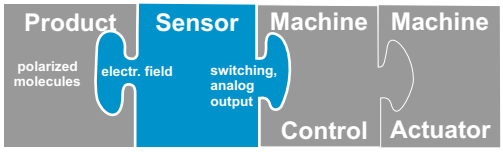
The QMS70U-20 operates being as all QMS sensors independent of all optical characteristics like colour, transparency, contrast and ambient light, it has no effect on the detection. Detection of transparent labels on transparent carrier foils is therefore easily possible.

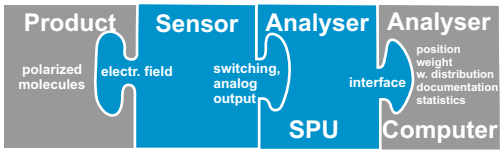
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent.

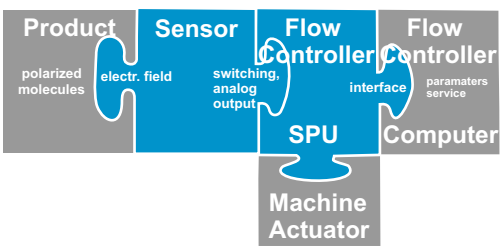
Building Blocks :

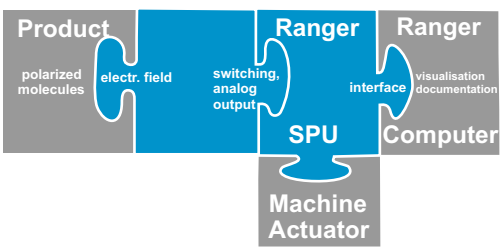
Hossbach equipment

machine line device





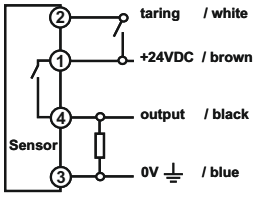




Plug Connections : switching output

Sensor version : switching output, PNP

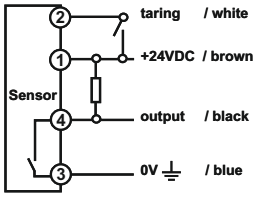
sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"0V/24V"	black



PNP

Sensor version : switching output, NPN

sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"24V/0V"	black



NPN

QMS 70U - 20

Technical Data :

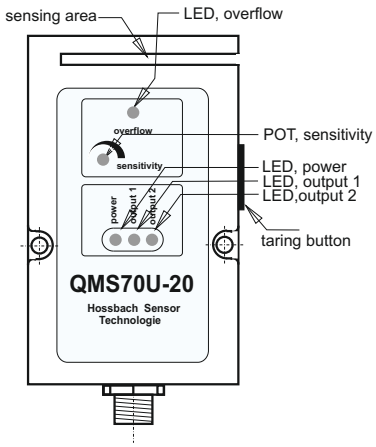
sensitivity :	high	external taring :	by ext. signal, 24V or push button	operation temperature range :	0...40° C
measurement mode :	interval	output :	switching output, 24V/20mA	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 10 mg	operation voltage :	+24VDC +- 10% 50mA typ.	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy : (INT-version) s	1...6 % RSD reachable	mounting :	2 holes 4 mm, or 2 pre-drilled bolt holes, M5 on bottom side	protection type	IP 50
evaluation time :	< 1ms				
active sensor area :	38 x 14 mm	dimensions :	100 x 60 x 20 mm		
gap height :	3 mm	weight :	typ. 230 gr.		CE

Order Data :

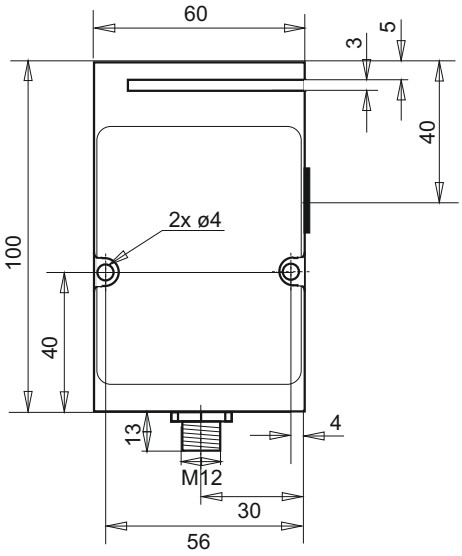
sensor version		order no.	
QMS 70U-20	for interval measurement with switching output, pnp	**QMS70U-20-INT-PNP**	*)

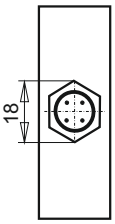
*) sensor including 5m connection cable

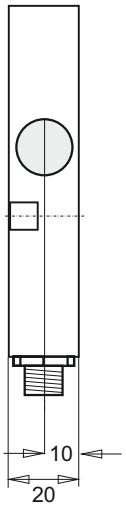
Dimension : [mm]



variations due to sensor version







Sensor for Production and Quality Control

Sensor

QMS 70U-115

Hossbach Sensor Technologie

QMS 70U - 115

Features :

- U-shaped sensor for non-contact operation
- inspection or control of continuous or intermittently aligned products as filter rods or any products made of cotton, foil, fleece or paper materials
- stand alone operation or preferable operation within the HST sensor systems
- compact sensor housing
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 115 x 80 x 50 mm

Description :

The QMS 70U-115 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70U-115 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials having little weight are to be inspected or controlled.
The QMS 70U-115 is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.

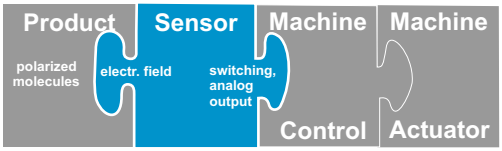
The QMS 70U-115 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.
Due to the high sensor gap also very voluminous materials can be measured.

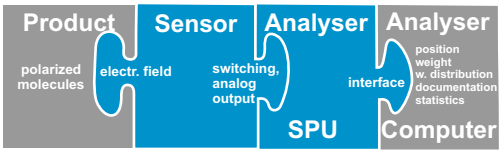
The QMS 70U-115 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. Among the qualitative information and data are production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

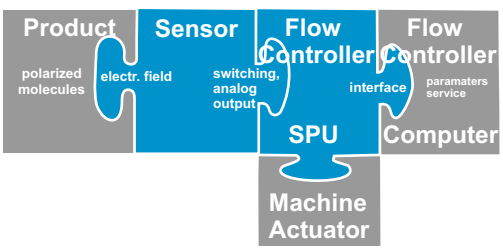
Building Blocks :

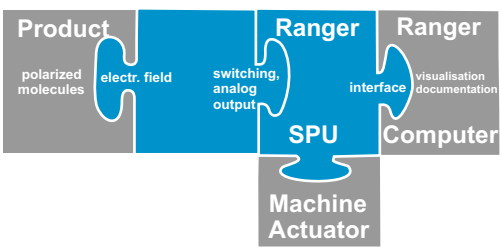
Hossbach equipment

machine line device





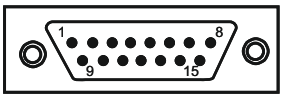




Plug Connections : **analog output**

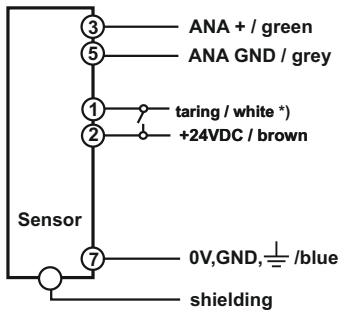
8-pin male M12 sensor connector

15 pin male SUB-D sensor cable connector **)

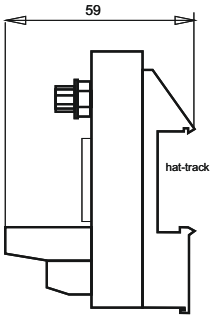


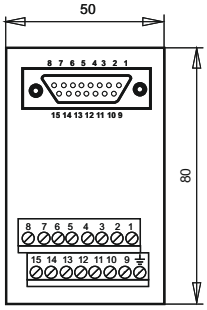
sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	not to connect
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	not to connect
	shielding	blanc	housing	shielding
	don't use pin 4, 6, 8		don't use pin 1,4,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	

sensor connector pins



sensor cable





QMS 70U - 115

Technical Data :

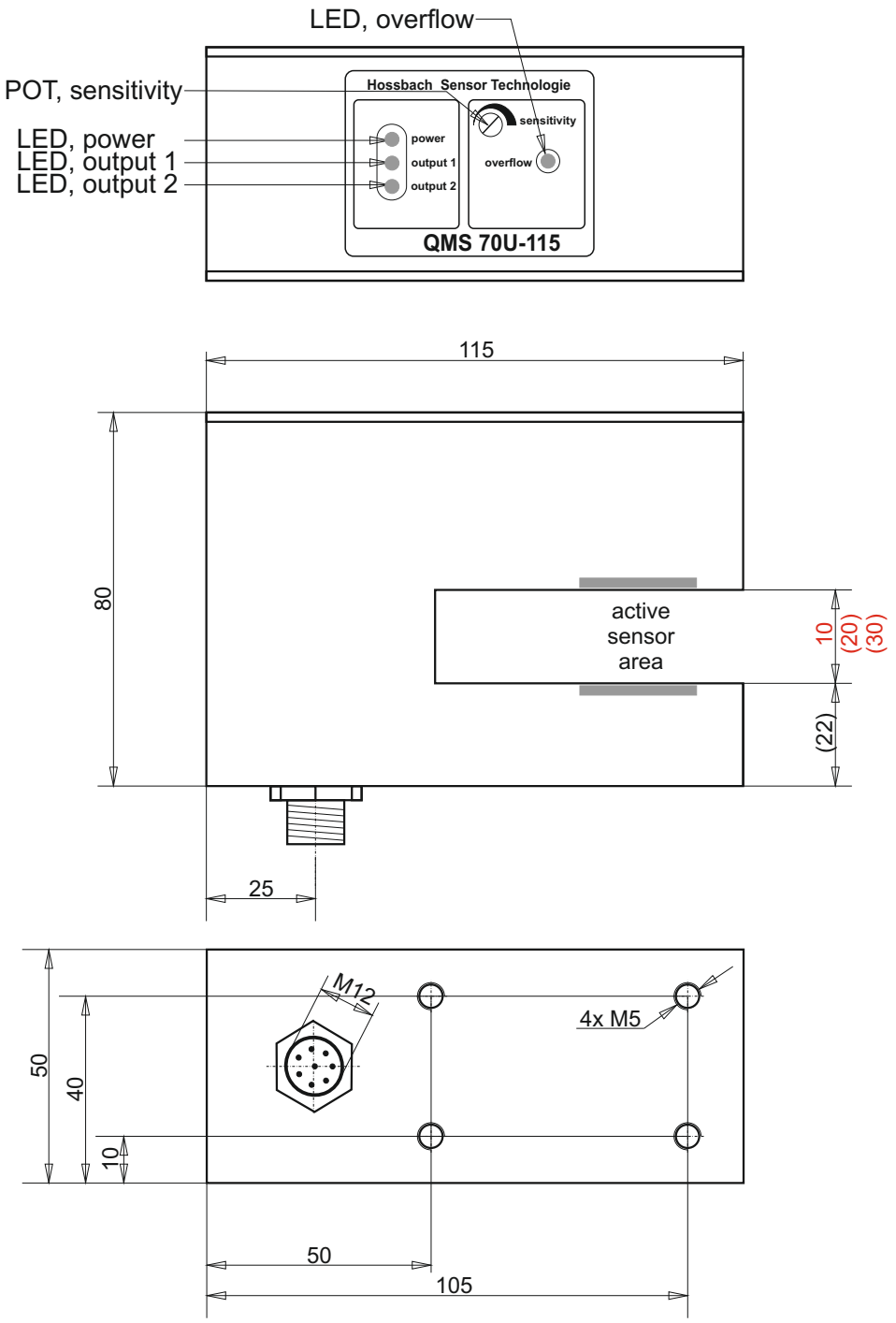
sensitivity :	medium	output :	analog voltage output 0...10V	operation temperature range :	0...40° C
measurement mode :	permanent	operation voltage :	+24VDC +- 10% 40mA typ.	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	mounting :	4 pre-drilled bolt holes, M5 on bottom side	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	dimension :	115 x 80 x 50 mm	protection type	IP 60
evaluation time :	< 1ms				CE
active sensing area :	appr. 25 x 25 mm				
gap height :	10 / 20 / 30 mm				

Order Data :

sensor version		order no.
QMS 70U-115	for permanent, continuous measurement with analog output 0...10V	**QMS70U-115-PERM-ANA-10mm -20mm -30mm**
QMS 70U-115	for interval measurement with analog output 0...10V	**QMS70U-115-INT-ANA-10mm -20mm -30mm**
QMS 70U-115	any sensor version available with SUBD-connector cable and adapter box	**QMS70U-115-...-SUBD**

sensor including 5 m connection cable

Dimension : [mm]



variations due to sensor version

Sensor for Production and Quality Control

Sensor

QMS 70U-170

Hossbach Sensor Technologie

QMS 70 U - 170

Features :

- U-shaped sensor for non-contact operation
- detection of intermittently aligned or sporadically occurring objects made of thin or voluminous materials
- auto-adjust functionality
- deep gap, wide sensing area, high sensitivity
- operation either as stand-alone sensor or in combination with visualization and control units
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 173 x 80 x 50mm

Description :

The QMS 70U-170 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. QMS 70U-170 is designed for materials, products, product parts - hereafter denoted as objects - really difficult to be detected. These objects may intermittently aligned and either fixed on carriers or enclosed in paper or foils. The objects themselves may be made of any non-metallic materials, adhesive tapes, cellulose, textile, cardboard etc.

The single objects may pass the sensing area either sporadically or intermittently aligned. Due to the high sensor gap and depth the thickness of the objects may vary from 1 mm to 10 mm and reach 120 mm inside the sensor gap. As the carrier or enclosure material is continuous and constant the sensor zeroes the carrier and enclosure material and concentrates only on the objects to be detected.

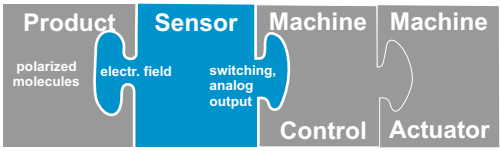
The QMS 70U-170 is offered as a complete detection sensor unit with a switching output. Otherwise the QMS 70U-170 version with analog output enables the interconnection to control and inspection systems like the HST Ranger and HST Analyser.

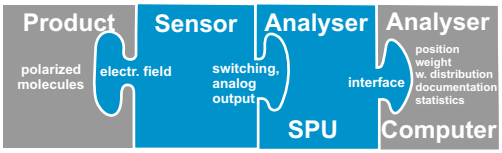
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent.

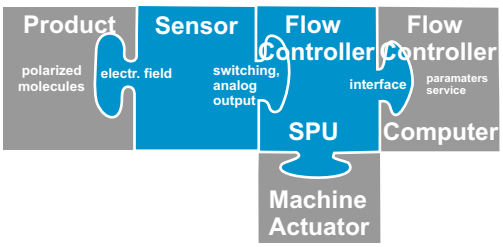
Building Blocks :

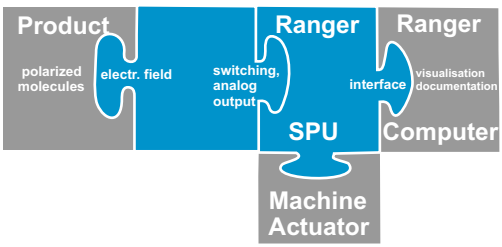
Hossbach equipment

machine line device







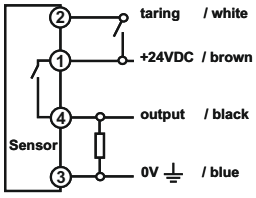


Plug Connections : switching output (standard version)

Sensor version : switching output, PNP

sensor version switching ouput

4 pin	female connector		cable
pin 1	power supply	+24V	brown
pin 2	taring input	+24V	white
pin 3	power supply	0V/GND	blue
pin 4	switching output	"0V/24V"	black

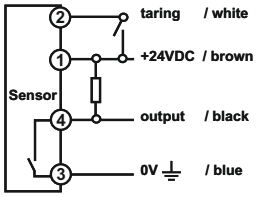


PNP

Sensor version : switching output, NPN

sensor version switching ouput

4 pin	female connector		cable
pin 1	power supply	+24V	brown
pin 2	taring input	+24V	white
pin 3	power supply	0V/GND	blue
pin 4	switching output	"24V/0V"	black

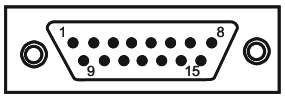


NPN

Plug Connections : analog output plus 1 PNP switching output

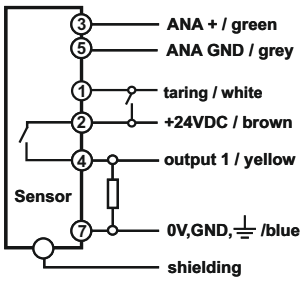
8-pin male M12 sensor connector

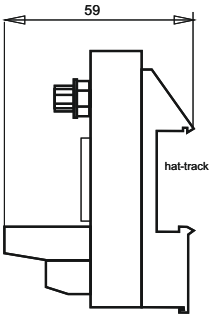
15 pin male SUB-D sensor cable connector **)

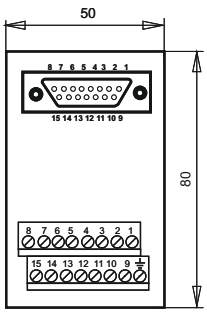


sensor version sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	switching output, PNP
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	not to connect
shielding	blanc	housing	shielding
don't use pin 6, 8		don't use pin 1,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 U - 170

Technical Data :

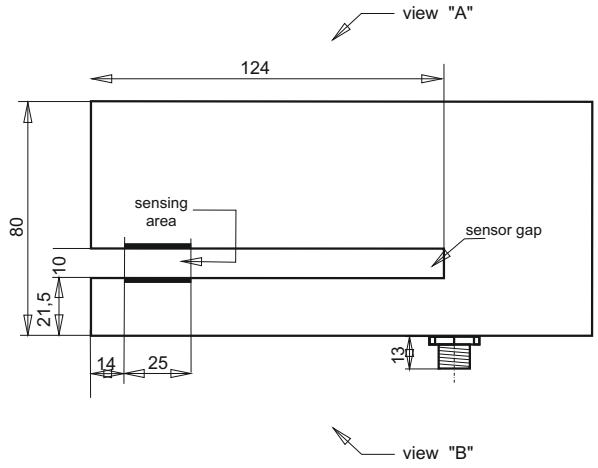
sensitivity :	middle	sensor gap :	124 x 50 x 10 mm	operation temperature range :	0...40° C
measurement mode :	intervall	external taring :	by ext. signal, 24V or push button	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 10 mg	output :	switching output, 24V/20mA	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	operation voltage :	+24VDC +- 10% 50mA typ.	protection type	IP 50
evaluation time :	< 1ms	mounting :	4 pre-drilled bolt holes, M5 on bottom side		
active sensor area :	appr. 20 x 20 mm	dimension :	173 x 80 x 50 mm		
		weight :	typ. 650 gr.		CE

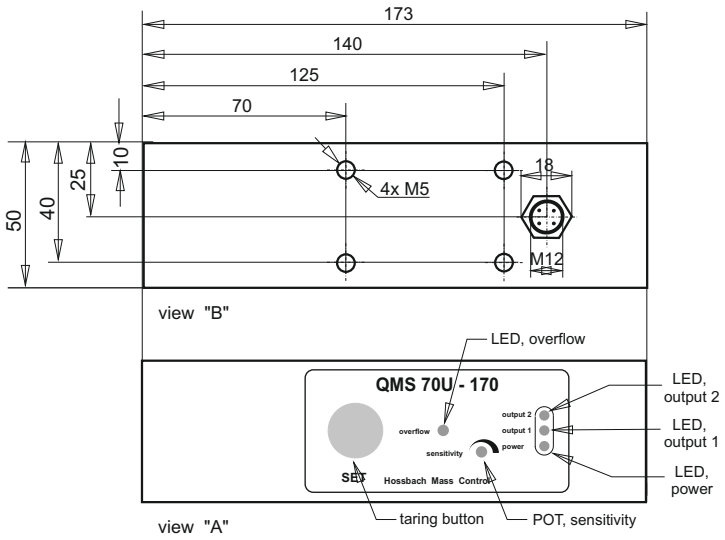
Order Data :

sensor version	order no.
QMS 70U-170 -standard version- for interval measurement with switching output, pnp	**QMS70U-170-INT-PNP**
QMS 70U-170 for interval measurement with analog output 0...10V and one switching output, PNP	**QMS70U-170-INT-ANA**
QMS 70U-170 any sensor version available with ceramic electrode	**QMS70U-170- ... - ceramic**
QMS 70U-170 any sensor version available with SUB-D15 connector cable and adapter box	**QMS70U-170- ... - SUBD**

sensors including 5m connection cable

Dimension : [mm]





variations due to sensor version

Sensor for Production and Quality Control

Sensor

QMS 70U-172

Hossbach Sensor Technologie

QMS 70 U - 172

QMS70U - 172 / 172-2

QMS70U - 172-3

Features :

- U-shaped sensor for non-contact operation
- detection of intermittently aligned or sporadically occurring objects made of thin or voluminous materials
- auto-adjust functionality
- deep gap, wide sensing area, high sensitivity
- operation either as stand-alone sensor or in combination with visualization and control units
- switching output version
- key switch for easy switching between two sensitivity levels
  (three steps selector switch with the 172-3)
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 173 x 80 x 50mm

Description :

The QMS 70U-172 is used for a similar field of application as the QMS 70U-170. Due to its smaller gap, the QMS 70U-172 is even more sensitive and is capable to detect foils and fleece materials.
A key switch allows the operator to easily switch between two levels of sensitivity, fleece and foil from 30...135 gsm(*).

An even higher level of sensitivity offers the nearly identically designed version of the QMS 70U-172, the QMS 70U-172-2. The QMS 70U-172-2 has also a key switch and is capable to measure foils and very thin foils from 15...70 gsm(*).

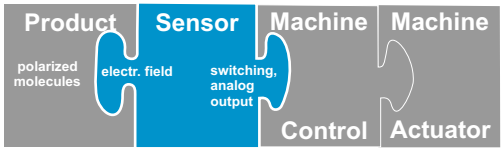
The QMS70U - 172-3 combines the fields of applications of the QMS70U - 172 and -172-2. With a selector switch the sensitivity is easily selectable in three steps for the required product basis weight. The new pre-set parameters of the QMS70U - 172-3 makes the sensor suitable for materials with even a lower basis weight from 10...150 gsm(*).

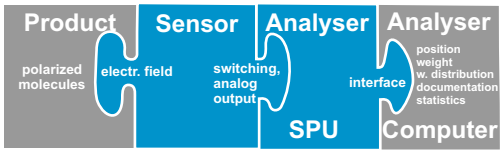
(*) dependent on material

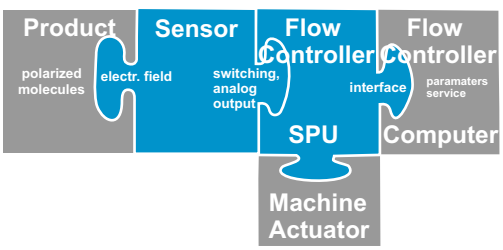
Building Blocks :

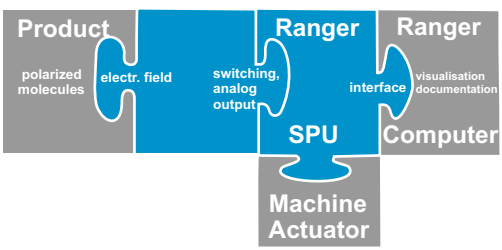
Hossbach equipment

machine line device





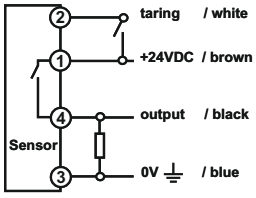




Plug Connections : switching output (standard version)

Sensor version : switching output, PNP

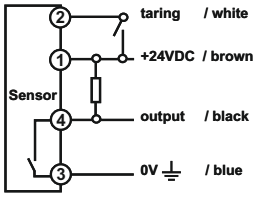
sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"0V/24V"	black



PNP

Sensor version : switching output, NPN

sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	taring input	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"24V/0V"	black

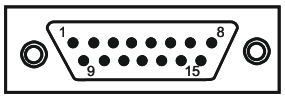


NPN

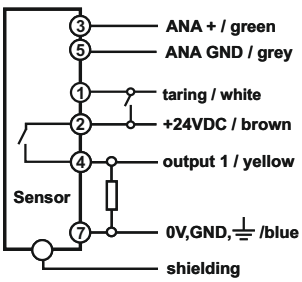
Plug Connections : analog output plus 1 PNP switching output

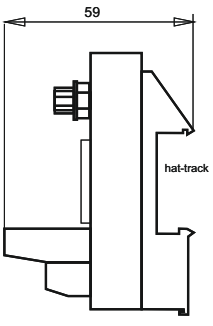
8-pin male M12 sensor connector

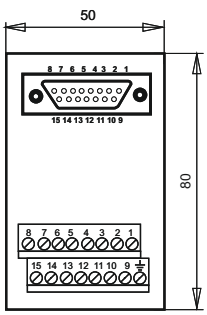
15 pin male SUB-D sensor cable connector **)



sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	switching output, PNP
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	not to connect
	shielding	blanc	housing	shielding
	don't use pin 6, 8		don't use pin 1,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 U - 172

Technical Data :

sensitivity :	high / very high 30...135 gsm (-172) 15...70 gsm (-172-2) 10...150 gsm (-172-3)	sensor gap :	124 x 50 x 8 mm	operation temperature range :	0...40° C
measurement mode :	intervall	external taring :	by ext. signal, 24V or push button	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 10 mg	output :	switching output, 24V/20mA	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	operation voltage :	+24VDC +- 10% 50mA typ.	protection type	IP 50
evaluation time :	< 1ms	mounting :	4 pre-drilled bolt holes, M5 on bottom side		CE
active sensor area :	appr. 50 x 25 mm	dimension :	173 x 80 x 50 mm		
		weight :	typ. 650 gr.		

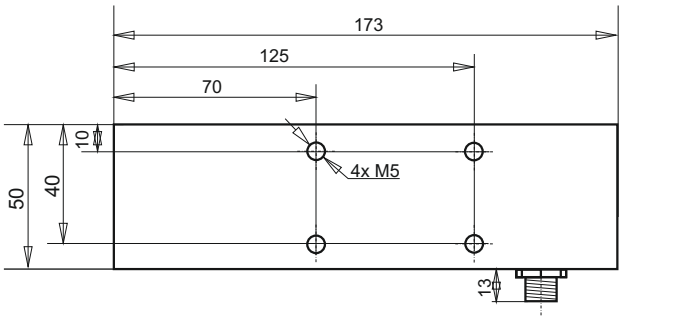
Order Data :

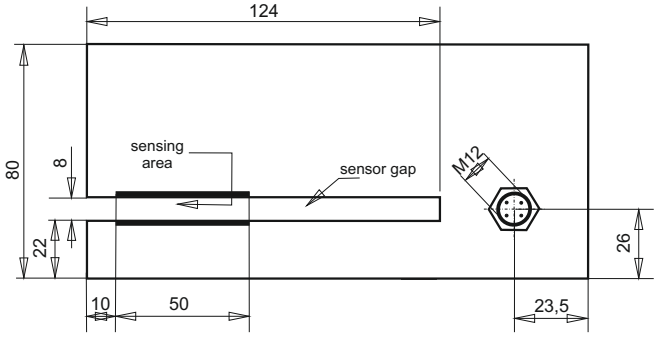
sensor version		order no.
QMS 70U-172 -standard version-	for interval measurement with switching output, pnp	**QMS70U-172-INT-PNP** **QMS70U-172-2-INT-PNP** **QMS70U-172-3-INT-PNP**
QMS 70U-172	for interval measurement with analog output 0...10V with switching output, pnp	**QMS70U-172-INT-ANA** **QMS70U-172-2-INT-ANA** **QMS70U-172-3-INT-ANA**
QMS 70U-172	any sensor version available with ceramic electrode	**QMS70U-172- ... - ceramic** **QMS70U-172-2- ... - ceramic** **QMS70U-172-3- ... - ceramic**
QMS 70U-172	any sensor version available with SUBD-connector cable and adapter box	**QMS70U-172- ... - SUBD** **QMS70U-172-2- ... - SUBD** **QMS70U-172-3- ... - SUBD**

sensors including 5m connection cable

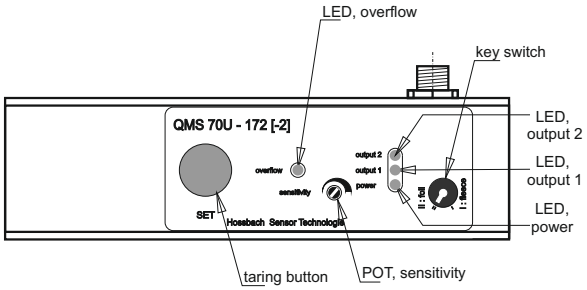
QMS 70 U - 172

Dimension : [mm]

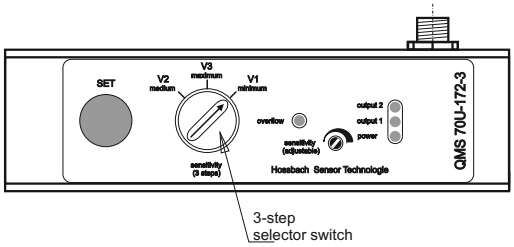




QMS 70U - 172 /
QMS 70U - 172-2:



QMS 70U - 172-3:



variations due to sensor version

Sensor for Production and Quality Control

Sensor

QMS 70U-172-AMP8

Hossbach Sensor Technologie

QMS 70 U - 172 - AMP8

Features :

- U-shaped sensor for non-contact operation
- detection of intermittently aligned or sporadically occurring objects made of thin or voluminous materials
- **NEW:** eight, BCD-coded sensitivity steps, settable by machine control
- auto-adjust functionality within set measurement range
- deep gap, wider sensing area, high sensitivity
- high measuring rate, >1000/sec
- switching output 24V (optional two switching outputs and analog signal output)
- +24V +/- 10% operation voltage
- robust aluminium housing 173x80x50mm

Description :

The QMS 70U-172-AMP8 is a compact and robust sensor using an unique capacitive sensor technique as well as high sophisticated electronics.
It is the latest development in the QM70U-172-series and meets the demands in production to reduce human interaction with the machine or components inside the machine and can replace all previous sensors from the QMS70U-172-series.

Through its BCD-coded amplification settings, the machine control (PLC) takes over the setting of the sensor. For each product type a specific amplification setting can be saved in the PLC and automatically restored at a change of the product type by activating the corresponding BCD-inputs of the sensor.

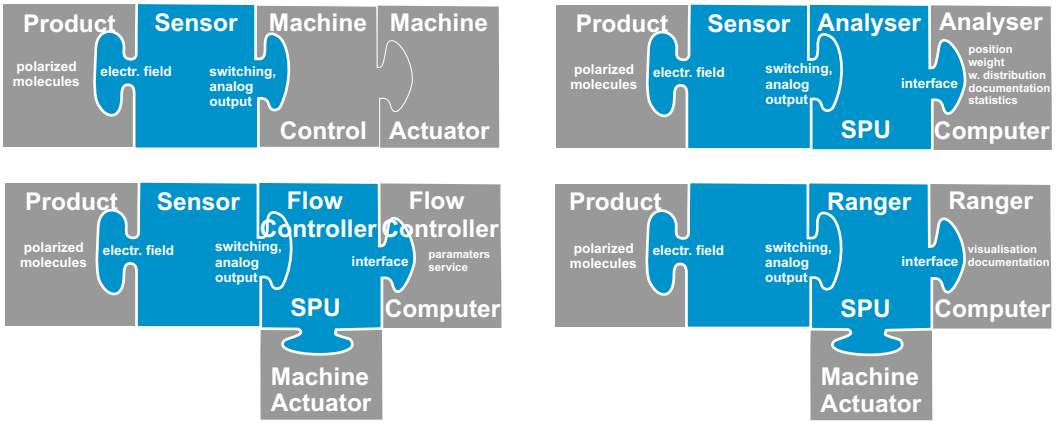
As with all sensors of the QM70U-172-series, operation may be performed by controlling the material itself or by detecting objects e.g. splices on carriers like fleece or foil webs without contact.
The sensor gap and sensing area are designed big enough to allow measurement and detection of thicker and wider materials and objects.

The QMS 70U-172-AMP8 measures intermittently alligned or sporadically occurring objects or mass changes in interval measurement mode and concentrates only to the objects or material changes.
The QMS 70U-172-AMP8 covers a wide range of applications with a big variety of objects and materials.
Pushing the set button or applying a 24V signal at the sensor connector's taring input brings the sensor into operation immediately. Otherwise the sensor takes <1 min. for auto-adjustment to the set range of the material basis weight.

Building Blocks :

Hossbach equipment

machine line device

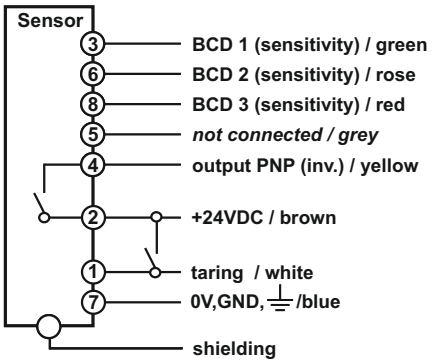


Plug Connections :

Sensor version : switching output PNP (standard version)

sensor version
sensor+machine control (PLC)

8 pin male sensor connector*)	cable color	function
pin 1	white	taring input +24V
pin 2	brown	power supply +24V
pin 3	green	BCD 1 (sensitivity)
pin 4	yellow	switching output
pin 5	grey	*not connected*
pin 6	rose	BCD 2 (sensitivity)
pin 7	blue	power supply 0V/GND
pin 8	red	BCD 3 (sensitivity)
shielding	blanc	shielding/housing
8-pin male M12 sensor connector 		don't use pin 5

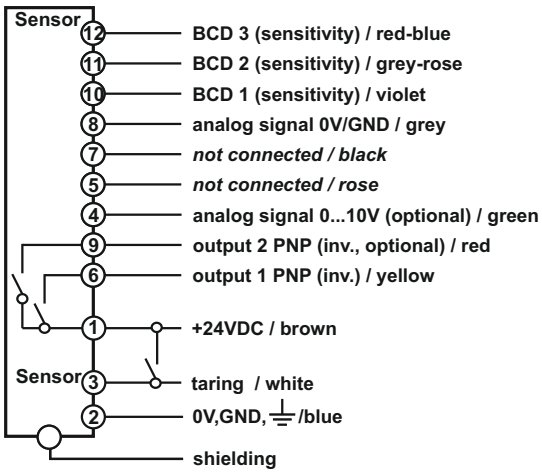


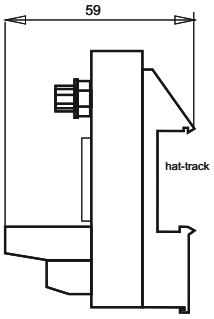
extended sensor version *) : switching output PNP, analog output optional

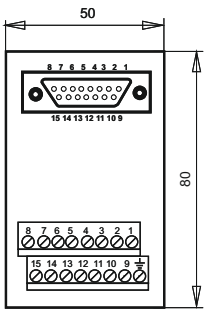
sensor version
sensor+HST Flow Controller+machine control

12 pin male sensor connector*)	cable color	function
pin 1	brown	power supply +24V
pin 2	blue	power supply 0V/GND
pin 3	white	taring input +24V *)
pin 4	green	analog signal 0...10V (optional)
pin 5	rose	*not connected*
pin 6	yellow	switching output 1
pin 7	black	*not connected*
pin 8	grey	analog signal 0V/GND
pin 9	red	switching output 2 (optional)
pin10	violet	BCD 1 (sensitivity)
pin 11	grey-rose	BCD 2 (sensitivity)
pin 12	red-blue	BCD 3 (sensitivity)
shielding	blanc	shielding/housing
12-pin male M12 sensor connector 		don't use pin 5, 7 *) available for interval measuring sensors

*) preliminary







all sensors include 5m sensor cable
(open end, with electric wire ferrule)

optional: cable with SUB-D connecter
and screw adapter box

Range Settings :

Amplification Levels (default)

Level	A1	A2	A3	A4	A5	A6	A7	A8 *
Sensitivity	~6,5%	~8,5%	~13%	~19%	~30%	~42%	~70%	100%
BCD 1	0	1	0	1	0	1	0	1
BCD 2	0	0	1	1	0	0	1	1
BCD 3	0	0	0	0	1	1	1	1

BCD level 0 ≙ 0 Volt (low), BCD level 1 ≙ 24 Volt (high)

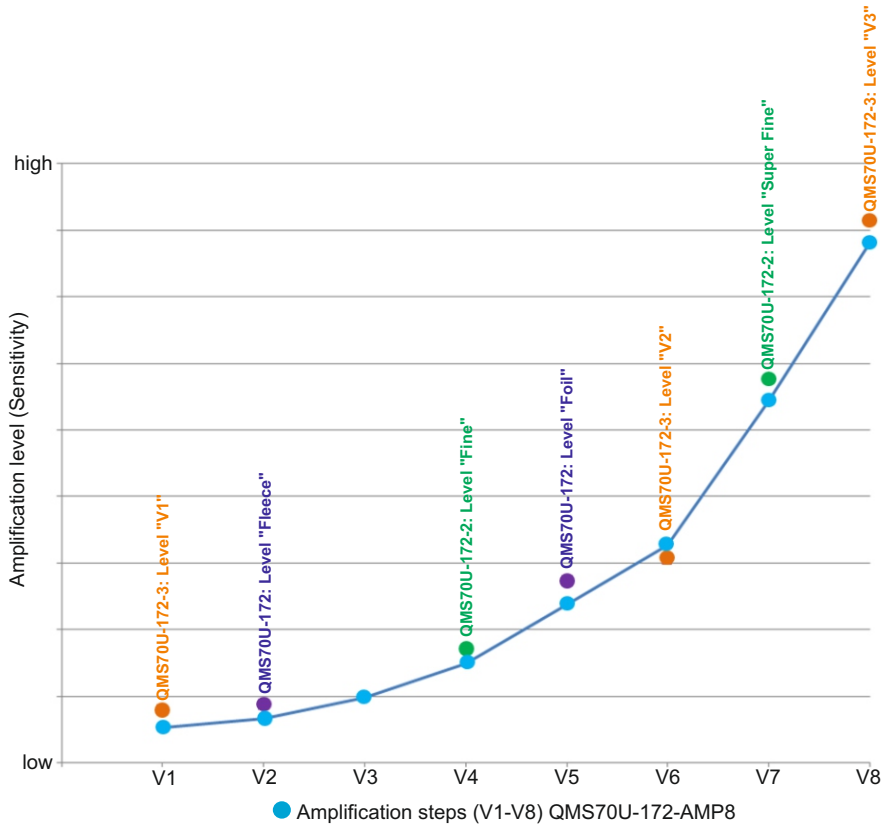
Approx. basis weight ranges, calculation / extrapolation based on one product sample each material

Messurement Ranges with 8-step QMS70U-172-AMP8 (calculated)

		@min	@max		Amplification factor V_x/V_{x+1}≈1,5											
	Voltage	3	7,5	V												
Amplification Setting	V1 (min)		V2		V3		V4		V5		V6		V7		V8 (max)	
Measurement Range *)	GSM_{min}	GSM_{max}	GSM_{min}	GSM_{max}	GSM_{min}	GSM_{max}	GSM_{min}	GSM_{max}	GSM_{min}	GSM_{max}	GSM_{min}	GSM_{max}	GSM_{min}	GSM_{max}	GSM_{min}	GSM_{max}
Nonwoven B	136	340	104	260	68	170	47	116	30	74	21	53	13	32	9	22
Nonwoven A	143	357	109	273	71	178	49	122	31	77	22	55	13	33	9	23
Pantex	215	536	164	410	107	268	73	184	46	116	33	83	20	50	14	35
Airlaid	105	261	80	200	52	131	36	89	23	57	16	40	10	24	7	17
Cotton	82	205	63	157	41	102	28	70	18	44	13	32	8	19	5	13
CPM	126	316	97	241	63	158	43	108	27	68	20	49	12	29	8	21
Foil (PE)	241	603	184	461	121	301	82	206	52	131	37	93	22	56	16	39

*) Detection of objects, which are made out of same material (Splices/overlap) as carrier or specified material. Size of detected object must be at least 20mm x 50mm (moving direction x cross direction) in sensing area

Comparison to other QMS70U-172 sensor versions :



QMS 70 U - 172 - AMP8

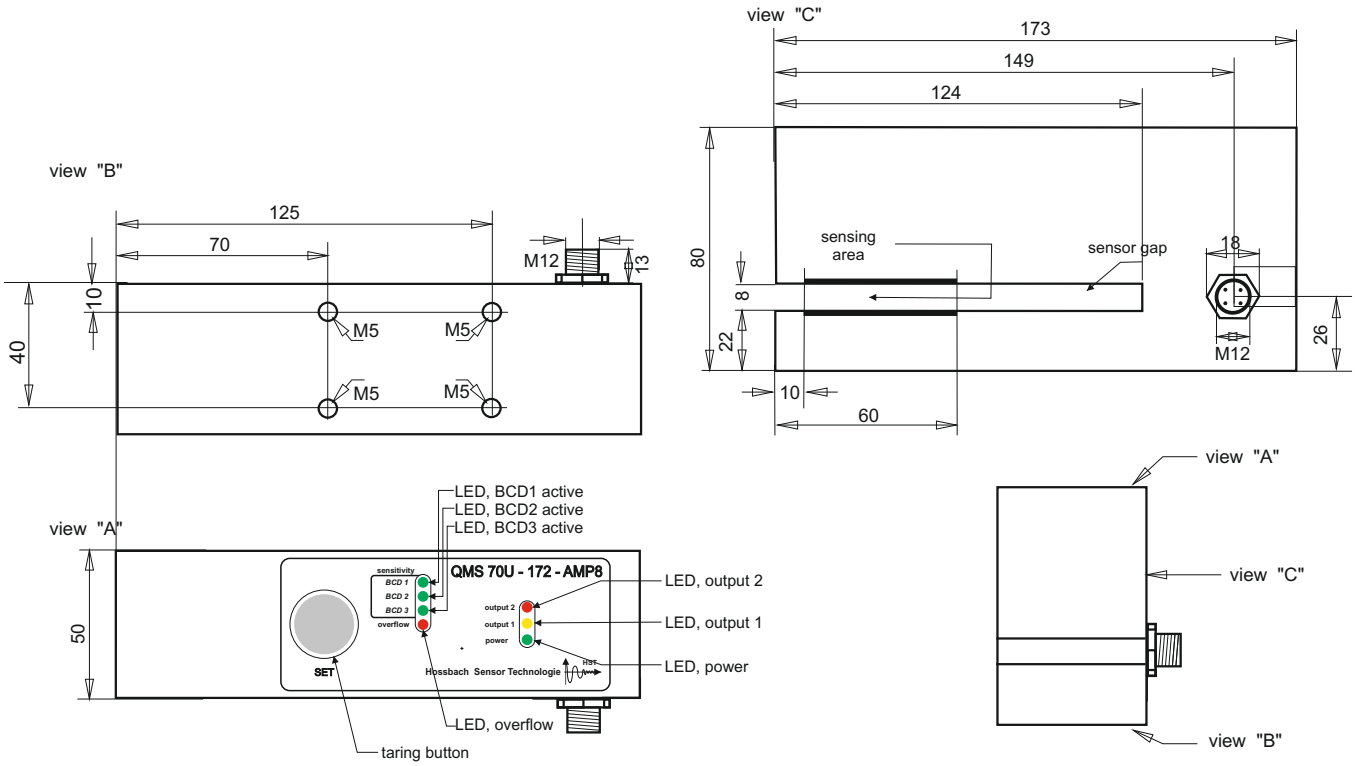
Technical Data :

sensitivity :	low - very high	sensor gap :	124 x 50 x 8 mm	operation temperature range :	0...40° C
measurement mode :	intervall	inputs:	ext. signal, 24V for taring 3 BCD-coded inputs (24V)	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 10 mg	output(s) :	switching output, 24V/20mA optional: analog output 0...10V	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	operation voltage :	+24VDC +- 10% 50mA typ.	protection type	IP 50
evaluation time :	< 1ms	mounting :	4 pre-drilled bolt holes, M5 on bottom side		CE
active sensor area :	appr. 50 x 25 mm	dimension :	173 x 80 x 50 mm		
		weight :	typ. 650 gr.		

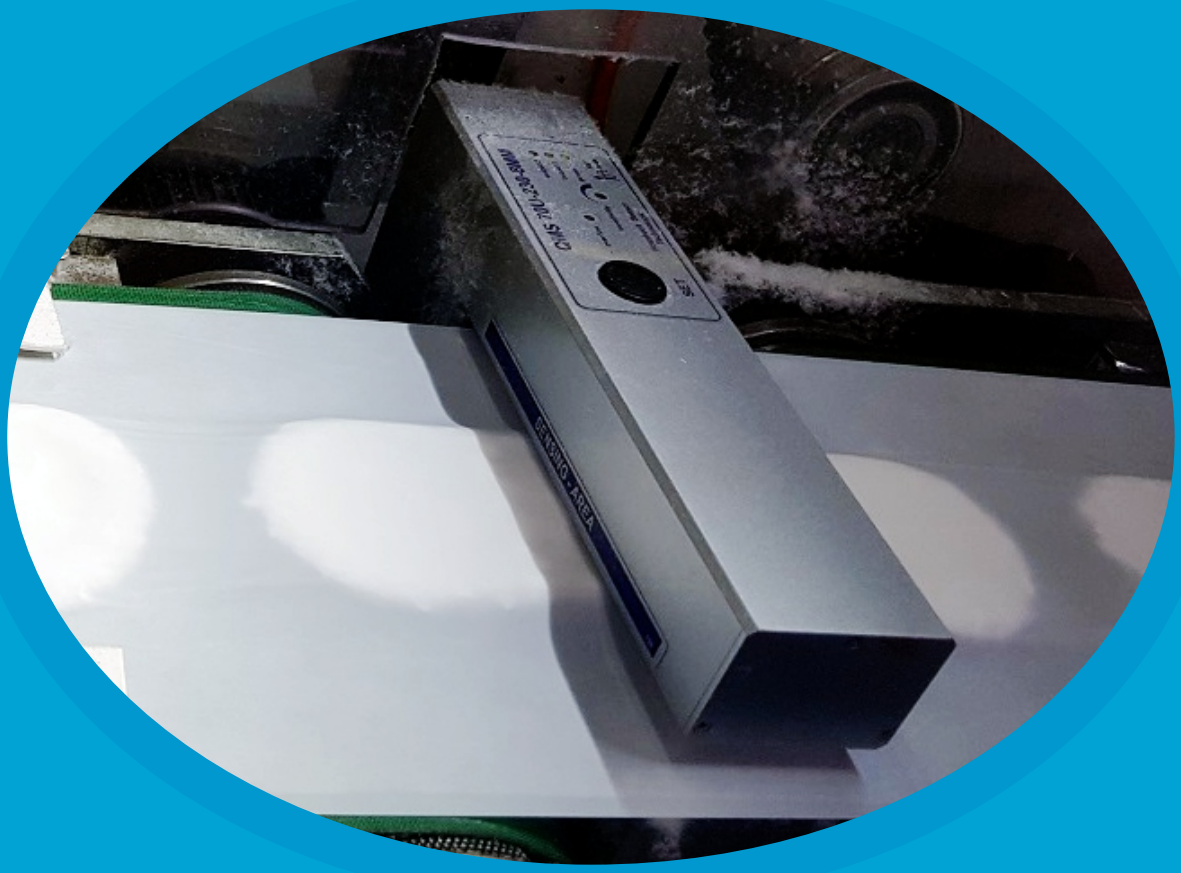
Order Data :

sensor version		order no.
QMS 70U-172-AMP8 (standard version)	for interval measurement with one switching output (PNP)	**QMS70U-172-AMP8-INT-PNP**
QMS 70U-172-AMP8	for interval measurement with one switching output (PNP) and one analog output (0...10V)	**QMS70U-172-AMP8-INT-ANA-PNP**
QMS 70U-172-AMP8	for interval measurement with two switching outputs (PNP)	**QMS70U-172-AMP8-INT-2PNP**
QMS 70U-172-AMP8	for interval measurement with two switching outputs (PNP) and one analog output (0...10V)	**QMS70U-172-AMP8-INT-ANA-2PNP**
QMS 70U-172-AMP8	any sensor version with ceramic electrodes	**QMS70U-172-AMP8-...-ceramic**
sensor including 5m connection cable plus adapter box for sensor versions with analog output		

Dimension : [mm]



Sensor for Production and Quality Control



QMS 70U-230

Hossbach Sensor Technologie

QMS 70U - 230

Features :

- U-shaped sensor for non-contact operation
- 100% inspection and control of continuous or intermittently aligned products as sanitary napkins directly in the production line
- stand alone operation or preferable operation within the HST sensor systems
- compact sensor housing
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 230 x 80 x 50 mm
- ceramic electrode for lowest abrasion

Description :

The QMS 70U – 230 is a compact and robust sensor using a unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70U – 230 covers solutions of a wide range of applications, where voluminous or thin, non-metalized objects, products and materials are to be inspected or controlled.
The QMS 70U – 230 is easily mounted in machines mainly without changes in machine parts needed.
It measures a continuous material flow as well as products intermittently aligned on carriers like foils or papers.
The product may also be packaged or enclosed.

The QMS 70U – 230 can be delivered with a switching output, signalising too much or too little material flow passing the sensor electrode within the sensor gap.
Mainly the QMS 70U – 230 is used as analog version, giving a dynamical 0…10V analog signal, proportional to the basis weight actually passing the sensor electrode.
This output is used by an HST control system like the HST Flow Controller, HST Analyser or Ranger to derive and evaluate important qualitative and quantitative product information and data.
Qualitative information and data may concern production, product, machine and material deficiencies.
Weight, weight distribution, statistics etc. are classified to the quantitative information and data.

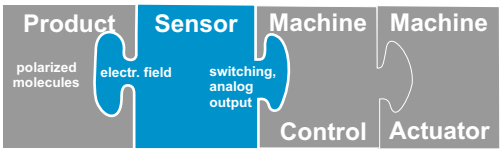
In the most common application the QMS 70U – 230 is installed into a sanitary napkin machine at a place, where the product is compressed and shaped, short before folding. Here the weight distribution and single weight can be measured with high precision, even during high machine speed (3000 products per minute, higher on request).
Like all QMS 70 sensors, the QMS 70U – 230 is easy to install and brought into operation.
Adjustment is performed, if needed at all at the first commissioning.
Due to the auto-taring feature, no re-adjustment is needed normally.
Pollution has no effect on sensor operation in a very wide extent and abrasion is kept very low due to the robust sensor electrode.

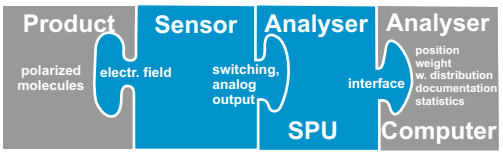
Example for Application see p.204

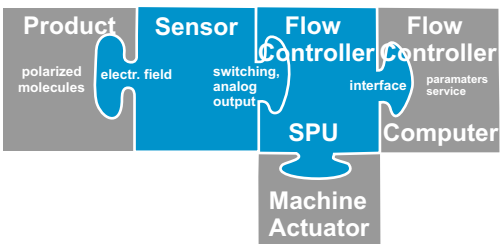
Hossbach equipment

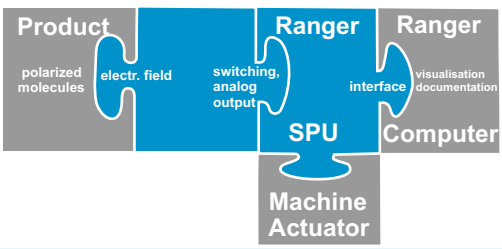
machine line device

Building Blocks :





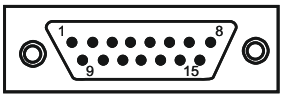




Plug Connections : **analog output 1/2 switching outputs PNP**

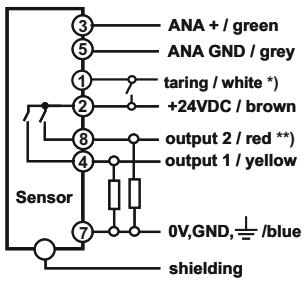
8-pin male M12 sensor connector

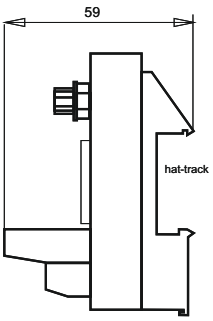
15 pin male SUB-D sensor cable connector ***)

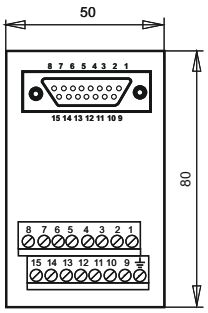


sensor version sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector ***)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	switching output 1,PNP
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	switching output 2,PNP **)
shielding	blanc	housing	shielding
don't use pin 6		don't use pin 1,6,7,9,10,13,14,15 *) only active for "interval measuring" sensor version **) only active in 2PNP sensor version ***) SUB-D connector and adapter box optional	







QMS 70U - 230

Technical Data :

sensitivity :	high	output :	analog voltage output 0...10V	operation temperature range :	0...40° C
measurement mode :	intermittent permanent	operation voltage :	+24VDC +- 10% 40mA typ.	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	mounting :	4 pre-drilled bolt holes, M5 on bottom side	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	dimension :	230 x 80 x 50 mm	protection type	IP 60
evaluation time :	< 1ms				CE
active sensing area :	appr. 5 x 120 mm				
gap height :	8 (10 / 12 / ... mm)*)				

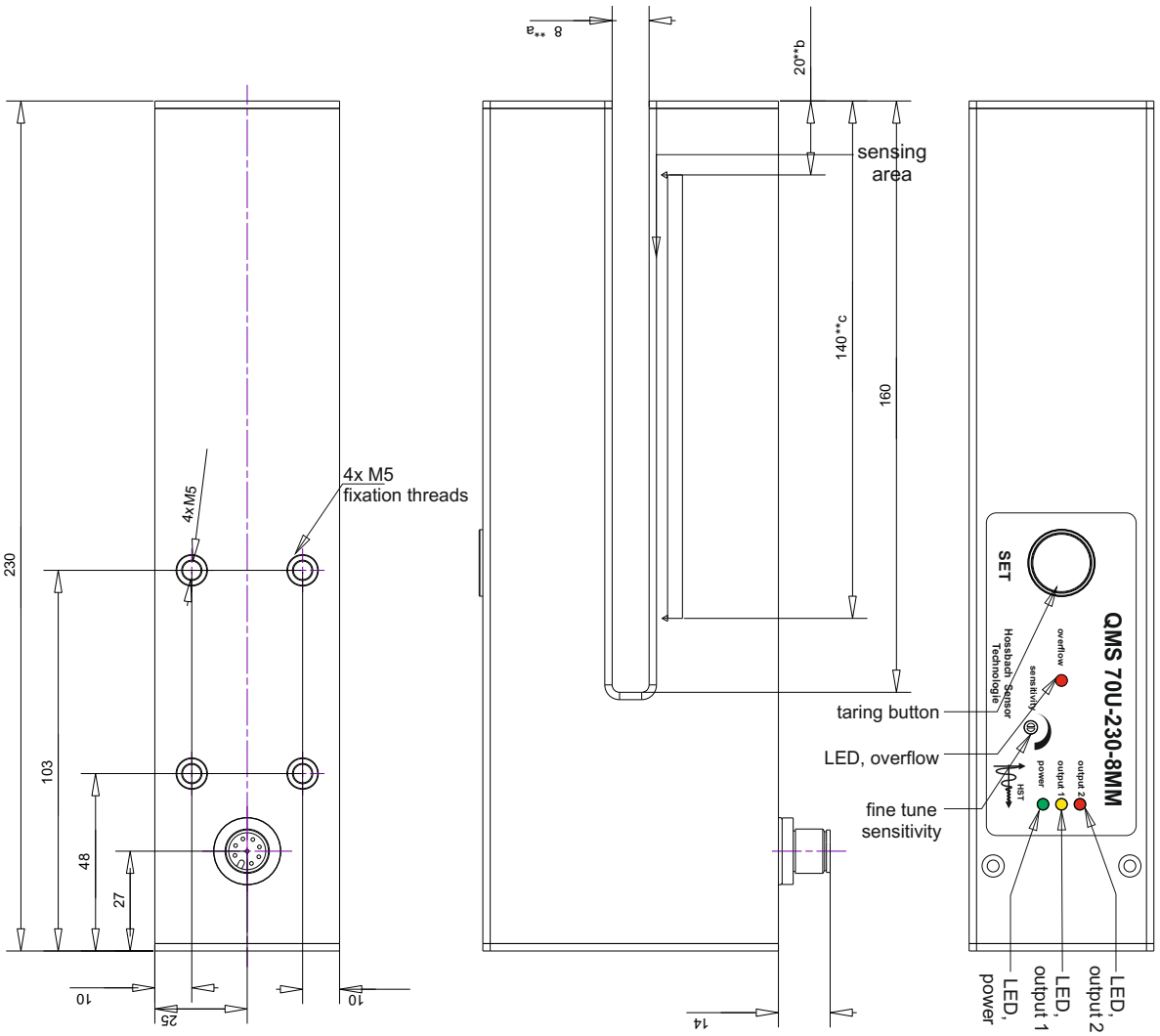
Order Data :

sensor version		order no.
QMS 70U-230 -standard version-	for interval measurement with analog output 0...10V	**QMS70U-230-INT-ANA-[8MM]** *)
QMS 70U-230	for permanent, continuous measurement with analog output 0...10V	**QMS70U-230-PERM-ANA-[8MM]** *)
QMS 70U-230	for interval measurement with analog output 0...10V and PNP switching output	**QMS70U-230-INT-ANA-PNP-[8MM]** *)
QMS 70U-230	any sensor version available with SUBD-Connector cable and adapter box	**QMS70U-230-...-SUBD**

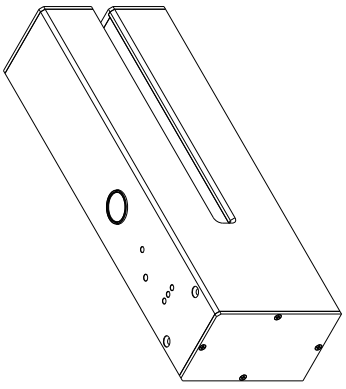
sensor including 5 m connection cable, open end, with electric wire ferrule.
Cable with SUB-D connector optional or with HST Sensor System
standard: ceramic electrode
*) sensor gap height 8mm (variations on request)

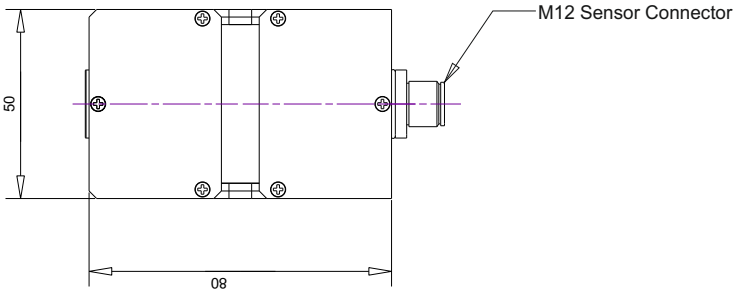
QMS 70U - 230

Dimension : [mm]

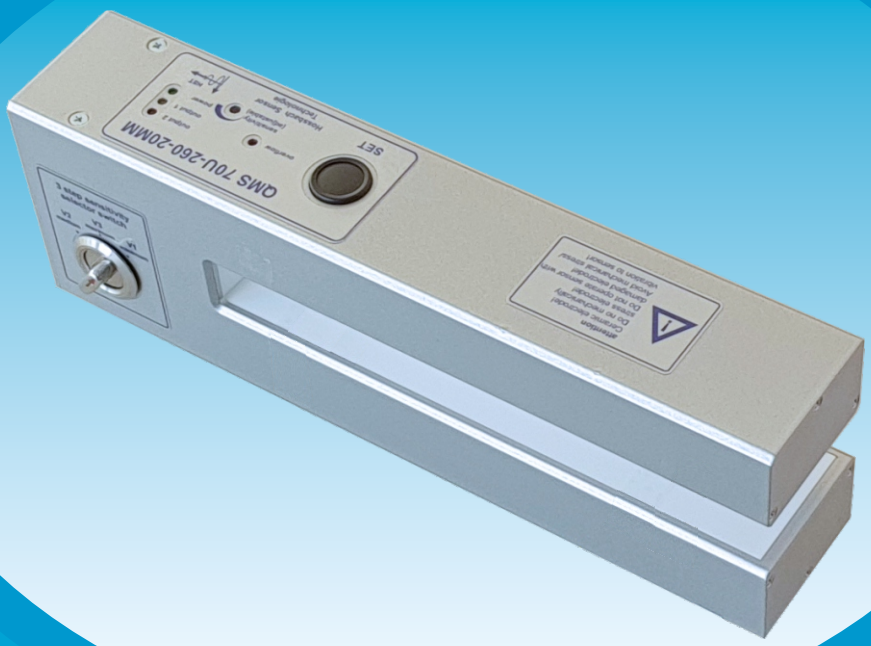


**a: Gap height 8mm standard. Variations possible
**b: Start Sensing Area (Sensor Electrode) depending on size of Sensing Area
**c: Size of Sensing Area (c-b) standard 120mm. Variations possible





Sensor for Production and Quality Control



QMS 70U-260

Hossbach Sensor Technologie

QMS 70U - 260

Features :

- U-shaped sensor for non-contact operation
- 100% inspection and control of continuous or intermittently aligned products as baby diaper directly in the production line
- stand alone operation or preferable operation within the HST sensor systems
- compact sensor housing, big sensor gap (max. 20mm)
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 260 x 80 x 50 mm
- Ceramic electrode for lowest abrasion
- Three-level selector switch for sensitivity range

Description :

The QMS 70U – 260 is a compact and robust sensor using a unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70U – 260 covers solutions of a wide range of applications, where voluminous or thin, non-metalized objects, products and materials are to be inspected or controlled.
The QMS 70U – 260 is easily mounted in machines mainly without changes in machine parts needed.
It measures a continuous material flow as well as products intermittently aligned on carriers like foils or papers.
The product may also be packaged or enclosed.

The QMS 70U – 260 can be delivered with a switching output, signalising too much or too little material flow passing the sensor electrode within the sensor gap.
Mainly the QMS 70U – 260 is used as analog version, giving a dynamical 0…10V analog signal, proportional to the basis weight actually passing the sensor electrode.
This output is used by an HST control system like the HST Flow Controller, HST Analyser or Ranger to derive and evaluate important qualitative and quantitative product information and data.
Qualitative information and data may concern production, product, machine and material deficiencies.
Weight, weight distribution, statistics etc. are classified to the quantitative information and data.

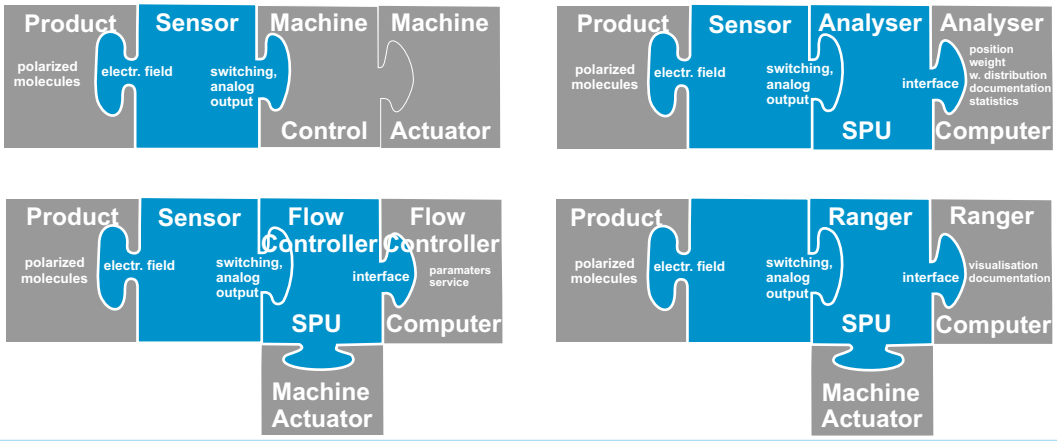
In the most common application the QMS 70U – 260 is installed into a baby diaper machine at a place, where the product is compressed and shaped, short before folding. Here the weight distribution and single weight can be measured with high precision, even during high machine speed (3000 products per minute, higher on request).
Like all QMS 70 sensors, the QMS 70U – 260 is easy to install and brought into operation.
Adjustment is performed, if needed at all at the first commissioning. The sensitivity range can be easily set by the three-level selector switch at a product changeovers with different product weight.
Due to the auto-taring feature, no re-adjustment is needed normally.
Pollution has no effect on sensor operation in a very wide extent and abrasion is kept very low due to the robust sensor electrode.

Example for Application see p.204

Hossbach equipment

machine line device

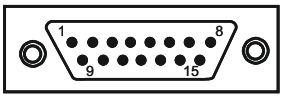
Building Blocks :



Plug Connections : **analog output 1/2 switching outputs PNP**

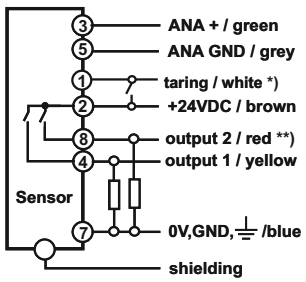
8-pin male M12 sensor connector

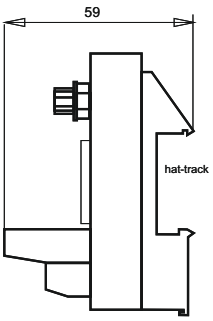
15 pin male SUB-D sensor cable connector ***)

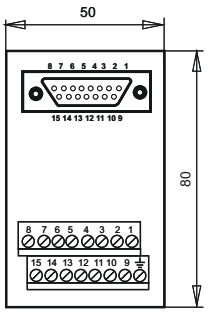


sensor version sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector ***)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	switching output 1,PNP
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	switching output 2,PNP **)
shielding	blanc	housing	shielding
don't use pin 6		don't use pin 1,6,7,9,10,13,14,15 *) only active for "interval measuring" sensor version **) only active in 2PNP sensor version ***) SUB-D connector and adapter box optional	







QMS 70U - 260

Technical Data :

sensitivity :	medium-high	output :	analog voltage output 0...10V	operation temperature range :	0...40° C
measurement mode :	intermittent permanent	operation voltage :	+24VDC +- 10% 40mA typ.	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	mounting :	4 pre-drilled bolt holes, M5 on bottom side	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	dimension :	260 x 80 x 50 mm	protection type	IP 60
evaluation time :	< 1ms				CE
active sensing area :	appr. 10 x 120 mm				
gap height :	standard 20 mm				

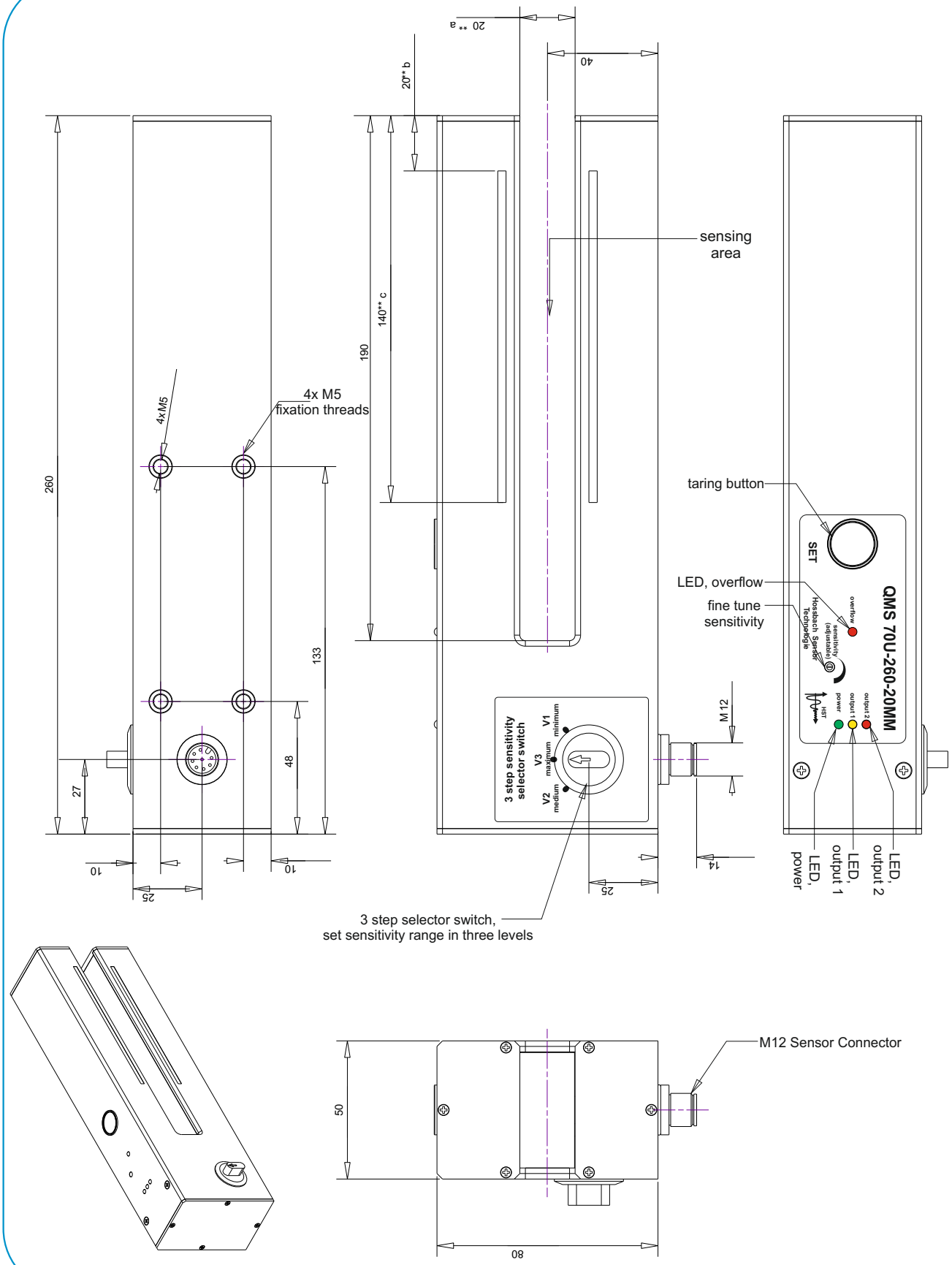
Order Data :

sensor version		order no.
QMS 70U-260 -standard version-	for interval measurement with analog output 0...10V	**QMS70U-260-INT-ANA-[20MM]** *)
QMS 70U-260	for permanent, continuous measurement with analog output 0...10V	**QMS70U-260-PERM-ANA-[20MM]** *)
QMS 70U-260	for interval measurement with analog output 0...10V and PNP switching output	**QMS70U-260-INT-ANA-PNP-[20MM]** *)
QMS 70U-260	any sensor version available with SUBD-Connector cable and adapter box	**QMS70U-260-...-SUBD**

sensor including 5 m connection cable, open end, with electric wire ferrule.
Cable with SUB-D connector optional or with HST Sensor System
standard: ceramic electrode
*) sensor gap height 20mm (variations on request)

QMS 70U - 260

Dimension : [mm]



**a: Gap height 20mm standard. Variations on request
**b: Start Sensing Area (Sensor Electrode) depending on size of Sensing Area
**c: Size of Sensing Area (c-b) standard 120mm. Variations on request

Sensor for Production and Quality Control

Sensor

QMS 70U-270

Hossbach Sensor Technologie

QMS 70U - 270

Features :

- U-shaped sensor for non-contact operation
- inspection or control of continuous or intermittently aligned products made of non-woven, foil, fleece or paper materials
- stand alone operation or preferable operation within the HST sensor systems
- compact sensor housing
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 270 x 60 x 40 mm
- abrasive resistant ceramic electrodes

Description :

The QMS 70U-270 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70U-270 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials having little weight are to be inspected or controlled.
The QMS 70U-270 is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.

The QMS 70U.270 was designed to measure and control the coating quantity and quality of endless layers, like the application of glue to an endless paper ribbon.

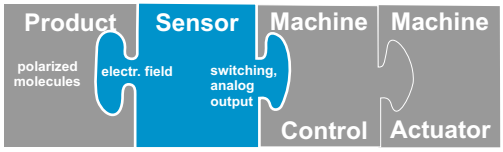
The QMS 70U-270 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.

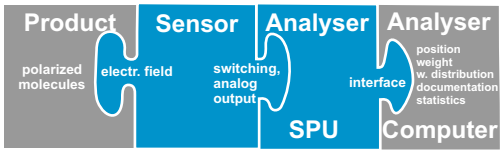
The QMS 70U-270 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. Among the qualitative information and data are production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

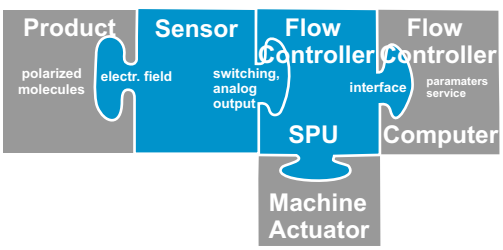
Building Blocks :

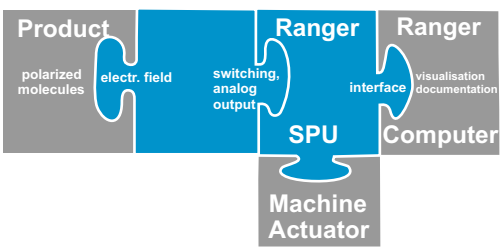
Hossbach equipment

machine line device





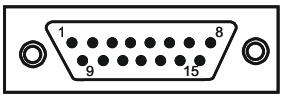




Plug Connections : **analog output**

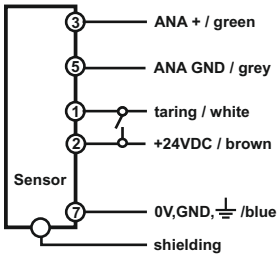
8-pin male M12 sensor connector

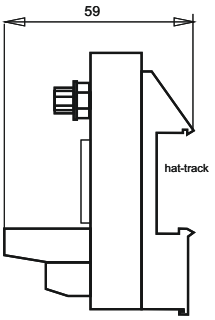
15 pin male SUB-D sensor cable connector **)

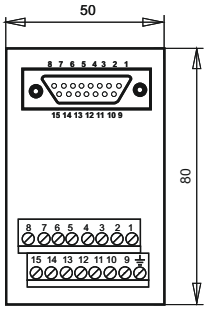


sensor version
sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	not to connect
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	not to connect
shielding	blanc	housing	shielding
don't use pin 4, 6, 8		don't use pin 1,4,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	



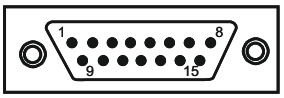




Plug Connections : **analog output**

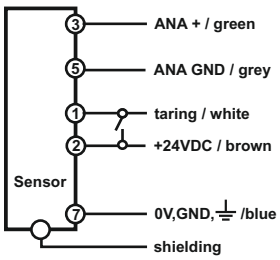
8-pin male M12 sensor connector

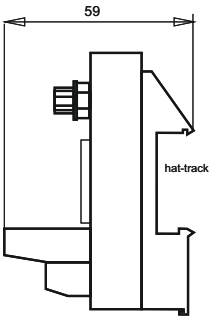
15 pin male SUB-D sensor cable connector **)

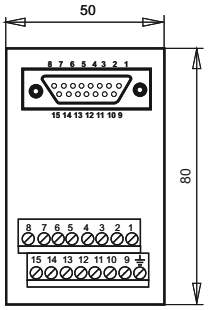


sensor version
sensor+HST evaluaiton device

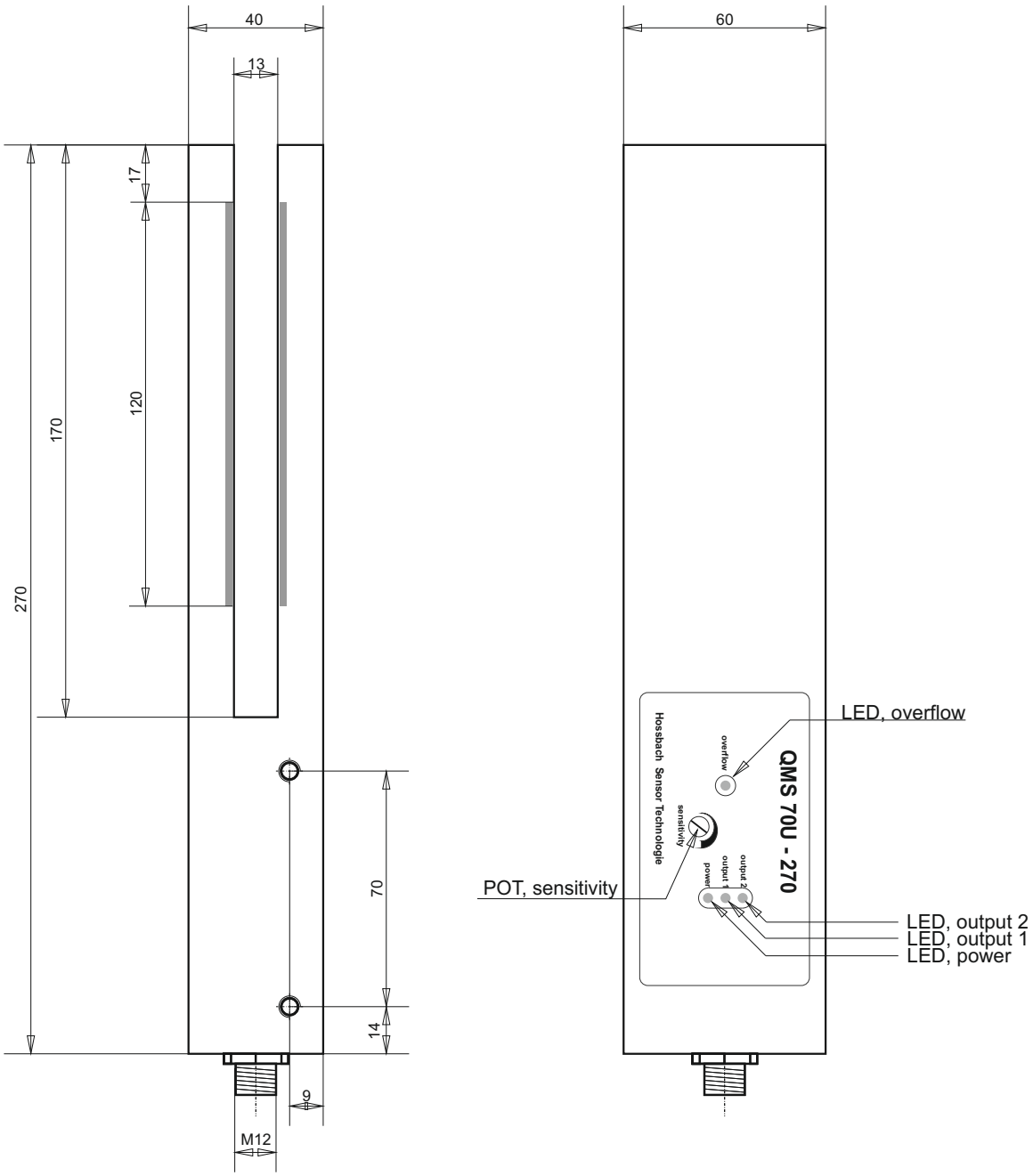
8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	not to connect
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	not to connect
shielding	blanc	housing	shielding
don't use pin 4, 6, 8		don't use pin 1,4,5,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







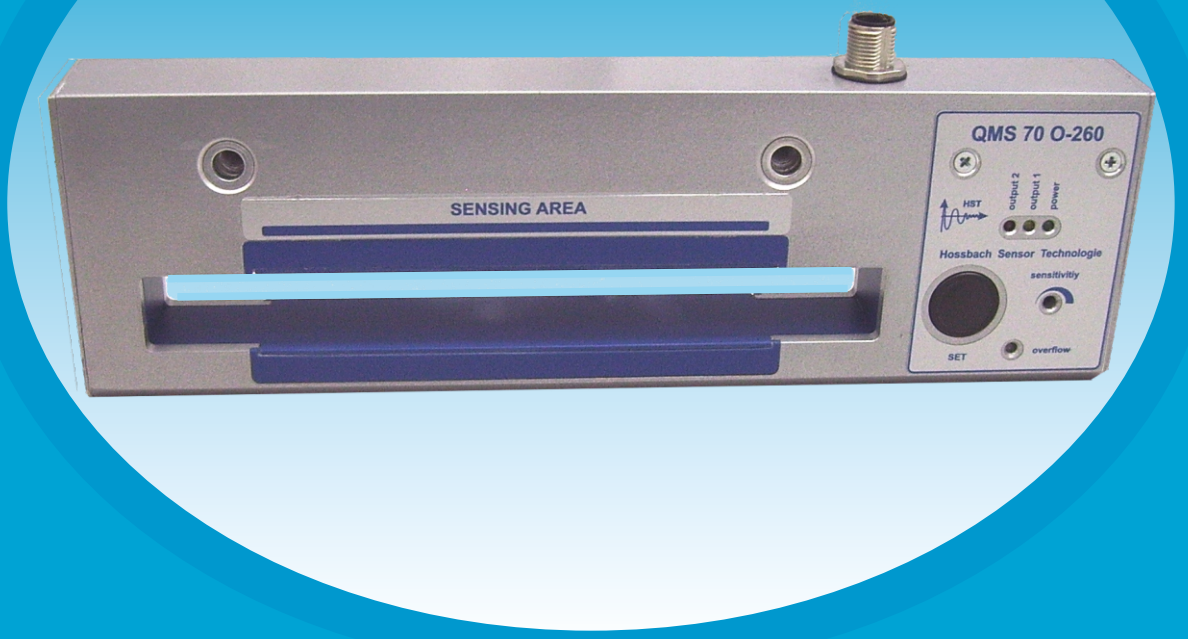
Dimension : [mm]



variations due to sensor version

Sensor for Production and Quality Control

Sensor



QMS 70-O-260

Hossbach Sensor Technologie

QMS 70 - O - 260

Features :

- O-shaped sensor for non-contact operation
- inspection or control of continuous or intermittently aligned products made of voluminous materials
- stand alone operation or preferable operation within the HST sensor systems
- wide gap, compact sensor housing
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 260 x 30 x 80 mm

Description :

The QMS 70-O-260 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-O-260 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials having little weight are to be inspected or controlled.
The QMS 70-O-260 is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.

The QMS 70-O-260 is designed for detecting the correct folding of sanitary napkins, after they were individually packaged.

The QMS 70-O-260 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.

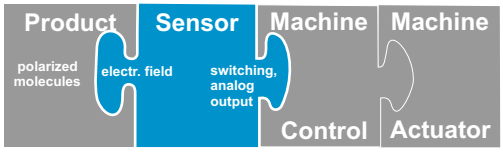
The QMS 70-O-260 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. Among the qualitative information and data are production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

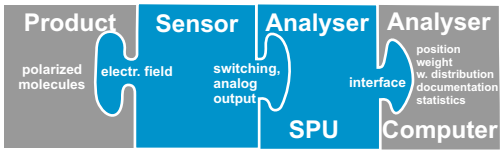
Example for Application see p. 215

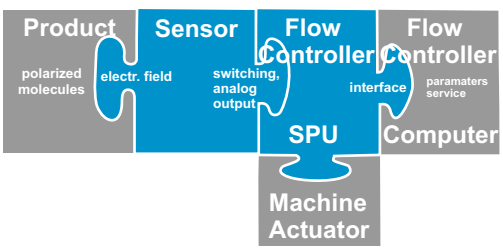
Building Blocks :

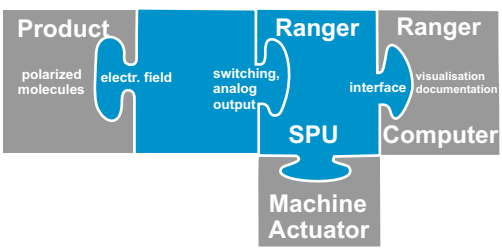
Hossbach equipment

machine line device





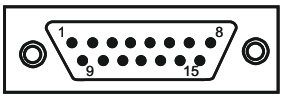




Plug Connections : **analog output plus 1 PNP switching output**

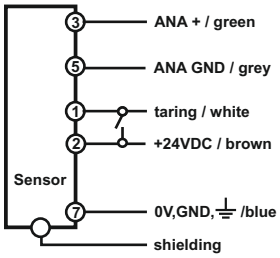
8-pin male M12 sensor connector

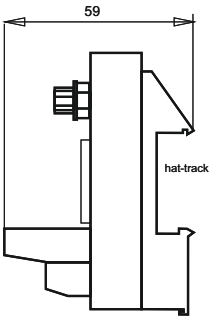
15 pin male SUB-D sensor cable connector **)

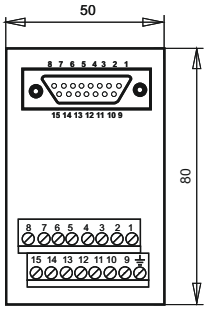


sensor version
sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V
pin 4	yellow	pin 4	switching output, PNP
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	not to connect, test
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	not to connect
shielding	blanc	housing	shielding
don't use pin 6, 8		don't use pin 1,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







QMS 70 - O - 260

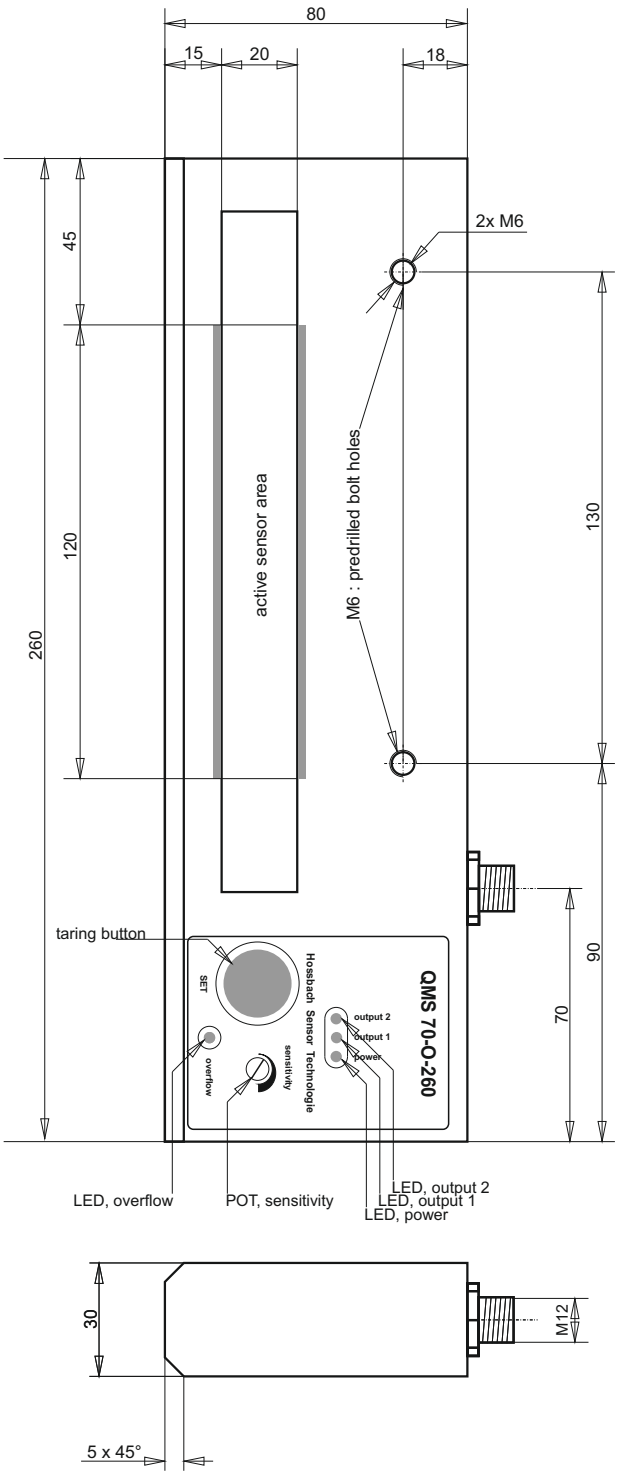
Technical Data :

sensitivity :	middle	external taring :	automatically or by external 24V signal or push button	operation temperature range :	0...40° C
measurement mode :	intermittent, permanent	output :	analog output 0...10V,	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	operation voltage :	+24VDC +- 10% 50mA typ.	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	mounting :	4 pre-drilled bolt holes, M5 on bottom side	protection type	IP 60
evaluation time :	< 1ms	dimension :	260 x 80 x 30 mm		
active sensor area :	approx. 120 x 10 mm	weight :	typ. 500 gr.		
gap height :	20 mm				CE

Order Data :

sensor version	order no.
QMS 70-O-260 for interval measurement with analog output 0...10V	**QMS 70-O-260-INT-ANA**
QMS 70-O-260 for operation with HST Control Units (HST Flow Controller, Ranger, Analyser)	**QMS 70-O-260-SYSTEM**
QMS 70-O-260 any sensor version available with SUBD connector cable and adapter box	**QMS 70-O-260-...-SUBD**
sensor including 5m connection cable	

Dimension : [mm]



variations due to sensor version

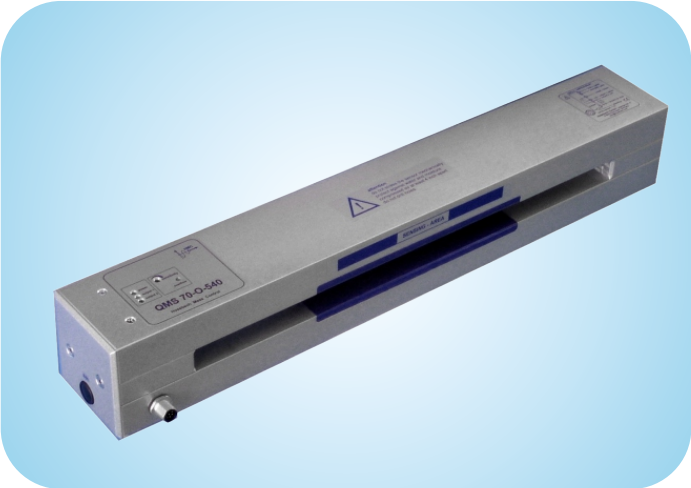
Sensor for Production and Quality Control

Sensor

QMS 70-O-540

Hossbach Sensor Technologie

QMS 70 - O - 540



Features :

- O-shaped sensor for non-contact operation
- inspection or control of continuous or intermittently aligned products made of voluminous materials
- stand alone operation or preferable operation within the HST sensor systems
- wide gap, wide sensing area, high sensitivity
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 540 x 80 x 80 mm

Description :

The QMS 70-O-540 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-O-540 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials are to be inspected or controlled.
The QMS 70-O-540 is easily mounted in machines to measure the continuous material flow as well as products intermittently aligned on carriers like foils or papers. The measurement object may also be packaged or enclosed.
The QMS 70-O-540 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.

The QMS 70-O-540 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Flow Controller, HST Analyser or Ranger to derive and evaluate important qualitative and quantitative information and data. Qualitative information and data may concern production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

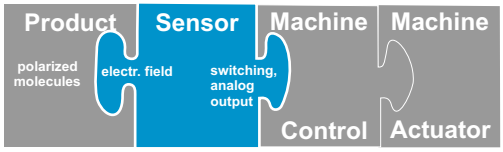
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent.

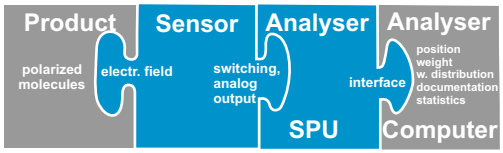
Example for Application see p.204

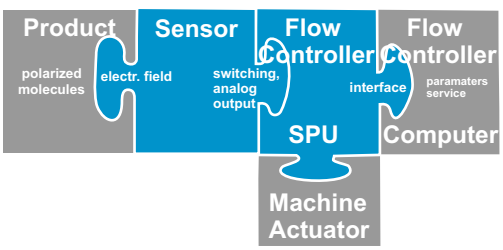
Building Blocks :

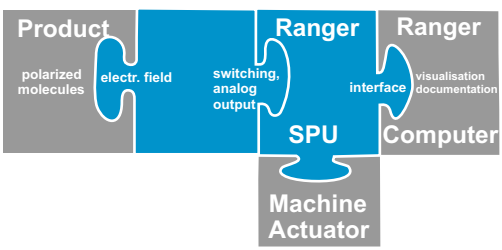
Hossbach equipment

machine line device





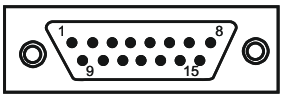




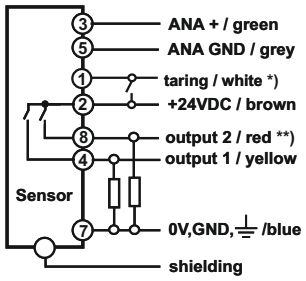
Plug Connections : analog output 1/2 switching outputs PNP

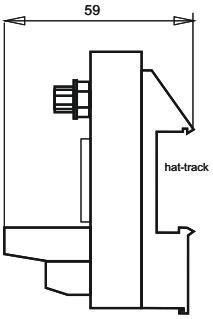
8-pin male M12 sensor connector

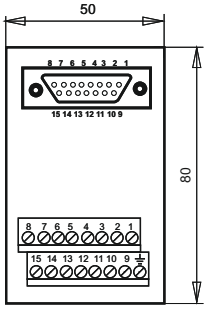
15 pin male SUB-D sensor cable connector ***)



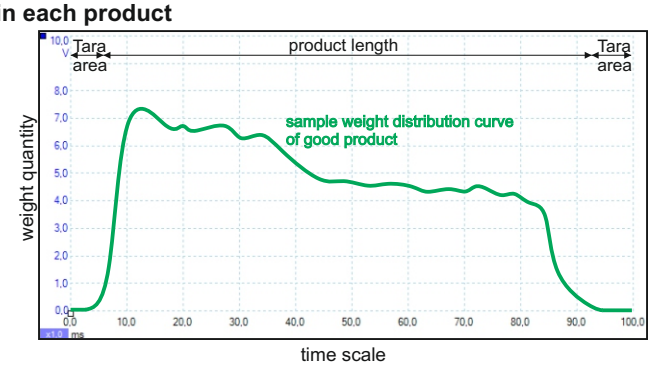
sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector ***)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	switching output 1,PNP
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	switching output 2,PNP **)
	shielding	blanc	housing	shielding
	don't use pin 6		don't use pin 1,6,7,9,10,13,14,15 *) only active for "interval measuring" sensor version **) only active in 2PNP sensor version ***) SUB-D connector and adapter box optional	







Visualize weight distribution in each product



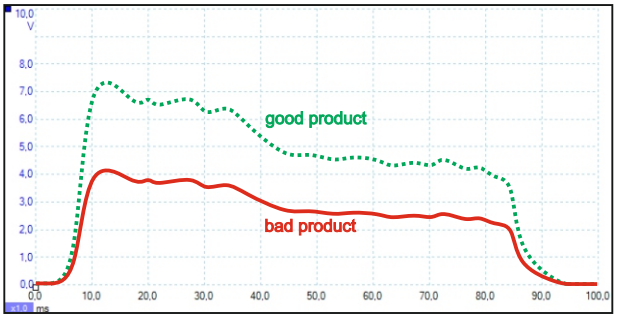
Visualization of weight distribution:

Y-axis: weight quantity;
curve elevation proportional to weight of product section

X-axis: time;
should be scaled according to production speed

Example 1:

One component is missing over whole product length;
weight distribution curve lowers



Example 2:

Product is folded lenghtwise;
weight distribution curve increases partially and lowers partially

By visualizing the sensor signal, any defectives could be discovered which are caused by faulty weight distribtuion.
It enables the operator to react immediately to machine or material irregularities.

QMS 70 - O - 540

Technical Data :

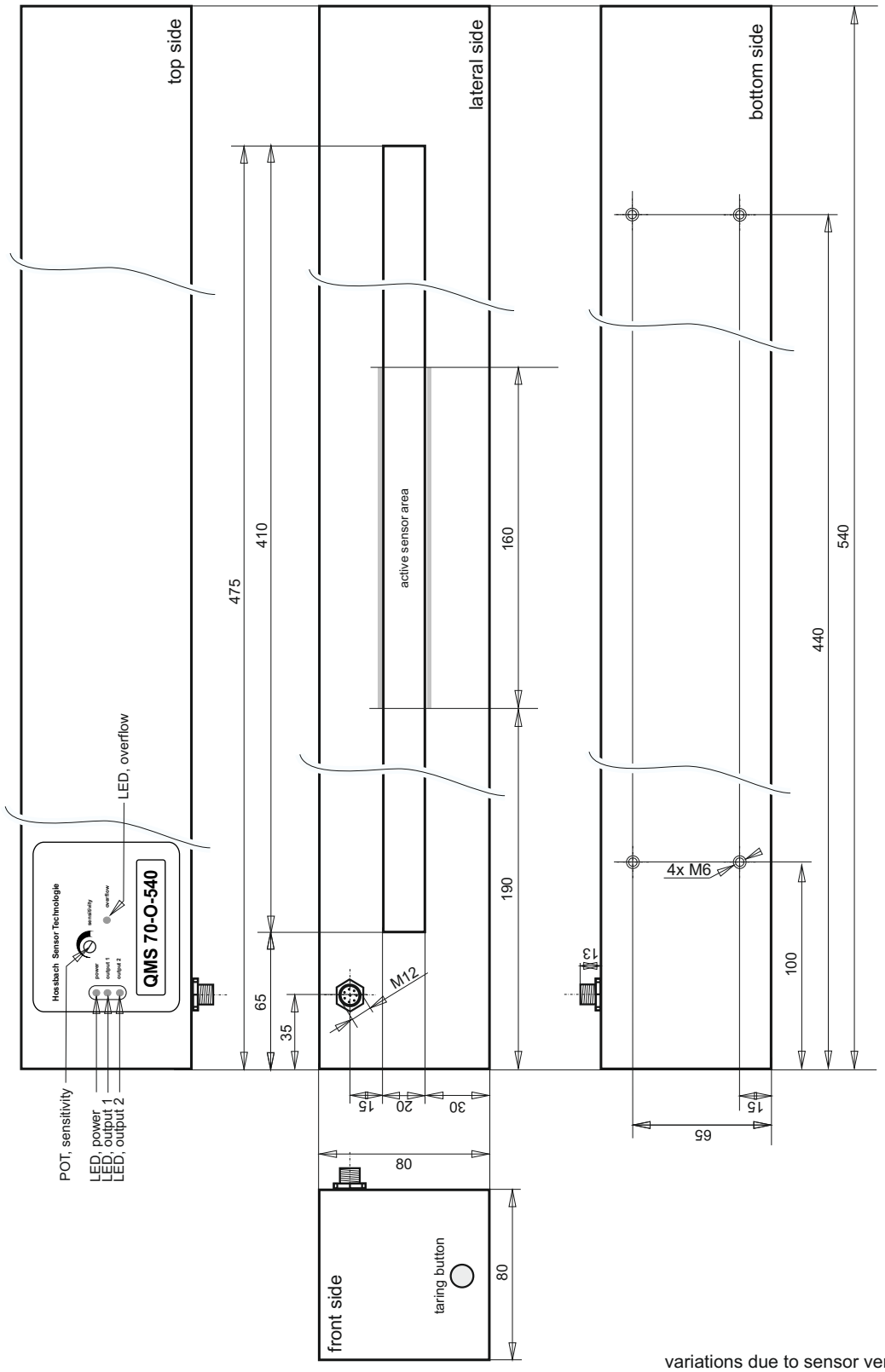
sensitivity :	middle	evaluation time :	< 1ms	weight :	typ. 2800 gr.
measurement mode :	intervall, permanent	external taring :	automatically or by external 24V signal or push button (INT, TARA versions)	operation temperature range :	10°C ...40° C
lowest detectable weight quantity :	< 10 mg			storage temperature range :	0°C ...50°C
accuracy : (INT-version)	1...3 % RSD depending on material quantity and material characteristics	output :	0...+10V 1/2 switching outputs 24V (PNP)	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
active sensor area :	160 x 15 mm	operation voltage :	+24VDC +- 10% 50 mA typ.	protection type	IP 60
gap height :	20 mm	mounting :	4 pre-drilled bolt holes, M6 on bottom side		CE
		dimension :	540 x 80 x 80 mm		

Order Data :

sensor version		order no.
QMS 70-O-540 -standard version-	for interval measurement with analog output 0...10V	**QMS70-O-540-INT-ANA**
QMS 70-O-540	for permanent measurement with analog output 0...10V	**QMS70-O-540-PERM-ANA**
QMS 70-O-540	for permanent measurement,controlled tara with analog output 0...10V	**QMS70-O-540-PERM-ANA-TARA**
QMS 70-O-540	for interval measurement with analog output 0...10V and two PNP outputs	**QMS70-O-540-INT-ANA-2PNP**
QMS 70-O-540	for operation with HST Control Units (HST Flow Controller, Ranger, Analyser)	**QMS 70-O-540-SYSTEM**
QMS 70-O-540	any sensor version available with SUBD-connector cable and adapter box	**QMS 70-O-540-...-SUBD**

sensors including 5m connection cable

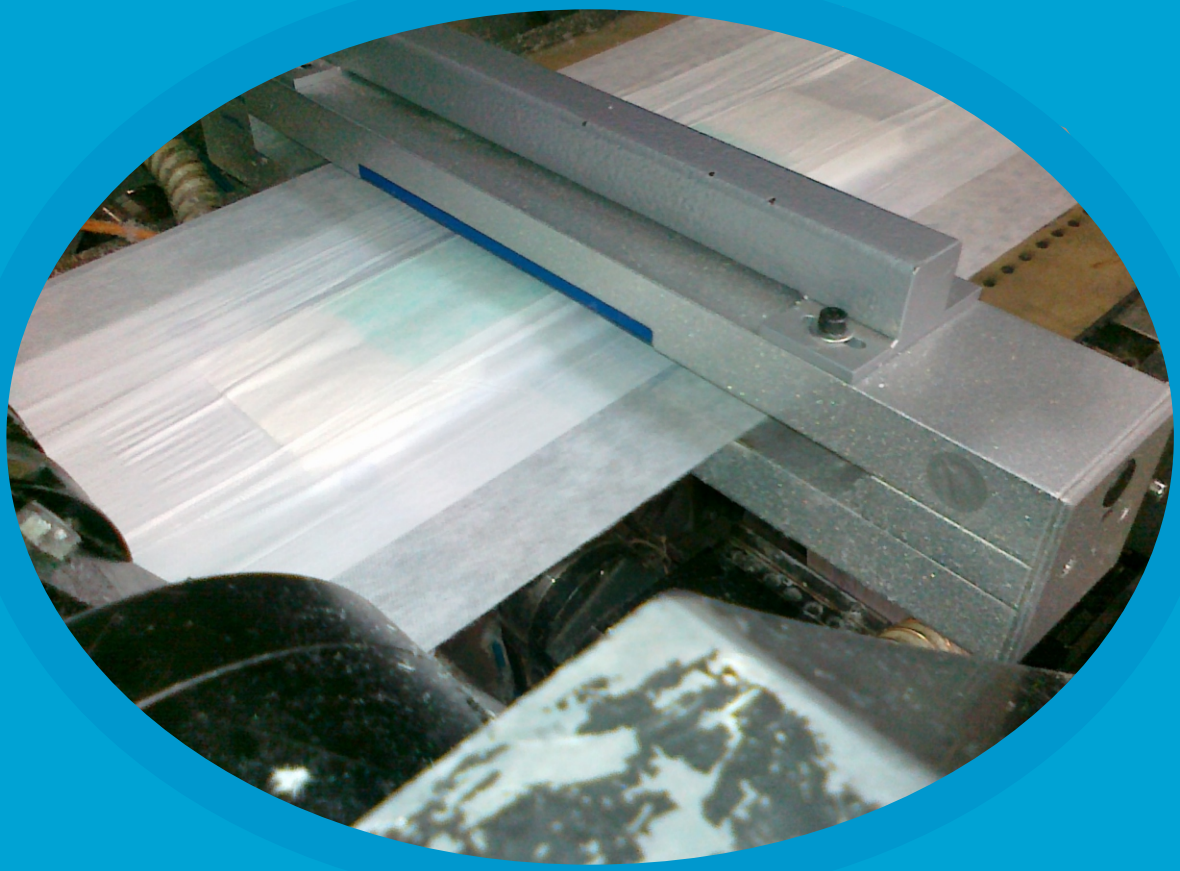
Dimension : [mm]



variations due to sensor version

Sensor for Production and Quality Control

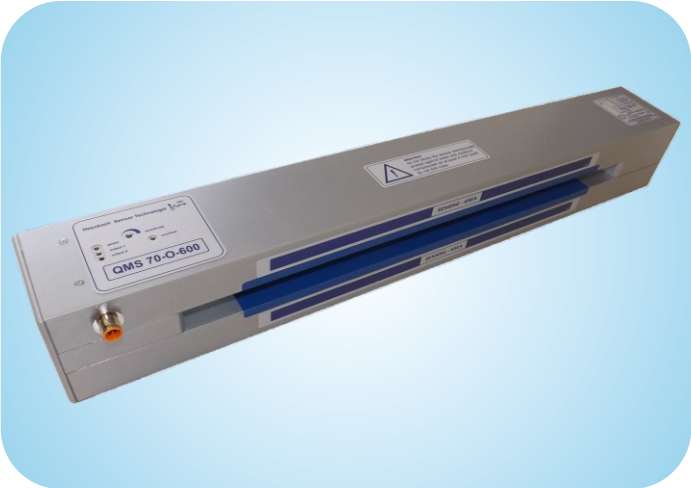
Sensor



QMS 70-O-600

Hossbach Sensor Technologie

QMS 70 - O - 600



Features :

- O-shaped sensor for non-contact operation
- inspection or control of continuous or intermittently aligned products made of voluminous materials
- stand alone operation or preferable operation within the HST sensor systems
- wide gap, wide sensing area, high sensitivity
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 600 x 80 x 80 mm

Description :

The QMS 70-O-600 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-O-600 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials are to be inspected or controlled.
The QMS 70-O-600 is easily mounted in machines to measure the continuous material flow as well as products intermittently aligned on carriers like foils or papers. The measurement object may also be packaged or enclosed.
The QMS 70-O-600 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.

The QMS 70-O-600 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Flow Controller, HST Analyser or Ranger to derive and evaluate important qualitativeand quantitative information and data. Qualitative information and data may concern production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

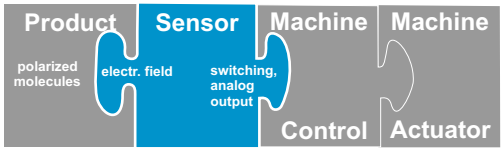
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent.

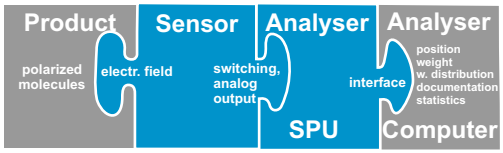
Example for Application see p.204

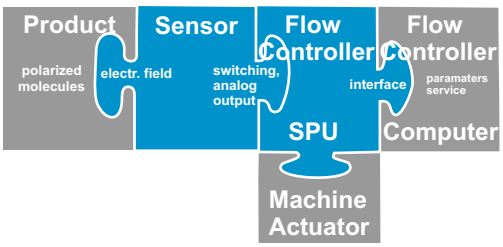
Building Blocks :

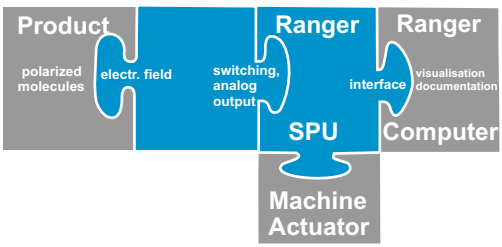
Hossbach equipment

machine line device





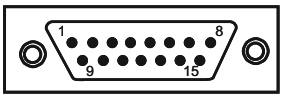




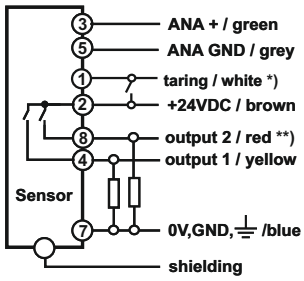
Plug Connections : analog output

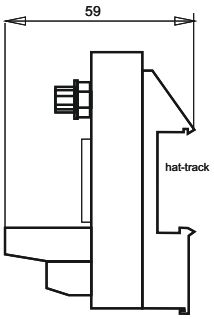
8-pin male M12 sensor connector

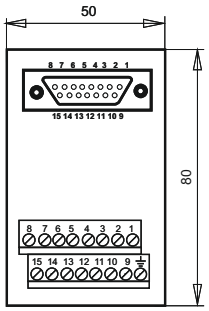
15 pin male SUB-D sensor cable connector ***)



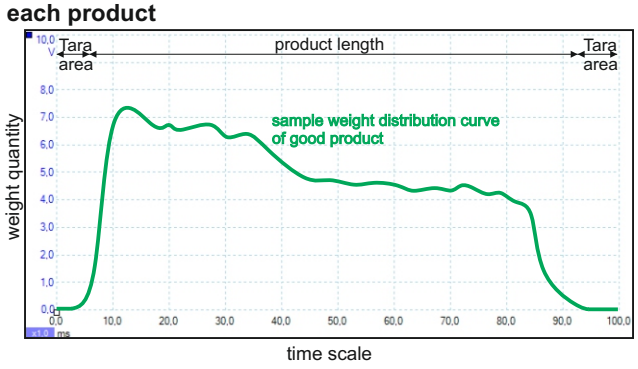
sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector ***)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	switching output 1,PNP
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	switching output 2,PNP **)
	shielding	blanc	housing	shielding
	don't use pin 6		don't use pin 1,6,7,9,10,13,14,15 *) only active for "interval measuring" sensor version **) only active in 2PNP sensor version ***) SUB-D connector and adapter box optional	







Visualize weight distribution in each product



Visualization of weight distribution:

Y-axis: weight quantity;
curve elevation proportional to weight of product section

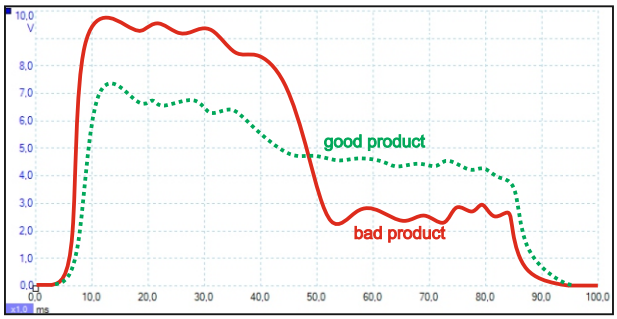
X-axis: time;
should be scaled according to production speed

Example 1:

One component is missing over whole product length;
weight distribution curve lowers

Example 2:

Product is folded lenghtwise;
weight distribution curve increases partially and lowers partially



By visualizing the sensor signal, any defectives could be discovered which are caused by faulty weight distribtuion.
It enables the operator to react immediately to machine or material irregularities.

QMS 70 - O - 600

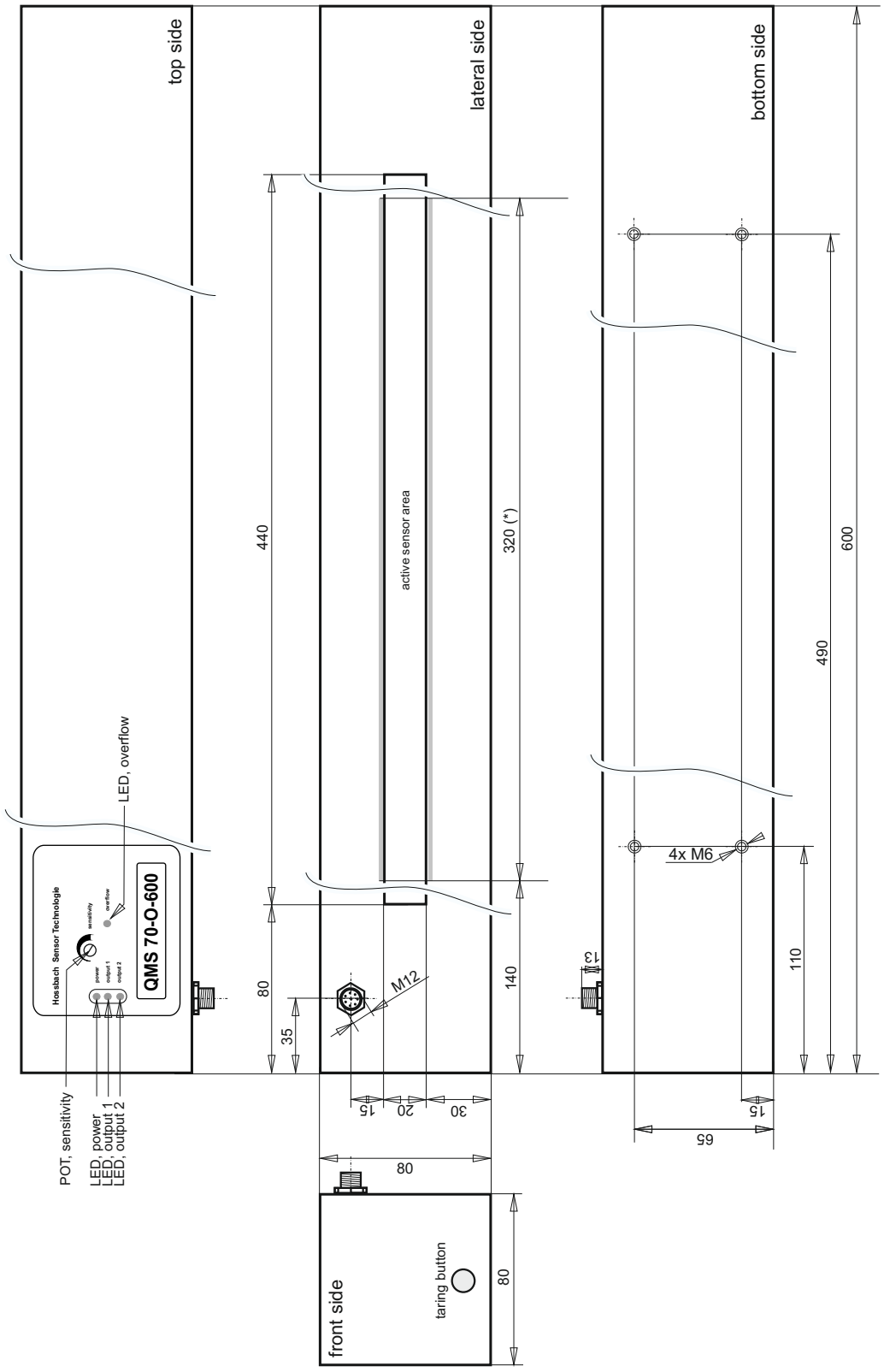
Technical Data :

sensitivity :	middle	evaluation time :	< 1ms	weight :	typ. 3100 gr.
measurement mode :	intervall, permanent	external taring :	automatically or by external 24V signal or push button (INT, TARA versions)	operation temperature range :	10°C ...40° C
lowest detectable weight quantity :	< 10 mg			storage temperature range :	0°C ...50°C
accuracy : (INT-version)	1...3 % RSD reachable	output :	0...+10V 1/2 switching outputs 24V (PNP)	meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
active sensor area :	320 x 15 mm	operation voltage :	+24VDC +- 10% 50 mA typ.	protection type	IP 60
gap height :	20 mm	mounting :	4 pre-drilled bolt holes, M6 on bottom side		CE
		dimension :	600 x 80 x 80 mm		

Order Data :

sensor version		order no.
QMS 70-O-600 -standard version-	for interval measurement with analog output 0...10V	**QMS 70-O-600-INT-ANA**
QMS 70-O-600	for permanent measurement with analog output 0...10V	**QMS 70-O-600-PERM-ANA**
QMS 70-O-600	for permanent measurement,controlled tara with analog output 0...10V	**QMS 70-O-600-PERM-ANA-TARA**
QMS 70-O-600	for interval measurement with analog output 0...10V and two PNP outputs	**QMS 70-O-600-INT-ANA-2PNP**
QMS 70-O-600	for operation with HST Control Units (HST Flow Controller, Ranger, Analyser)	**QMS 70-O-600-SYSTEM**
QMS 70-O-600	any sensor version available with SUBD-connector cable and adapter box	**QMS 70-O-600-...-SUBD**
sensors including 5m connection cable		

Dimension : [mm]



variations due to sensor version

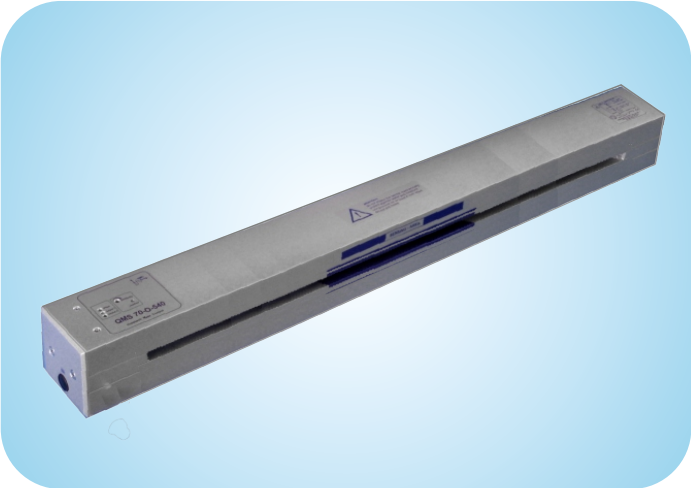
Sensor for Production and Quality Control

Sensor

QMS 70-O-725

Hossbach Sensor Technologie

QMS 70 - O - 725



Features :

- O-shaped sensor for non-contact operation
- inspection or control of continuous or intermittently aligned products made of thin materials like non-woven webs
- stand alone operation or preferable operation within the HST sensor systems
- small gap, wide sensing area
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 725 x 80 x 80 mm

Description :

The QMS 70-O-725 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-O-725 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials are to be inspected or controlled.
The QMS 70-O-725 is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.

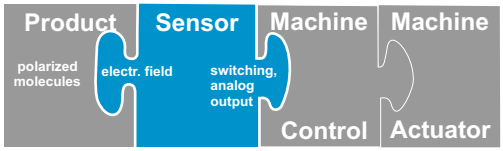
The QMS 70-O-725 can be delivered with an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. The qualitative information and data concern production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

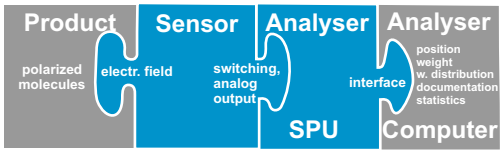
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent.

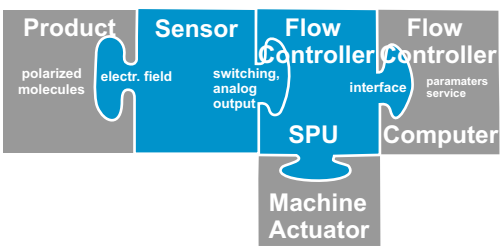
Building Blocks :

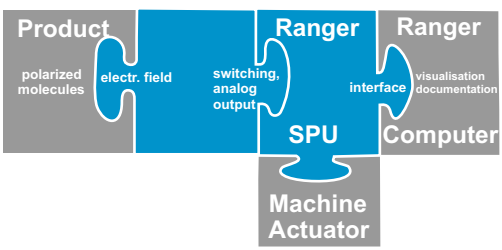
Hossbach equipment

machine line device





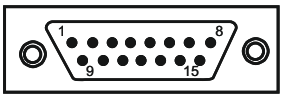




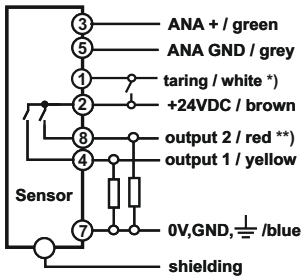
Plug Connections : **analog output**

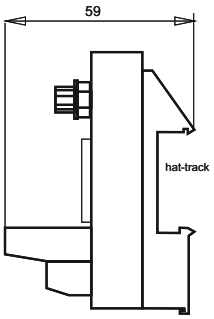
8-pin male M12 sensor connector

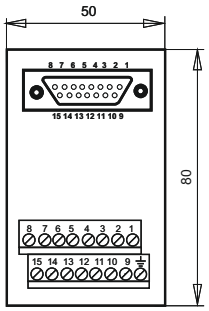
15 pin male SUB-D sensor cable connector ***)



sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector ***)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	switching output 1,PNP
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	switching output 2,PNP **)
	shielding	blanc	housing	shielding
	don't use pin 6		don't use pin 1,6,7,9,10,13,14,15 *) only active for "interval measuring" sensor version **) only active in 2PNP sensor version ***) SUB-D connector and adapter box optional	







QMS 70 - O - 725

Technical Data :

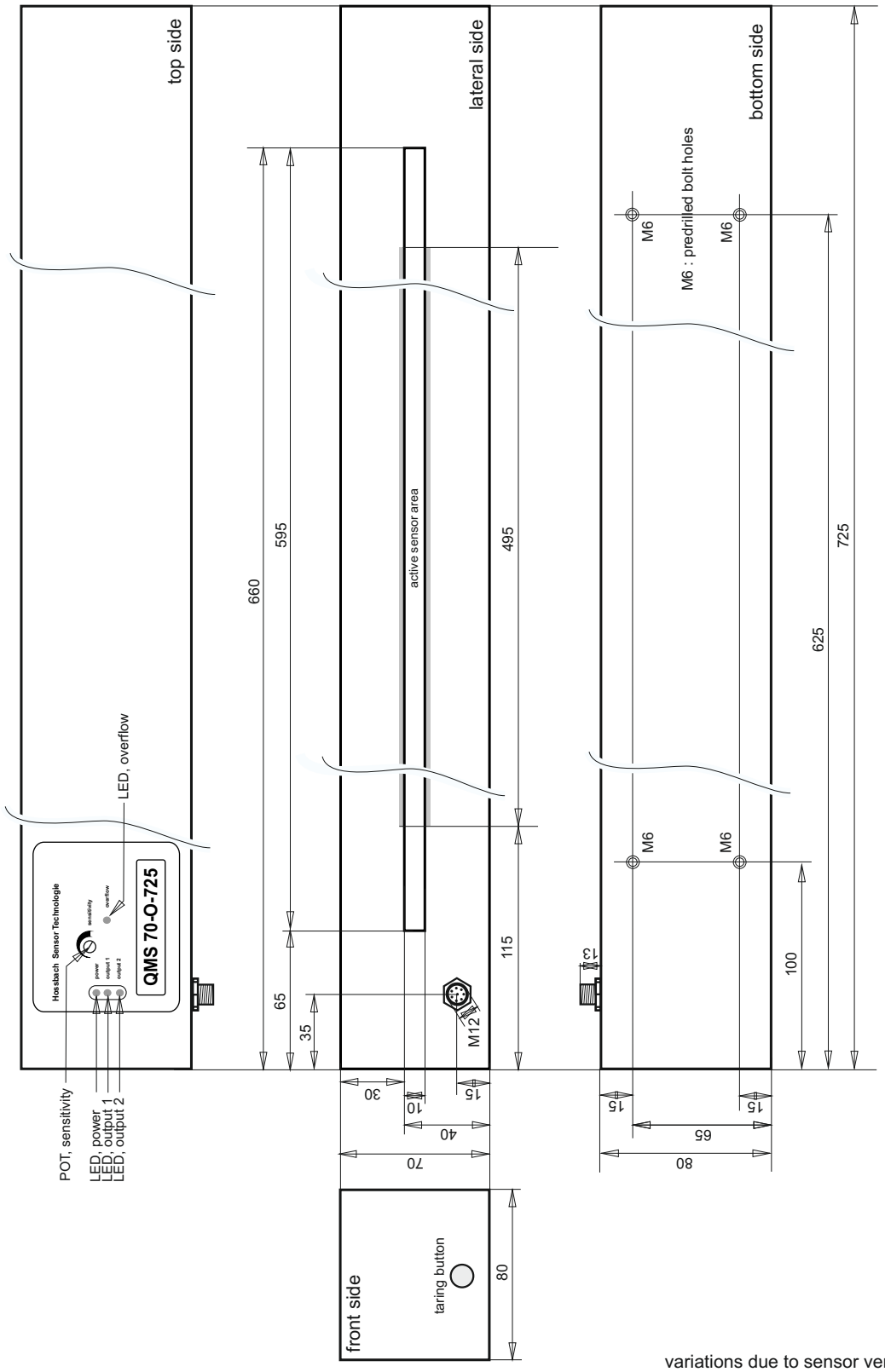
sensitivity :	middle	evaluation time :	< 1ms	weight :	typ. 3700 gr.
measurement mode :	interval, permanent	external taring :	automatically or by external 24V signal or push button (INT, TARA version)	operation temperature range :	10°C ...40° C
lowest detectable weight quantity :	< 10 mg			storage temperature range :	0°C ...50°C
accuracy : (INT-version)	1...3 % RSD reachable	output :	0...+10V 1/2 switching outputs 24V (PNP)	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
active sensor area :	max 500 x 15 mm	operation voltage :	+24VDC +- 10% 50 mA typ.	protection type	IP 60
gap height :	10 mm	mounting :	4 pre-drilled bolt holes, M6 on bottom side		CE
		dimension :	725 x 70 x 80 mm		

Order Data :

sensor version		order no.
QMS 70-O-725	for interval measurement with analog output 0...10V	**QMS 70-O-725-INT-ANA**
QMS 70-O-725 -standard version-	for permanent measurement with analog output 0...10V	**QMS 70-O-725-PERM-ANA**
QMS 70-O-725	for permanent measurement,controlled tara with analog output 0...10V	**QMS 70-O-725-PERM-ANA-TARA**
QMS 70-O-725	for interval measurement with analog output 0...10V and two PNP outputs	**QMS 70-O-725-INT-ANA-2PNP**
QMS 70-O-725	for operation with HST Control Units (HST Flow Controller, Ranger, Analyser)	**QMS 70-O-725-SYSTEM**
QMS 70-O-725	any sensor version available with SUBD-connector cable and adapter box	**QMS 70-O-725-...-SUBD**
sensors including 5m connection cable		

QMS 70 - O - 725

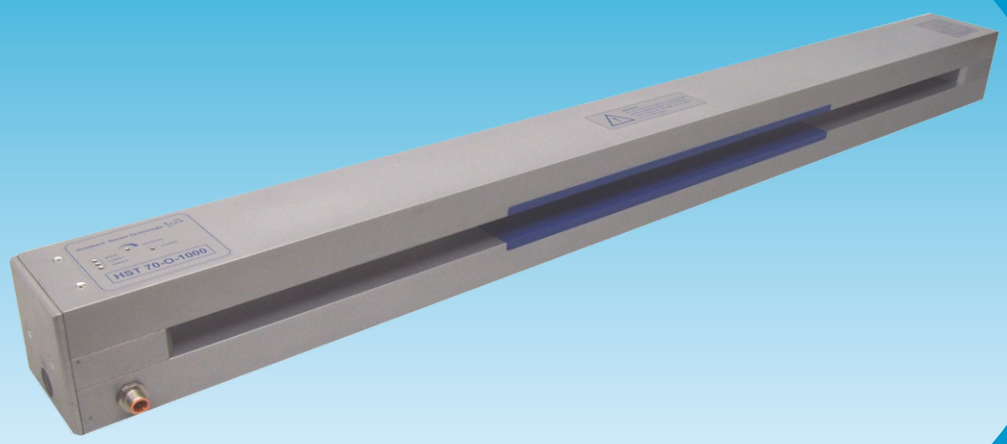
Dimension : [mm]



variations due to sensor version

Sensor for Production and Quality Control

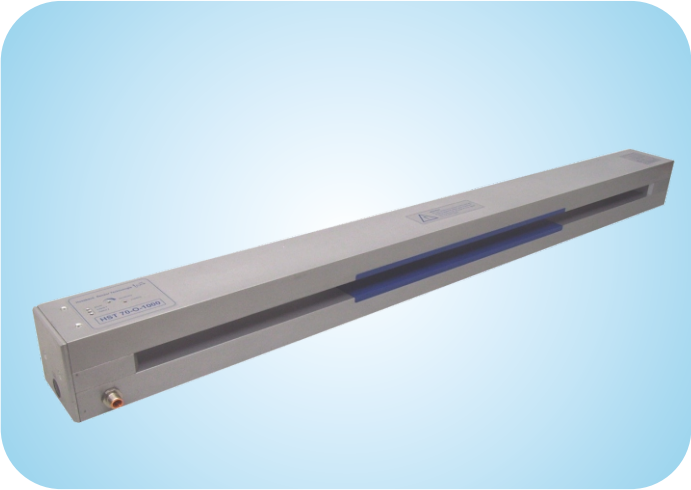
Sensor



QMS 70-O-1000

Hossbach Sensor Technologie

QMS 70 - O - 1000



Features :

- O-shaped sensor for non-contact operation
- inspection or control of continuous or intermittently aligned products made of voluminous materials
- stand alone operation or preferable operation within the HST sensor systems
- wide gap, wide sensing area, high sensitivity
- switching output version
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 1000 x 80 x 80 mm

Description :

The QMS 70-O-1000 is a size larger, compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70-O-1000 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials are to be inspected or controlled.
The QMS 70-O-1000 is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.
The QMS 70-O-1000 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.

The QMS 70-O-1000 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. The qualitative information and data concern production, machine and material etc. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

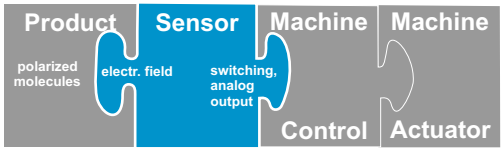
Bringing into operation is very easy. Adjustment is performed, if needed at all, at the first commissioning. Due to the auto-taring function, no re-adjustment is needed normally. Pollution and abrasion have no effect on sensor operation in a very wide extent.

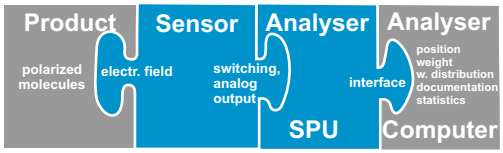
Example for Application see p.204

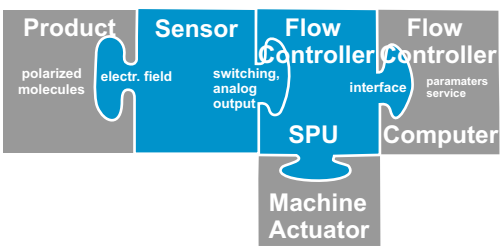
Building Blocks :

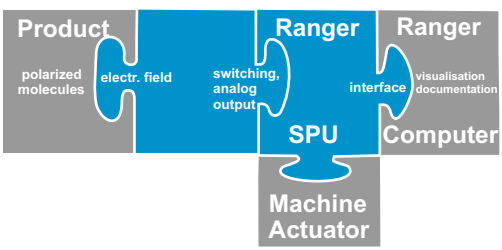
Hossbach equipment

machine line device





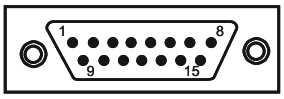




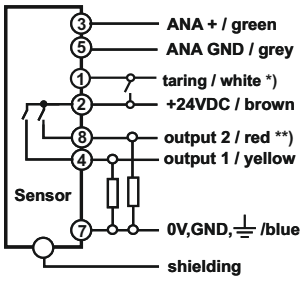
Plug Connections : analog output

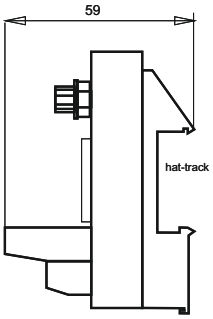
8-pin male M12 sensor connector

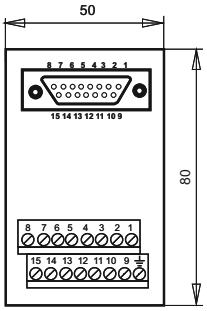
15 pin male SUB-D sensor cable connector ***)



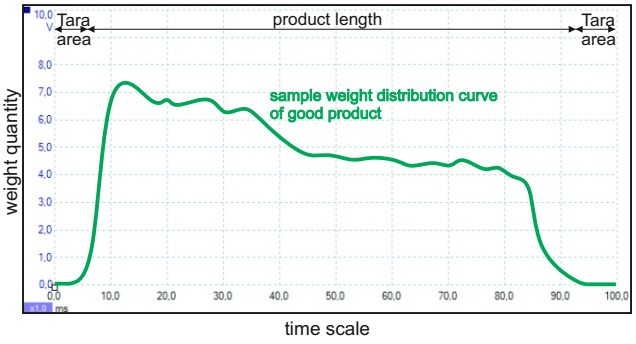
sensor version sensor+HST evaluaiton device	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	switching output 1,PNP
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	switching output 2,PNP **)
	shielding	blanc	housing	shielding
	don't use pin 6		don't use pin 1,6,7,9,10,13,14,15 *) only active for "interval measuring" sensor version **) only active in 2PNP sensor version ***) SUB-D connector and adapter box optional	







Visualize weight distribution in each product



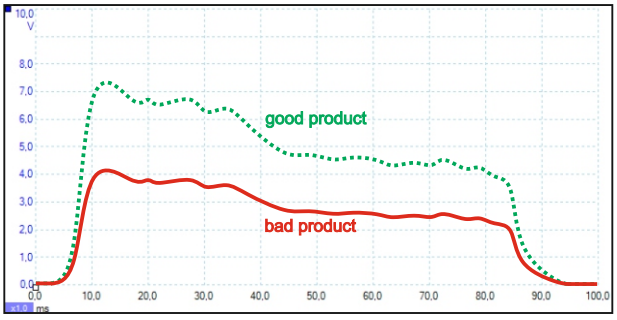
Visualization of weight distribution:

Y-axis: weight quantity;
curve elevation proportional to weight of product section

X-axis: time;
should be scaled according to production speed

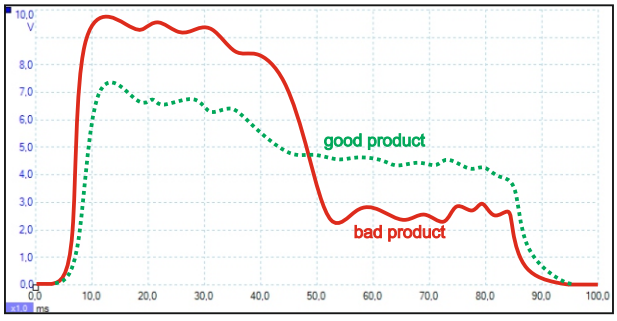
Example 1:

One component is missing over whole product length;
weight distribution curve lowers



Example 2:

Product is folded lenghtwise;
weight distribution curve increases partially and lowers partially



By visualizing the sensor signal, any defectives could be discovered which are caused by faulty weight distribtuion.
It enables the operator to react immediately to machine or material irregularities.

QMS 70 - O - 1000

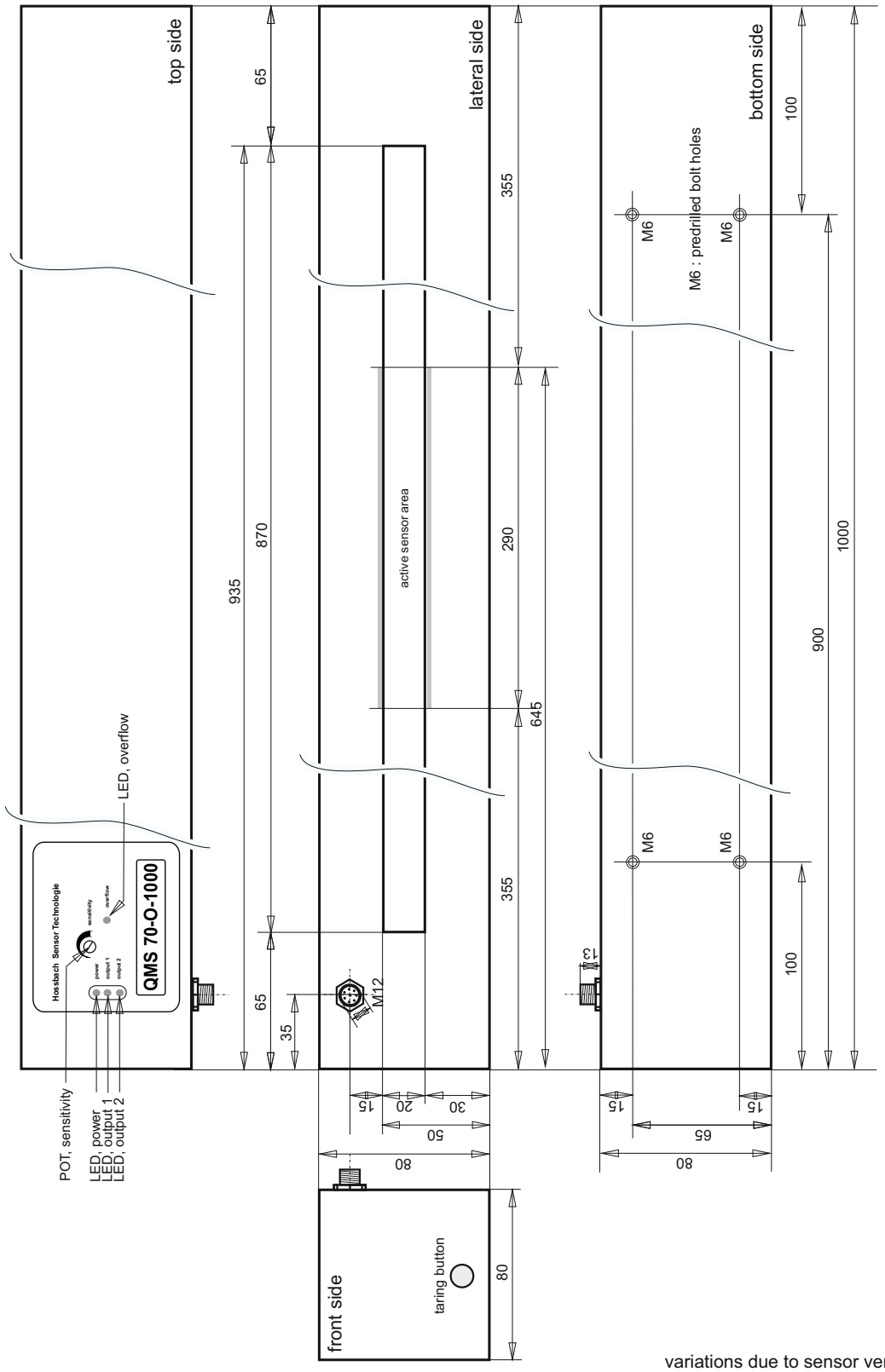
Technical Data :

sensitivity :	middle	evaluation time :	< 1ms	weight :	typ. 4700 gr.
measurement mode :	interval, permanent	external taring :	automatically or by external 24V signal or push button (INT, TARA version)	operation temperature range :	10°C ...40° C
lowest detectable weight quantity :	< 10 mg			storage temperature range :	0°C ...50°C
accuracy : (INT-version)	1...3 % RSD reachable	output :	0...+10V 1/2 switching outputs 24V (PNP)	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
active sensor area :	290 x 15 mm	operation voltage :	+24VDC +- 10% 50 mA typ.	protection type	IP 60
gap height :	20 mm	mounting :	4 pre-drilled bolt holes, M6 on bottom side		CE
		dimension :	1000 x 80 x 80 mm		

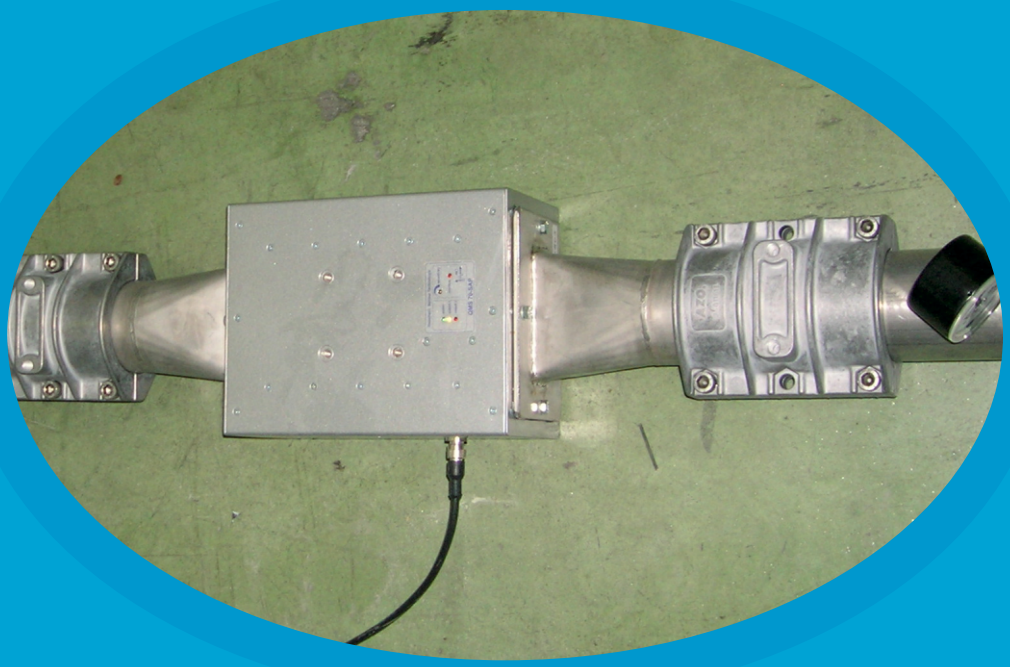
Order Data :

sensor version		order no.
QMS 70-O-1000 -standard version-	for interval measurement with analog output 0...10V	**QMS 70-O-1000-INT-ANA**
QMS 70-O-1000	for permanent measurement with analog output 0...10V	**QMS 70-O-1000-PERM-ANA**
QMS 70-O-1000	for permanent measurement,controlled tara with analog output 0...10V	**QMS 70-O-1000-PERM-ANA-TARA**
QMS 70-O-1000	for interval measurement with analog output 0...10V and two PNP outputs	**QMS 70-O-1000-INT-ANA-2PNP**
QMS 70-O-1000	for operation with HST Control Units (HST Flow Controller, Ranger, Analyser)	**QMS 70-O-1000-SYSTEM**
QMS 70-O-1000	any sensor version available with SUBD-connector cable and adapter box	**QMS 70-O-1000-...-SUBD**
sensors including 5m connection cable		

Dimension : [mm]



Sensor



QMS 70 SAP-T

QMS 70 SAP-T

Features :

- test sensor for granulate and powder high speed flow control
- continuous and pulse flow operation
- auto-adjust functionality for pulse flow applications
- independent of material transparency, colour etc. and environmental light and abrasive effects
- for material flow speeds up to 40 m/s and more
- analog output 0 … 10 V
- +24V +/- 10% operation voltage
- robust steel housing 240 x 188 x 123 mm
- easily to install, flange mounting for material guiding pipes, ceramic plate armed tunnel

Description :

The QMS 70 - SAP - T is an unique sensor to control the mass flow of powders, granulates or similar materials. Due to the measuring principle and the high measuring rate, the QMS 70 - SAP gives user instantaneously many information about the flow behaviour of the material right before it gets processed, filled, mixed etc...

The QMS 70 - SAP - T enables to control not only the material flow concerning weight but also enables to control the mass distribution. This enables user to regulate the material flow concerning continuous mass flow as well as material pulses.

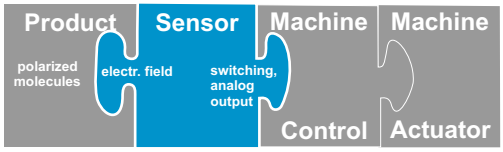
The QMS 70 - SAP - T outputs a 0...10 V analogue signal proportional to the mass quantity just being in the sensor's measuring field. This voltage can be used by the production line control unit or/and can be used by the inspection system HST Analyser or the control system HST Flow Controller. Due to the high speed characteristics of the QMS 70-SAP-T mass profiles can be evaluated, visualized and controlled.

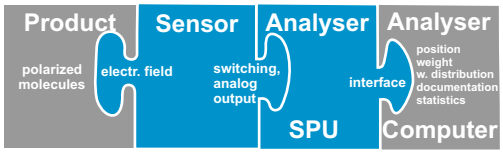
Example for Application see p. 225

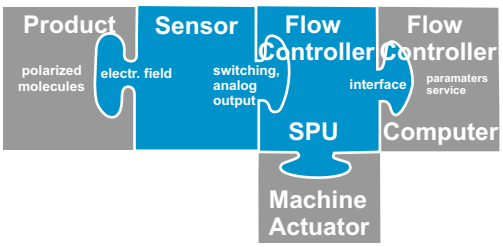
Building Blocks :

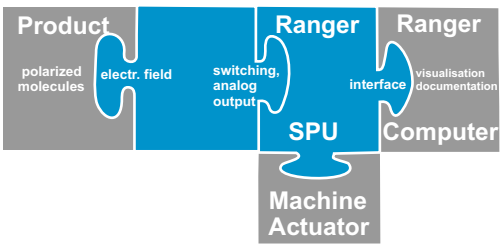
Hossbach equipment

machine line device





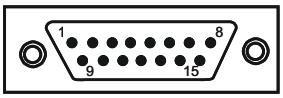




Plug Connections : **analog output**

8-pin male M12 sensor connector

15 pin male SUB-D sensor cable connector 2)

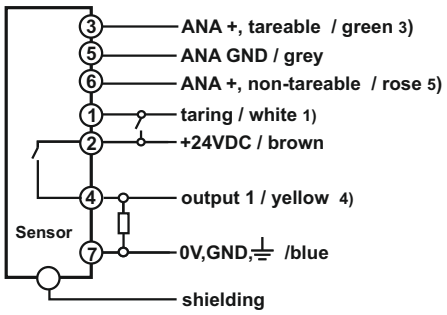


sensor version
sensor+HST evaluaiton device

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V 1)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V, tareable 3)
pin 4	yellow	pin 4	switching output, PNP 4)
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	analog output 0...+10V, non-tareable 5)
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	not to connect
shielding	blanc	housing	shielding
don't use pin 8		don't use pin 6,7,8,9,10,13,14,15	

1) only active for "interval measuring" sensor version
2) SUB-D connector and adapter box optional
3) non-tareable with PERM-sensor version, tareable with INT-sensor version
4) available with PNP-sensor version
5) available with double analog version, non-tareable

sensor connector pins



sensor cable

QMS 70 SAP-T

Technical Data :

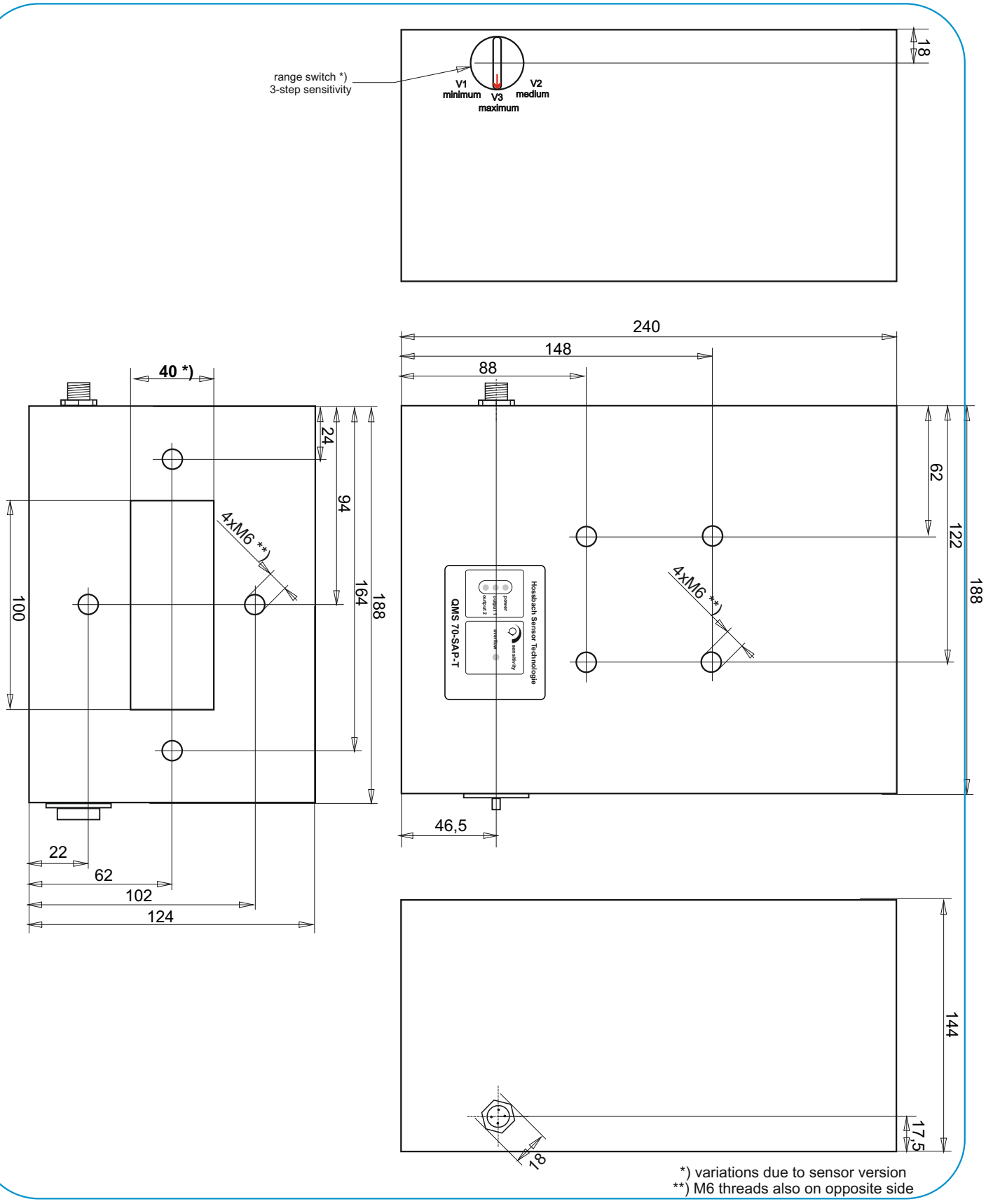
sensitivity :	high	external taring :	during material flow interrupts	operation temperature range :	0...40° C
measurement mode :	permanent, auto-taring	output :	two switching outputs, 24V/50mA, PNP	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 10 mg		analog voltage output 0...10V	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy : (INT-version)	1...3 % RSD reachable	operation voltage :	+24VDC +- 10% 40mA typ.	protection type	IP 61
evaluation time :	< 1ms	mounting :	8 pre/drilled bolt holes, M5, on lateral sides		CE
active sensing area :	appr. 90 x 90 mm				
measurement by :	double sided electrode	dimension :	240 x 188 x 144 mm		

Order Data :

sensor version		order no.
QMS 70-SAP-T*)	for permanent, continuous flow measurement with analog output -10...+10V Standard tunnel opening 100x40mm Standard electrode height 90mm	**QMS70-SAP-T-PERM-ANA-100-40-90**
QMS 70-SAP-T **)	for interval, intermittent flow measurement (pulses) with analog output 0...+10V Standard tunnel opening 100x40mm Customized electrode height XXmm	**QMS70-SAP-T-INT-ANA-100-40-XX**
QMS 70-SAP-T	for interval, intermittent measurement with analog output 0...+10V Including 3-step-selector switch	**QMS70-SAP-T-INT-ANA-...-3SW**
Features and dimensions listed above could be combined. *Please contact HST Support for detailed requests.*		
sensor including 5m connection cable plus adapter box		

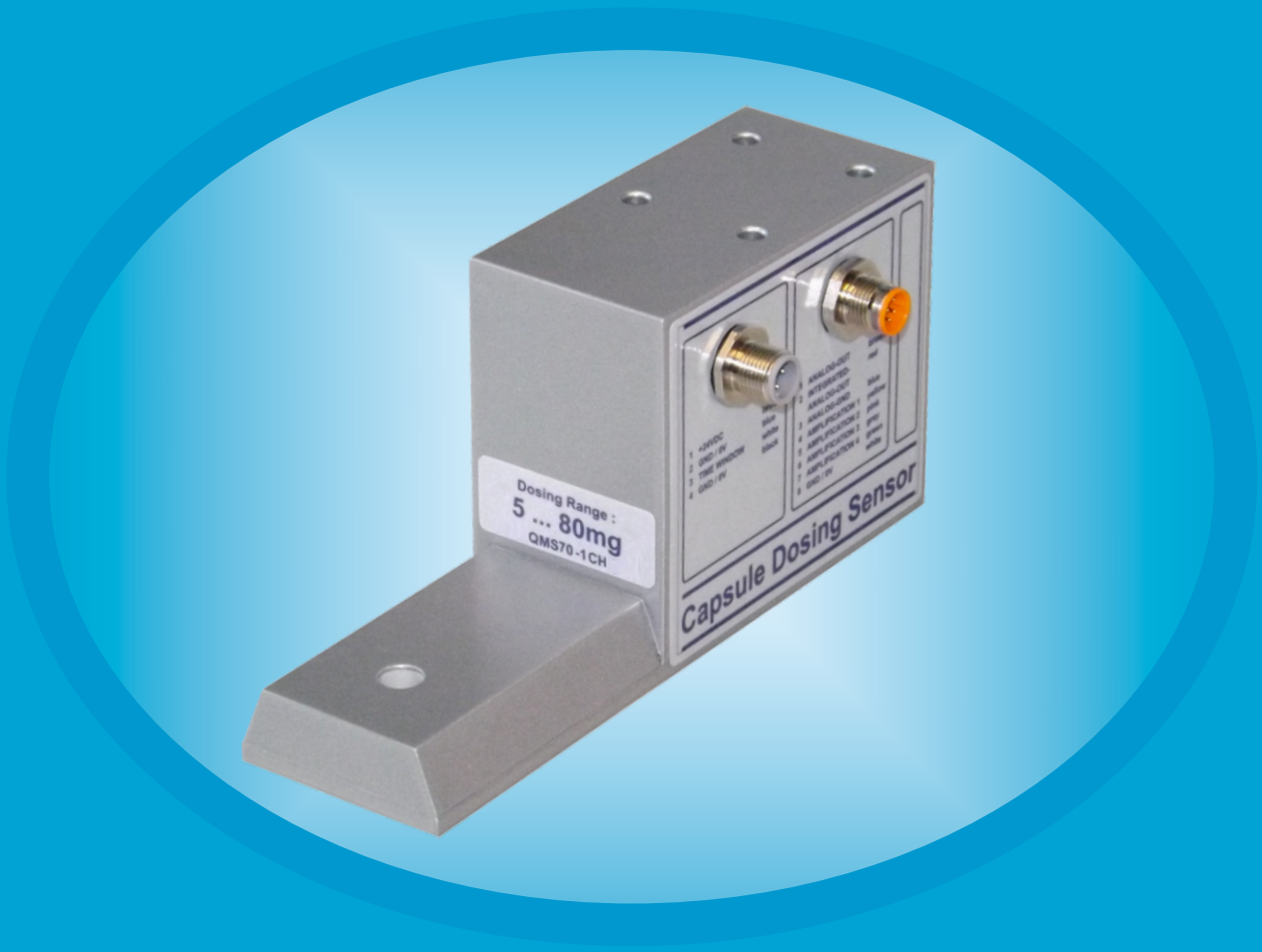
*) for continuous material flow, occurring signal offset must be taken into account
**) for intermittent material flow, i.e. pulses auto-calibration will auto-zero any signal drifts

Dimension : [mm]



*) variations due to sensor version
**) M6 threads also on opposite side

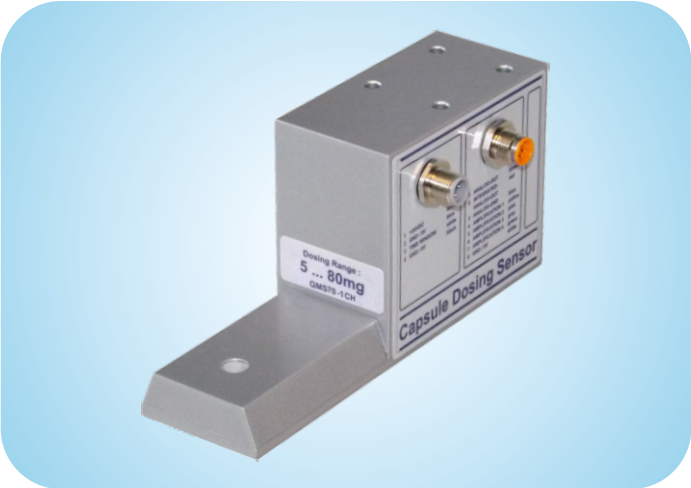
Sensor for Production and Quality Control



QMS 70 - 1CH

Hossbach Sensor Technologie

QMS 70 - 1CH



Features :

- Single, round measurement channel
- 100% measurement of material passing the cavity in free fall
- Measurement of powder, granulates and pellets
- Dosing of capsules, cartridges, vials or carpules
- Dosing quantities <1mg .... 1000mg+
- Sensor signal for total weight quantity and Live-Signal of product flow
- +24VDC +/- 10% operation voltage
- robust aluminium housing 175 x 84 x 50 mm

Description :

The QMS70 - 1CH is an unique sensor with sophisticated sensor electronics and signal processing. It is designed to measure the quantity of material flow during free fall.
It can be used in dosing machines, where capsules or other containers are filled with powder, granulates or pellets.

The QMS70 - 1CH is operated in clocked machines, where different pulses of material have to be measured regarding their weight quantity and flow quality.

The sensor receives an external trigger signal, which signalizes the beginning of the dosing procedure to the sensor. During the trigger is active, the sensor outputs an analogue signal in real-time, which is proportional to the amount of material which is just inside the measurement channel. By this signal the dosing process and the flow quality can be visualized.

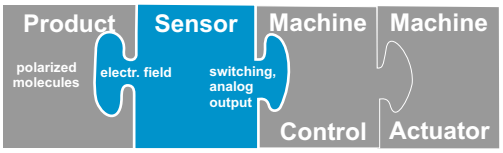
After the dosing process is finished, the sensor outputs an analogue signal (0...10V) which is proportional to the total amount of material having passed the measurement channel during the trigger signal. (e.g. 5,892 V ≙ 26,62 mg)

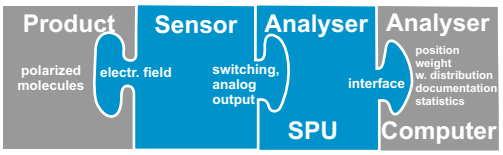
The QMS70 - 1CH is available for different pulse quantities. The dimensions of the sensor can be customized, depending on the available space in the dosing machine.
By the compact design of the sensor many parallel measurement channels can be realized in one or two lines.

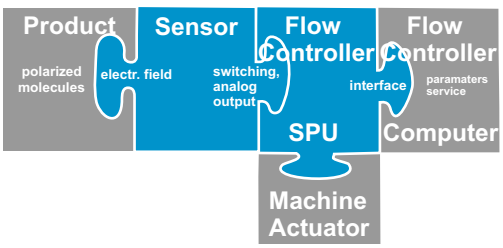
Building Blocks :

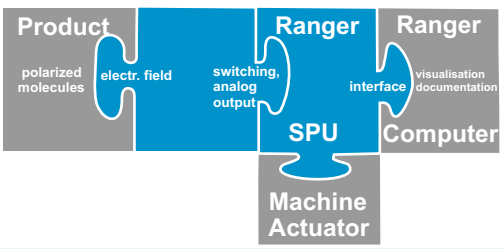
Hossbach equipment

machine line device









QMS 70 - 1CH

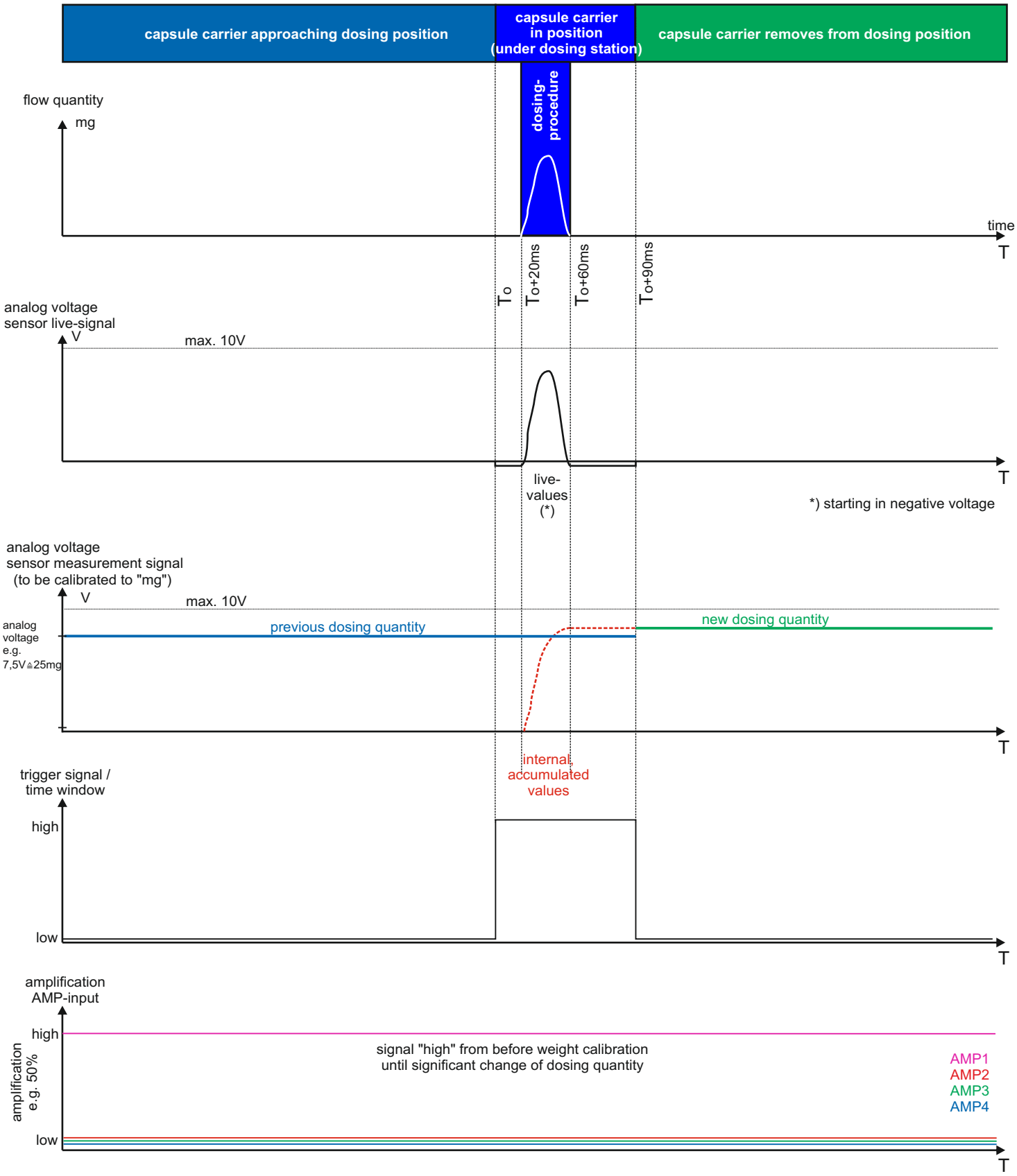
Technical Data :

sensitivity :	high - very high	output :	two analog voltage outputs 0...10V (live + total signal)	operation temperature range :	0...40° C
measurement mode :	intermittent	operation voltage :	+24VDC +- 10% 40mA typ.	storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	mounting :	4 pre-drilled bolt holes, M5 on top side	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy :	typical 1...3 % RSD depending on material quantity and material characteristics	dimension :	175 x 84 x 50 mm	protection type	IP 60
evaluation time :	< 1ms				CE
active sensing area :	appr. ø8 x 15 mm				
channel height :	18 mm				

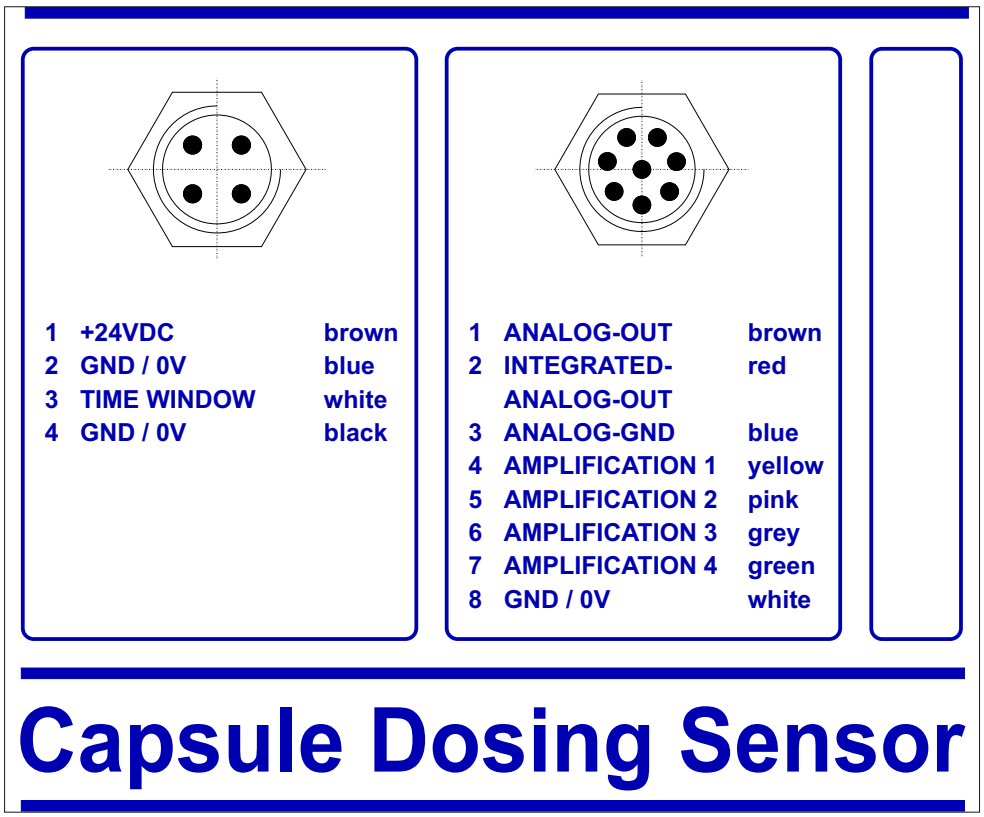
Order Data :

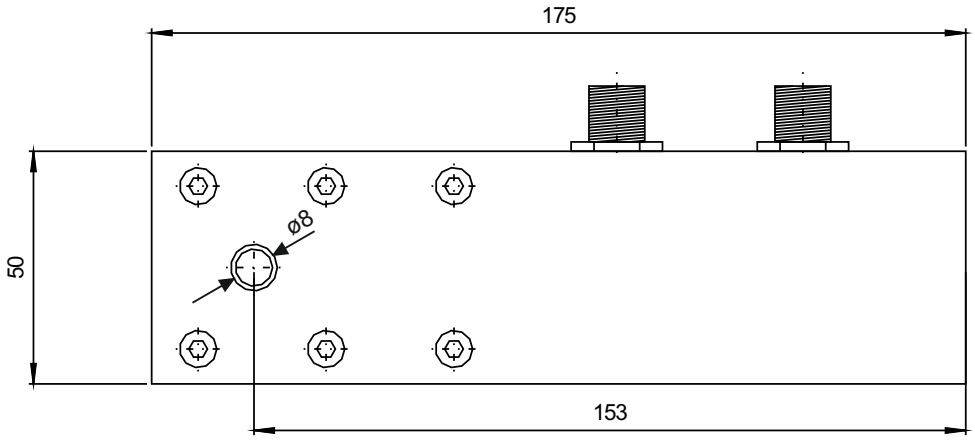
sensor version		order no.
QMS 70 - 1CH	for product pulse measurement with two analog outputs 0...10V	**QMS70-1CH-XXmg**
sensor including two 5 m connection cables		

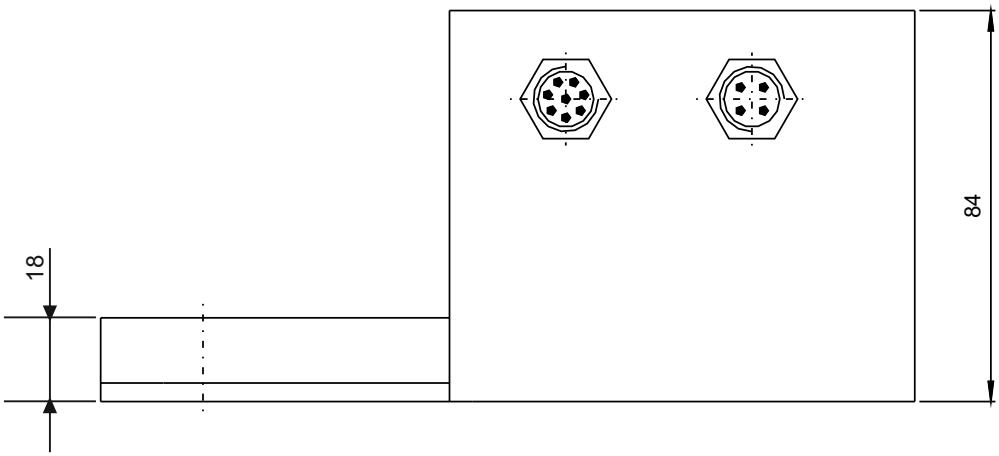
Timing Diagramm and control logic: timing example at dosing procedure

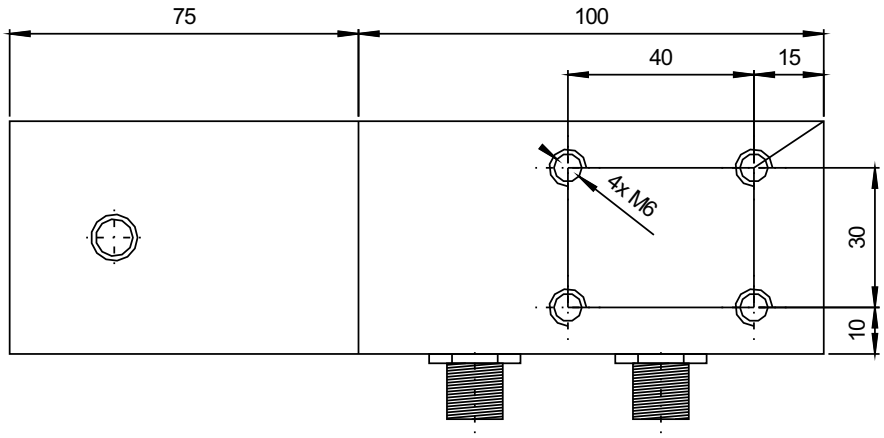


Plug Connections : analog output





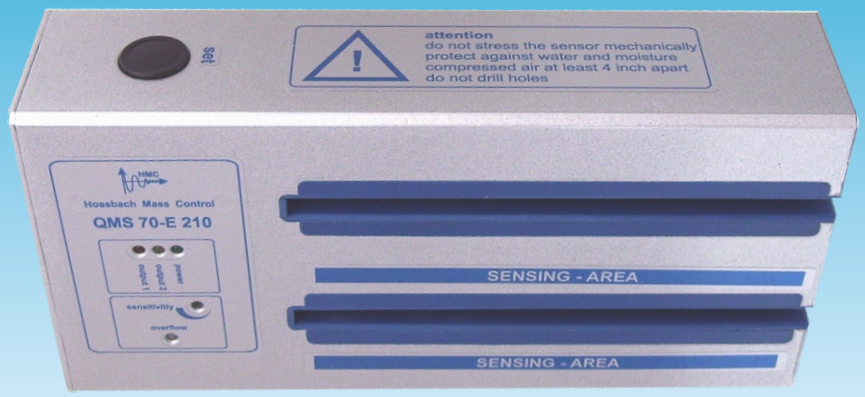




variations due to sensor version (customization)

Sensor for Production and Quality Control

Sensor



QMS 70E-210

Hossbach Sensor Technologie

QMS 70E - 210

Features :

- E-shaped sensor for non-contact operation
- still more precise measurement thanks to compensation technique
- detection and mass control of thin and voluminous materials
- deep gap, wide sensing area, high sensitivity
- operation either as stand-alone sensor or with visualisation and control units
- analog output 0...10V and switching output 24V versions
- +24V +/- 10% operation voltage
- robust aluminium housing 210 x 100 x 50mm

Description :

The QMS 70E-210 is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70E-210 covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials having little weight are to be inspected or controlled .
The QMS 70E-210 is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.

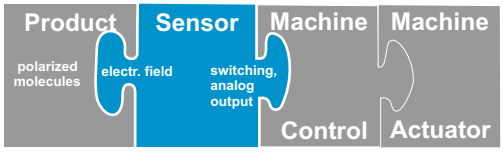
The QMS 70E-210 can be delivered containing a switching output, signalising a too much or too little or detecting if a certain amount of material passing the sensor field.

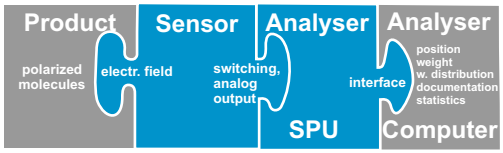
The QMS 70- 70E-210 can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Ranger and HST Analyser to derive and evaluate important qualitative and quantitative information and data. Among the qualitative information and data are production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

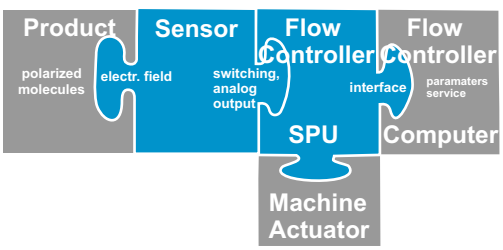
Building Blocks :

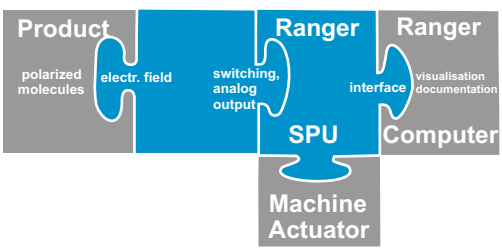
Hossbach equipment

machine line device





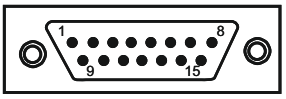




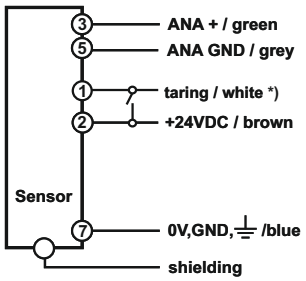
Plug Connections : analog output

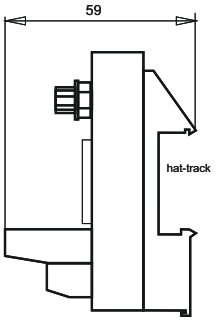
8-pin male M12 sensor connector

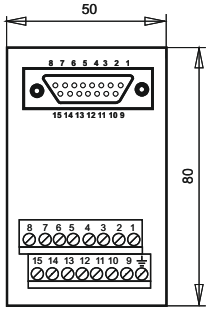
15 pin male SUB-D sensor cable connector **)



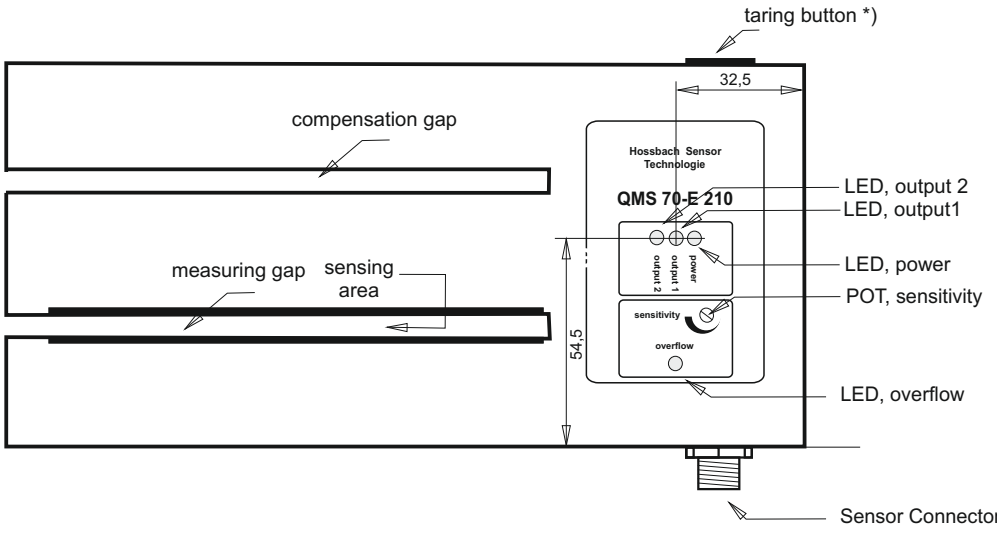
	8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
sensor version sensor+profiler	pin 1	white	pin 5	taring input +24V *)
	pin 2	brown	pin 12	power supply +24V
	pin 3	green	pin 3	analog output 0...+10V
	pin 4	yellow	pin 4	not to connect
	pin 5	grey	pin 2	analog output GND
	pin 6	rose	pin 1	not to connect, test
	pin 7	blue	pin 11	power supply 0V/GND
	pin 8	red	pin 8	not to connect
	shielding	blanc	housing	shielding
	don't use pin 4, 6, 8		don't use pin 1,4,6,7,8,9,10,13,14,15 *) only active for "interval measuring" sensor version **) SUB-D connector and adapter box optional	







Operation Elements :



*) Only available in interval measuring sensors (INT)

QMS 70E - 210

Technical Data :

sensitivity :	high	external taring :	automatically or by external 24V signal or push button (TARA version)	operation temperature range :	0...40° C
measurement mode :	permanent			storage temperature range :	0...50°C
lowest detectable weight quantity :	< 1 mg	output :	analog output 0...10V,	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy :	1...3 % RSD reachable	operation voltage :	+24VDC +- 10% 50mA typ.	protection type	IP 60
evaluation time :	< 1ms	mounting :	4 pre-drilled bolt holes, M5 on bottom side		
active sensor area :	approx. 130 x 20 mm	dimension :	210 x 100 x 50 mm		
gap height :	6 mm (standard) 4/8/10/12 mm	weight :	typ. 800 gr.		CE

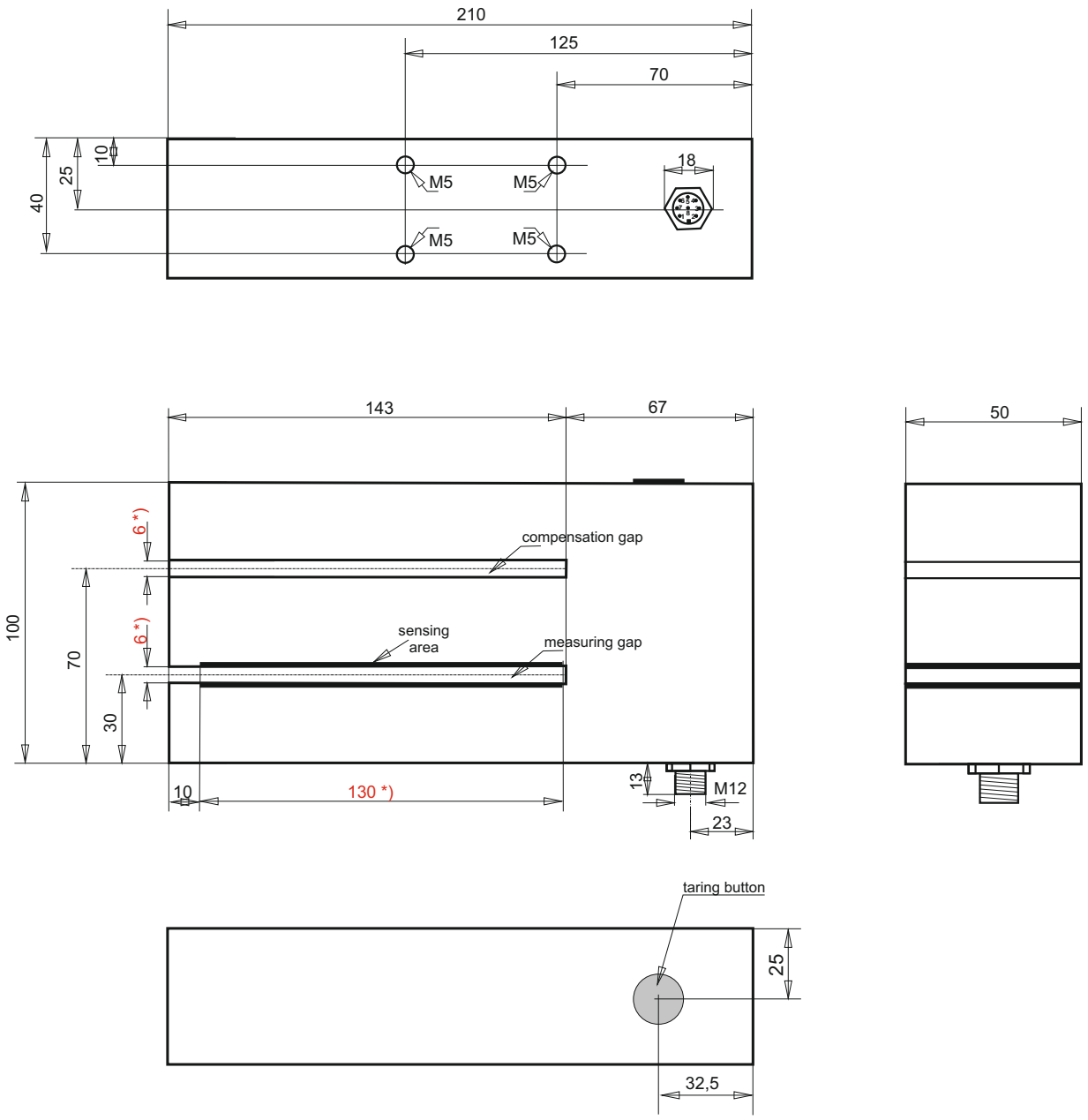
Order Data :

sensor version	order no.
QMS 70E-210 for permanent measurement with analog output 0...10V,	**QMS70E-210-PERM-ANA-[6MM-130MM] *)**
QMS 70E-210 for permanent measurement with analog output 0...10V, controlled tara	**QMS70E-210-PERM-ANA-TARA-[6MM-130MM] *)**
QMS 70E-210 any sensor version available with ceramic electrodes	**QMS70E-210-...-ceramic-[6MM-130MM] *)**
QMS 70E-210 any sensor version available with SUBD-connector cable and adapter box	**QMS70E-210-...-SUBD *)**

sensor including 5m connection cable plus adapter box
*) 6MM-130MM = Gap height 6mm - measurement area width 130mm (cross production direction);

standard gap height: 6mm, variations on request
standard measurement area width: 50/90/100/130mm, variations on request

Dimension : [mm]



variations due to sensor version
*) different versions available

Sensor for Production and Quality Control

Sensor

QMS 70E-WDS

Hossbach Sensor Technologie

QMS 70E - WDS

Features :

- E-shaped sensor for non-contact operation
- inspection or control of thick continuous or intermittently aligned products made of cotton, foil, fleece or paper materials
- stand alone operation or preferable operation within the HST sensor systems
- wide sensor gap for voluminous products
- compact sensor housing
- analog output 0...+10V version
- +24VDC +/- 10% operation voltage
- robust steel housing 300 x 200 x 150 mm

Description :

The QMS 70E-WDS is a compact and robust sensor using an unique capacitive sensor technique as well as highly sophisticated electronics. The QMS 70E-WDS covers solutions of a wide range of applications, where voluminous, non-metallised objects, products and materials having little weight are to be inspected or controlled.
The QMS 70E-WDS is easily mounted in machines to measure the continuous material flow as well as intermittently aligned products on carriers like foils or papers. The measurement object may also be packaged or enclosed.

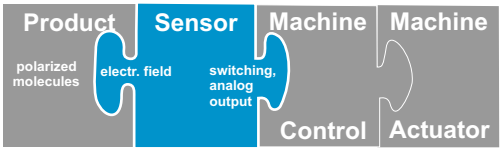
The QMS 70E-WDS can be delivered containing an analog output. Operation of this sensor versions allows to acquire the weight information of the transported product by a weight proportional voltage. This voltage is used by the inspection and control system, like HST Cooton Wool Weighing System, HST Flow Controller, HST Analyser or Ranger to derive and evaluate important qualitative and quantitative information and data. Among the qualitative information and data are production, machine and material etc. deficiencies. Weight, average weight, weight distribution, statistics etc. are classified to the quantitative information and data.

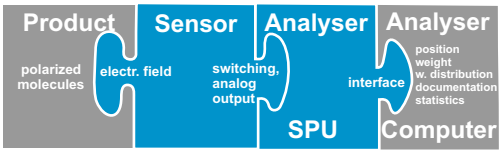
Example for Application see p. 256

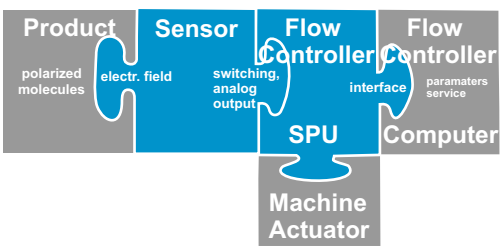
Building Blocks :

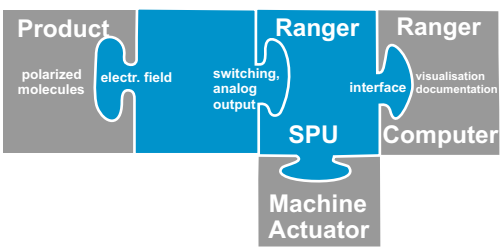
Hossbach equipment

machine line device



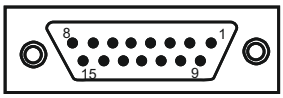




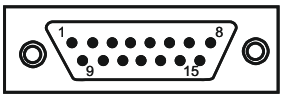


Plug Connections : **analog output**

15 pin female SUB-D sensor connector



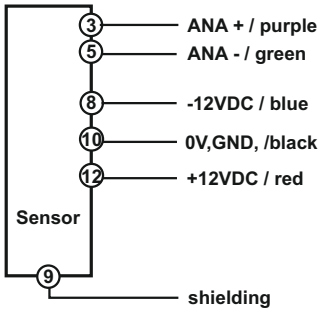
15 pin male SUB-D sensor cable connector



sensor version sensor+profiler

15 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 3 pin 5 pin 8 pin 9 pin 10 pin 12	purple green blue blanc black red	pin 3 pin 5 pin 8 pin 9 pin 10 pin 12	analog output +5V analog output -5V power supply -12V shielding 0V GND power supply +12V
pin assignment may differ for different applications		don't use pin 1,2,4,6,7,11,13,14,15	

sensor connector pins



sensor cable

Sensor for Production and Quality Control

Sensor

QMS 70 - DET1 - T

Hossbach Sensor Technologie

QMS 70 - DET1 - T

Features :

- tunnel Sensor for density and flow control of bulk materials (e.g. powder, granulate, pellets)
- easily to install, flange mounting for material guiding pipes
- independent of material transparency, colour environmental light and
- insensitive towards wear due to abrasive effects
- easy adjustment, if needed at all
- independent of environmental influences in a wide range

  two analog outputs:
  tareable: 0...10V
  not tareable (-10)...**0**...10V (optional)
- proportional to material amount in Sensor
- +24VDC +/- 10% operation voltage
- sensitivity adjustable in a very wide range optionally by external control unit (PLC) in 8 steps by three BCD-coded input signals (AMP8)
- robust aluminium housing 179 x 90 x 140 mm massive ceramic pipe ⌀50/60mm (d/D)

Description :

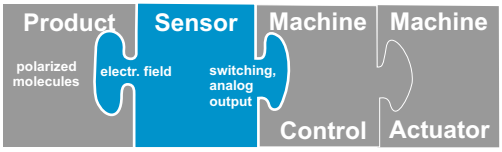
The QMS 70 - DET1 - T was developed to control the density of powder/granulate within its measurement area. Due to the measuring principle and the high measuring rate, the QMS 70 - DET1 - T provides instantaneously many information to the operator about the flow behaviour and dynamic density changes of the material right before it gets processed, filled, mixed etc...
It is installed in between two pipes, which are adapted by flanges to the tubing diameter on the Sensor housing. The Sensor outputs two analogue signals, which are proportional to the mass quantity just being in the Sensor's measuring field. The analogue signals can be processed either directly by the machine control (PLC) or an HST evaluation device as the HST Ranger and/or Flow Controller.

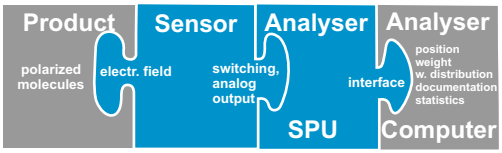
In an extended version the QMS 70 - DET1 - T is available with an "AMP8"-feature, with eight amplification (sensitivity) levels, which can be set by the machine control (PLC) via three BCD-coded signal inputs.

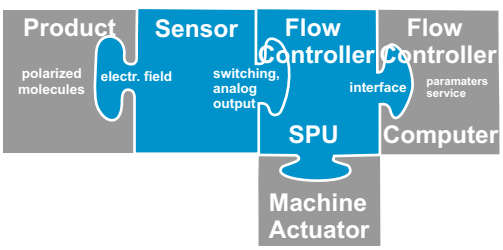
Building Blocks :

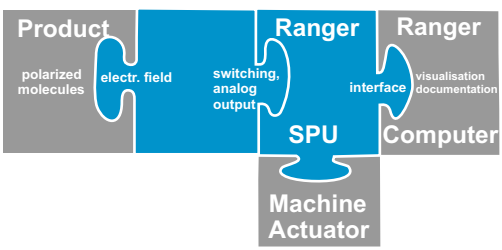
Hossbach equipment

machine line device





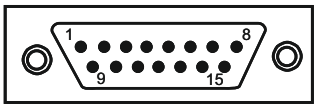




Sensor version : analog output, optional two analog outputs and two digital outputs

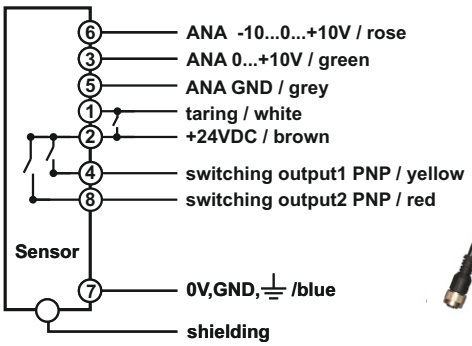
8-pin male M12 sensor connector

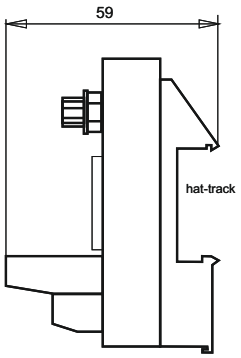
15 pin male SUB-D sensor cable connector (optional)

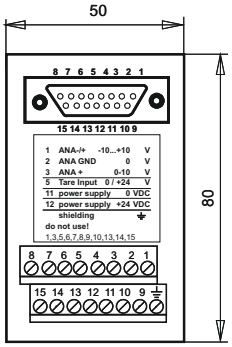


sensor version sensor+profiler

8 pin male sensor connector*)	cable color	15 pin male SUB-D cable connector **)	function
pin 1	white	pin 5	taring input +24V *)
pin 2	brown	pin 12	power supply +24V
pin 3	green	pin 3	analog output 0...+10V (tareable)
pin 4	yellow	pin 4	switching output 1 PNP (+24V) ***)
pin 5	grey	pin 2	analog output GND
pin 6	rose	pin 1	analog output -10...0...+10V (not tareable)***)
pin 7	blue	pin 11	power supply 0V/GND
pin 8	red	pin 8	switching output 2 PNP (+24V) ***)
shielding	blanc	pin 11	shielding
		don't use pin 6, 7, 9, 10, 13, 14, 15 *) only active for "interval measuring" sensor version **) only with optional SUB-D connector plug ***) second analog / switching outputs: optional features	







(SUB-D adapter box optional)

QMS 70 - DET1 - T

Technical Data :

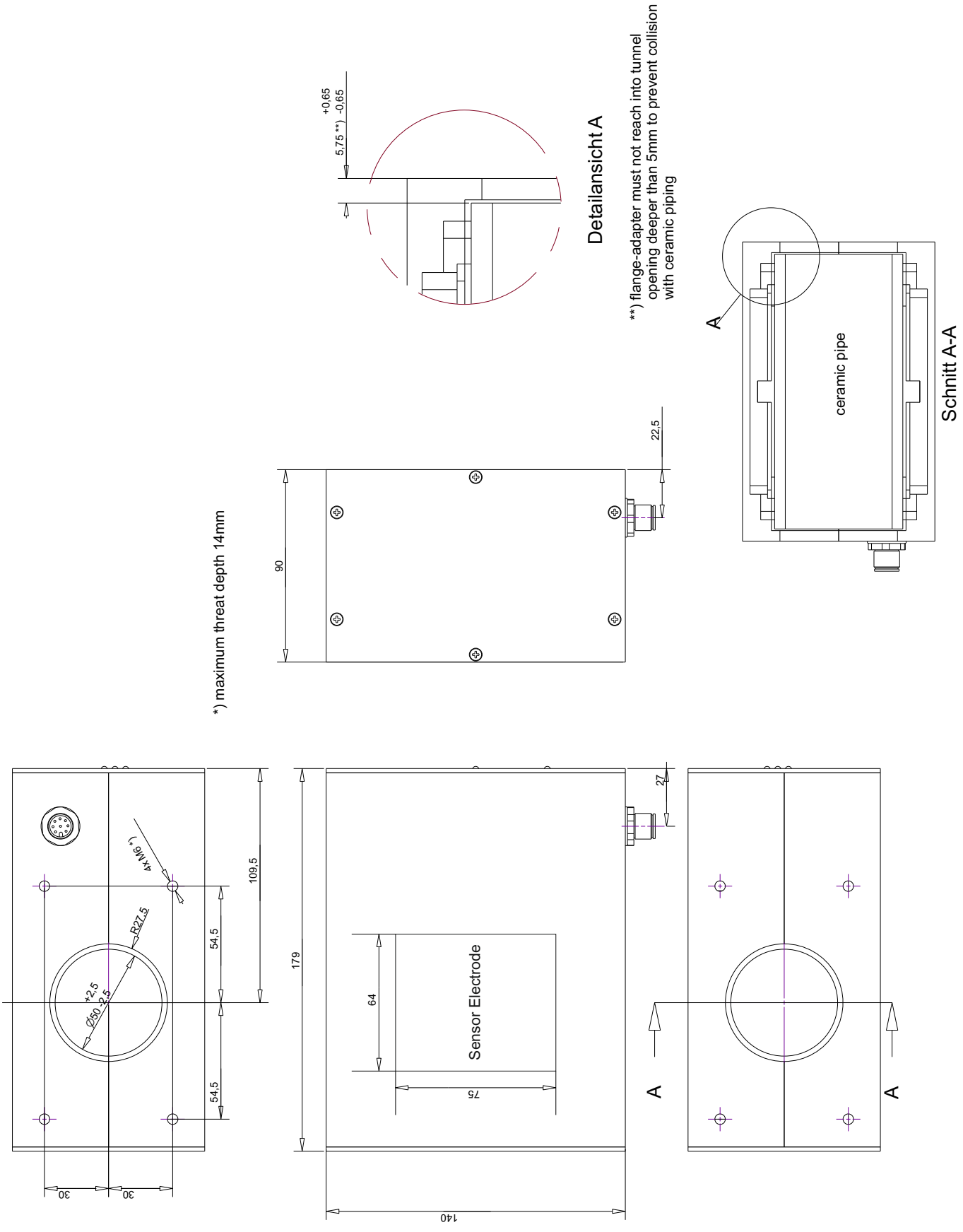
sensitivity :	low to medium	inputs :	taring by ext. signal, 24V or push button optional: 3 BCD-coded inputs for sensitivity setting	operation temperature range :	10...40° C
measurement mode :	interval or permanent			storage temperature range :	0...50°C
lowest detectable weight quantity :	~ 0,2 g	outputs :	analog outputs, tareable: 0...+10V optional: non-tareable -10...0...+10V switching outputs (PNP, 24V)	meets or exceeds standard and requirements :	EN 55011:2007 class A EN 61326-1:2006
accuracy :	3% RSD reachable, depending on material quantity, dosing type (interval/permanent) and material characteristics	operation voltage :	+24VDC +- 10% 40mA typ.	protection type :	IP 61
evaluation time :	< 1ms	mounting :	8 pre/drilled bolt holes, M6, on top/bottom side	warm-up duration :	typ. 30 minutes
active sensor area :	appr. 75 x 64 mm	dimension :	179 x 90 x 140 mm		CE
		weight :	typ. 2.300 gr.		
		amplification: (sensitivity)	set by screw potentiometer or 3-step selector switch optional: 8 steps, BCD-coded		

Order Data :

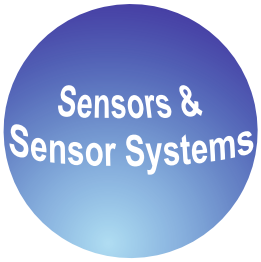
sensor version	order no.
QMS 70-DET1-T for permanent, continuous measurement with two analog outputs 0...+10 V (tareable) (-10)...**0**...+10 V (non-tareable)	**QMS70-DET1-T-PERM-ANA**
QMS 70-DET1-T any sensor version with BCD-coded amplification (sensitivity) setting	**QMS70-DET1-T-...-AMP8**
(customized sensor versions on request)	

sensor including 5m connection cable plus optional adapter box

Dimensions in mm :



Tables of content



Sensor for Production and Quality Control

Sensor

MDS70R-40R-S30 /-A

- Blister Count C -

Hossbach Sensor Technologie

Blister Count C

Features :

- sensor for control of blister filled boxes or any package filled with stacked aluminium wrapped products
- ideal alternative to conventional balances
- easy upgrade for existent machines
- 100% control of blister filled packages
- detection of missing and supernumerary blister(s)
- detection rate > 600 packages per minute
- easy adjustment due to “teach” features
- PC software for adjustment and operation control
- +24V +/- 10% operation voltage
- switching, opto-coupler output +24 V / 20mA
- optional analog output 0...10V, related to amount of blister / metallized foil layers

Description :

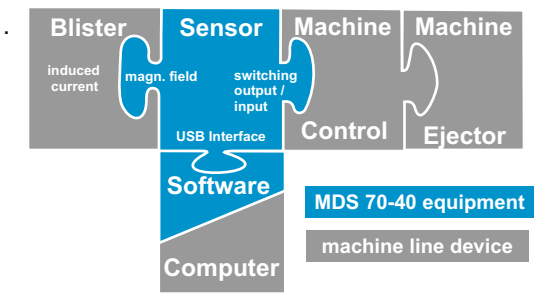
The Blister Count C ensures, that only correctly blister filled boxes will leave the packaging machine. The Blister Count C is a smart control system, which is, due to its ingenious concept, very easily integrated in blister packaging machines, cartoners and directly accessed by external machine controls.

The Blister Count C signalizes by a +24V signal for each box, that the box is filled with the accurate number of blisters. The LED indicators give additional information.

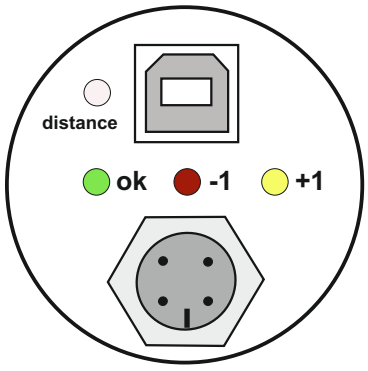
Instead of troublesome adjustments, the Blister Count C is adjusted for the just packaged blister box either by applying a 24V signal to its “teach” input or by the help of the computer software.
Using the Blister Count C software operation and adjustments are controlled and visualised. The parameter sets of each product can be stored and re-loaded for future packaging commissions. So the Blister Count C software is an important tool for validation purposes, while the Blister Count C, once set correctly, also is working with all its features as stand alone system.

With the optional analog output of the Blister Count C, the measurement of the Blister Count C additionally can be evaluated by an external device or the machine control. The analog signal in its height is correlated to the amount of blisters or metallized foil layers in between Blister Count C Transmitter (Sender) and Receiver.

Building Blocks :



Operation Elements :



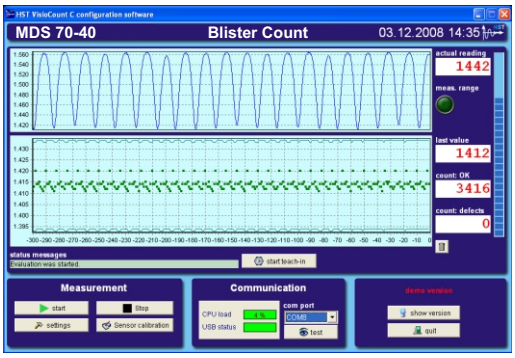
rear side of the Receiver

Blister Count C

Delivery Extent

Receiver : MDS70R-R40

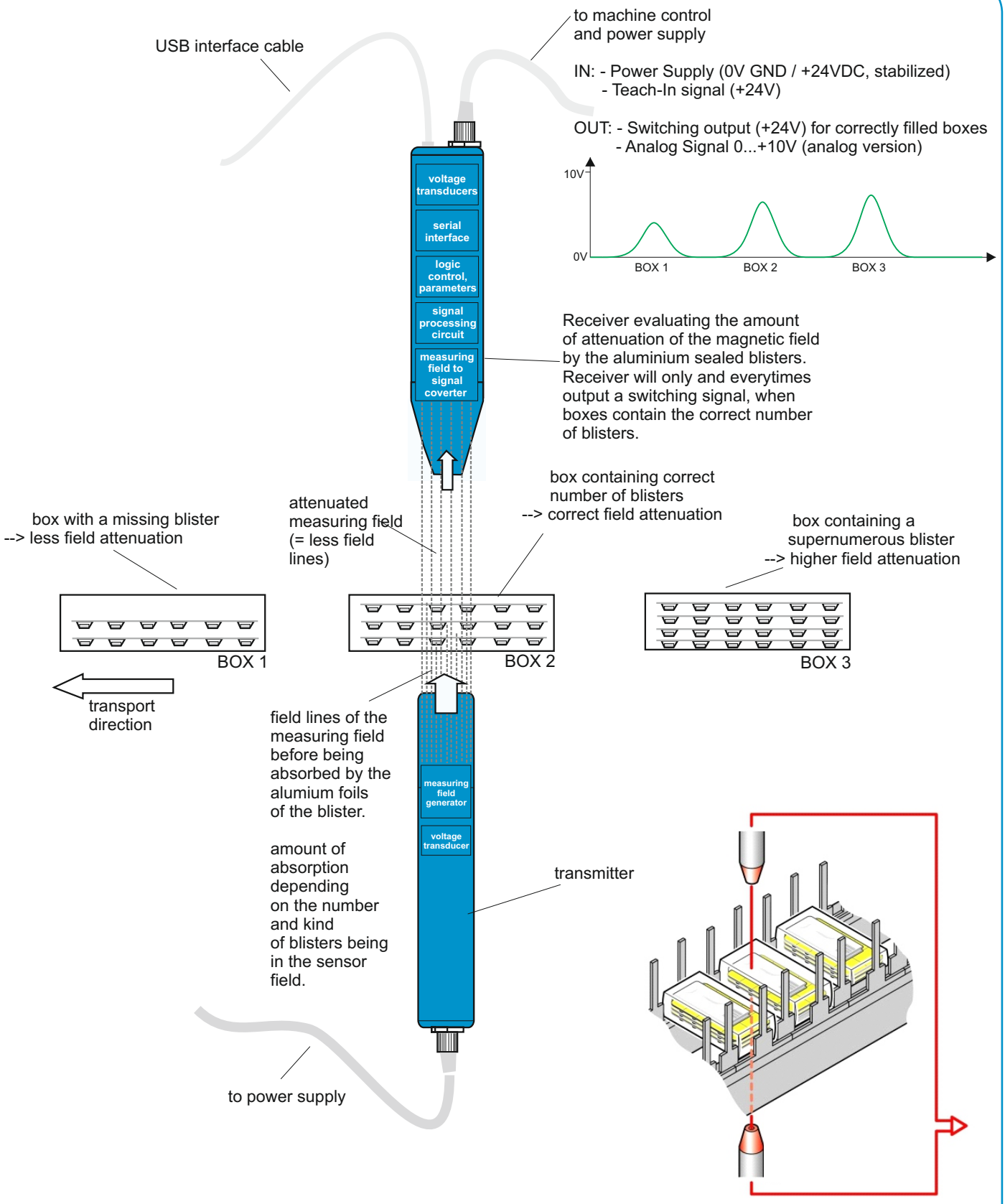
Transmitter : MDS70R-S30 (Sender)



Blister Count Software

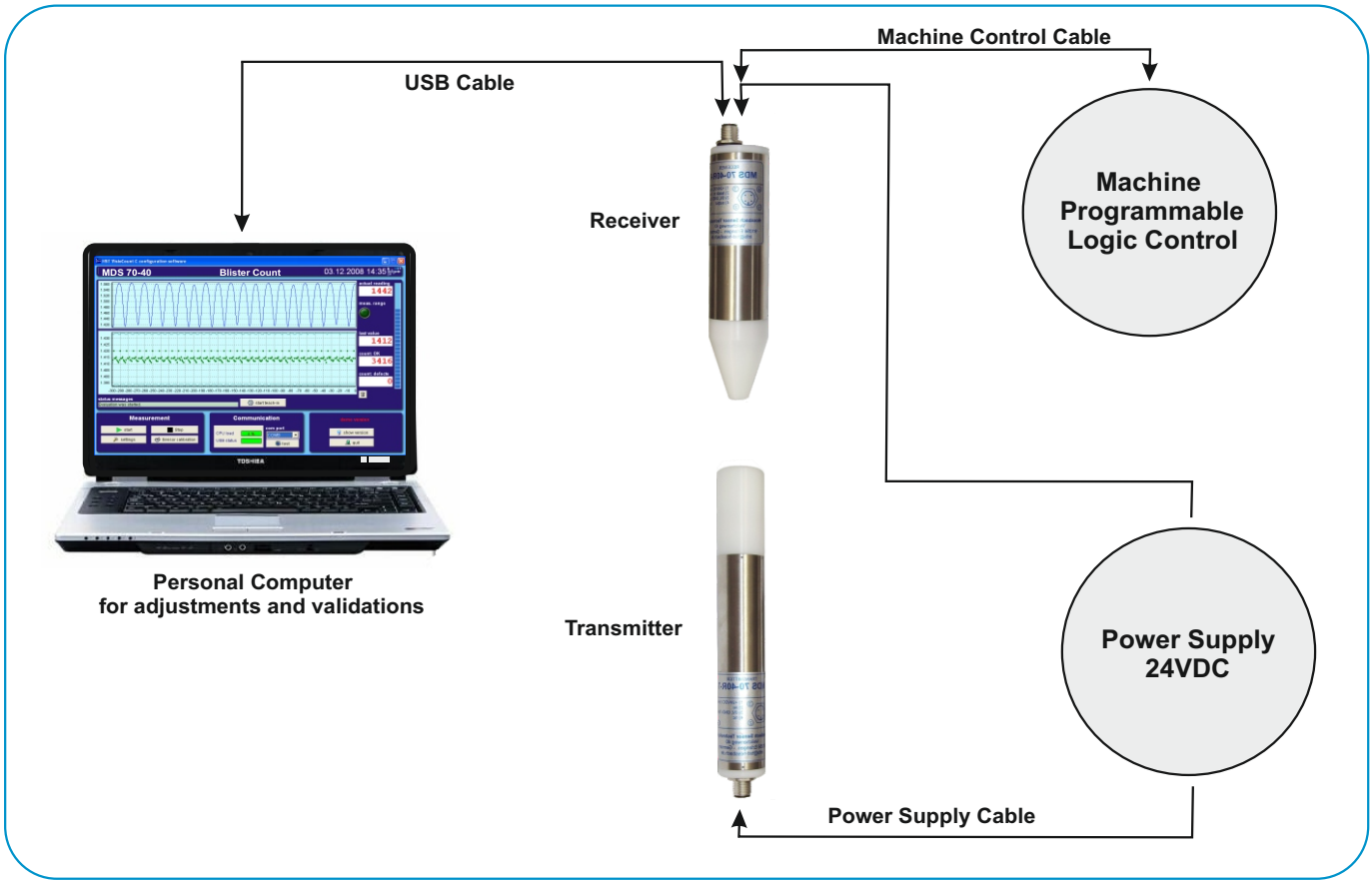
USB Interface Cable

Measurement Principle



Blister Count C

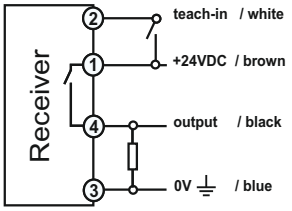
System Overview :



Plug Connections : power supply and switching / analog signal output

Receiver switching output version

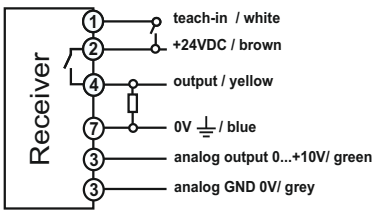
sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 2	teach in	+24V	white
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"0V/24V"	black



PNP

Receiver analog and switching output version

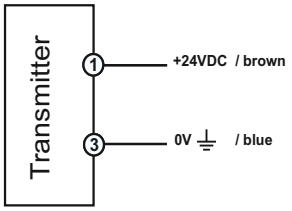
sensor version analog ouput	8 pin	female connector		cable
	pin 1	teach-in	"0V/24V"	white
	pin 2	power supply	+24VDC	brown
	pin 3	analog output	0...+10V	green
	pin 4	switching output	"0V/24V"	yellow
	pin 5	analog ground	0V	grey
	pin 7	power supply GND ⏚	0V/GND	blue
	shielding (cable)		0V/GND	blanc



ANA

Transmitter (Sender) : all versions

sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 3	power supply	0V/GND	blue



Blister Count C

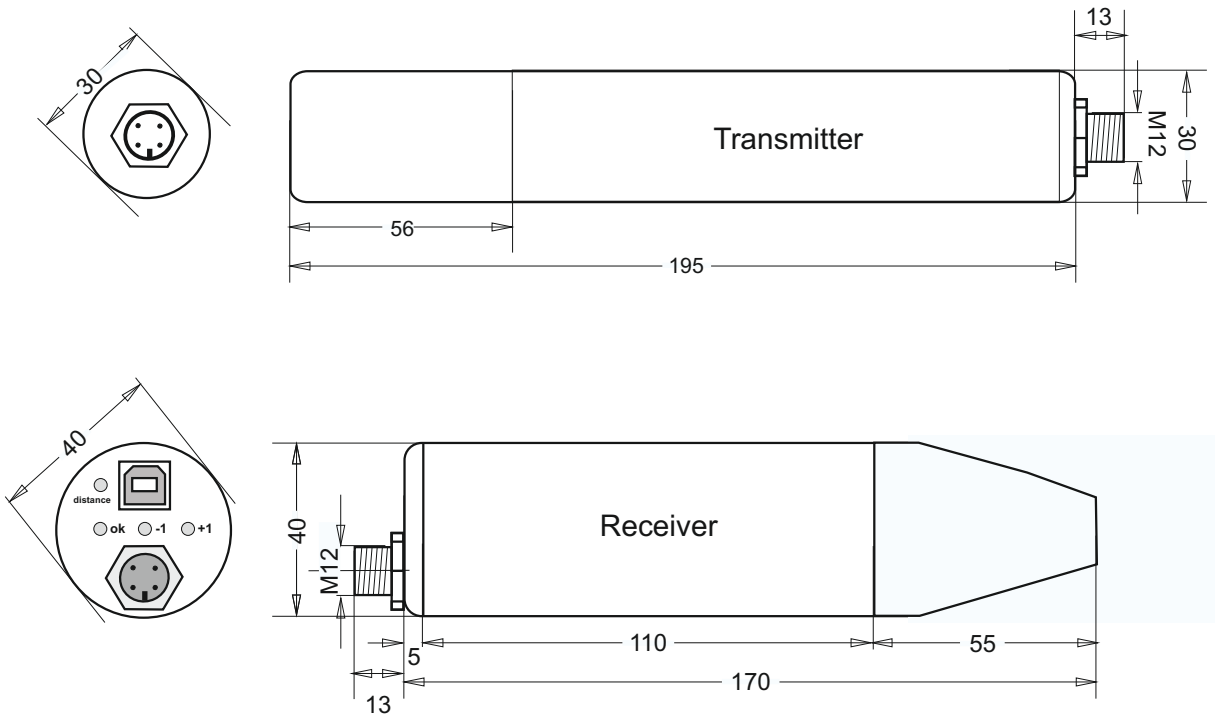
Technical Data :

sensitivity :	middle	output :	switching output, 24V / 50mA PNP analog output 0...10V	operation temperature range :	0...40° C
measurement mode :	interval			storage temperature range :	0...50°C
adjustment :	teach in procedure, push button or external +24V	operation voltage :	+24VDC +- 10% ~30mA Transmitter ~80mA Receiver	meets or exceeds standard and requirements :	EN 50011 class A EN 61326-1:2006
detectable blister :	up to 10 blister / box perforated or unperf. varying in sizes	mounting :	clamp mounting	protection type	IP 60
accuracy for packages with 1...5 Blister 6...10 Blister	 +- 1 blister +- 1 blister ... +-2 blister	dimensions :	transmitter 195 x ø 30 mm receiver 170 x ø 40 mm		
evaluation time :	< 100 ms	weight :	400 gr.		CE

Order Data :

sensor version	order no.
QMS 70-40R, Blister Count for control of blister filled packages	**MDS 70-40R**

Dimension : [mm]



Sensor for Production and Quality Control

Sensor

MDS 70-O-640

Hossbach Sensor Technologie

MDS 70 - O - 640

Features :

- O-shaped sensor for non-contact operation
- detection of metallic parts, here metallic labels
- easiest start up
- no re-calibration needed
- stand alone operation, direct connection to external PLC
- wide gap, wide sensing area
- PNP switching output version
- +24VDC +/- 10% operation voltage
- robust aluminium housing 640 x 140 x 100 mm

Description :

The MDS 70-O-640 is a compact and robust sensor using an unique inductive sensor technique as well as highly sophisticated electronics. The MDS 70-O-640 covers solutions of a wide range of applications, where metallic or metallised objects must be detected, counted or otherwise registered. Metallic foreign bodies are detected and can be ejected to avoid bad products. The MDS 70-O-640 is delivered by the manufacturer according customers demands. This concerns both the kind of metallic parts to be detected and the adjustment of the sensor. So normally no re-adjustments by the customer are needed.

The MDS 70-O-640 is easily mounted in production machines, where endless or intermittently aligned products or continuous materials must be controlled due to metallic parts. Once the metallic part is detected within the sensing area the switching output signalises its detection. Production speed may be up to 15m/sec. and higher. For vibration reduced mounting rubber buffer are used, that are included in the delivery extent.

The MDS 70-O-640 operates with 24VDC. Its PNP switching output can be directly connected to the control unit of the production machine. An occurring metallic part is detected and the corresponding output signal is delivered, when the metallic part is within the sensing area (the sensor tunnel).

Several LED indicators show the status of the sensor and give helpful information.

Delivery Extent :

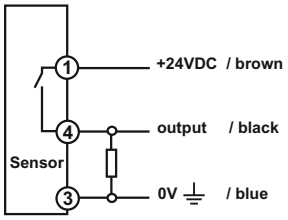
1 piece sensor MDS70-O-640
1 piece sensor cable
6 pieces rubber buffers
1 piece operation manual

MDS 70 - O - 640

Plug Connector :

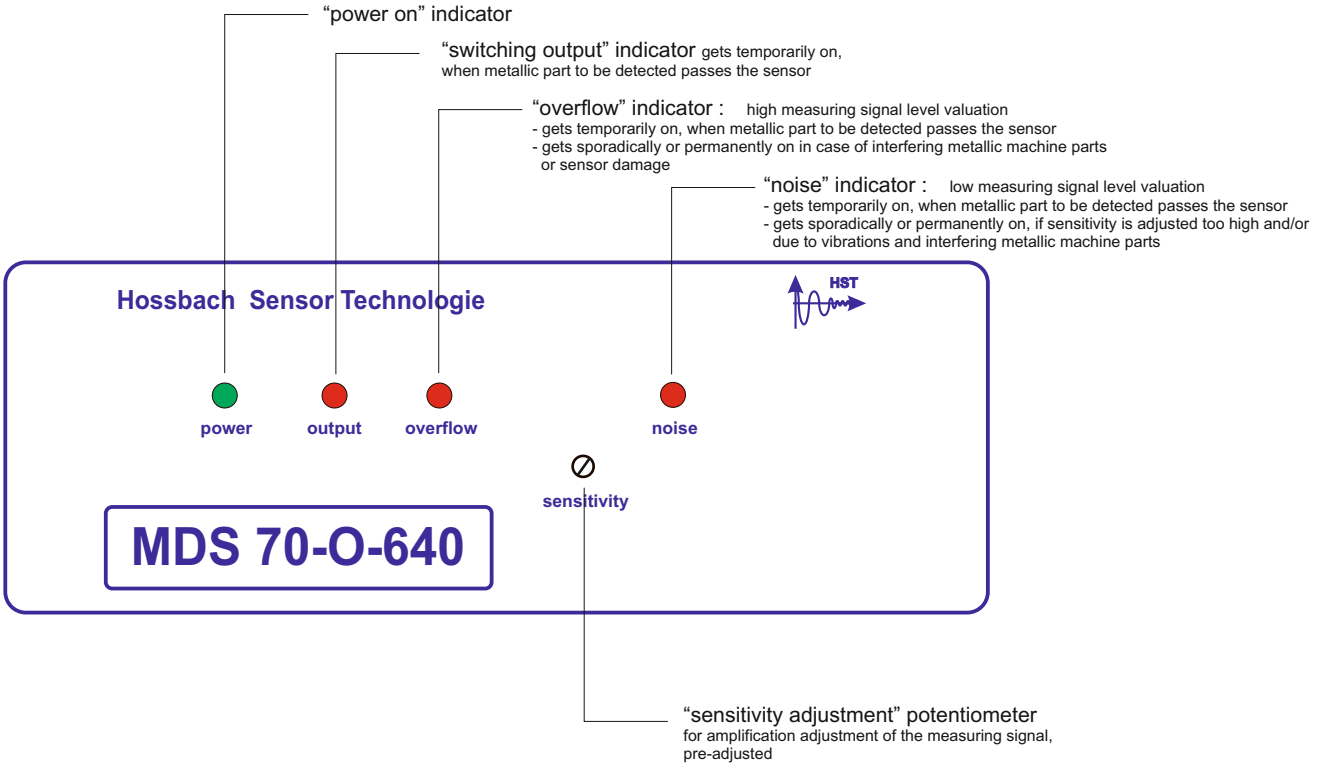
Sensor version : switching output, PNP

sensor version switching ouput	4 pin	female connector		cable
	pin 1	power supply	+24V	brown
	pin 3	power supply	0V/GND	blue
	pin 4	switching output	"0V/24V"	black



PNP

Panel Elements :



MDS 70 - O - 640

Technical Data :

sensitivity :	high	output :	switching output, 24V, PNP	operation temperature range :	10°C ...40° C
measurement mode :	dynamically, i.e. moving metallic parts	operation voltage :	+24VDC +- 10%	storage temperature range :	0°C ...50°C
detectable objects :	metallic parts, metallised labels	operation current :	60 mA typ.	meets or exceeds standard and requirements :	EN 55011:2007 limit class A EN 61326-1:2006
reaction time :	< 1ms	mounting :	6 pre-drilled bolt holes, M6 on bottom side	protection type :	IP 60
max. line speed :	15m/sec.	dimension :	640 x 100 x 160 mm		CE
detection signal duration :	> 30ms	weight :	approx. 8,5 kg.		
active sensor area :	440 x 60 mm				
gap height :	20 mm				

Order Data :

sensor version	order no.
MDS 70-O-640 for metal detection	**MDS70-O-640-INT-PNP**

sensor including 5m connection cable with blank ends

MDS 70 - O - 640

Dimension : [mm]

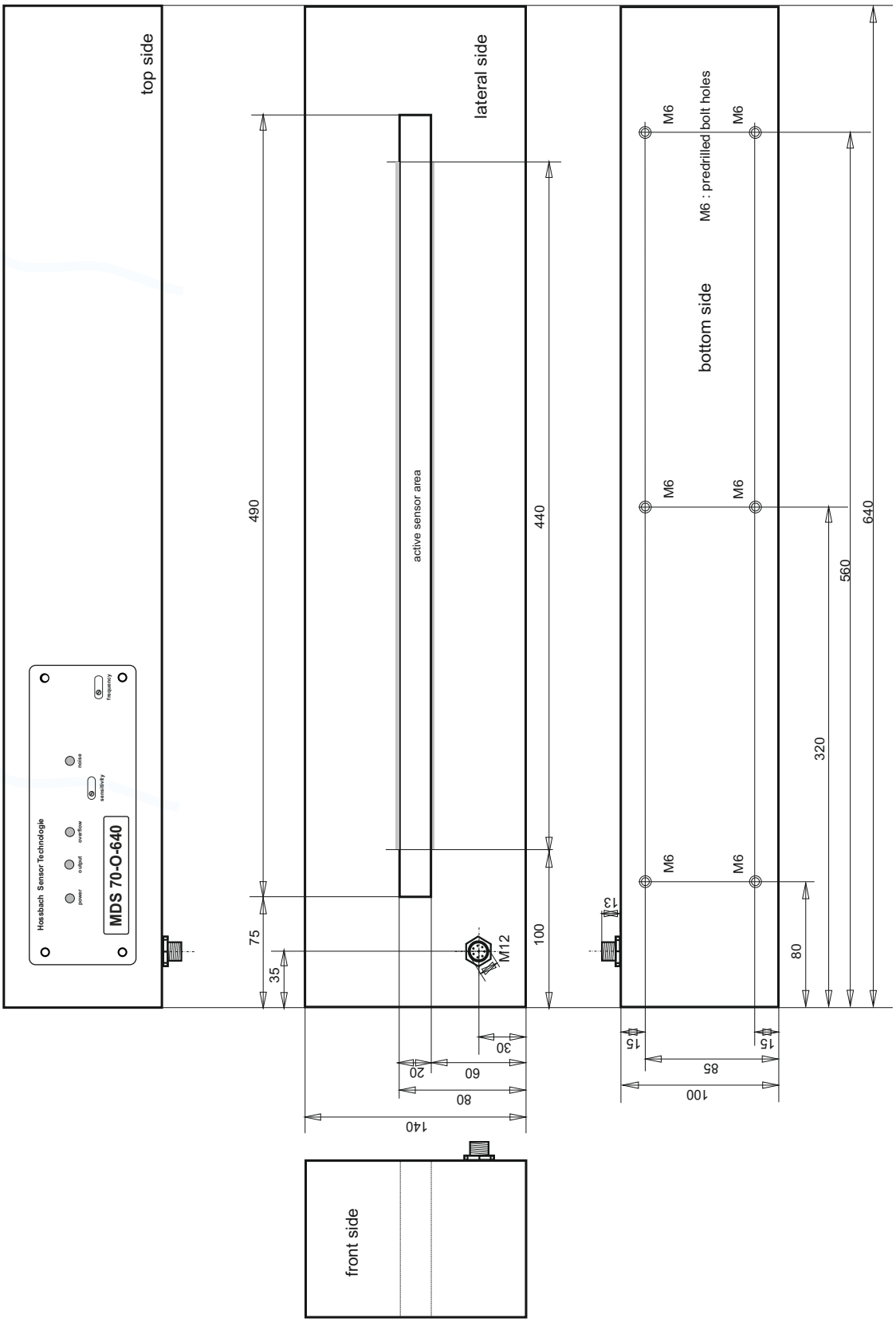
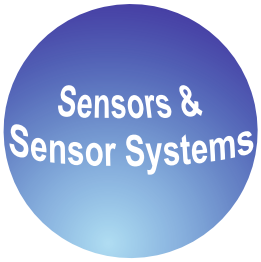


Table of contents



HST -

Sensor Systems

=

+ Enhancing Quality

+ Saving Money

+ Supporting Engineering

+ Supporting Purchasing

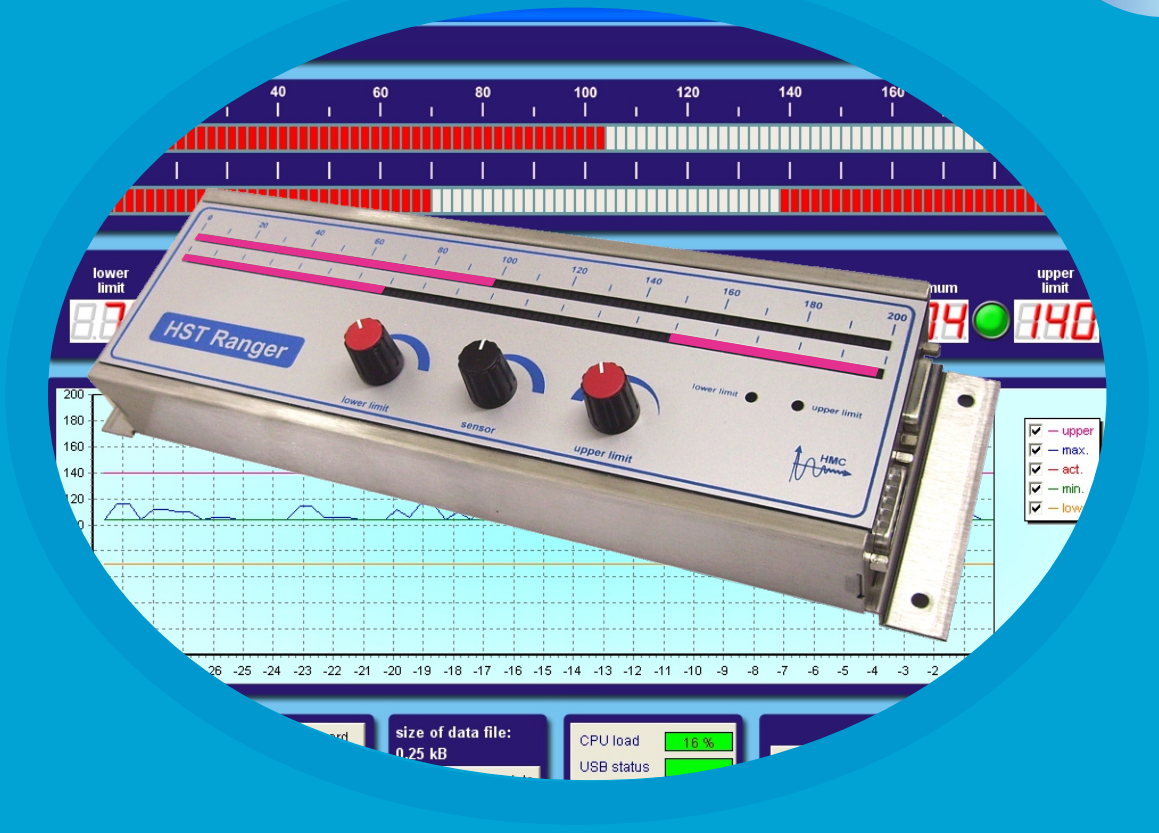
+ Supporting Decisions

=

Being Competitive

Sensor System for Production and Quality Control

Sensor System



HST Ranger

Hossbach Sensor Technologie

Ranger

the weight range control system

for continuous materials

=

+ Controlling

+ Visualisation

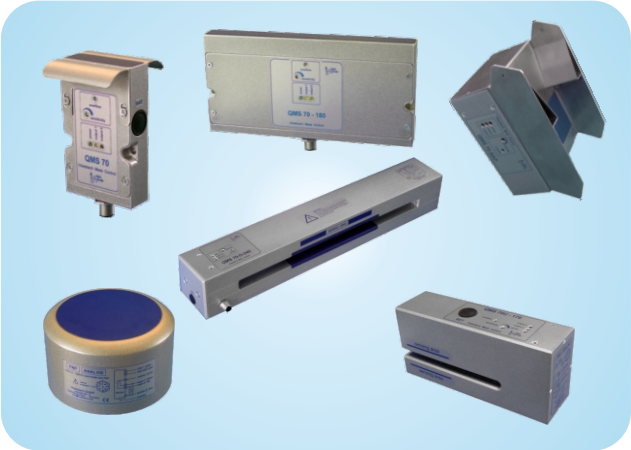
+ Monitoring

+ Documentation

=

Being Competitive

HST Ranger



Features :

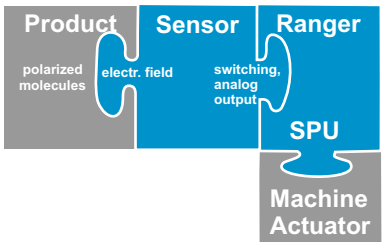
- weight range control of continuous, endless products, materials by upper and lower limit
- limits and product signal easily adjusted by knobs
- visualisation of limits and products on LED bar graphs
- switching outputs activated, when product signal falls under lower limit or exceed upper limit
- covering many control application only by changing over to other sensors mounted at different machine locations
- additional software package available :
- extended visualisation elements
- calibration for showing exact value
- set parameter like averaging time
- product signal visualisation in a chart
- documentation data for spreadsheet programs

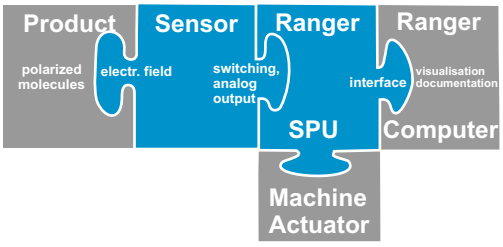
Description :

The HST Ranger is a smart sensor system for controlling continuous, endless foils, papers, coatings, webs etc. Upper limit and lower limit and the measuring value are visualised on two 100 element LED bar graphs. The range between the upper and lower limit represents the allowable tolerance range for the measuring value, that is proportional to the product weight or material quantity just being in the sensing area of the sensor. Values, i.e. their representation as single elements or bar graphs falling under the pre-set lower limit or exceeding the pre-set upper limit are beyond the tolerance range and will cause alarms by activating the referring switching output.

The HST Ranger can also be delivered with the “HST Ranger Software Package”. After interfacing the control unit by an USB cable to a PC, the sensor system becomes an even more powerful control system. The basic visualisation by bar graphs can be let the same or changed to other bar graph visualisation modes.
Additionally the limits and the measuring value are indicated by 3 digit indicators and can be calibrated to suitable values, representing the actual weight, weight/sqm, material flow etc. Very helpful is the adjustment of an averaging time, that avoids too much and un-wished flickering measurement values and smoothes their curve representation in the curve chart. The chart shows additionally the preset limits. Data stored during operation over a pre-set time can imported in spreadsheet programs.

Building Blocks :



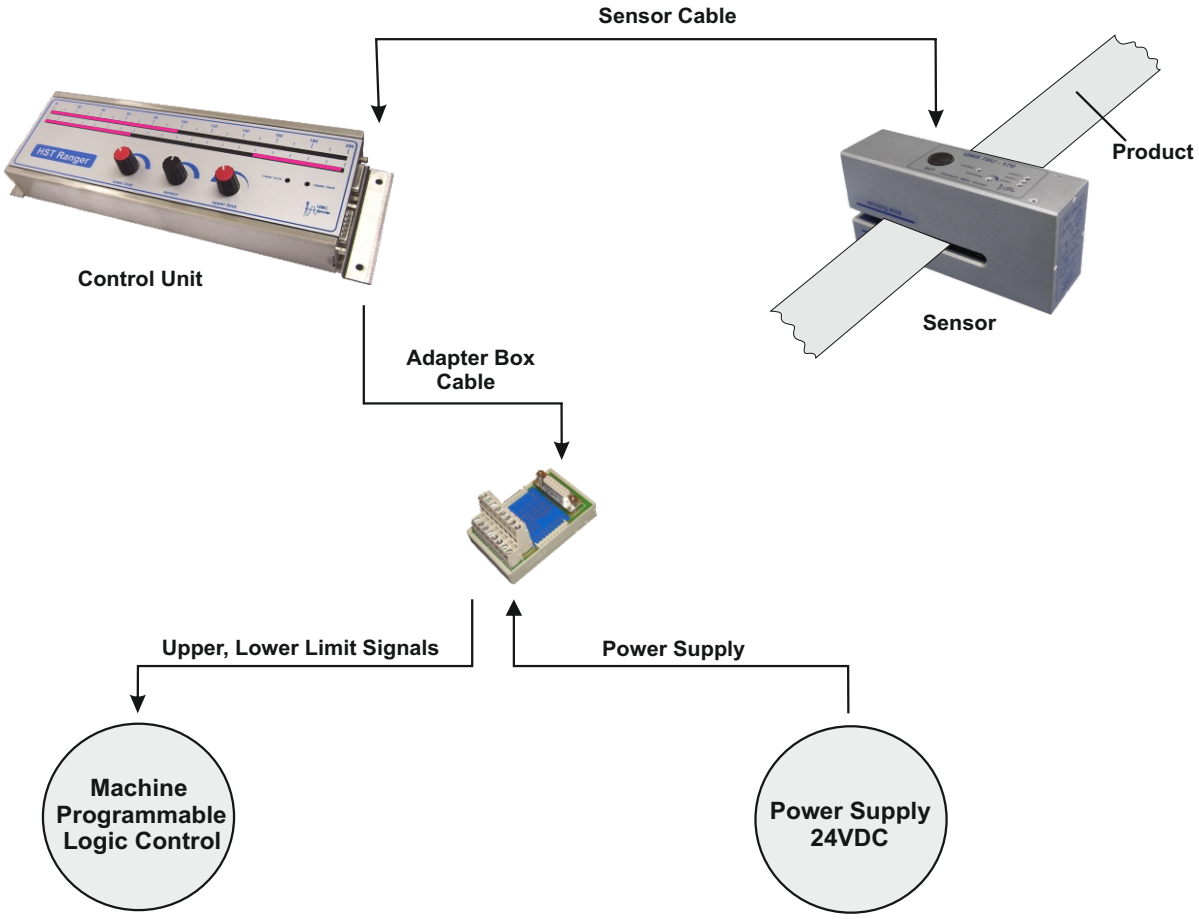


Hossbach equipment

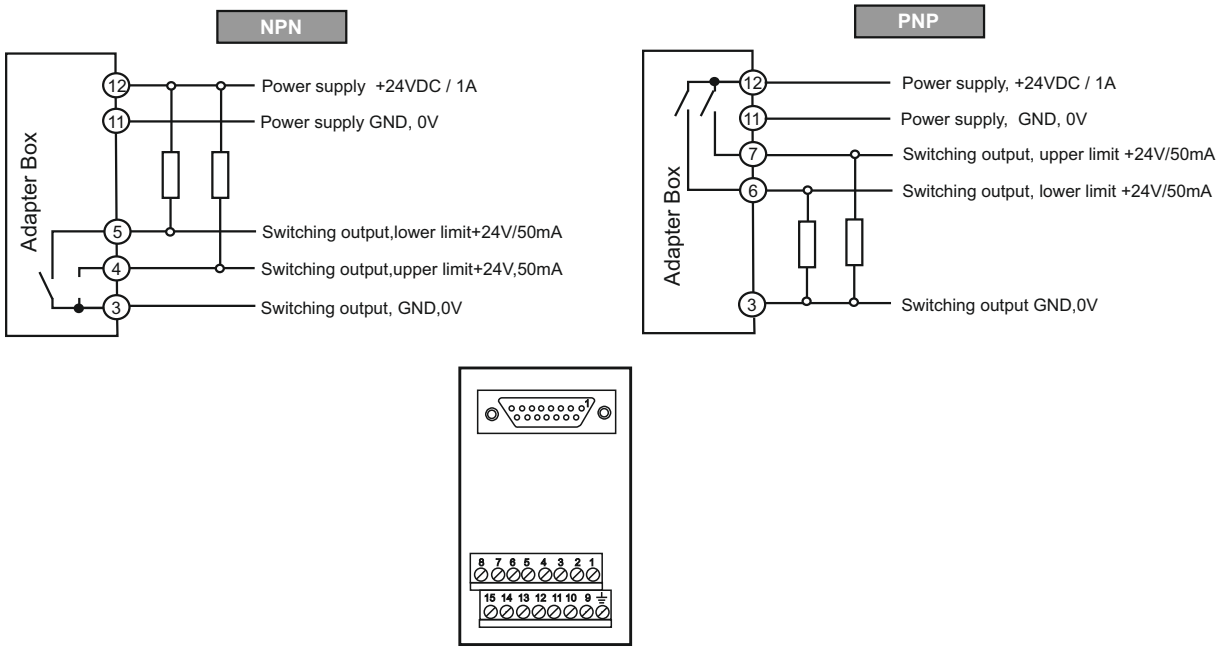
machine line device

System Overview

Interconnections :



Adapter Box :

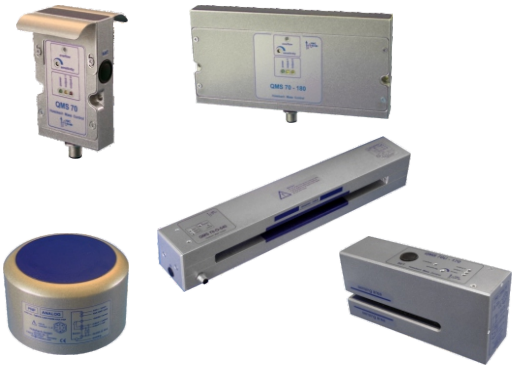


Delivery Extent

Signal Processing Unit (SPU)

Adapter Box Cable

Adapter Box



one sensor, version according application

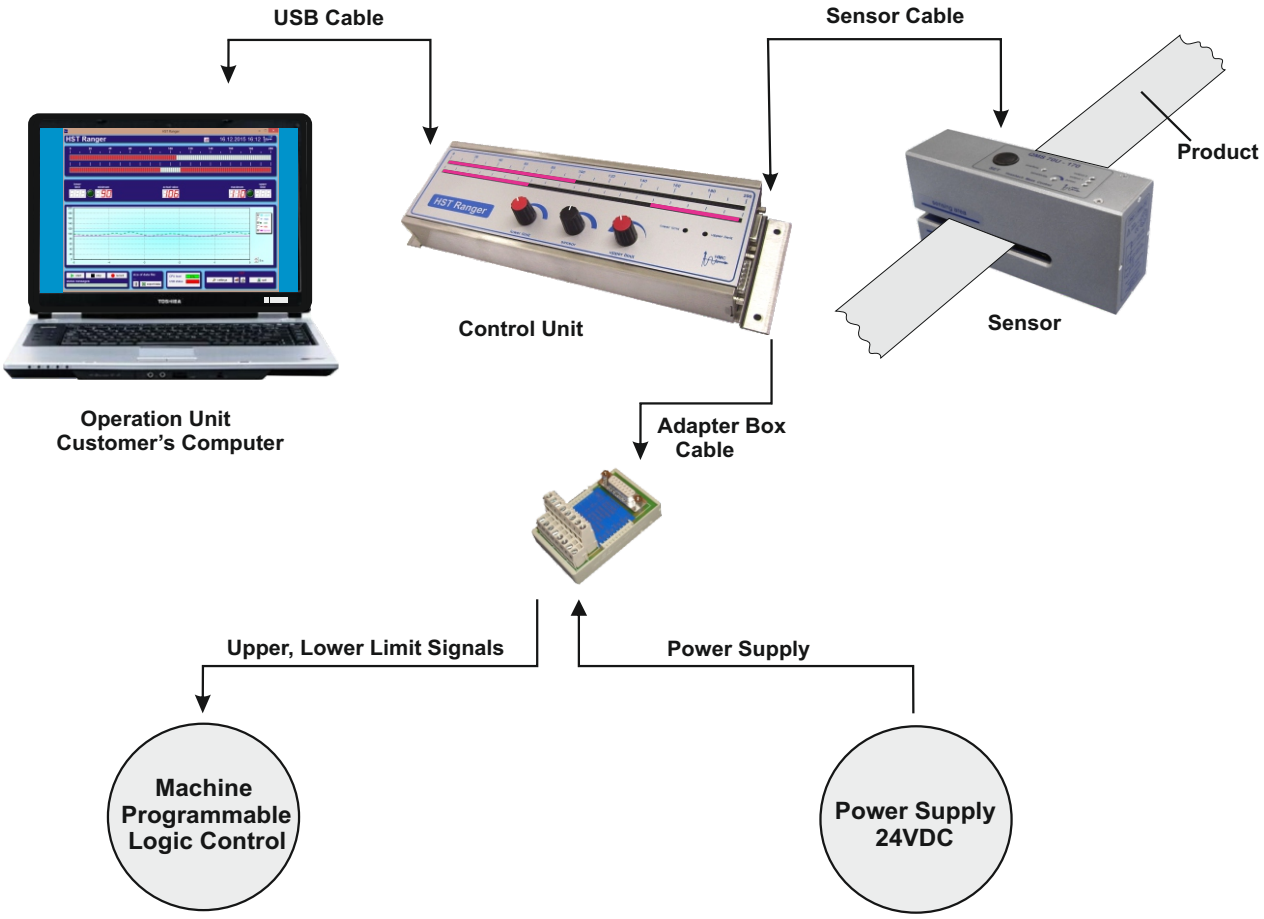
Sensor

version according application

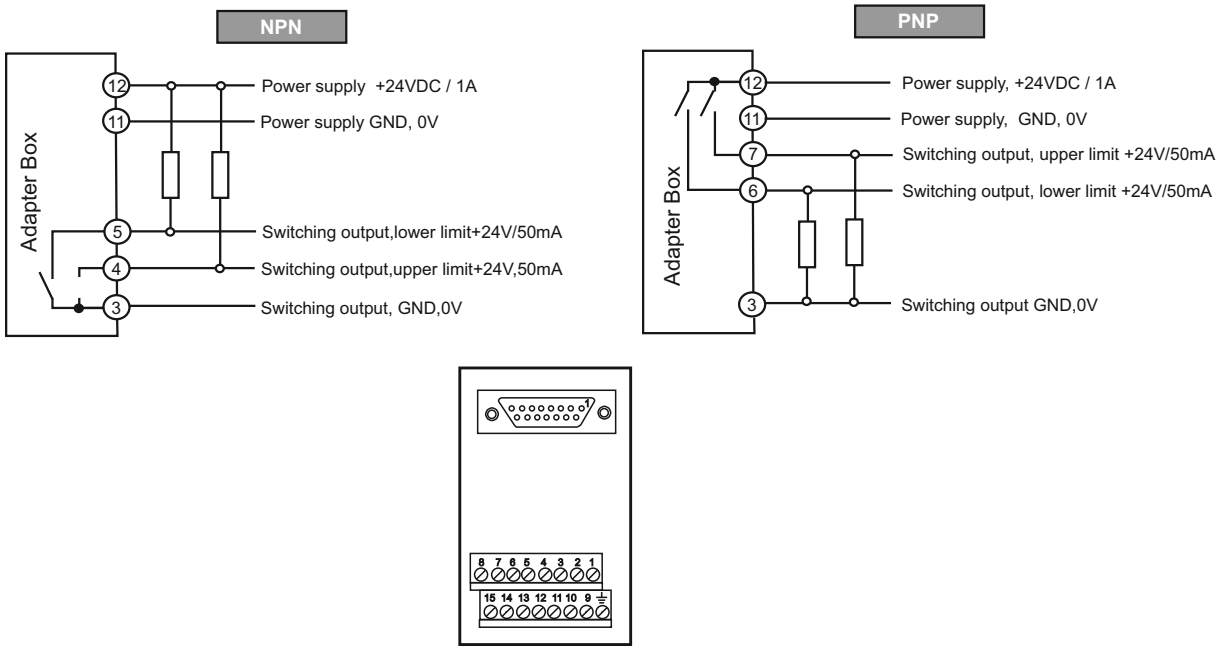
Sensor Cable

System Overview incl. Software Package

Interconnections :



Adapter Box :



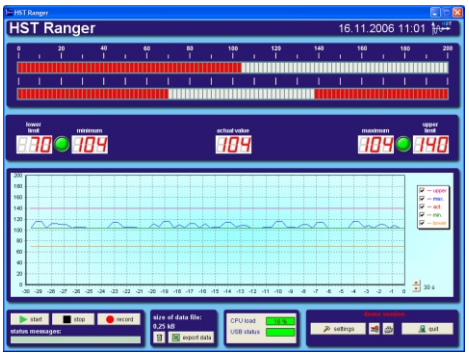
Delivery Extent incl. Software Package

Signal Processing Unit (SPU)
- including USB interface -

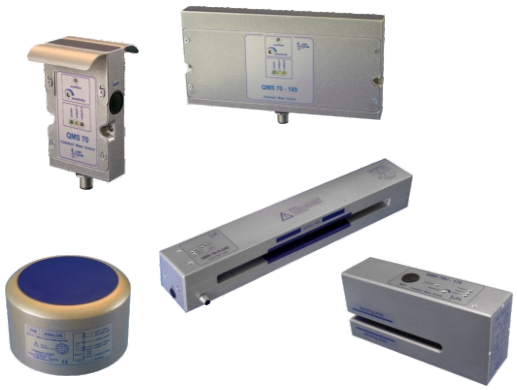
Adapter Box Cable

Adapter Box

Shielded USB Cable



HST Ranger Software Package



Sensor

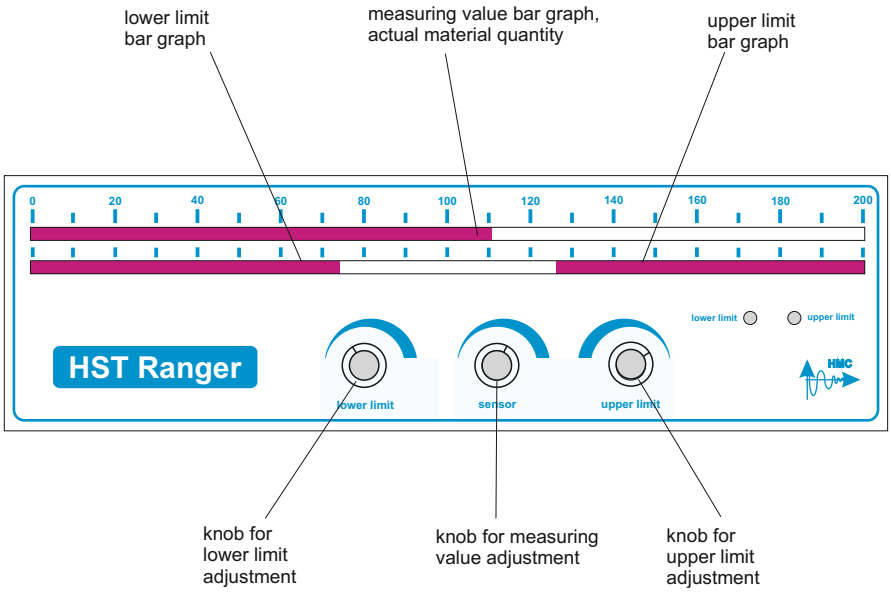
version according application

one sensor, version according application

Sensor Cable

Features

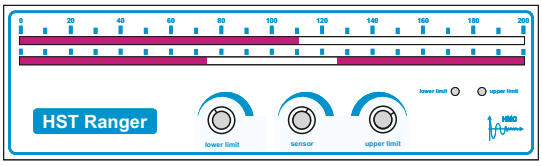
Operation Elements :



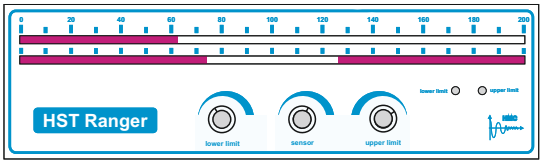
Operation Mode :

Two operation modes can be created by adjusting the lower and upper limits by the referring knobs.

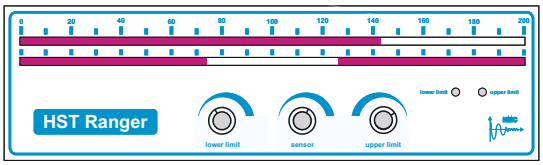
Mode 1 : The bar graphs for “lower limit” and “higher limit” are adjusted independently from another.



measuring value within tolerance range,
switching output “lower limit” and “upper limit” deactivated

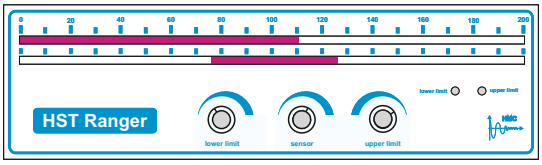


measuring value out of tolerance range, falling under lower limit,
switching output “lower limit” activated

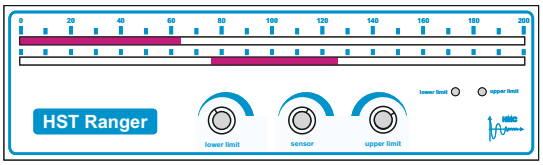


measuring value out of tolerance range, exceeding upper limit
switching output “upper limit” activated

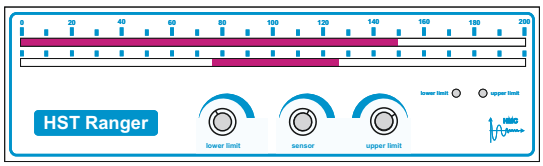
Mode 2 : The bar graphs for “lower limit” and “higher limit” overlap.



measuring value within tolerance range,
switching output “lower limit” and “upper limit” activated

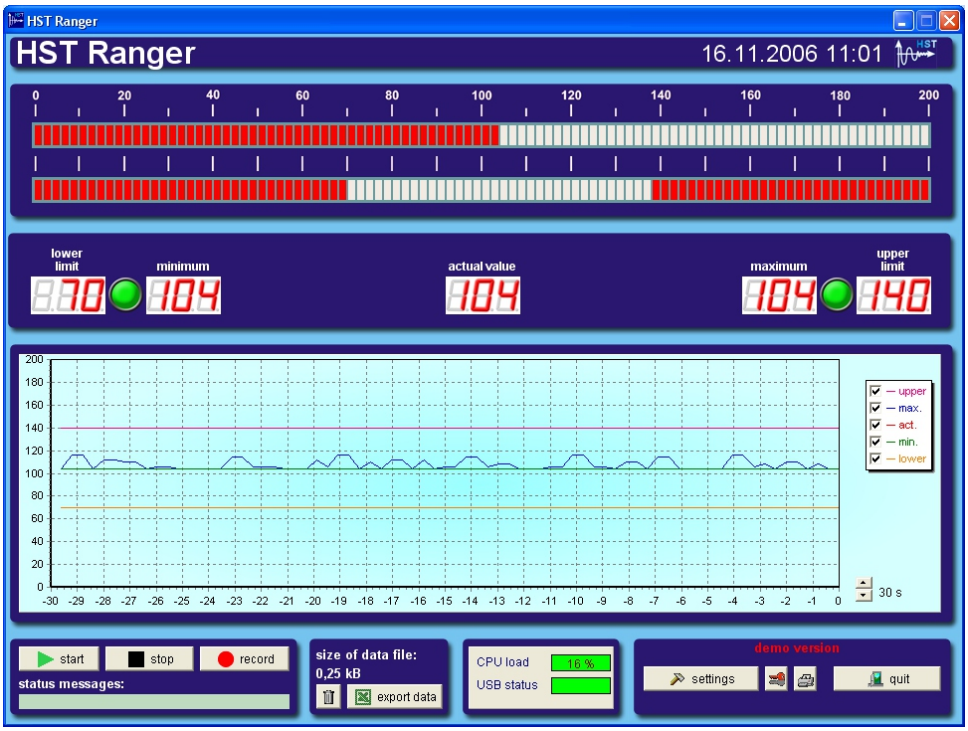


measuring value out of tolerance range, falling under lower limit,
switching output “lower limit” de-activated

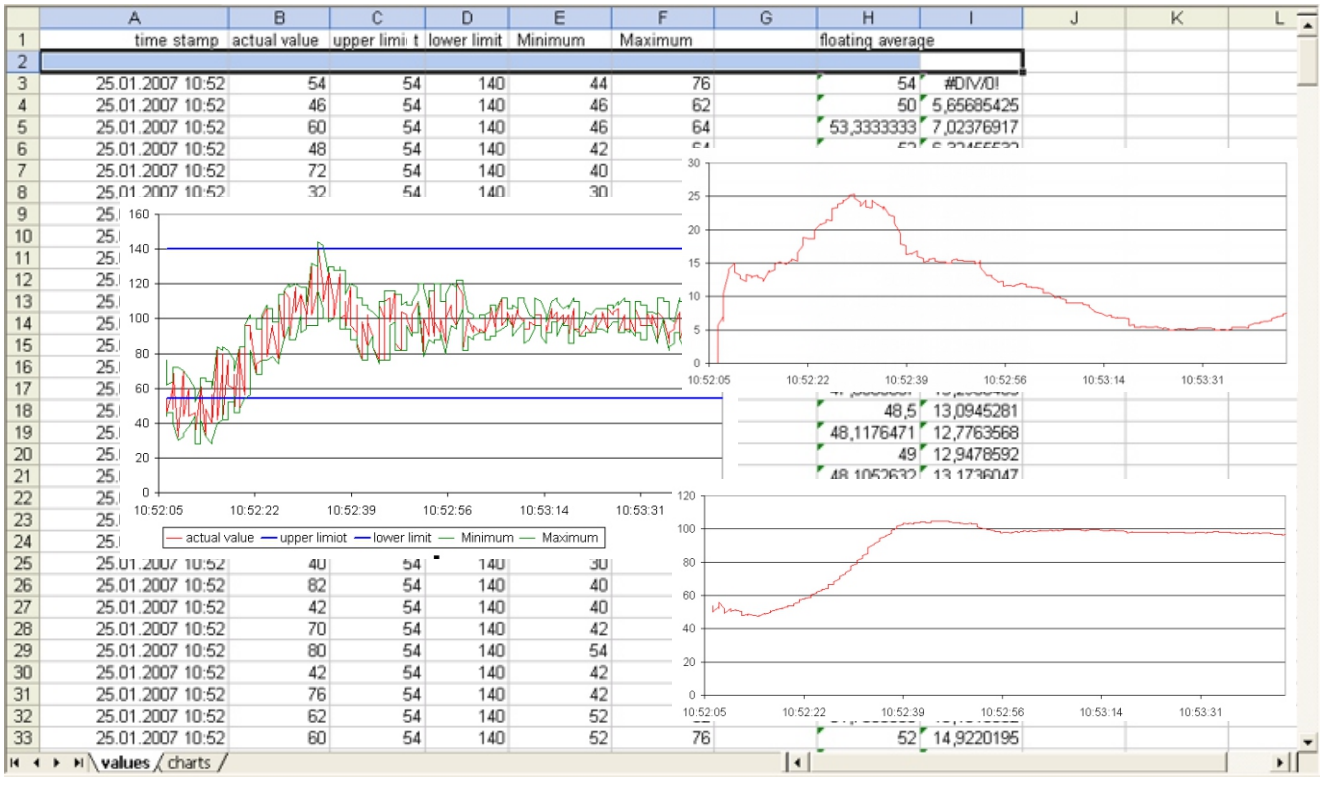


measuring value out of tolerance range, exceeding upper limit
switching output “upper limit” de-activated

Operation Screen



Charts



Order Data : **- operation unit -**

operation unit version	order no.
HST Ranger 0...10V analog input as sensor interface, 2 switching outputs PNP or NPN incl. adapter box, adapter box cable	**HST Ranger Basic**
HST Ranger 0...10V analog input as sensor interface, USB output as PC interface 2 switching outputs PNP or NPN incl. adapter box, adapter box cable, 1,5m shielded USB cable	**HST Ranger USB**

Order Data : **- complete sensor system -**

HST Ranger Sensor System version	order no.
HST Ranger 0...10V analog input as sensor interface, 2 switching outputs PNP or NPN incl. adapter box, adapter box cable **QMS70xxx Sensor** Sensor with 0...10V analog output, incl. 5m sensor cable	**HST Ranger Basic-QMS70xxx** *)
HST Ranger 0...10V analog input as sensor interface, USB output as PC interface 2 switching outputs PNP or NPN incl. adapter box, adapter box cable, 1,5m shielded USB cable **QMS70xxx Sensor** Sensor with 0...10V analog output, incl. 5m sensor cable	**HST Ranger USB-QMS70xxx** *)
*) QMS 70xxx replaced by the order no. of the referring sensor	

Order Data : **- software package, optional -**

operation unit version	order no.
HST Ranger Software Package for windows , 1 CD, operation manual	**HST Ranger SWP**

Technical Data

Operation Unit :

version 1 :	without PC interface
version 2 :	with USB PC interface and HST Ranger Software Package
visualisation :	on two 100 element LED bar-graph indicators
visual resolution :	2 %
internal accuracy :	< 0,1 %
measurement rate :	> 1000 /sec
adjustment :	by 3 knobs
sensor interface :	0 ... 10V, +24V, 15-pin SUB-D connector
PLC and power supply interface : fastenings	15-pin SUB-connector and adapter box with screw
switching outputs :	2 PNP and NPN, 24V/50 mA, opto-coupler for lower and upper limit
operation voltage :	+24VDC +- 10%
dimension, HxWxD :	92 x 320 x 46 mm
weight :	800 gr.
mounting :	four 4 mm holes for wall mounting
operation temperature range :	10...40° C
storage temperature range :	0...50° C
meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
protection type :	IP 50

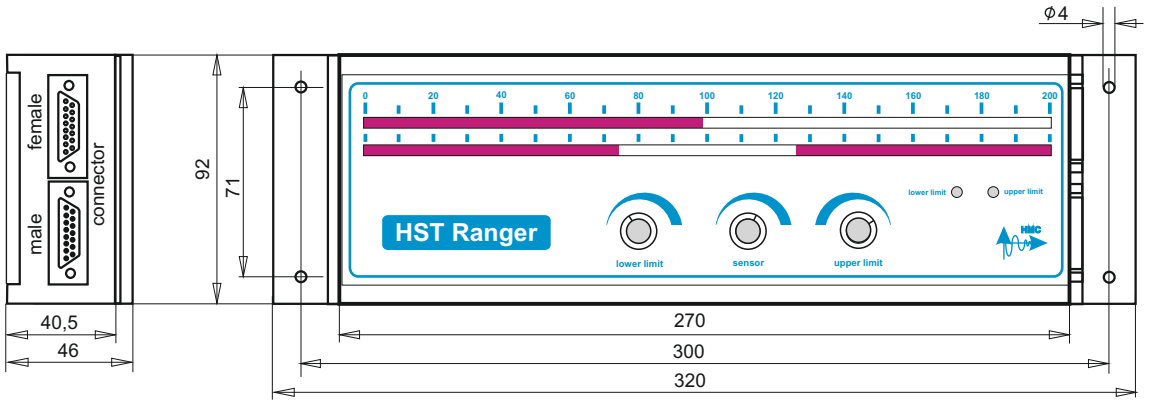
CE

Technical Data

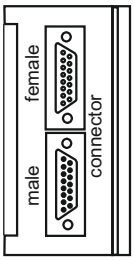
Software Package :

delivery extent :	licensed software on CD
visualisation elements :	bar graph, numeric digital display, chart
protocoled data :	time stamp, actual measuring value, upper limit, lower limit, minimum value, maximum value
max. conversion rate :	> 1000 measuring values / second
stored data format :	CSV (comma separated value)
recording volume :	1Mbyte / day @ 2 measurements per second
PC requirements :	Windows XP, Windows Vista, Windows 7, 8, 10, 11 processor speed > 1 GHz ; RAM >= 1GByte ; screen resolution >= 1024x768 pixels

Dimension : [mm]

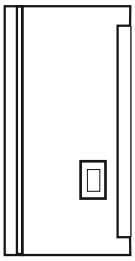


Connections :



15-pin female connector :
QMS 70.. sensor connector cable

15-pin male connector
adapter box inter-connection cable



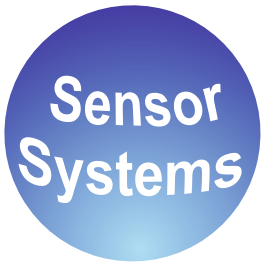
USB - Connector

Sensor System for Production and Quality Control

Sensor System

HST Flow Controller

Hossbach Sensor Technologie



HOSSBACH Sensor Technologie

Production und Service :
HOSSBACH Sensor Technologie Heinrich-Stranka-Str. 3-5, D-90765 Fuerth Germany
Tel . xx49 (0)91137677529 Fax. xx49 (0)91137677528

FLOW Controller

F : Material **F**low

L : Object **L**ocation

O : **O**bject Weight Distribution

W : Product **W**eight

=

+ Teach In

+ Evaluation

+ Controlling

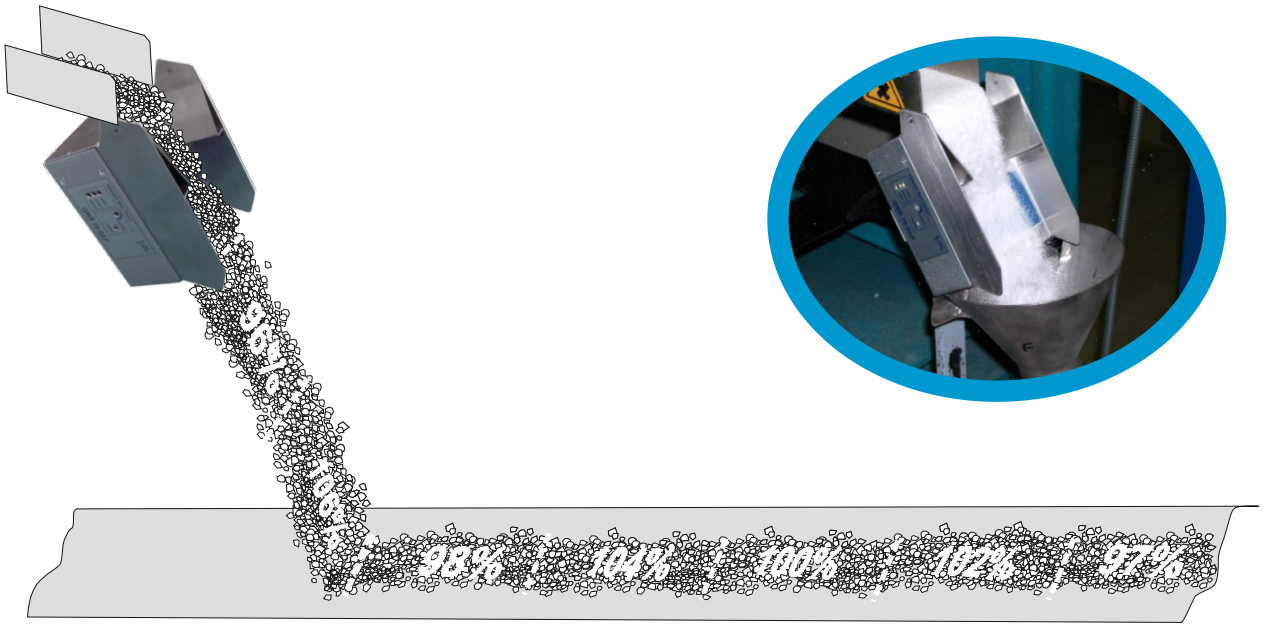
+ Regulation

=

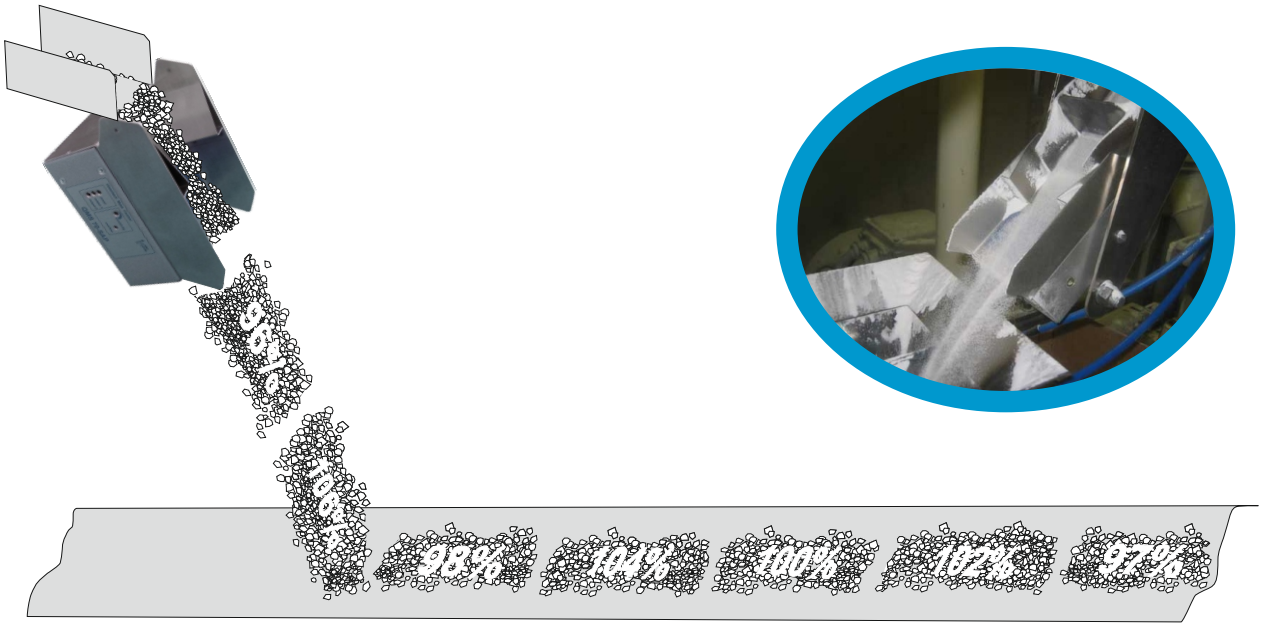
Being Competitive

Applications

continuous flow of material like granulate, powder : **flow control**

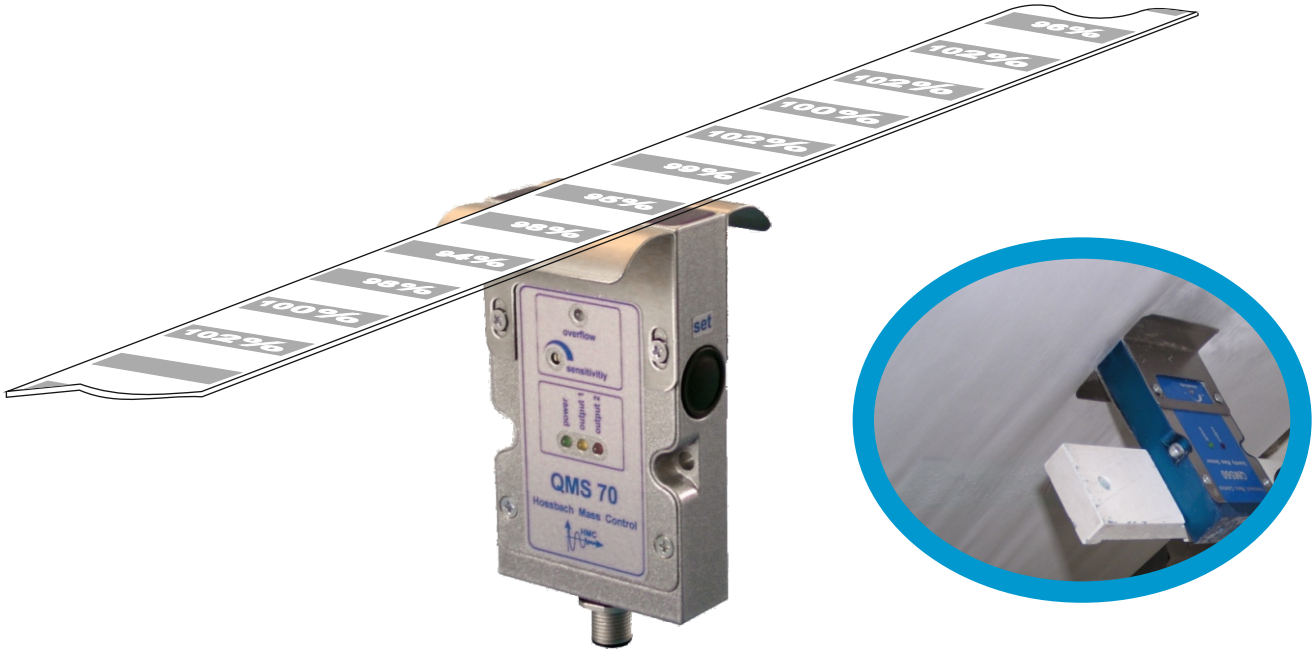


discrete portions of material like granulate, powder : **flow control**

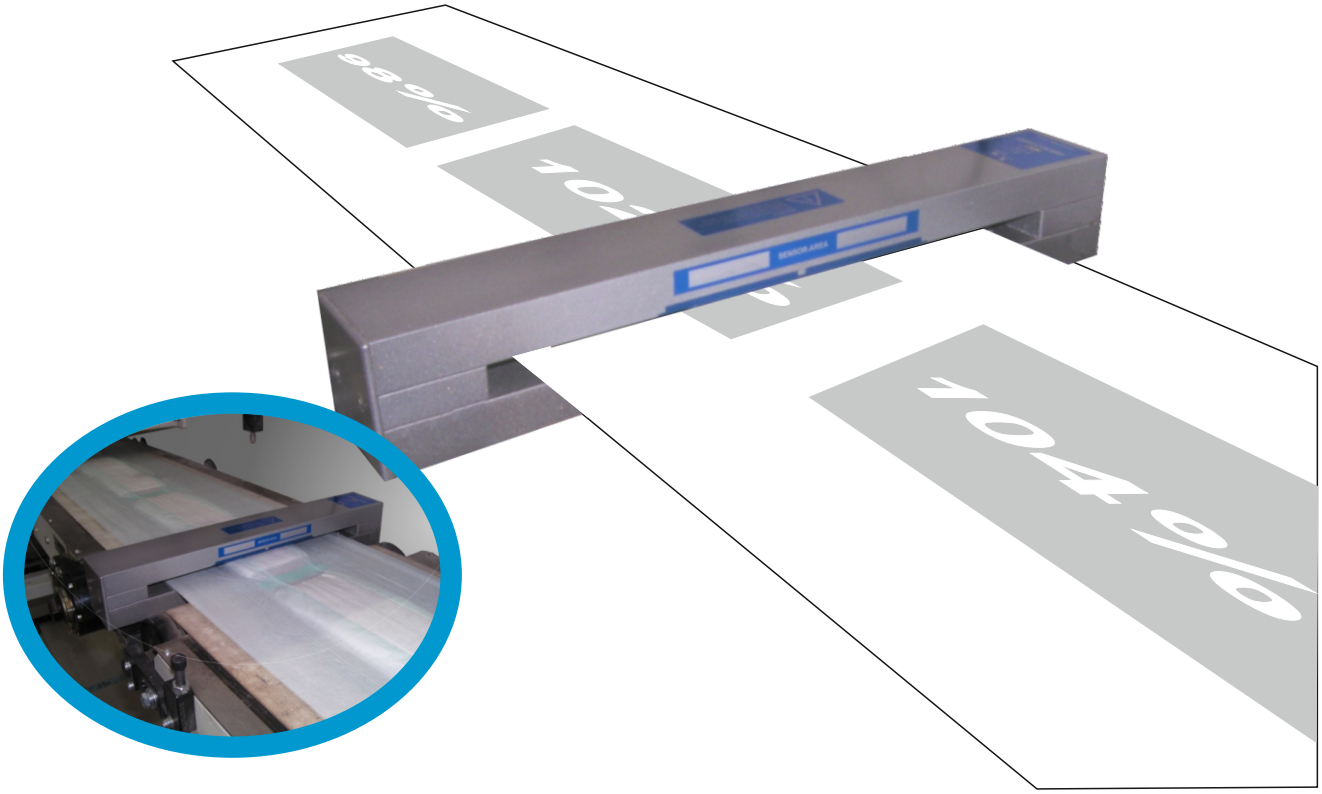


Applications

glue stripes : **weight control**

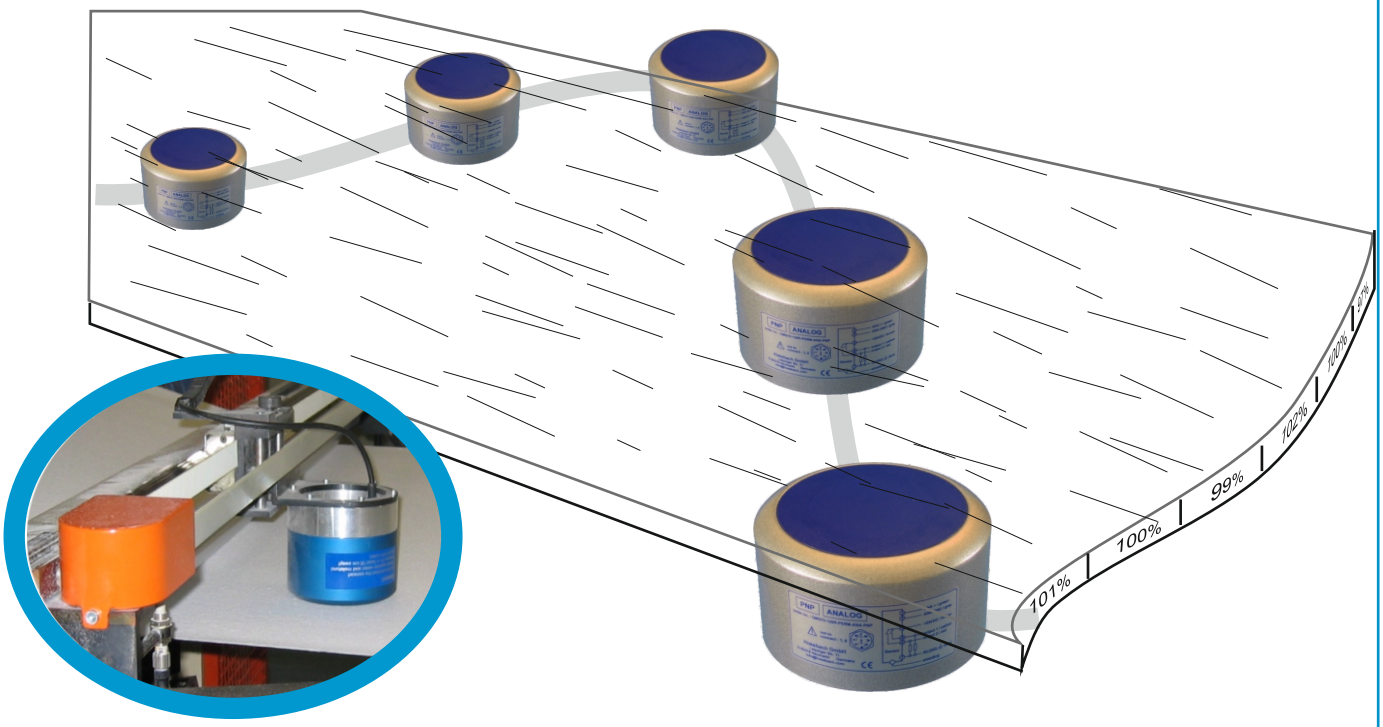


single- or multi-layer products : **weight control**

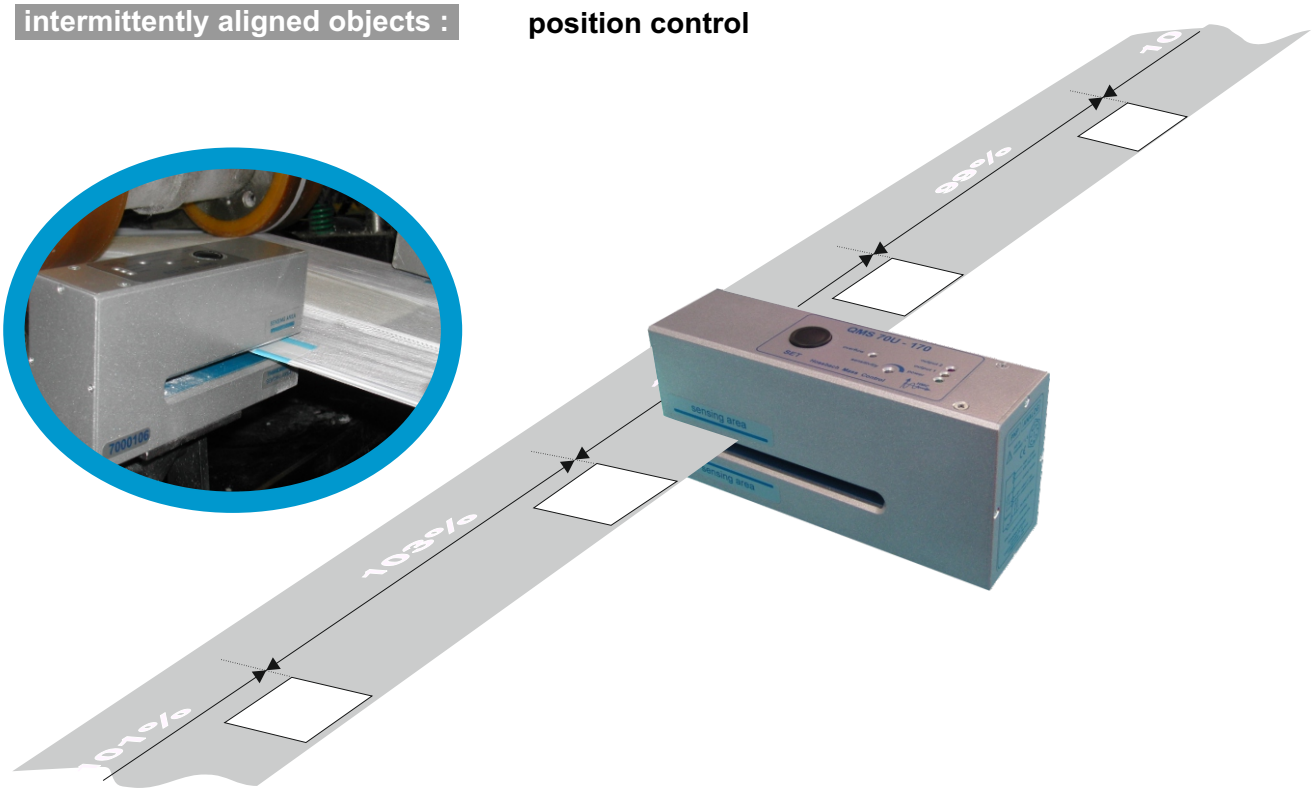


Applications

continuous web : **weight distribution control**

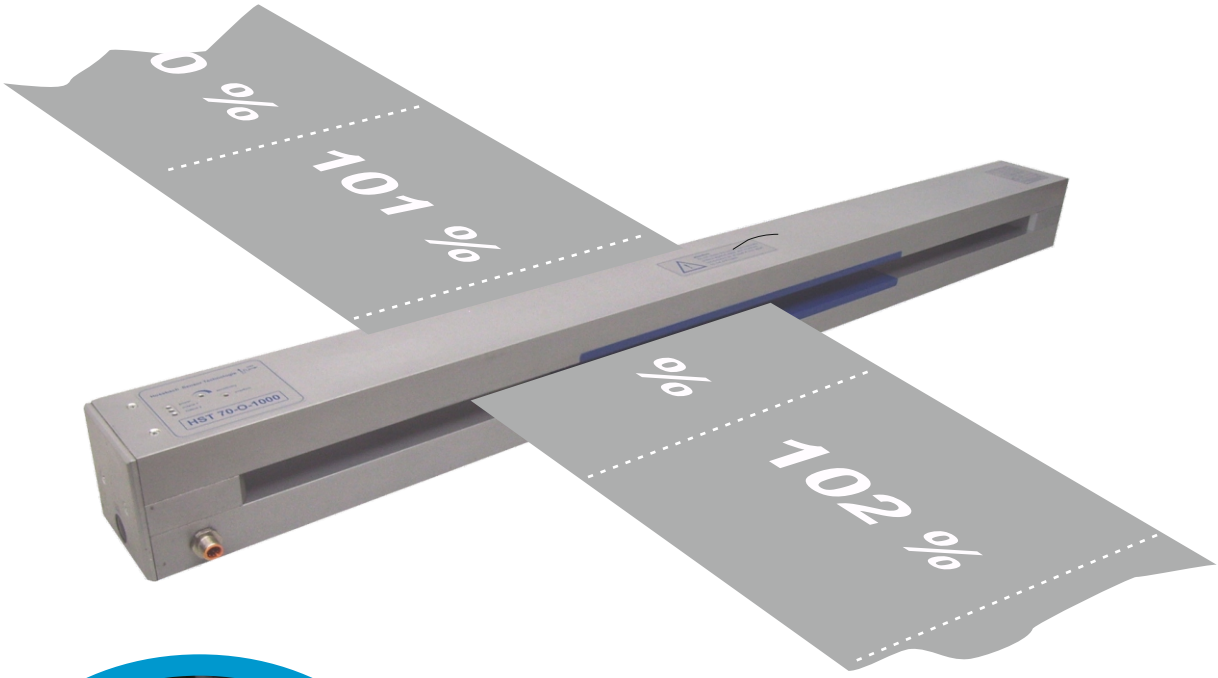


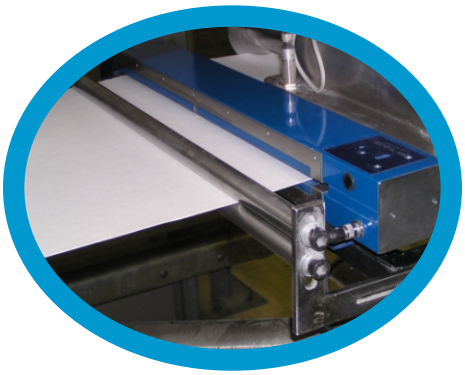
intermittently aligned objects : **position control**



Applications

continuous web : **weight control**





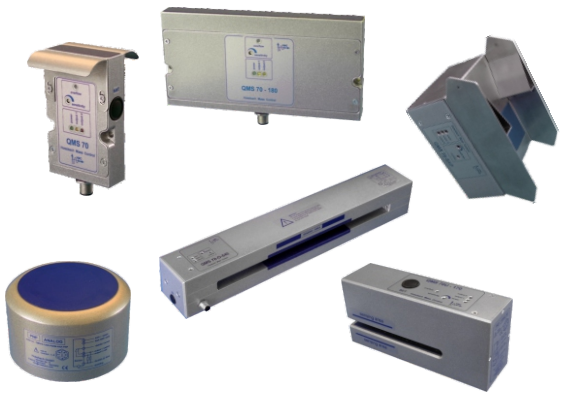
HST Flow Controller

Delivery Extent

Control Unit

including :
- Sensor Interface
- Interface for external machine control units
- Interface for HST Analyser/HST Profiler
- USB interface for PC
- Shielded USB cable

HST Flow Controler Software



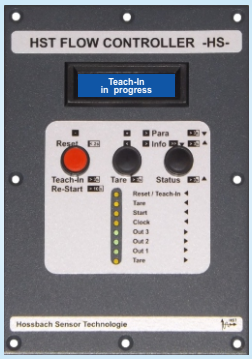
Sensor

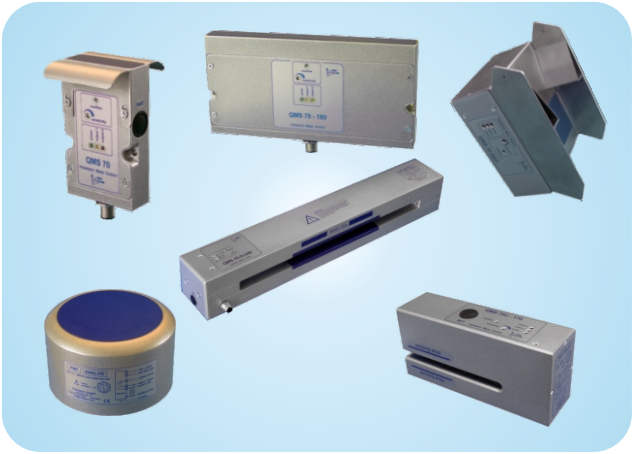
version according application

one sensor, version according application

Sensor Cable

HST Flow Controller





Features :

- versatile, fast, easily to operate and low cost control system
- covers many applications, also often occurring in a single production line
- control of weight, weight distribution, object position and material flow
- control of materials like cellulose, textile, paper, foils, granulate, coatings or pharmaceutical substances etc.
- on-line control of continuous and discontinuous objects, materials and (whole) products
- application solutions thanks to a wide range of sensor versions and constructions
- teach-in functionality allows quick and automated adjustment
- digital and analog interface for external machine line control units
- software package for calibration and visualisation by/on a PC
- temporary or permanent operation with HST Analyser or HST Profiler

Description :

The HST Flow Controller is a versatile and extremely easily to handle control system, that covers a wide range of applications concerning weight, weight distribution, flow and position control. Pushing one button or applying a 24 Volts signal initiates the teach-in procedure and starts after the teach-in procedure the operation for one of the above mentioned applications. The displayed measuring value is normalised to 100% and the analog output to 5 Volts.

The control application determines the type of QMS70xxx sensor, that meets the demands best. Single sided QMS70xxx sensors can be used for applications, where extremely little or thin material must be controlled and the material is in contact with the sensor or its guiding plates. The materials for this kind of control may be foils, fleeces, paper, glue coatings, granulate powder etc. One very interesting application is the control of powder or granulate flow. The HST Flow Controller can operate by evaluating the weight of continuous or discontinuous flow of powder and granulate. These both evaluation-possibilties are not restricted for material flow applications. Cellulose or textile webs represent further continuous material weight control applications. Whereas whole products aligned intermittently represent the discontinuous weight control.

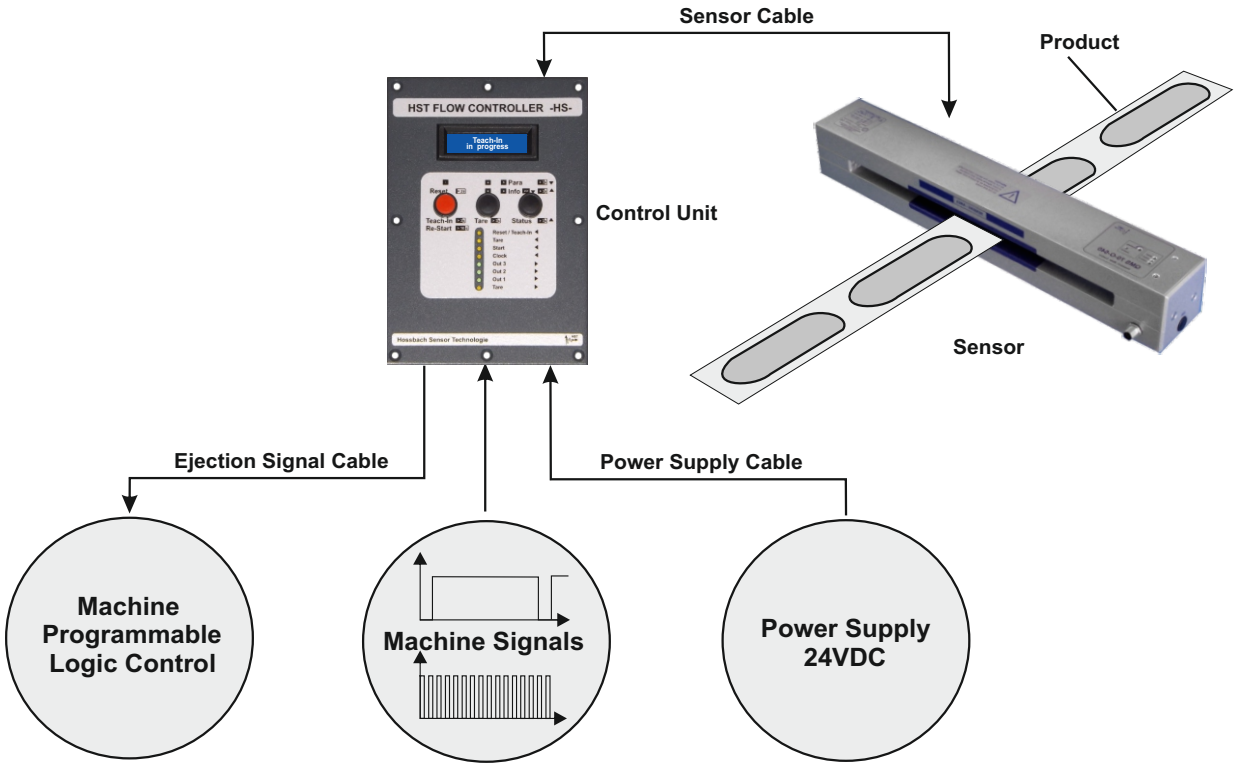
Two further applications are very interesting and solve many production problems :
Hereby the HST Flow Controller controls the weight distribution of whole product or discrete areas of materials.
For that the teach-in procedure generates by measuring several product or discrete material areas a reference weight distribution curve. Too large deviations from this reference curve will be detected and signalised.
The HST Flow Controller controls also the location and position of objects. Too large deviations will be signalised.
The referring products may be ejected.

All above mentioned applications except the position control are based on QMSxxx sensors, that deliver weight quantity information. The different QMSxxx sensor versions i.e. constructions, help to find the best one for a distinct application.

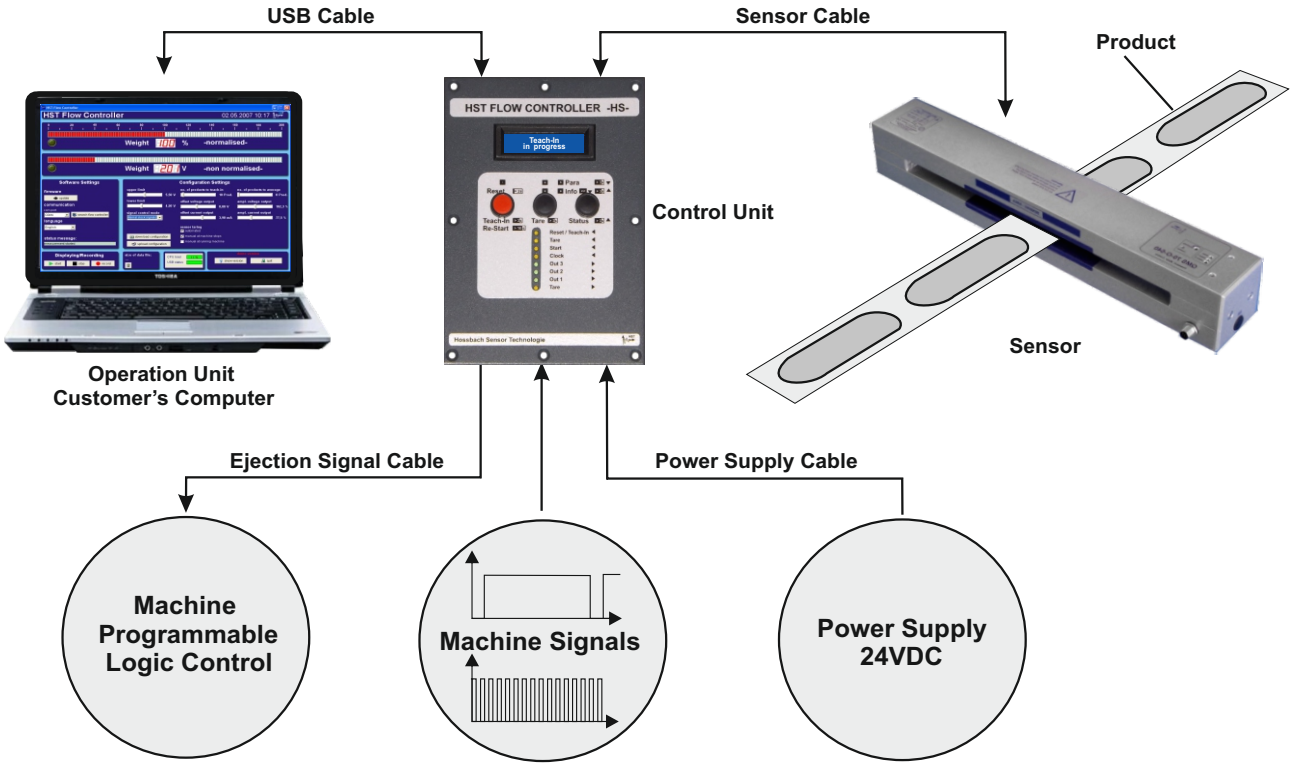
The HST Flow Controller is a very fast control system, which is delivered with a PC-Software for visualisation and configuration. The HST Flow Controller can also operate either permanently or temporary with other inspection and control systems like the HST Analyser or HST Profiler to deliver more information of the production process.

System Overview

Interconnections : normal operation

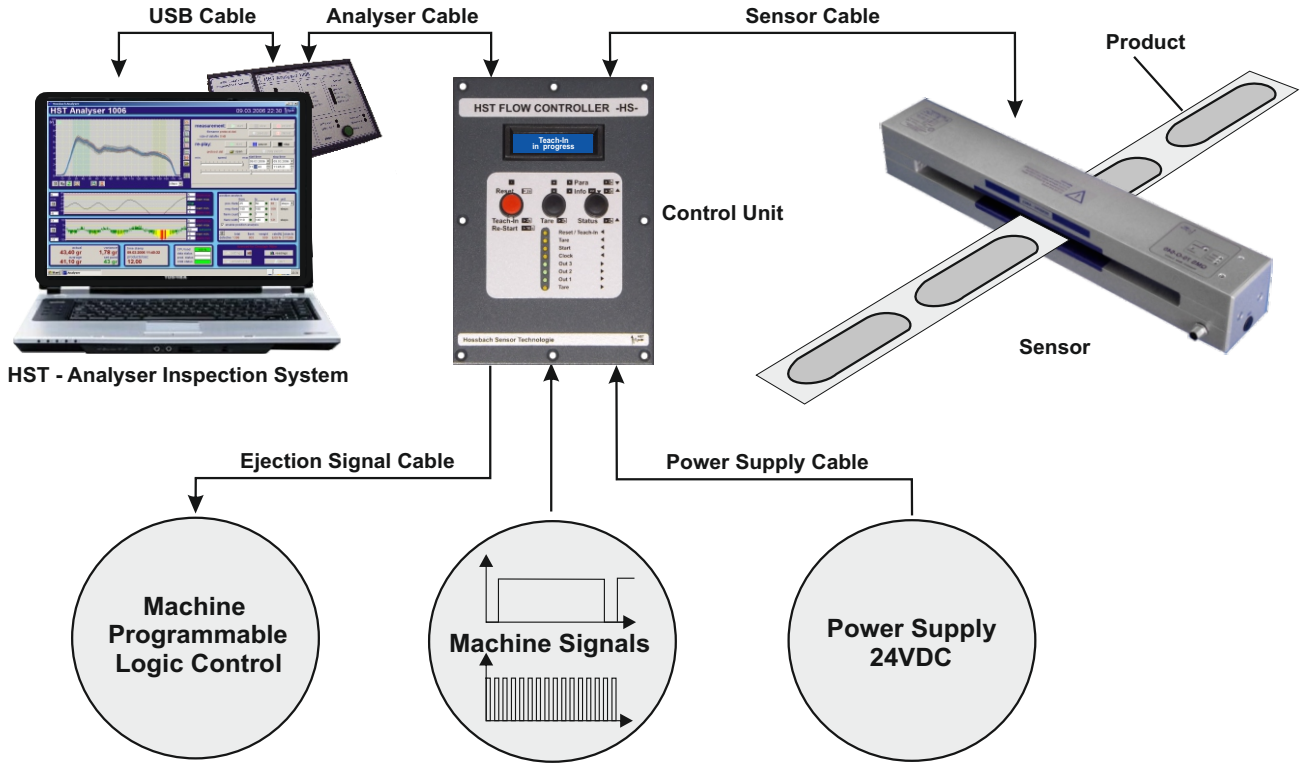


Interconnections : PC for configuration + monitoring



System Overview

Interconnections : HST Analyser for advanced operation + inspection + documentation



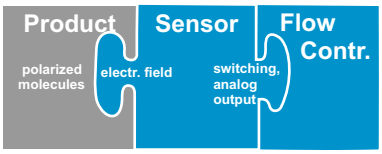
System Operation

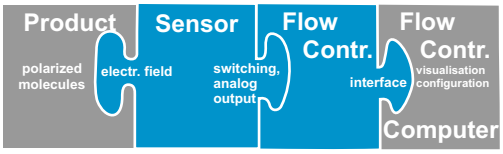
Building Blocks :

Hossbach equipment

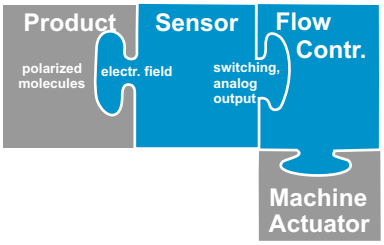
machine line device

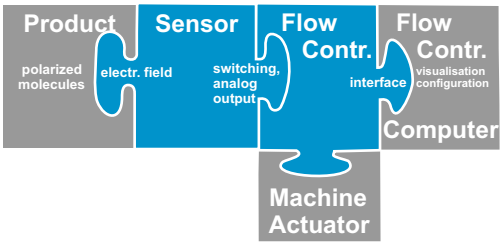
Flow Controller : Monitoring



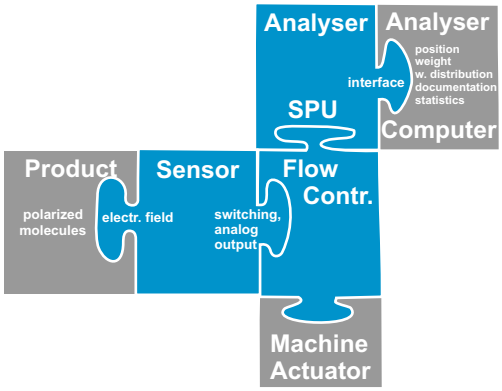


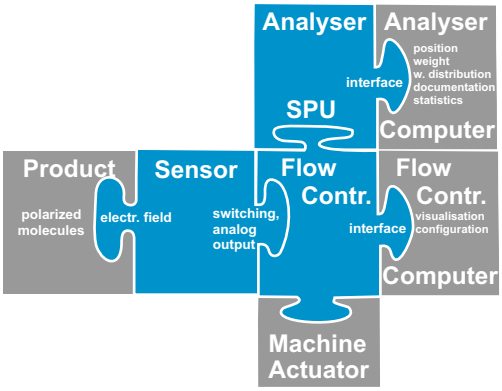
Flow Controller : Monitoring + Controlling





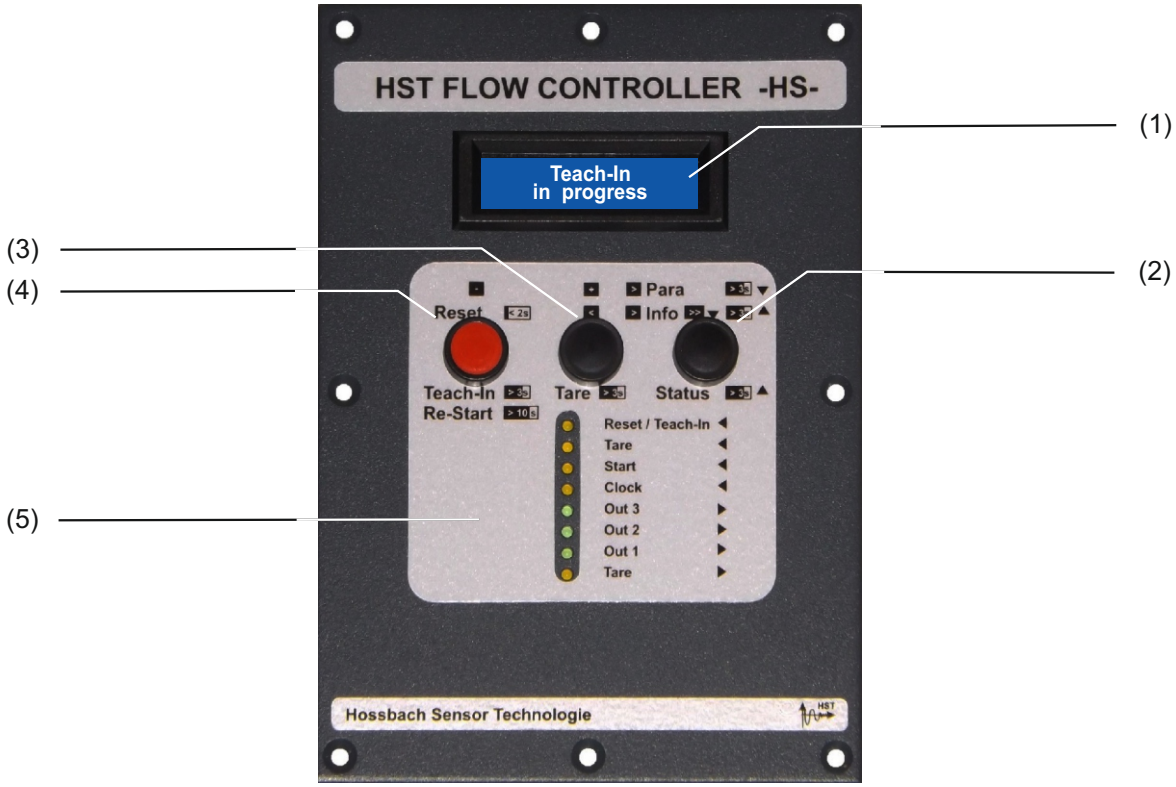
Flow Controller : Monitoring + Controlling + Analyser for documentation and for advanced inspection





Operation Elements

Control Unit Housing : **- front side -**



(1) Display for evaluation results, operation modes and comments, status

(2) Push-button for electronic self-test

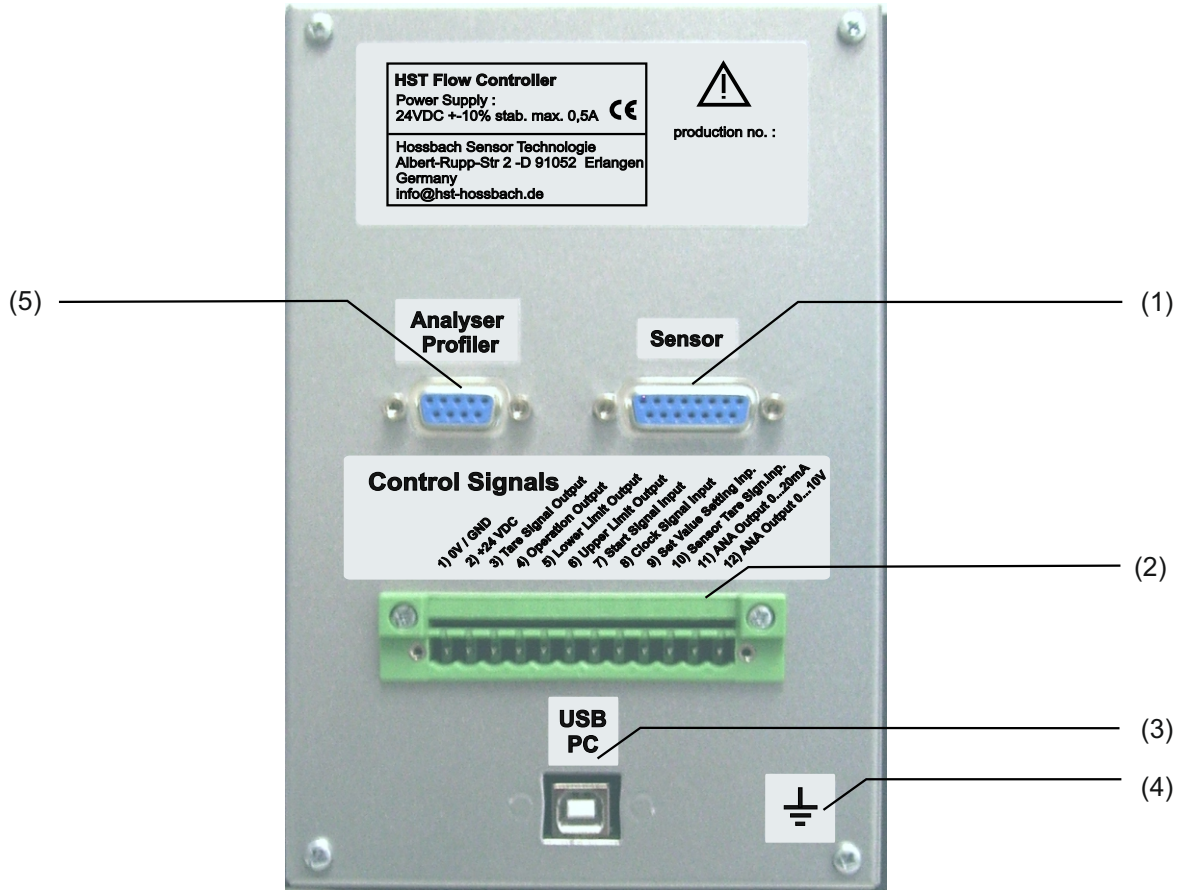
(3) Push-button for Sensor-Taring

(4) Push-button for starting teach-in procedure and 100%-normation

(5) Status and operation LEDs

Connectors

Control Unit Housing : **- rear side -**



(1) Sensor interface connector

(2) Control signal interface connector

(3) USB interface connector

(4) Grounding pin

(5) HST Analyser and HST Profiler interface connector

Configuration and Visualisation Screen

Order Information

Order Data : **Controller Version “F” : Material Flow Applications**

description :		order no.
HST Flow Control	Control Unit including : - interface for QMS-Sensors with analog output QMS70...PERM-ANA-TARA - interface to external control units - USB interface to PC - interface to HST Analyser and HST Profiler - shielded USB cable Software Package for external PC : - for configuration - monitoring	**HST-Flow-Controller-1007-F**

Order Data : **Controller Version “L” : Location, Position Control Applications**

description :		order no.
HST Flow Control	Control Unit including : - interface for QMS-Sensors with analog output QMS70...INT-ANA - interface to external control units - USB interface to PC - interface to HST Analyser and HST Profiler - shielded USB cable Software Package for external PC : - for configuration - monitoring	**HST-Flow-Controller-1007-L**

Order Data : **Controller Version “O” : Single Object-Weight Distribution Control Applications**

description :		order no.
HST Flow Control	Control Unit including : - interface for QMS-Sensors with analog output QMS70...INT-ANA - interface to external control units - USB interface to PC - interface to HST Analyser and HST Profiler - shielded USB cable Software Package for external PC : - for configuration - monitoring	**HST-Flow-Controller-1007-O-Object**

Order Information

Order Data : **Controller Version “O” : Endless Object, Web-Weight Distribution Control Applications**

description :		order no.
HST Flow Control	Control Unit including : - interface for QMS-Sensors with analog output QMS70...PERM-ANA-TARA - interface to external control units - USB interface to PC - interface to HST Analyser and HST Profiler - shielded USB cable Software Package for external PC : - for configuration - monitoring	**HST-Flow-Controller-1007-O-WEB**

Order Data : **Controller Version “W” : Product Weight Control Applications**

description :		order no.
HST Flow Control	Control Unit including : - interface for QMS-Sensors with analog output QMS70...INT-ANA - interface to external control units - USB interface to PC - interface to HST Analyser and HST Profiler - shielded USB cable Software Package for external PC : - for configuration - monitoring	**HST-Flow-Controller-1007-WEIGHT**

Technical Data

Control Unit :

visualisation :	2 x 16 character displax
measurement rate :	> 1000 /sec
adjustment :	automated teach-Procedure
switching outputs :	PNP 24V/20 mA, opto-coupler
switching inputs :	24V/10 mA, opto-coupler
analog output :	0...5V...10V
PLC and power supply interface :	12-pin removable screw connector
sensor interface :	15-pin SUB-D female connector
Analyser, Profiler interface :	9-pin SUB-D female connector
PC interface :	USB connector
operation voltage :	+24VDC +- 10%
power consumption :	typ. 300 mA
dimension, HxWxD :	210 x 150 x 64 mm
weight :	1050 gr.
mounting :	eight 4 mm holes for wall mounting
operation temperature range :	10...40° C
storage temperature range :	0...50° C
meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
protection type :	IP 50

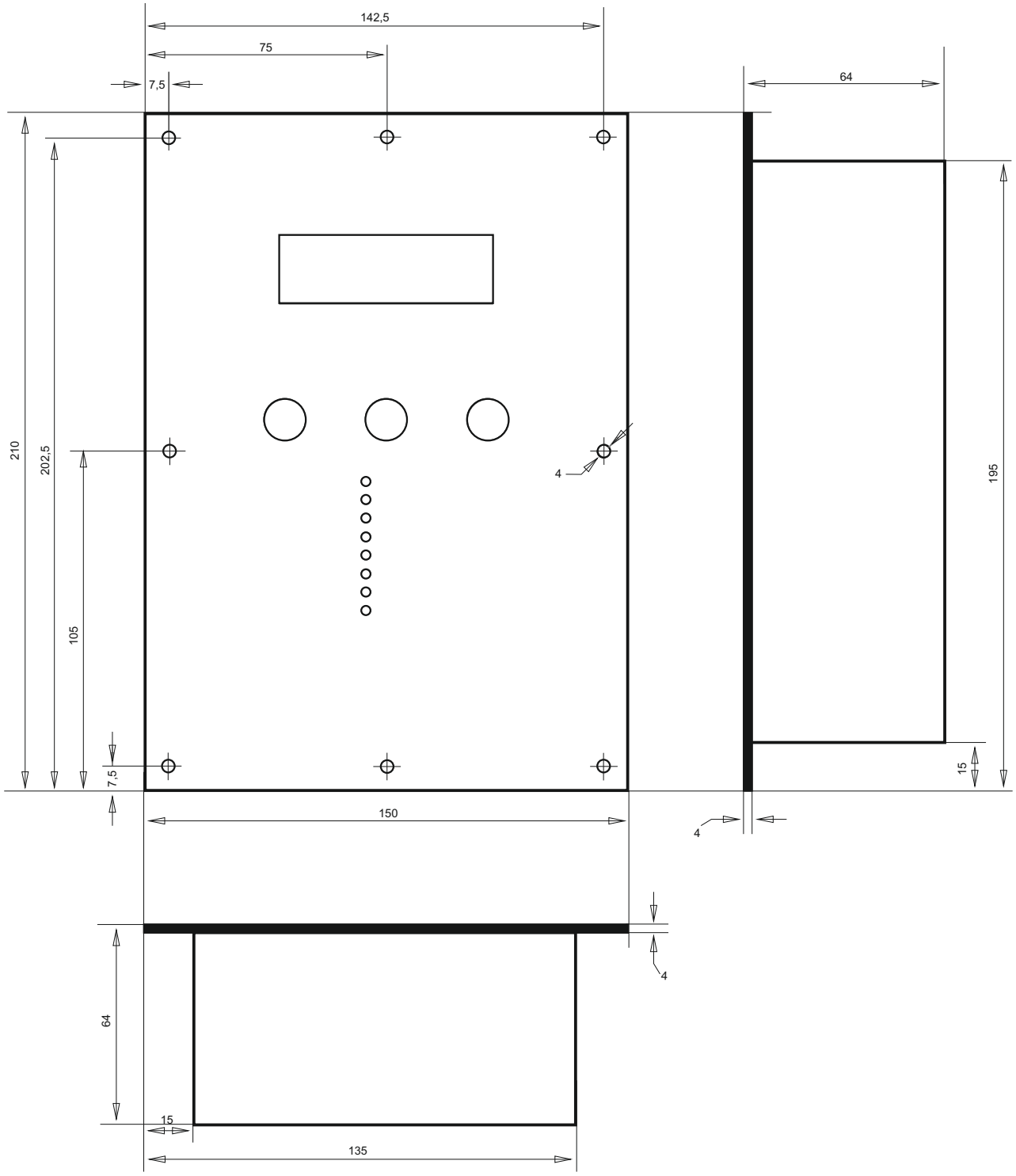
CE

Technical Data

Software Package :

delivery extent :	licensed software on CD
function :	visualisation and configuration
operation :	controlling function independent of connected PC
visualisation elements :	bar-graph, numeric digital display, indicator
max. conversion rate :	> 5000 readings / second
PC requirements :	
operation system :	Microsoft Windows 7, 8, 10, 11
processor speed :	processor speed > 1 GHz ; RAM >= 1GByte ;
screen resolution :	screen resolution >= 1024x768 pixels
drivers :	actual graphic drivers, actual direct/X/version,

[mm]



HST Flow Controller and HST Analyser

Application Examples

Sensor System for Production and Quality Control

Sensor System

Diaper and Sanitary Napkin Control Application

Hossbach Sensor Technologie

Diaper and Sanitary Napkin Control Application

Description :

The HST Systems for Diaper and Sanitary Napkin Control are powerful tools to control, evaluate, visualize and store important product parameters. The measurement is done during production inside the machine and covers every single product.This principle avoids the need to intervene into the production process or control the product at the end of the production line extensively.
There are no comparable systems which empowers the diaper manufacturer to receive such a large number of information about every product and the whole production.
Due to the capacitive measurement principle of the HST Sensors, the whole product composition is included into the measurement, even enclosed, mixed or covered contents.
It is also a very helpful tool for new machine installations, re-builds or product changes to find the optimal settings for the production machine. By the visualization of the product parameters it is also very easy to recognize faulty machine settings, defectives or runaway parameters.

For Diaper Control there are three different applications offered by HST :

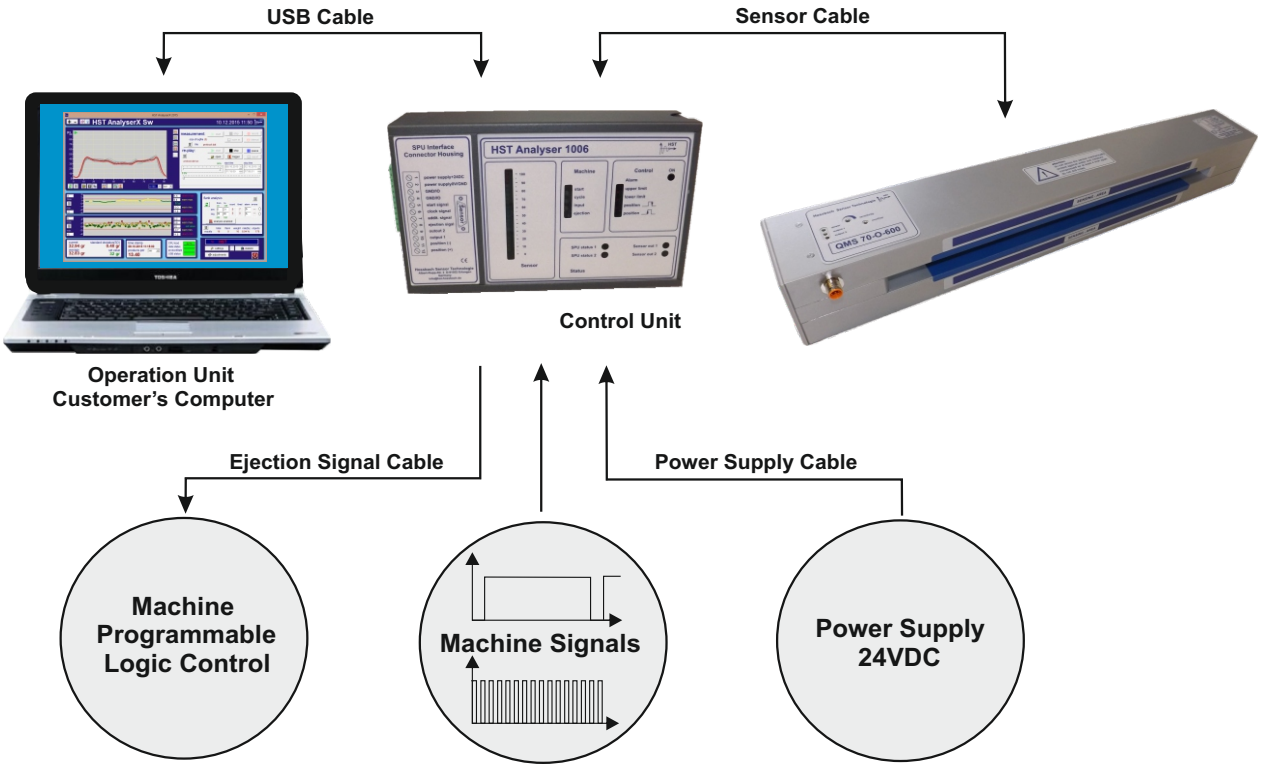
- HST Analyser or HST Flow Controller for product weight and weight distribution evaluation and recording
- HST Flow Controller for real-time product weight and weight distribution control (Profiler)
- HST Flow Controller for basis weight control in two areas and recording

Each of those application has its unique feature to reach a very high level of product quality.
The installation and the calibration of the system is very easy, usually no maintenance is necessary and only little adjustments must be done during operation.
All three HST Systems are working even at high speed, up to a production speed of 1500 products per minute.
Even at this speed each product is measured with all the features of the used system.
As the measurement is done inside the machine always at the same time and at the same position, the objectivity, the repeatability and the accuracy exceeds the end-of-line quality control by checkweighers.

Diaper and Sanitary Napkin Control Application

HST Analyser for weight evaluation and recording

System interconnections



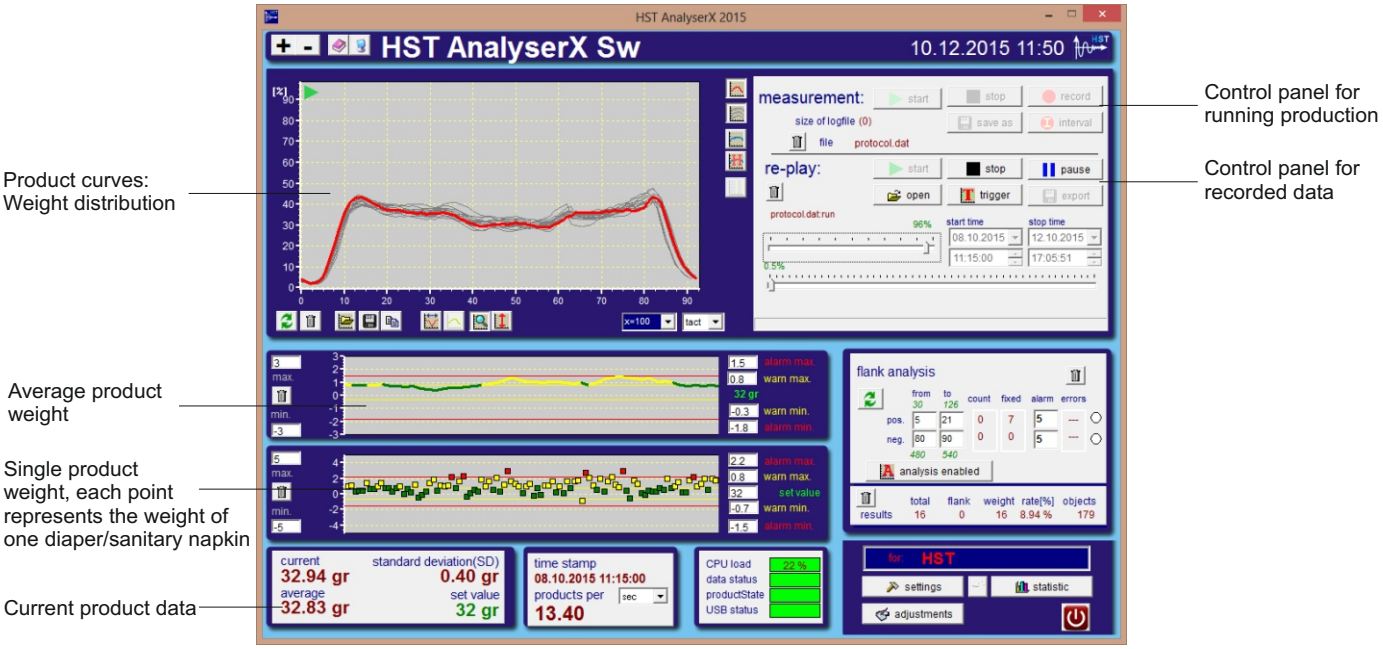
The main interconnections between the HST Analyser System and the production machine are the machine signals. They are essential to let the system know when a product starts and how fast the machine is running, so the system is able to work speed independently.
For machines with stable production speed, the machine signals for speed may not be needed by using the HST Flow Controller instead of the HST Analyser.
Both, HST Analyser and HST Flow Controller are suitable for this application.

The HST Analyser System is designed to work with a computer. A special HST Software for this application brings every feature of the system to any Microsoft Windows computer.
Here the operator has the possibility to store the product data in common folders and process the data in a spreadsheet software or quality management system.

Diaper and Sanitary Napkin Control Application

HST Analyser for weight evaluation and recording

Software interface and main features



HST Analyser Software

Main features of the HST Analyser Software :

- Calculate and evaluate weight of each single product
- Show distribution of weight inside product (red product curve)
- Show weight distribution of recent products (grey product curves)
- Show trend or drifts of product average weight in histogram
- Show single product weight of recent products in histogram
- Load product curves of products with ideal weight distribution
- Set the limits for upper and lower product weight tolerances
- Generate statistical data as product average weight, standard deviation, Gaussian curve
- Calibration of the system to product weight and size
- Recording of production (every product parameter in logfiles and CSV-files)
- Replay stored data in offline software version at any computer
- Trigger Analysis; stop at runaway weight distribution at replay
- Error counter for defective products (weight out of specification, product displacement)
- Production speed up to 1500 products per minute

Diaper and Sanitary Napkin Control Application

HST Analyser for weight evaluation and recording

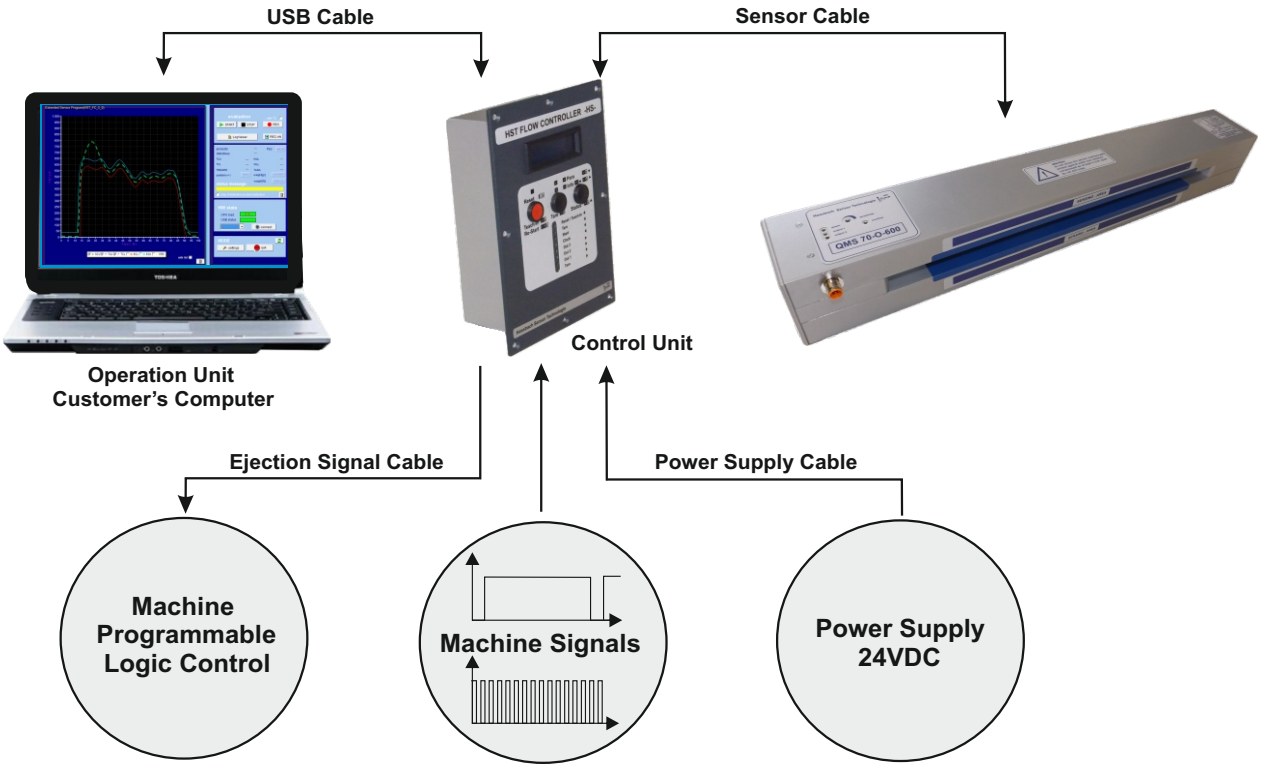
Contents of delivery :

- Standard or customized HST QMS70 - Sensor (e.g. QMS70-O-540)
- HST Analyser 1006 control unit
- HST Analyser Software CD
- HST Analyser Offline Software (on demand)
- Software license
- Operation Manual
- Quick Start Manual
- 5 m sensor cable
- 2 m USB cable
- USB - Ethernet range extender incl. 20 m Ethernet cable (on demand)
- Solid aluminium case for control unit

Diaper and Sanitary Napkin Control Application

HST Flow Controller for real-time product weight control

System interconnections



The main interconnections between the HST Flow Controller System and the production machine are the machine signals.They are essential to let the system know when a product starts and how fast the machine is running, so the system is able to work speed independently.

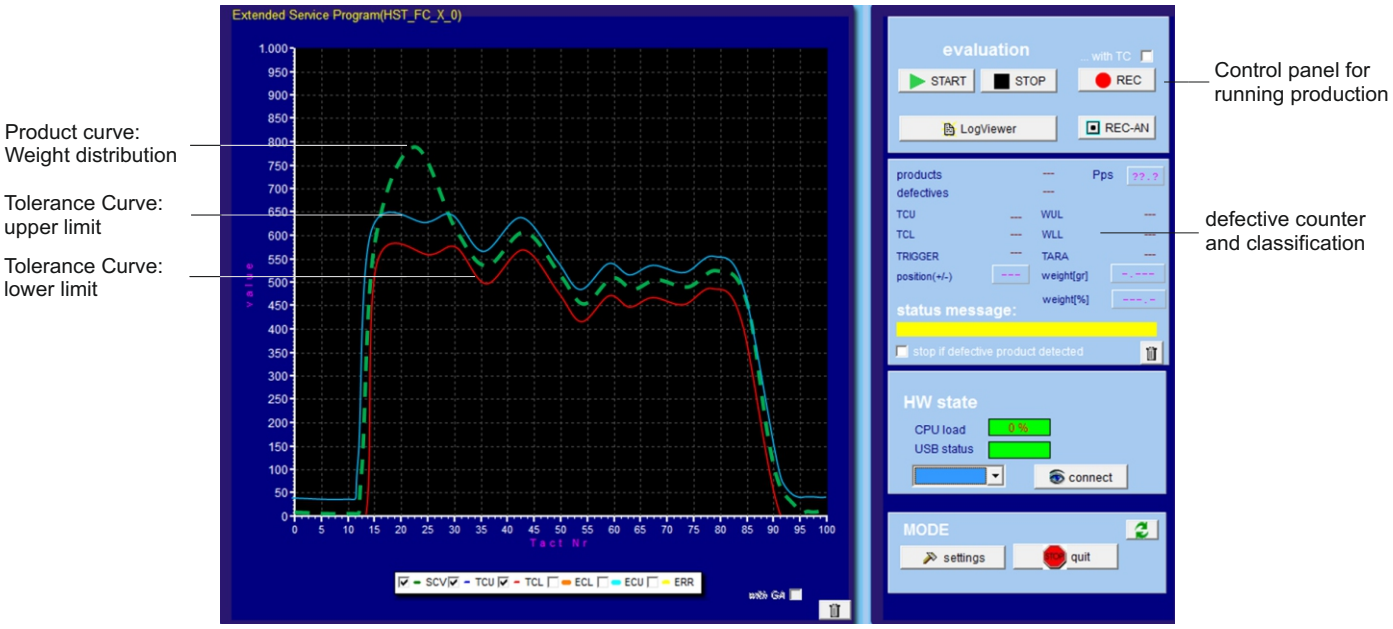
This HST Flow Controller System is designed to work without a computer. It is a independently working system, all evaluations are done by the HST Flow Controller. A computer is only recommended for initial setup to find the ideal settings and position of the product inside the sensor.
By the software also customized setting could be done to optimize the system or change the logic of the switching outputs.

After setting up the system, the computer is disconnected and the HST Flow Controller works as independent system.
It gives output signals (+24VDC, PNP/NPN) for each defective product without time delay. The machine's control unit should be programmed to eject every product which the HST Flow Controller recognized to be defective.

Diaper and Sanitary Napkin Control Application

HST Flow Controller for real-time product weight control

Software interface and main features



HST Flow Controller Service Program

Note: The shown program interface reflects the internal settings of the HST Flow Controller. All shown elements are used by the HST Flow Controller itself to evaluate the product parameters.

Main features of the HST Flow Controller (Profiler) :

- Calculate and evaluate weight of each single product in realtime
- Evalute distribution of weight inside product (symbolized as green curve in Service Program)
- Set the limits for upper and lower product weight tolerances
- Set the limits for upper and lower tolerance curves
- Control Tara Area (area between two products) for foreign objects
- Error counter for defective products (weight out of specification, product displacement)
- Control product position
- Easy product "Teach In" for system startup
- High Speed measurement up to 3000 products per minute

⇨ Realtime evaluation of each single product

⇨ Evaluation of product single weight, weight distribution, product displacement, foreign objects

⇨ Ejection signal for each product with wrong parameter (e.g. weight out of specification, product at wrong position, tolerance curve violated (see picture))

Save time, by getting feedback immediately from the HST System, if any error occurs !
Save money and raw materials by reducing product components to lowest acceptable quantity !

Diaper and Sanitary Napkin Control Application

HST Flow Controller for real-time product weight control

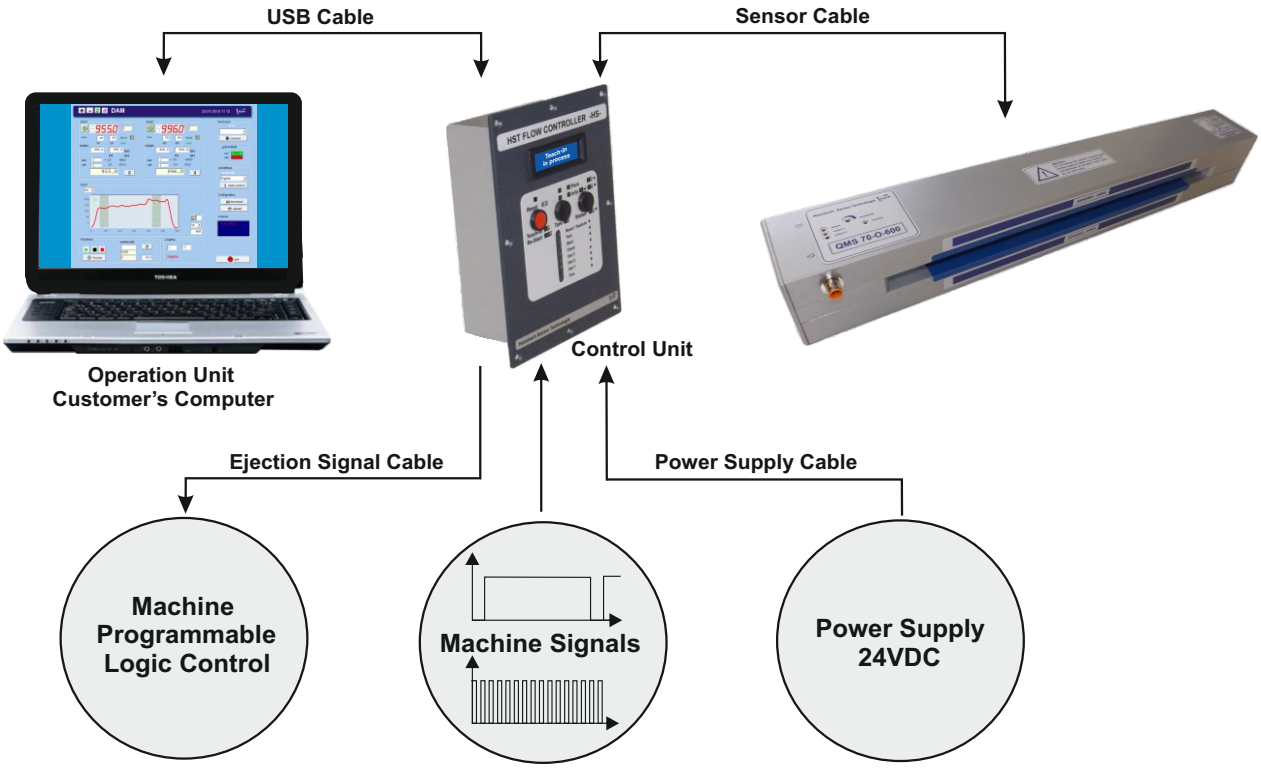
Contents of delivery :

- Standard or customized HST QMS70 - Sensor (e.g. QMS70-O-540)
- HST Flow Controller - High Speed -
- HST Flow Controller Service Program CD
- HST Analyser 1006 control unit (on demand)
- HST Analyser Software CD (on demand)
- HST Analyser Offline Software (on demand)
- Software license
- Operation Manual
- Quick Start Manual
- 5 m sensor cable
- 2 m USB cable
- Connection cable for HST Analyser and HST Flow Controller
- USB - Ethernet range extender incl. 20 m Ethernet cable (on demand)
- Solid aluminium case for control unit

Diaper and Sanitary Napkin Control Application

HST Flow Controller for basis weight control in two areas

System interconnections



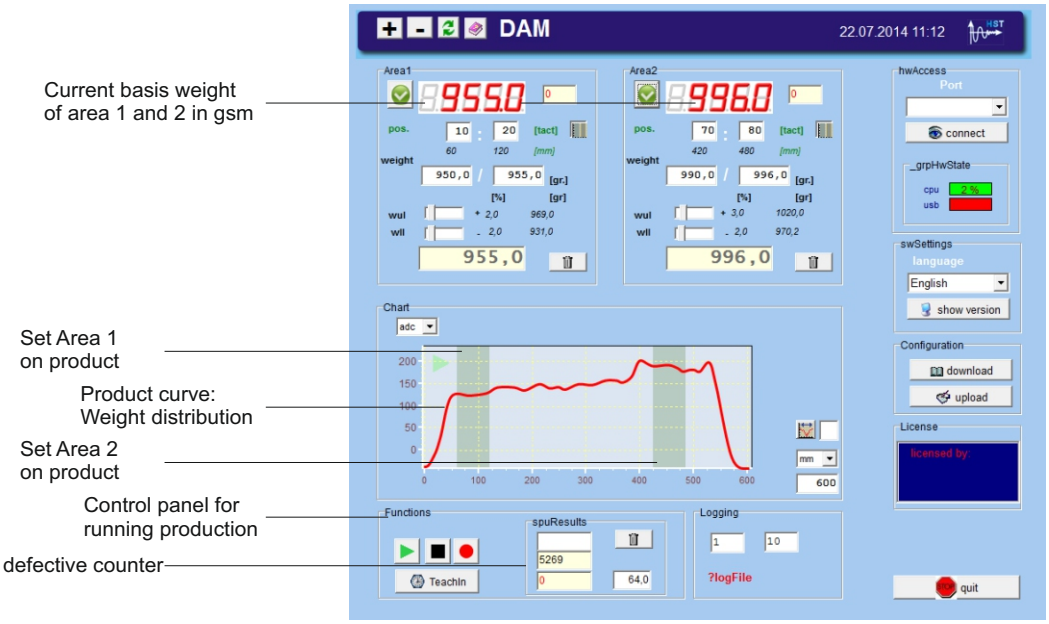
The main interconnections between the HST Flow Controller System and the production machine are the machine signals. They are essential to let the system know when a product starts and how fast the machine is running, so the system is able to work speed independently.

This HST Flow Controller System is designed to work with a computer. A special HST Software for this application brings every feature of the system to any Microsoft Windows computer.
Here the operator has the possibility to store the product data in common folders and process the data in a spreadsheet software or quality management system.

Diaper and Sanitary Napkin Control Application

HST Flow Controller for basis weight control in two areas

Software interface and main features



HST Flow Controller Double Area Software

Main features of the HST Flow Controller (Double Area Control) :

- Calculate and evaluate basis weight of two different areas on the product in gsm
- Define areas to be controlled (green bars)
- Set upper and lower limits for basis weight separately in both areas
- Visualize weight distribution inside product (red curve)
- Calibrate product length
- Set recording parameters (recording frequency, recording length)
- Record product data in CSV-file (time stamp, basis weight, limits)

- Save time by eliminating the very time consuming procedure to measure the basis weight in a finished product
- Get reliable data of complex product parameter very easily
- Store and evaluate production data over years

Diaper and Sanitary Napkin Control Application

HST Flow Controller for basis weight control in two areas

Contents of delivery :

- Standard or customized HST QMS70 - Sensor (e.g. QMS70-O-540)
- HST Flow Controller - High Speed -
- HST Flow Controller Double Area Measurement Software CD
- Software license
- Operation Manual
- Quick Start Manual
- 5 m sensor cable
- 2 m USB cable
- USB - Ethernet range extender incl. 20 m Ethernet cable (on demand)
- Solid aluminium case for control unit

Sensor System for Production and Quality Control

Sensor System

Folding Control Application

Hossbach Sensor Technologie

Folding Control Application

HST Flow Controller for folding control

Description :

The HST Systems for Folding Control is a powerful realtime System to detect wrong or insufficient foldings, weight specifications, foreign bodies in a product or in foil welding seams (e.g. sanitary napkins).

Due to the sophisticated capacitive measurement principle, the Sensor measures the whole product even in its completely wrapped state at the end of a production line. In this state no optical or gravimetrical method is able to detect the shape, the folding or weight distribution of the product.

The HST Sensor and the HST Flow Controller -High Speed- are fast enough to measure all product parameters featured by the system even at high speed up to 3000 products per minute without any loss of information.

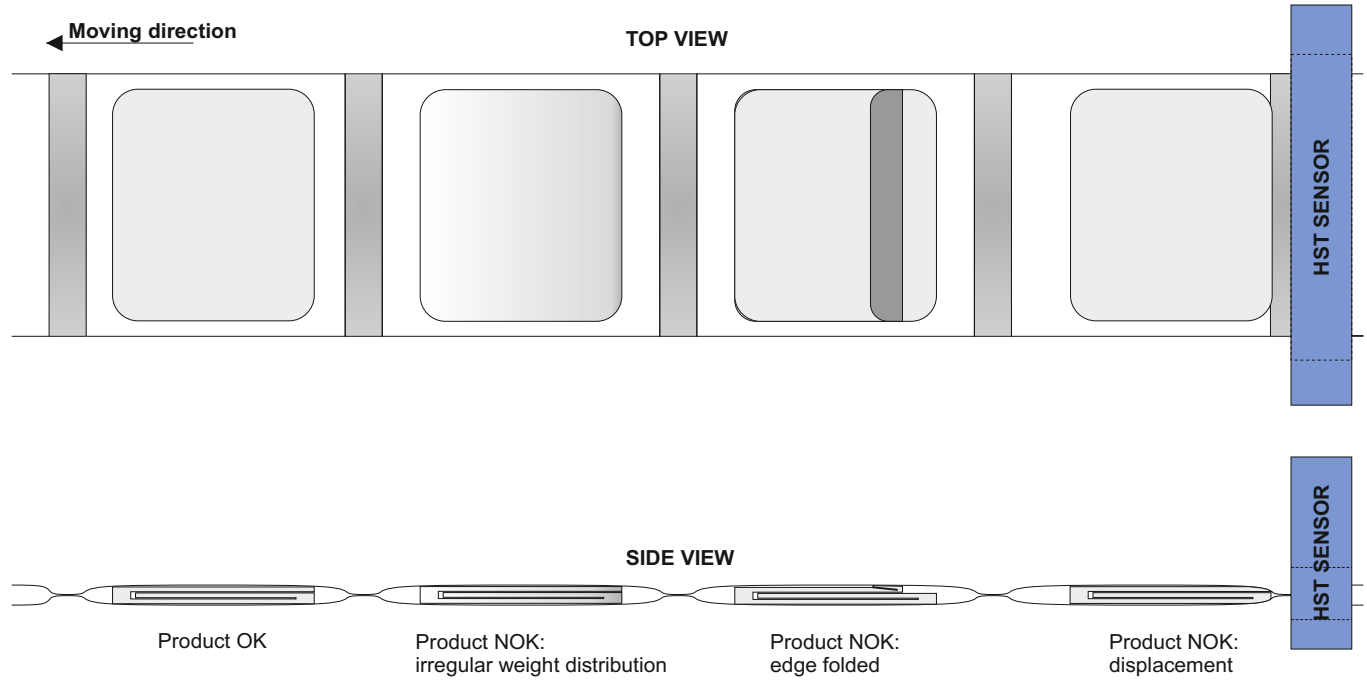
All three outputs of the HST Flow Controller could be assigned to a specific error on the product. This enables the operator to see immediately which kind of error occured inside the machine. The classification of errors helps spotting the location inside the machine where re-adjustments might be required.

Bringing the system into operation is very easy. The Sensor needs only little space and is located where the product should be measured but still is guided as uncut endless product or by a conveyor belt.
Also the operation is very easy, once taken into operation, the HST System usually does not need any re-adjustment or calibration at all. It runs with the machine over years, it only will be recogniced when an error occurs on the product.

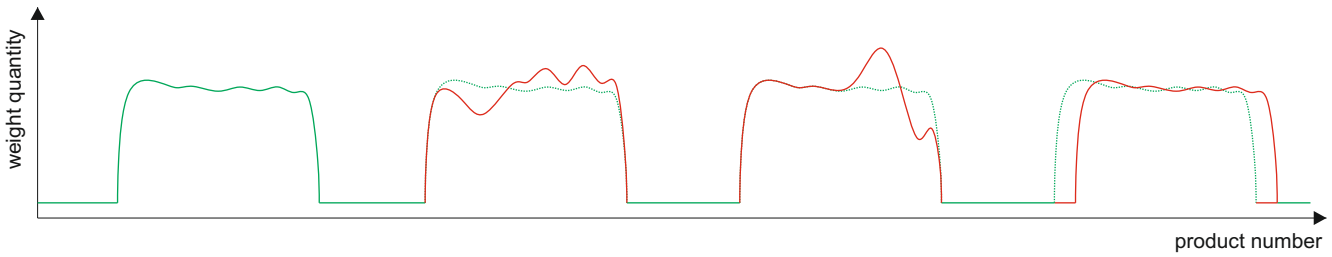
Folding Control Application

HST Flow Controller for folding control

Example: Sanitary Napkin



Weight distribution, product profile:



Description :

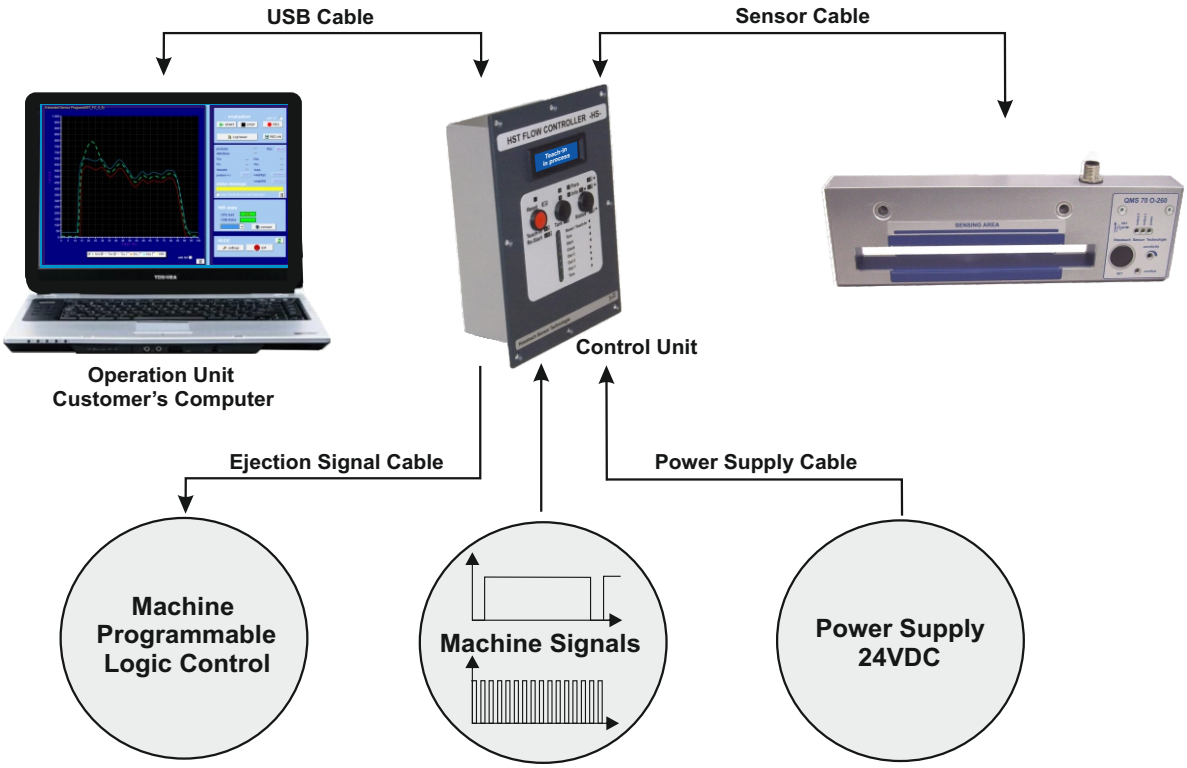
The HST Systems for Folding Control "scans" the weight distribution of each single product in real-time and converts it into a weight profile.
All products may have the same weight, so the detection of a faulty product is not possible with common methods. After a simple "Teach In" procedure the HST System knows, how a good product should look like and where it is positioned. The learned product profile is taken for comparison with all following products. This enables the HST System to detect any error inside the product caused by faulty weight distribution.

For visualisation of the product profiles the HST Flow Controller Sevice Program could be used.
Here also customized parameters as weight or profile tolerances for the evaluation and output signals could be set.

Folding Control Application

HST Flow Controller for folding control

System interconnections



The main interconnections between the HST Flow Controller System and the production machine are the machine signals.They are essential to let the system know when a product starts and how fast the machine is running, so the system is able to work speed independently. For constant high-speed production lines, the machine signals for speed may not be necessary, as the HST Flow Controller is here able to calculate it on its own.

This HST Flow Controller System is designed to work without a computer. It is a independently working system, all evaluations are done by the HST Flow Controller. A computer is only recommended for initial setup to find the ideal settings and position of the product inside the sensor.
By the software also customized setting could be done to optimize the system or change the logic of the switching outputs.

After setting up the system, the computer is disconnected and the HST Flow Controller works as independent system.
It gives output signals (+24VDC, PNP/NPN) for each defective product without time delay. The machine's control unit should be programmed to eject every product which the HST Flow Controller recognized to be defective.

Folding Control Application

HST Flow Controller for folding control

Contents of delivery :

- Standard or customized HST QMS70 - Sensor (e.g. QMS70-O-260)
- HST Flow Controller - High Speed -
- HST Flow Controller Service Program CD
- Software license
- Operation Manual
- Quick Start Manual
- 5 m sensor cable
- 2 m USB cable
- USB - Ethernet range extender incl. 20 m Ethernet cable (on demand)
- Solid aluminium case for control unit

Sensor System for Production and Quality Control

Sensor System

Small Object Detection

Hossbach Sensor Technologie

HST Small Object Detection

HST Flow Controller for small object detection

Description :

The HST Systems for Small Object Detection is a powerful realtime system to detect small foreign objects or particles on an endless or intermittent product.

It is for example used to detect glue lumps or paper cuts on a carrier foil. The sensor recognizesany irregularity on the product and the customized set up HST Flow Controller evalutes according to the size and position of the object, if the product is faulty or still meets the specifications.

As an additional feature, the system also is able to detect if components (as labels, velcro fastener, etc.) on the product are missing or in the wrong position.

It is a very fast sensor system, it also works reliable in real-time even in high speed production lines.

The HST Flow Controller gives an output signal for each faulty product, which is used for ejection of this product at the end of the production line or at the next ejection point.

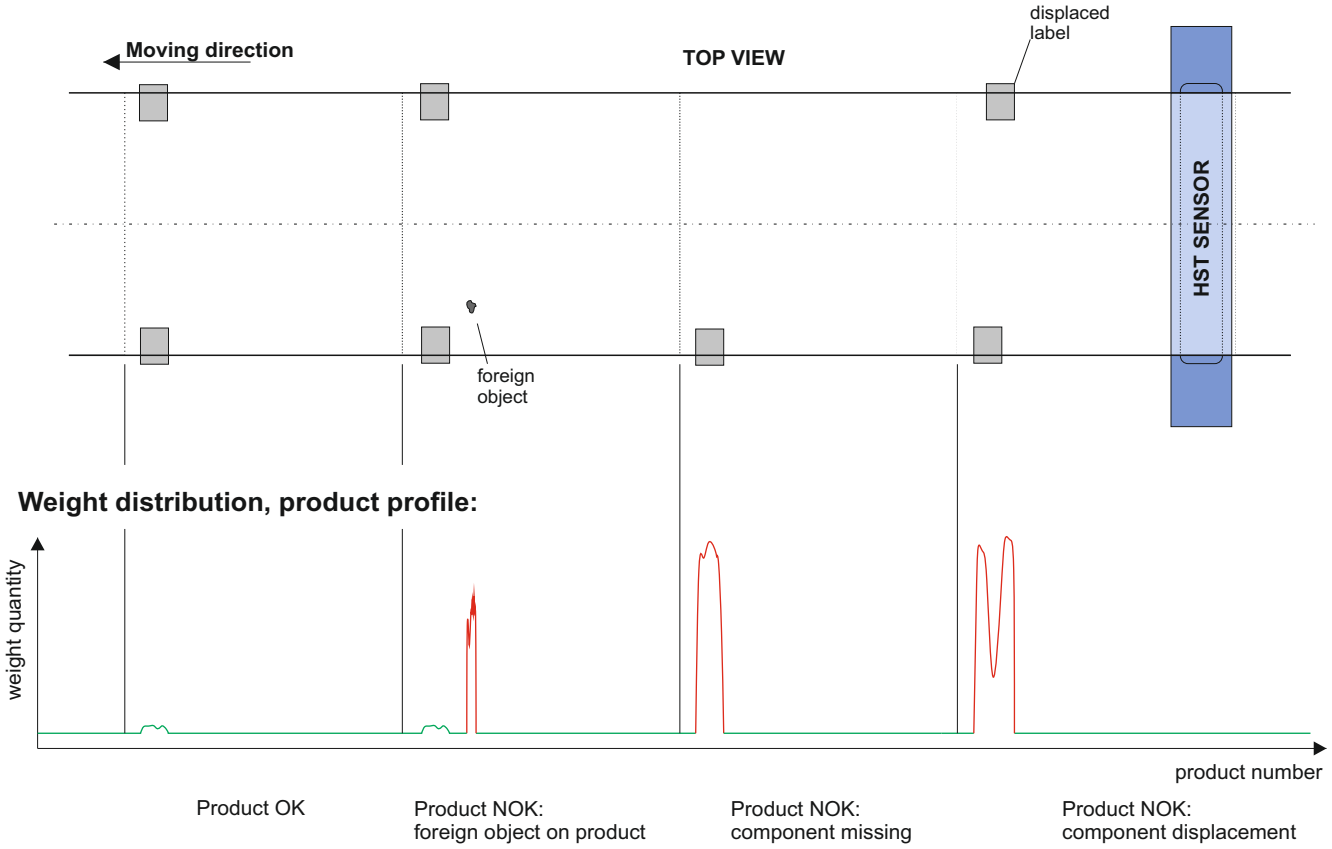
Bringing the system into operation is very easy. The Sensor needs only little space and is located where the product should be measured but still is guided as uncut endless product or by a conveyor belt.

The included HST Flow Controller Service Software enables a fast adjustment of the sensor.

Also the operation is very easy, once taken into operation, the HST System usually does not need any re-adjustment or calibration at all. It runs with the machine over years, it only will be recogniced when an error occurs on the product.

HST Flow Controller for small object detection

Example: Endless foil / nonwoven material with label



Description :

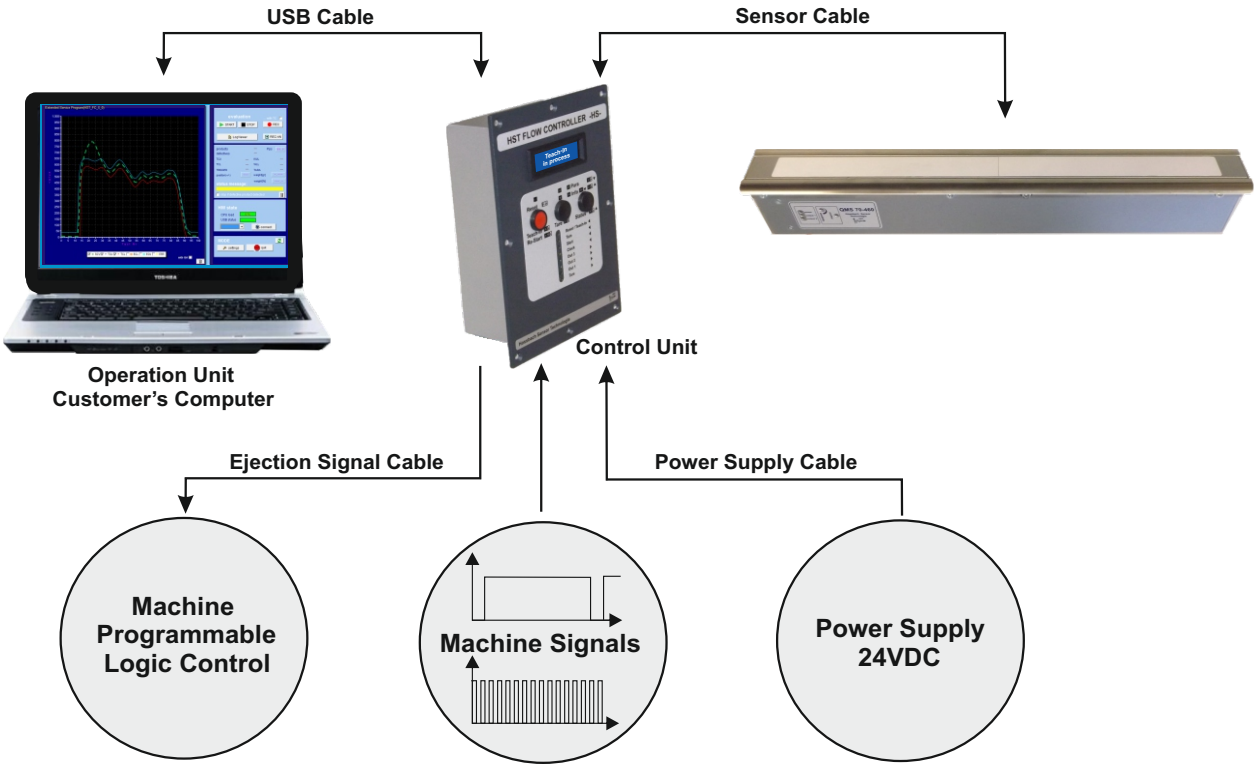
The HST Systems for Small Object Detection is designed to scan products for objects, which are very small related to the product size.

An intelligent sensor logic calculates automatically the difference between both lateral sides of the product. This enables a very high amplification of the sensor signal.
While the product is symmetrical, the sensor sends no signal to the HST Flow Controller. As soon as an irregularity occurs (as a foreign object, displaced component, hole in material) the product is no more symmetrical and the HST Flow Controller evaluates this as an error of product composition. An ejection signal is given by the HST Flow Controller for a defective product.

For visualisation of the product profiles the HST Flow Controller Sevice Program could be used.
Here also customized parameters as profile tolerances for the evaluation and output signals could be set.

HST Flow Controller for small object detection

System interconnections



The main interconnections between the HST Flow Controller System and the production machine are the machine signals.They are essential to let the system know when a product starts and how fast the machine is running, so the system is able to work speed independently.

This HST Flow Controller System is designed to work without a computer. It is a independently working system, all evaluations are done by the HST Flow Controller. A computer is only recommended for initial setup to find the ideal settings and position of the product on the sensor.
Also customized setting could be done by the software to optimize the system or change the logic of the switching outputs.

After setting up the system, the computer is disconnected and the HST Flow Controller works as independent system.
It gives output signals (+24VDC, PNP/NPN) for each defective product without time delay. The machine's control unit should be programmed to eject every product which the HST Flow Controller recognized to be defective.

HST Flow Controller for small object detection

Contents of delivery :

- Standard or customized HST QMS70 - Sensor (e.g. QMS70-460)
- HST Flow Controller - High Speed -
- HST Flow Controller Service Program CD
- Software license
- Operation Manual
- Quick Start Manual
- 5 m sensor cable
- 2 m USB cable
- USB - Ethernet range extender incl. 20 m Ethernet cable (on demand)
- Solid aluminium case for control unit

Sensor System for Production and Quality Control

Sensor System

Granulate Pulse Control

Hossbach Sensor Technologie

HST SAP / Granulate Pulse Control

HST Analyser for Pulse Control

Description :

The HST Analyser System in combination with the QMS70 SAP-T is a powerful system to evaluate and visualize a product flow transported by air stream. The sensor is installed in between the pipe, where the product is transported in. By this installation the measurement is done without affecting the material flow and the measurement could be done for 100% control of the production.

Many kinds of granulate or powder are transported efficiently in pipes by airstream. In technological advanced production machines the dosing of granulate in a multi-component product also is done by using this technique. To measure the material quantity and the weight distribution inside the airstream no common measuring method is satisfactorily accurate.

The QMS70 SAP-T is able to measure the total weight of each single pulse of granulate or measure the flow rate of a continuous flow.
By using the sophisticated HST Analyser Software, the weight distribution of granulate/powder inside a "cloud" could be measured, evaluated, visualized and recorded.
These features of the HST System not only could be used for production control purposes, but also for initial set up of the parameters for the airstream and the infeed of material.

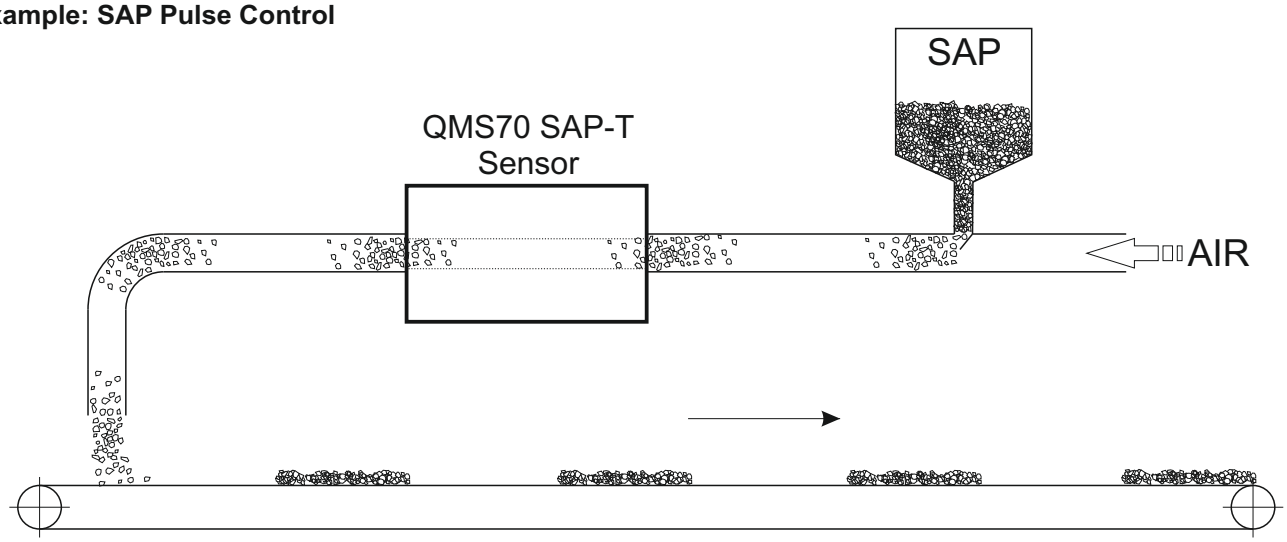
Due to the very fast sensor electronic, there nearly is no limit in product speed. Rates of 40 m/s and more are no problem for the HST Sensor System.

Bringing the system into operation is very easy. The Sensor is installed in between the pipe, where the granulate is mixed completely with air.

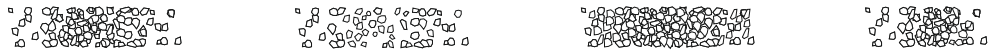
Also the operation is very easy, once taken into operation, the HST System usually does not need any re-adjustment at all.

HST Analyser for Pulse Control

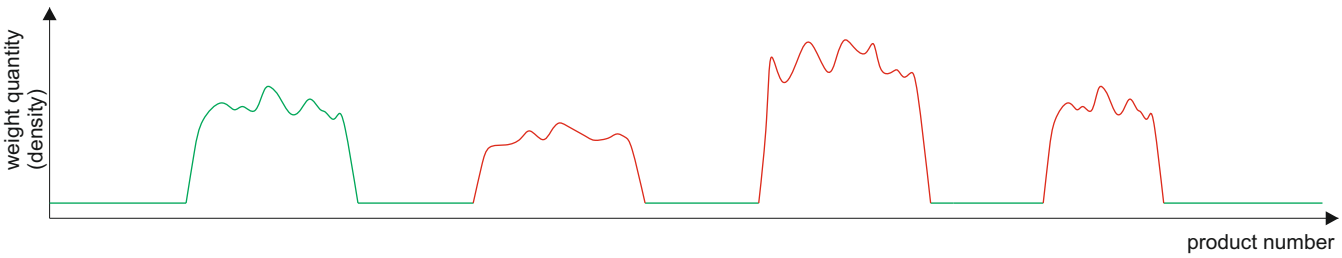
Example: SAP Pulse Control



SAP pulses:

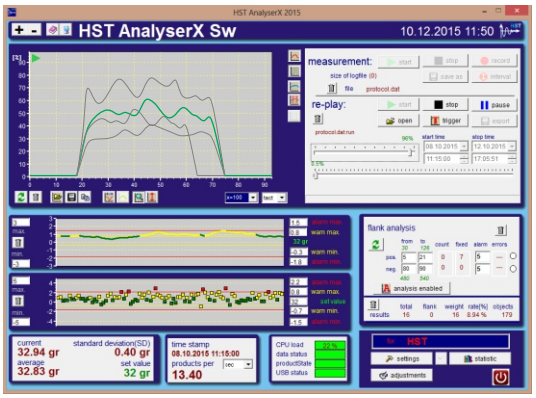


Weight distribution in SAP pulse, product profile:



Product OK	Product NOK: weight to low (density too low)	Product NOK: weight too high (density too high)	Product NOK: weight to low (pulse too short)

Visualisation, evaluation and recording in HST Analyser Software:



HST SAP / Granulate Pulse Control

HST Analyser for Pulse Control

Example: SAP Pulse Control

Description :

The HST Systems for SAP / Granulate Pulse Control is a very fast system to evalute in-line the material flow transported by airstream. Due to its robust design and the sophisticated electronics, the sensor can measure even high speed pulses without the loss of information.

Bulk materials as pellets, granulate, powder or dust are measured inside the tunnel shaped sensor. The electric field of the sensor measures every particle of the voluminous material and transfers its measuring value to the HST Analyser.

By using the HST Analyser Software, the pulse parameters as single pulse weight, pulse length and relative density are visualized and evaluated.

Commonly also the shape of the pulse itself is important. The structure of the material "cloud" with areas of different densities determines the result and qualitiy of the material distribution inside the final product. Optimizing the structure of the pulse now is very easy by using the HST Software. Here the weight distribution is visualized and any change of parameters as material infeed to the transportation pipe or airstream will be visible immediately on the computer screen.

HST Analyser for Pulse Control

Contents of delivery :

- HST QMS70 SAP-T Sensor
- HST Analyser 1006 control unit
- HST Analyser Software CD
- HST Analyser Offline Software (on demand)
- Software license
- Operation Manual
- Quick Start Manual
- 5 m sensor cable
- 2 m USB cable
- USB - Ethernet range extender incl. 20 m Ethernet cable (on demand)
- Solid aluminium case for control unit

Sensor System for Production and Quality Control

Sensor System

SAP/Granulate Flow Control

HST SAP / Granulate Flow Control

Features :

- single-sided sensor for flow rate measurement
- measure descrete portions or continuous flow of powder, granulate,pellets, SAP, etc.
- real-time evaluation of flow rate
- system calibrated to flow rate and upper/lower limits
- output signals from Flow Controller if limits exceeded
- independent of environmental influences in a wide range
- switching output +24V
- analog output 0...+10V
- +24VDC +/- 10% operation voltage
- robust aluminium housing, size 162 x 91x 104mm stainless steel slide and ceramic electrode

Description :

The QMS 70 SAP sensor in combination with the HST Flow Controller and the taring mechanic is a reliable and precise solution to measure flow rates of bulk material as powder, granulate, pellets or SAP.

Proportional to the quantity of product flow, the sensor gives an analog output which is evaluated by the Flow Controller.
Two different operational modes allowes the operator whether to evaluate the flow rate in grams per product or in percentage flow rate. These two modes are independant of the type of flow rate (descrete portions or continuous flow).

The signal interface to the machine‘s PLC is bi-directional.
For synchronisation, the Flow Controller needs a +24V signal from the machine at the beginning of each product.
In the operational mode for percentage flow rate and continuous flow, there no signal is needed by the PLC.
At exceeding or dropping the pre-set tolerances for the flow rate quantity, the Flow Controller gives a +24V switching output to the machine.

To get the maximum accuracy from the system, the taring mechanic moves the SAP sensor away from the product flow in adjustable temporal distances. The taring procedure lasts several seconds and the sensor is calibrated to zero automatically.

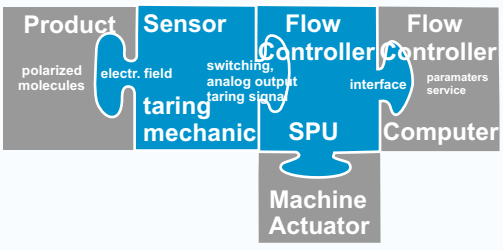
The system works independently from a computer or the software.
By using the HST SAP software, the product flow can be visualized, recorded and stored.
It also is used to calibrate the system and upload customized settings to the Flow Controller.

The QMS70 SAP operates being as all QMS sensors independent of all optical characteristics like colour, transparency, contrast and ambient light. They have no effect on the measurement.

Building Blocks :

Hossbach equipment

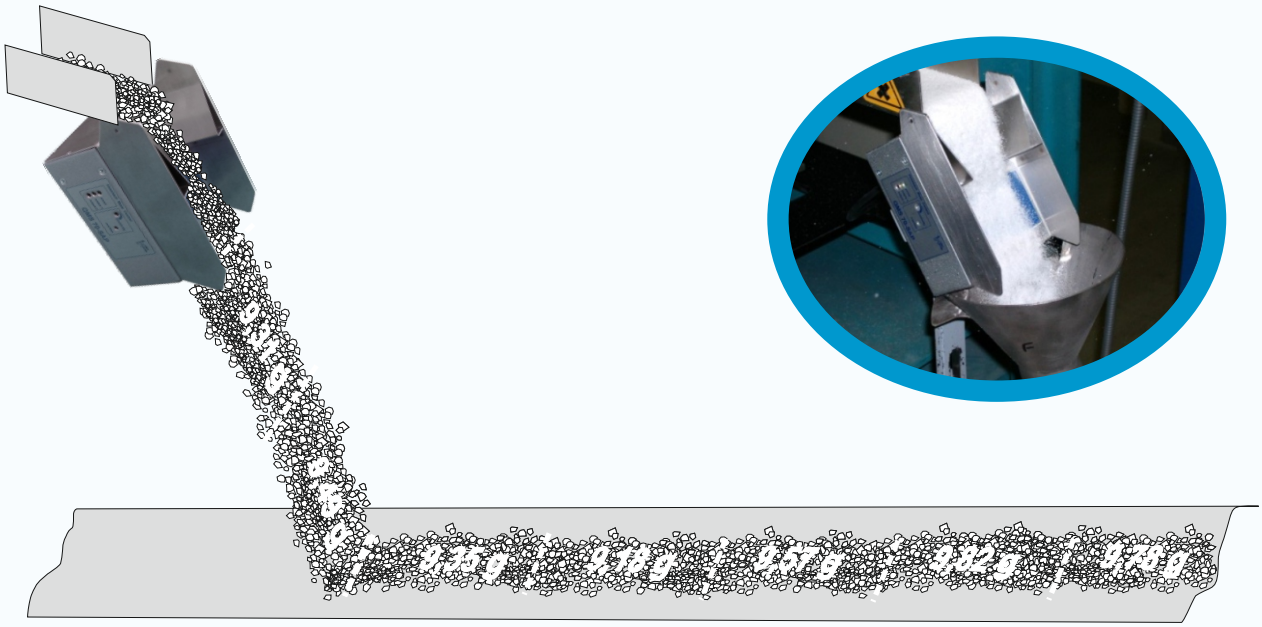
machine line device



Applications

-system calibrated to weight-

continuous flow of material like granulate, powder : **flow control**

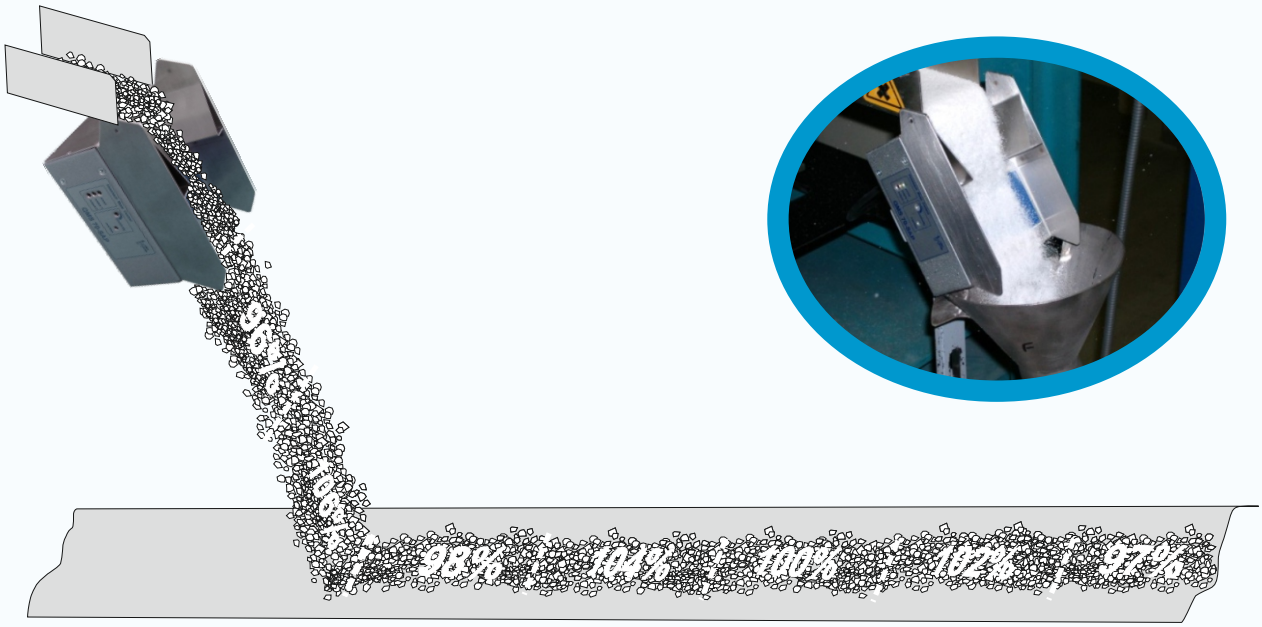


discrete portions of material like granulate, powder : **flow control**

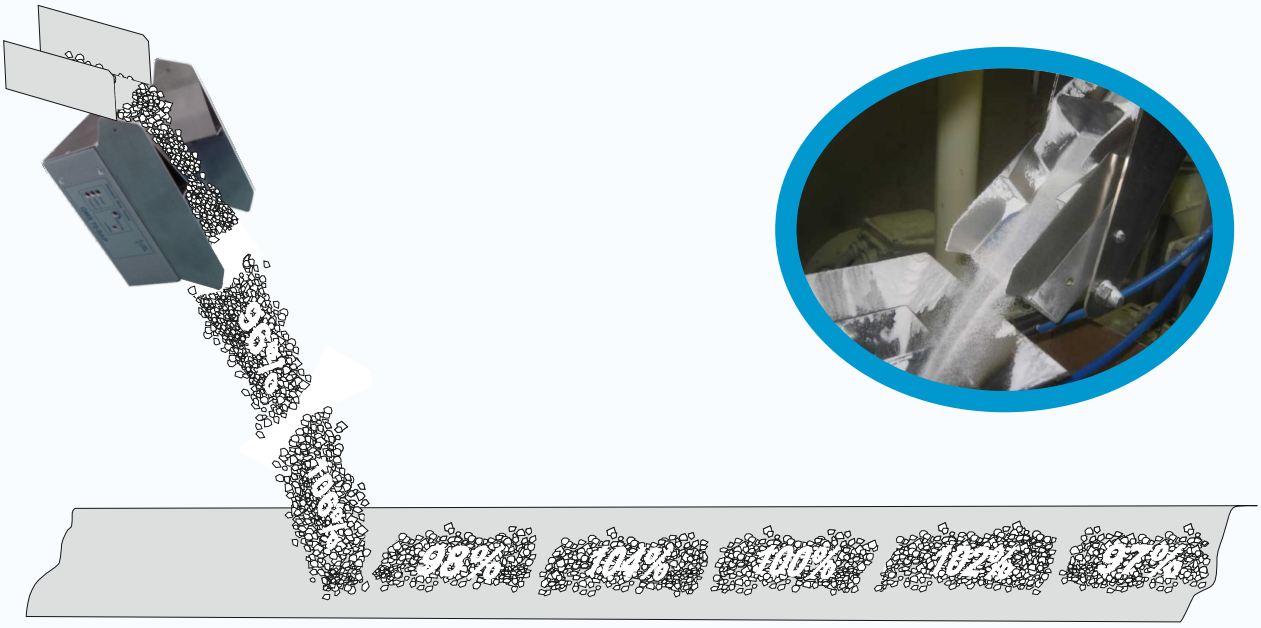
Applications

-system calibrated to percentage flow rate-

continuous flow of material like granulate, powder : **flow control**



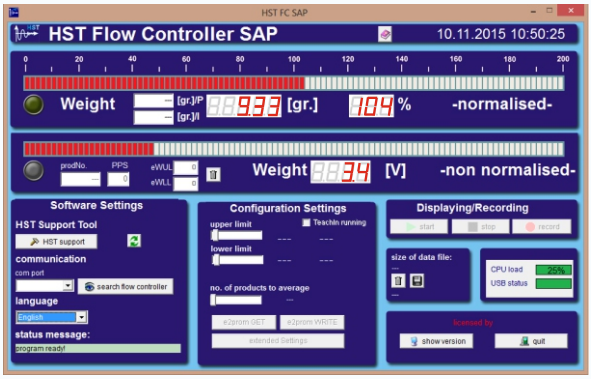
discrete portions of material like granulate, powder : **flow control**



Delivery Extent

Control Unit

including :
- Sensor Interface
- Interface for external machine control units
- Interface for taring mechanic
- USB interface for PC
- Shielded USB cable



HST Flow Controler Software

Sensor incl. taring mechanic

Sensor Cable

Package

HST SAP / Granulate Flow Control

Technical Data Sensor :

sensitivity :	high
measurement mode :	permanent, auto-taring
lowest detectable weight quantity :	< 10 mg
accuracy :	typ. < 1 % depending on material quantity and material characteristics
evaluation time :	< 1ms
active sensing area :	approx. 60 x 50 mm
measurement by :	single sided electrode

external taring :	automatically by Flow Controller
output :	analog voltage output 0...10V
operation voltage : sensor	+24VDC ±10% supply by Flow Controller
operation voltage : taring mechanic	+24VDC ±10% typ. 1,5 A
mounting :	2 pre-drilled bolt holes, M6, back side of taring mechanic
dimension :	154 x 191 x 274 mm incl. taring mechanic

weight :	4800 gr. 5050 gr. incl. 5m cable
operation temperature range :	10°C ...40° C
storage temperature range :	0°C ...50°C
meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
protection type	IP 60

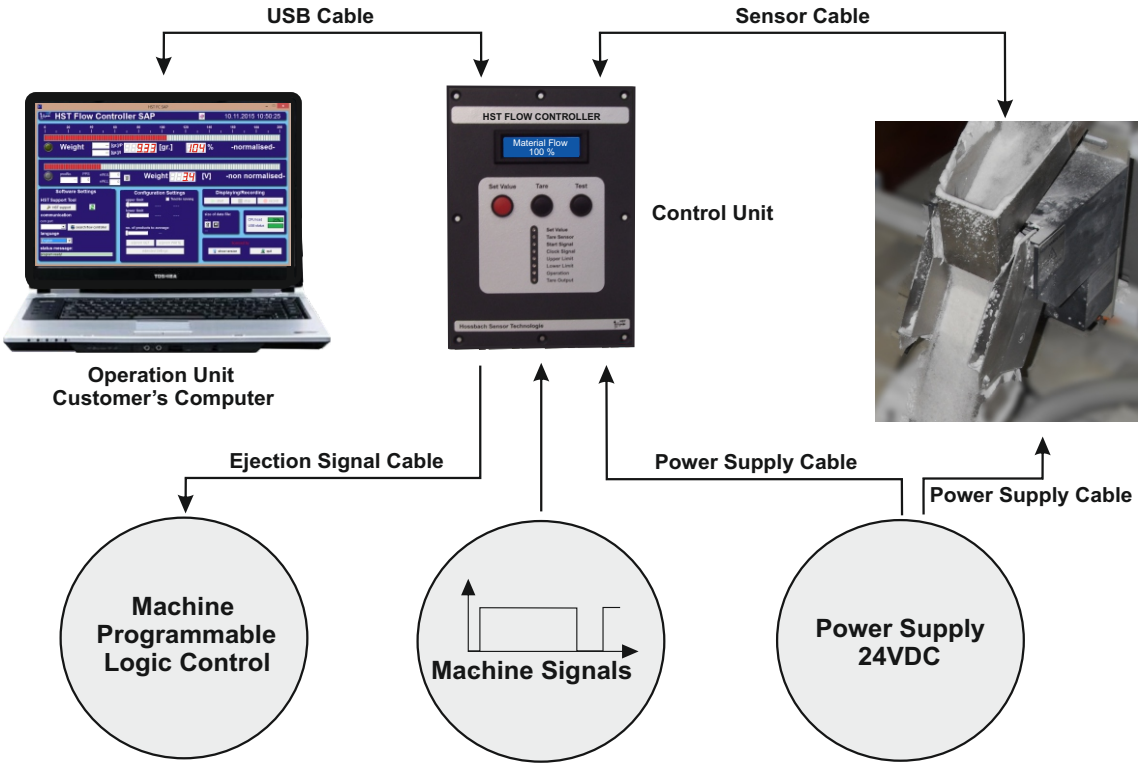
CE

Technical Data Flow Controller :

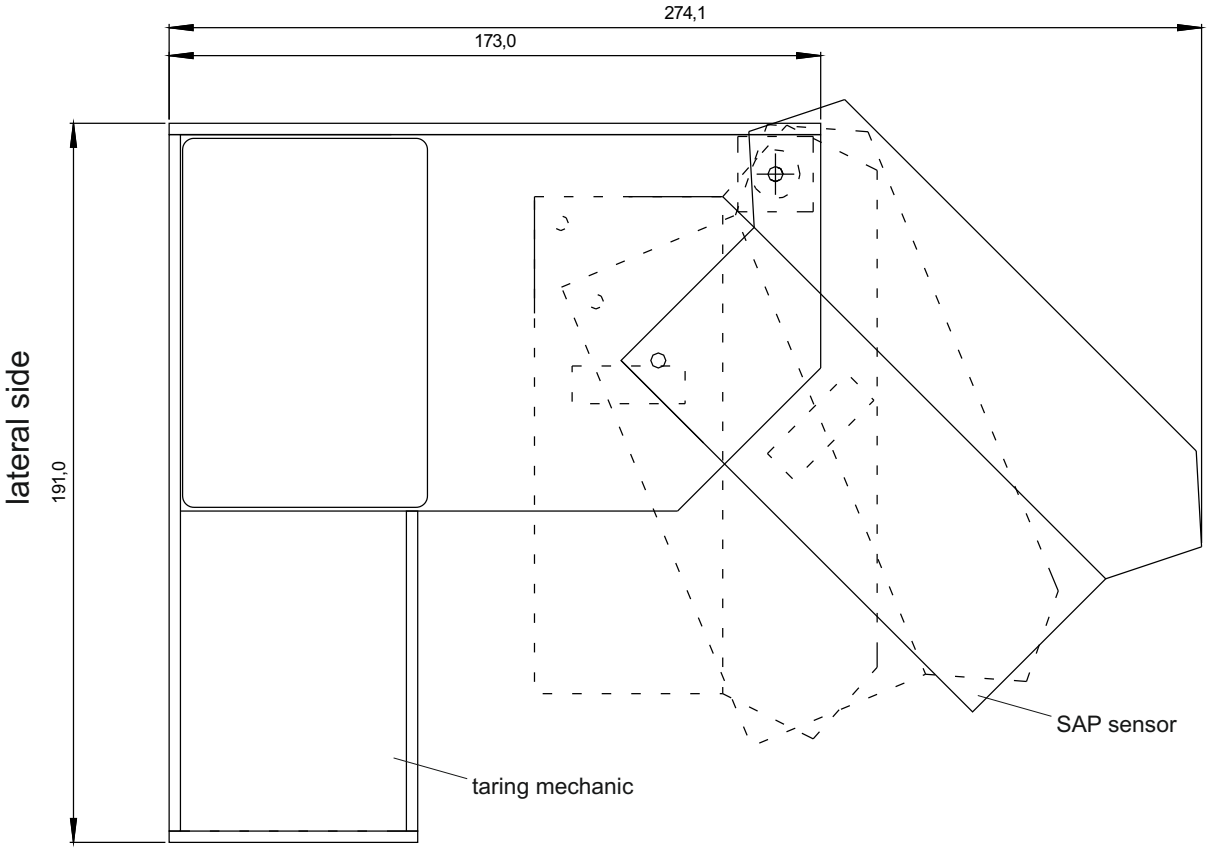
Visualisation :	2 x 16 character displax
measurement rate :	> 1000 /sec
adjustment :	automated teach-Procedure
switching outputs :	PNP 24V/20 mA, opto-coupler
switching inputs :	24V/10 mA, opto-coupler
analog output :	0...5V...10V
PLC and power supply interface :	12-pin removable screw connector
sensor interface :	15-pin SUB-D female connector
Analyser, Profiler interface :	9-pin SUB-D female connector
PC interface :	USB connector
operation voltage :	+24VDC +- 10%
power consumption :	typ. 300 mA
dimension, HxWxD :	210 x 150 x 64 mm
weight :	1050 gr.
mounting	eight 4 mm holes for wall mounting
operation temperature range :	10...40° C
storage temperature range :	0...50° C
meets or exceeds standard and requirements :	EN 61326-1:2006 EN 50011:2007 class A
protection type :	IP 50

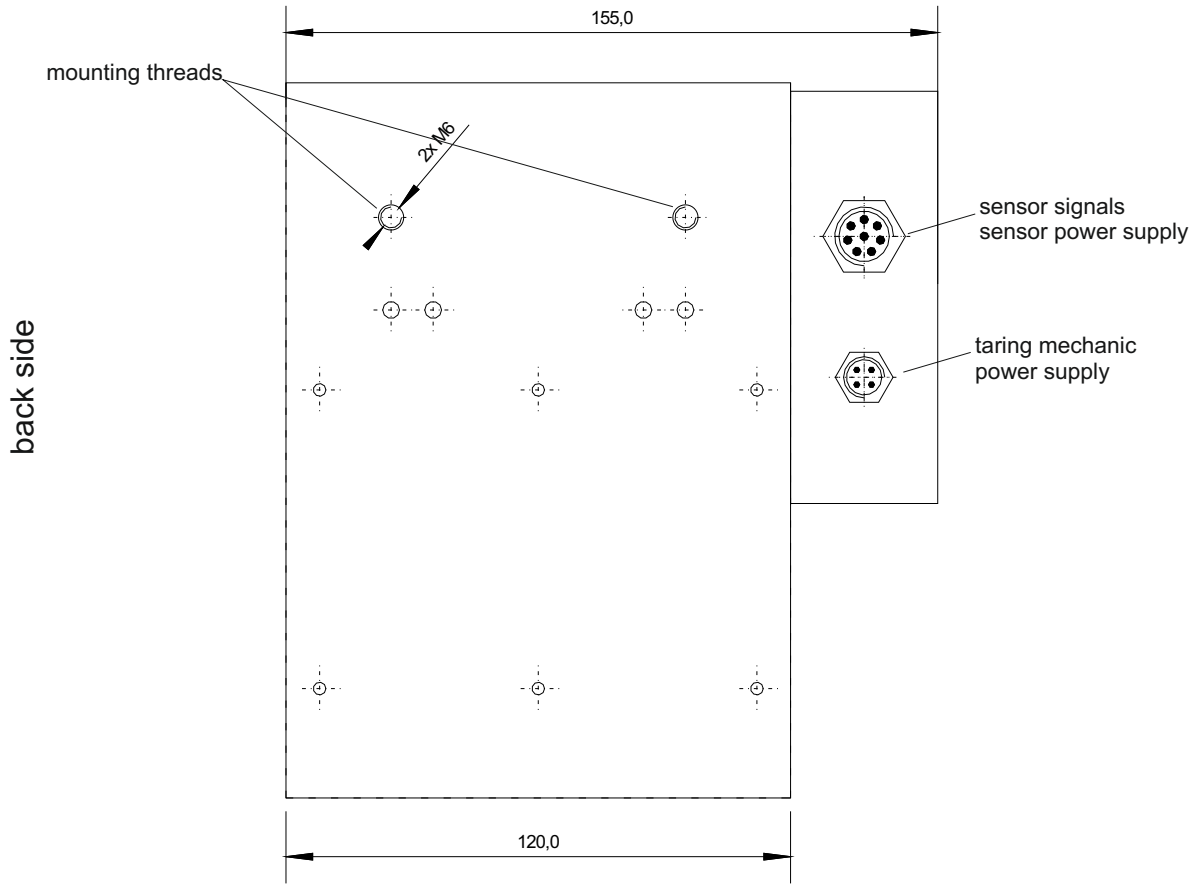
System Overview

Interconnections : PC for configuration + monitoring

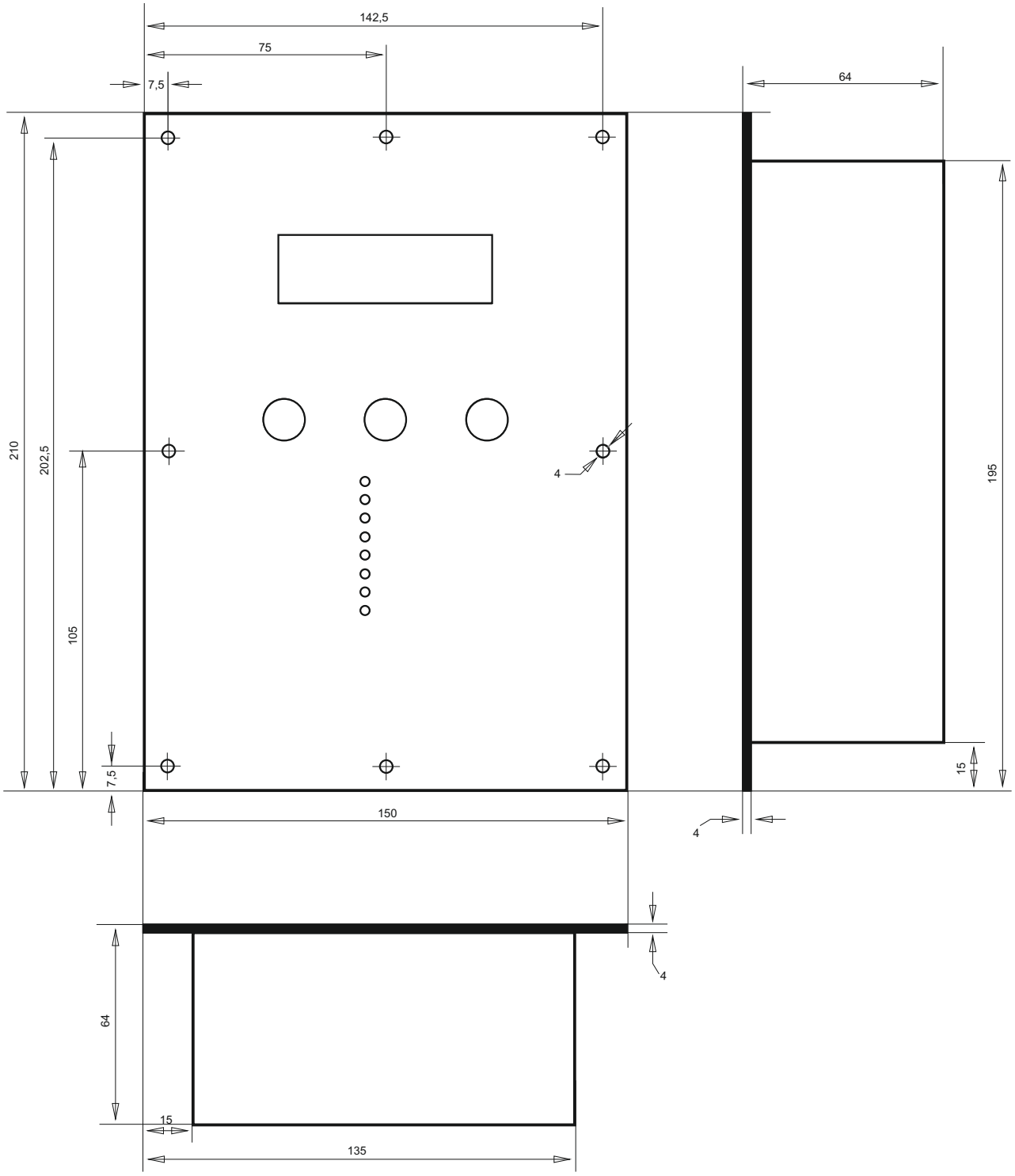


dimensions taring mechanic incl. SAP- sensor [mm]



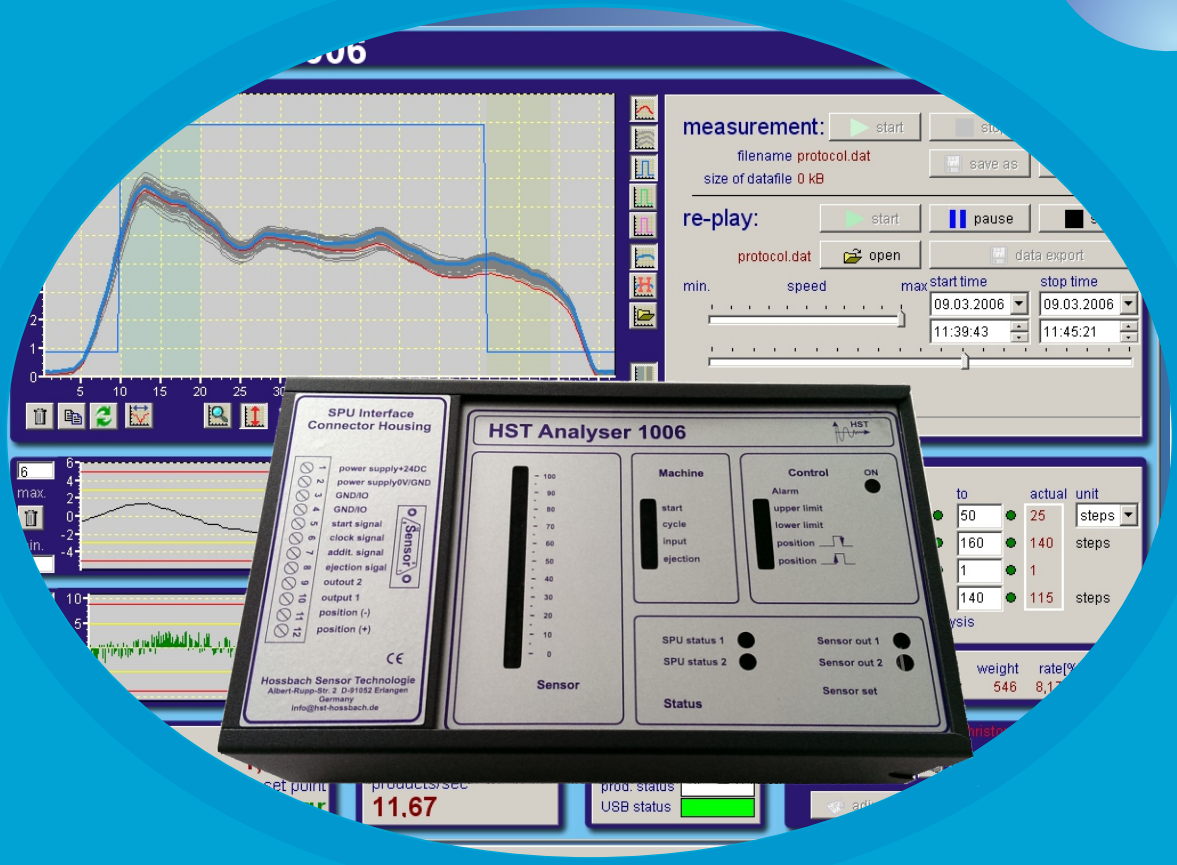


dimensions Flow Controller [mm]



Sensor System for Production and Quality Control

Sensor System



HST Analyser 1006

Hossbach Sensor Technologie

Analyser

the mobile inspection system
for intermittently aligned products

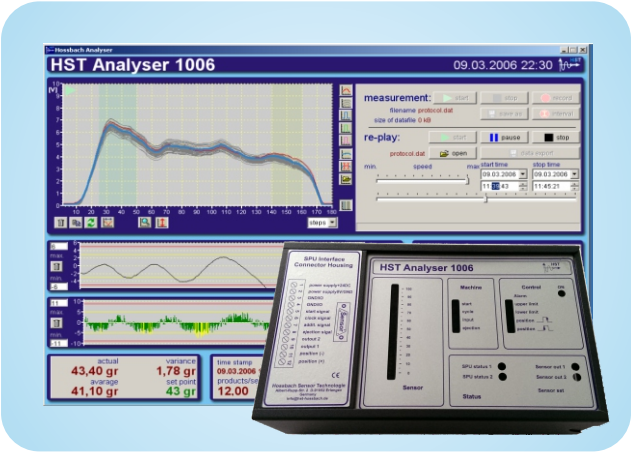
=

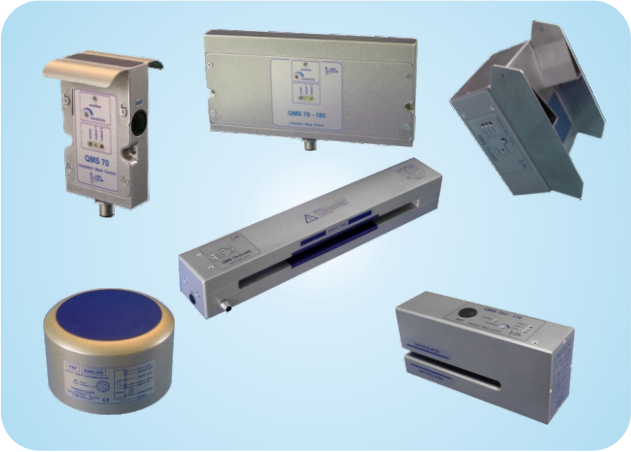
+ Enhancing Quality
+ Saving Money
+ Supporting Engineering
+ Supporting Purchasing
+ Supporting Decisions

=

Being Competitive

HST Analyser 1006





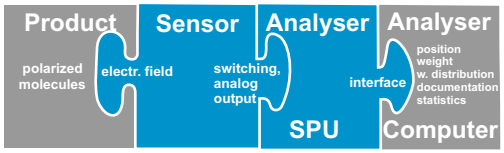
Features :

- mobile, high speed on-line inspection tool
- instantaneous overview over production and quality
- evaluation and visualisation of weight and weight distribution of total products
- evaluation and visualisation of object positions
- evaluation and visualisation of warnings, alarms and position deviations
- covering many inspection application only by changing over to other sensors mounted at different machine locations
- statistical calculations and representations
- comfortable scaling, calibrating, configuring
- drag and drop of weight distribution curves from screen into spreadsheet programs
- powerful protocoling and documentation
- video recorder like play, re-play, record functions

Description :

The HST Analyser inspects and analyses whole products or intermittently aligned materials due to their weight, weight distribution, position etc. The same applies to continuous webs or material flows measured for distinct periods or segments. Each product, web segment or material flow is recorded, based on a pre-set number of sensor measurements. From that a weight distribution profile is generated and weight is evaluated. By comparing a pre-set number of weights important information is derived for quantitative analysis. By monitoring and comparing the weight distribution profiles many information can be derived due to the production process, to the raw material, to the quality, effect of product changes.
A great variety of QMS70 Sensors can be used, each type of sensor covering another inspection application. Whereas the other components of the HST Analyser system can remain the same. The HST Analyser Software Package can be licenced for one or more PCs. The HST Analyser Online Software Package can be used both as on-line inspection software and as off-line analysis software tool. The HST Analyser Offline Software Package is only used as additional off-line software tool.
To reduce the expenditure of time and costs for inspections at different machine line locations additional interface connecting housings can be installed once at different locations to accept the Signal Processing Unit by simple plugging, avoiding reoccurring installations.

Building Blocks :

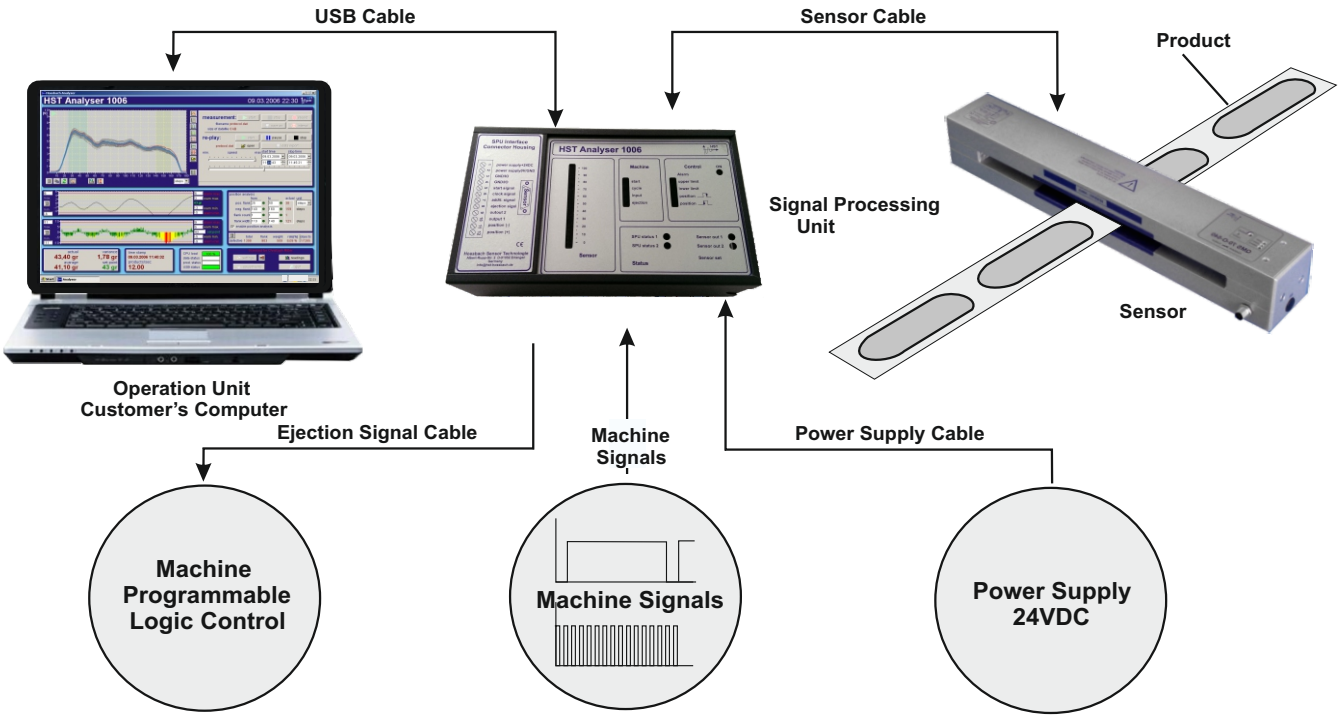


Hossbach equipment

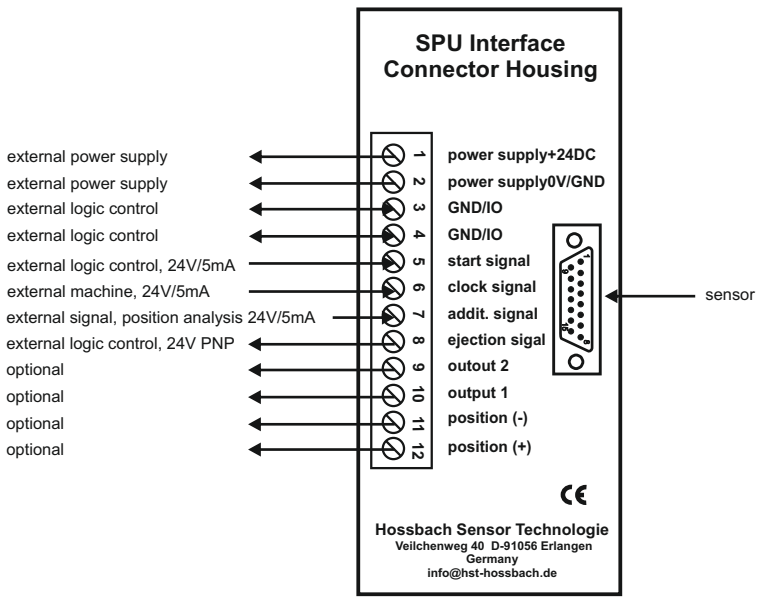
machine line device

System Oberview

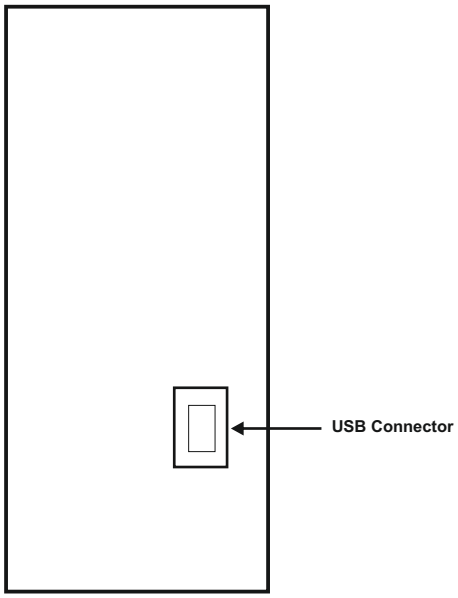
Interconnections :



SPU Interface Connector Housing :



SPU Housing USB Connector :



Features

HST Analyser 1006 a Versatile Analysis Tool

The reason why the HST Analyser 1006 is an amazing tool for a great variety of applications is based on its features and its system concept. The concept implies the software as well as the system components :

- **software package with features that are based on many years of experience**
- **software version for on-line measurements**
- **software version for off-line works, e.g. documentation, product design etc.**
- **the use of many different sensors, each designed for other measurement demands**
- **place to place moveable components**

The measurement concept covers a great variety of applications, products and materials and makes many measurements, checks, detections and tests possible. Products can be existent in many kinds:

- **discrete objects and products...**
- **endless, thin or voluminous materials, webs...**
- **material flow consisting of powder, granulate...**
- **coatings on paper or foils...**
- **covered or packaged object and products...**

Performance of the HST Analyser

Listing up all the advantages in production lines, where the HST Analyser 1006 can be used for as a tremendous inspection tool is not possible. In contrast to other inspections systems, the HST Analyser measures the quantity of the material, object or product just being in the measuring field of the sensor. Although the sensor measures the dielectric behaviour of the items being in the measuring field, the Analyser allows due to its unique features the calibration in weight or weight/sqm.

The HST Analyser gives many direct inspection results like position, weight, weight distribution or - remaining in the weight category - the production continuity concerning weight and weight distribution of whole products over time. Weights are indicated as single weight or average weight, or as weight deviations from a set weight value. Much more information of the production quality can be derived from the weight distribution of whole products or material webs represented by profile curves.

The HST Analyser gives immediate inspection results self-evidently. But it indicates much more. Due to one figure, the variance of weight, calculated by the HST Analyser 1006, the user can see, when the line is running constantly, is drifting, makes changes periodically, spontaneously or is running out of limits. The smaller the variance, the better the production runs. In other words, the machines running at lower variance values are working better than machines working at higher. The HST Analyser is not only a tremendous tool, but also an objective support to find the right decisions concerning e.g. overhauling or purchasing machine equipments.

The HST Analyser gives indirect inspection results in many categories. These indirect results are often very specific concerning on the one hand products, objects or material to be inspected or on the other hand the production line and production process. The inspection may range from raw material control to timing of different production steps. It is put in the hand of the user, to see if the coating, the knives, the vacuum, the infeed, the transport, the thickness, structure, placement of layers, the forming process, the product change or development... is ok or not.

Features

Although he HST Analyser offers many ultra modern analysis features the operation is kept very easy. The features are designed to give needed product data on-line at once during production or to deliver data thanks to its recording, documentation statistics tools off-line for later analysis.

Features

video recorder
The HST Analyser has three operation possibilities, due to a video recorder like panel. Other than the measurement mode, where the product information can only be monitored, the video recorder mode offers to record the just acquired production data or to re-play formerly recorded production data. Which production data should be stored, can be set by parameters. Weight or weight distribution data are two of such recordable data. All product or material measurements are stored with the referring time stamp.

weight distribution chart
External machine signals control the operation of the HST Analyser 1006. The start signal initiates the measurement of the product to be measured. The number of clocks determines the number of measurement signals of the sensor to represent the product as a weight distribution curve (profile) in the multi-functional chart. The beginning of the profile is the beginning of the product, the end of the profile is the end of the product. The profile-curve-points in between represent the weight quantity distribution of the profile in direction of the transport direction. In many applications the sensor measures over the whole width of the product, whereby the profile shows the weight distribution of product slices.

weight panel
The weight panel shows several weight data: The actual, the average, the set weight and the variance.

weight deviation histograms
Two weight histograms show the weight deviation of the last manufactured products or material portions. The single weight histogram shows the weight deviation from the set weight of each product. Products whose weight exceed or undergo the preset limits are visualised in different colours.
The average weight histogram shows the tendency of the product weight. Each spike represents an average weight preset number of products. Exceeds the average weight preset limits, the referring spikes are shown in other colours.

weight calibration
The sensor of the HST Analyser 1006 system has to be calibrated for the product to be checked. For that purpose several products or material extracted quantities are ejected, that are weighed on external balances. The determined weight is then inserted in the referring input line. From that moment on the HST Analyser is weight calibrated. For the weight calibration procedure, the HST Analyser 1006 outputs a 24V signal to the control unit of the production line, which ejects several products or extracts distinct material quantities.

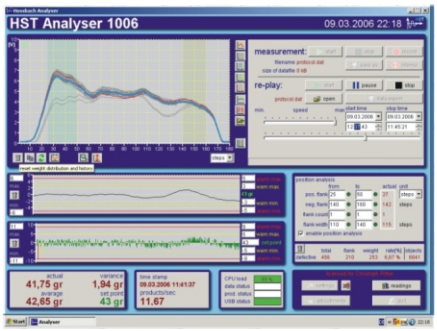
position, timing and synchronisation analysis
The position of objects, whose detection effects a 24V switching signal, can be analysed by the HST Analyser 1006. The beginning, the end and the length of the object can be checked by adjustable tolerance ranges. Although the position analysis is designed primarily for position analysis of objects detected by HST sensors, signals from other sensors like photo cells or machine signals in general can also be checked referring their position or timing or synchronisation.

statistics
Data which characterise the quality of the manufactured products give important information about the production process. Among these data is the total sum of manufactured products and defectives referring weight and position. An important value is the variance, that describes the weight fluctuation of a preset number of products. To visualise the weight fluctuations a Gaussian-like weight fluctuation curve is created, including the weight of all products.

documentation
All measurement (sensor) and evaluated data including time stamps can be recorded and re-played thanks to the video-recorder-like feature. Furthermore selected data can be easily extracted from recorded data files and imported into spreadsheet formula programs like Excel.
For quick documentation weight distribution and position curves can directly be copied from the screen to the spreadsheet formula programs.

Delivery Extent

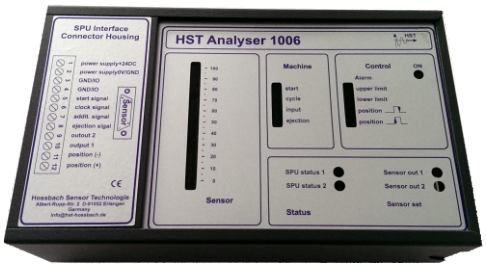
Delivery Extent :



HST-Analyser 1006 Software Package

HST-Analyser 1006 Software Package

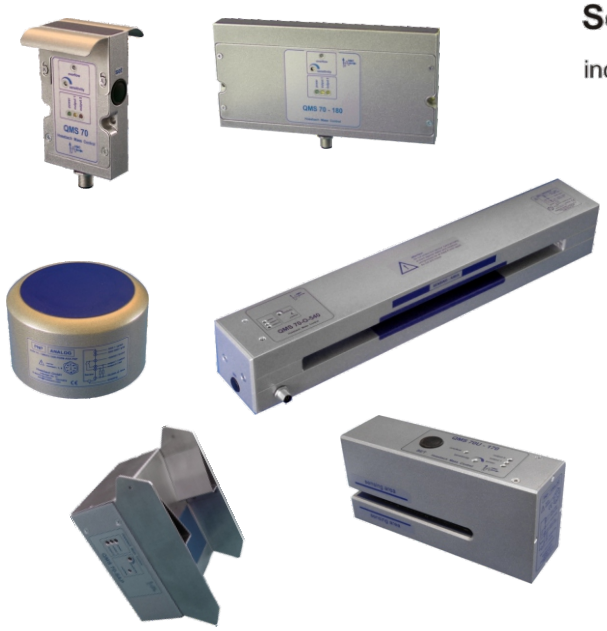
including : - CD containing software package
and operation manual
and Instruction film
and further information



Signal Processing Unit

Signal Processing Unit

including : - interface connector housing
- shielded USB cable



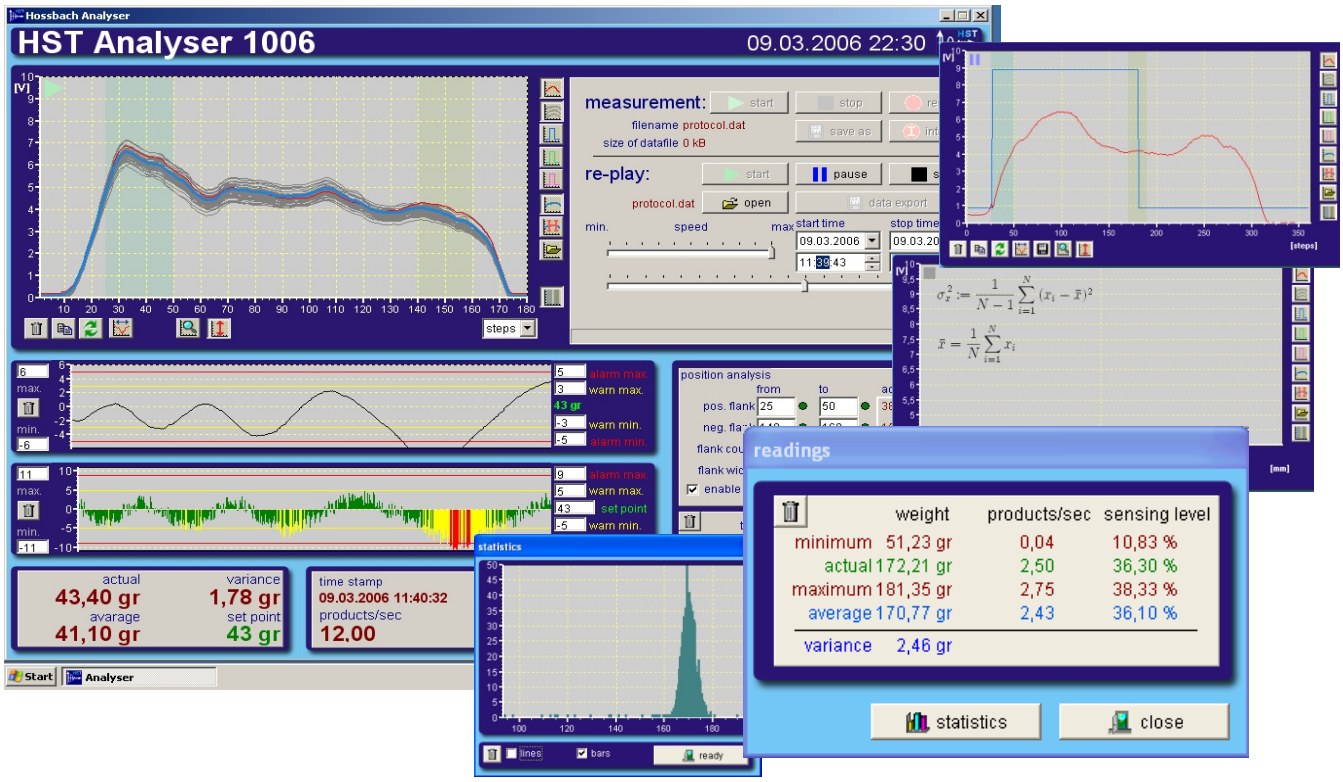
Sensor

including : sensor cable

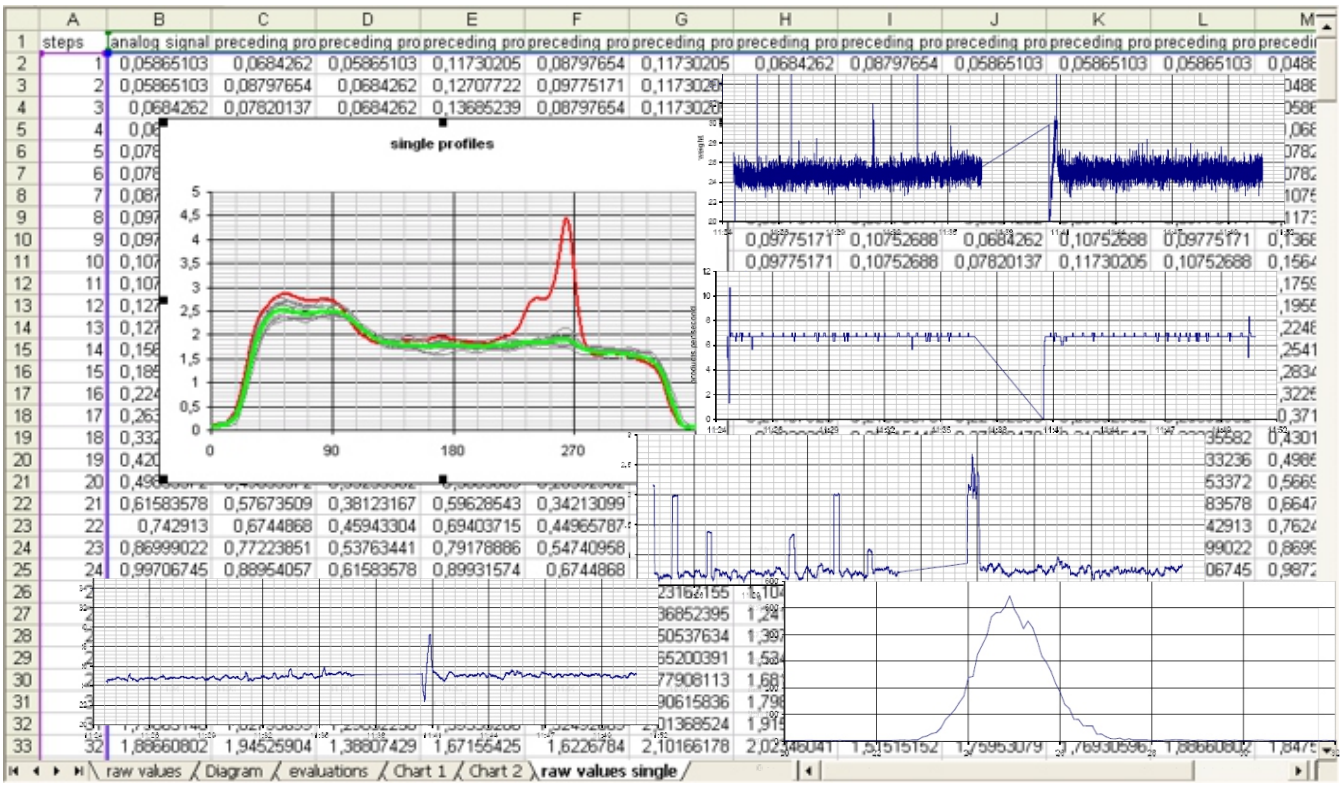
one sensor, version according application

HST Analyser 1006

Operation Screen



Charts



Order Data : **- control equipment -**

HST Analyser 1006	order no.
HST Analyser **Signal Processing Unit , SPU** 0...10V analog input as sensor interface switching output PNP USB output as PC interface 1,5m shielded USB cable **Online Software Package** licensed software for on-line measurement data acquisition on-line recording on-line analysis on-line editing, protocoling and documentation off-line measurement data re-play off-line analysis off-editing, protocoling and documentation **Transport Case**	**HST Analyser 1006 Basic**

Order Data : **- complete sensor system -**

HST Analyser 1006	order no.
HST Analyser **Signal Processing Unit , SPU** 0...10V analog input as sensor interface switching output PNP USB output as PC interface 1,5m shielded USB cable **Online Software Package** licensed software for on-line measurement data acquisition on-line recording on-line analysis on-line editing, protocoling and documentation off-line measurement data re-play off-line analysis off-editing, protocoling and documentation **QMS70xxx Sensor** Sensor with 0...10V analog output, incl. 5m sensor cable **Transport Case**	**HST Analyser 1006 - QMS70xxx** *)
*) QMS 70xxx replaced by the order no. of the referring sensor	

Order Data : **- spare parts -**

HST Analyser 1006	order no.
HST Analyser Transport Case	**HST Analyser 1006 - case**
1,5m shielded USB cable	**USB-SH-1-5**

Order Data : **- software packages -**

HST Analyser 1006	order no.
HST Analyser Online Software Package - one user license - software for on-line measurement data acquisition on-line recording on-line analysis on-line editing, protocoling and documentation off-line measurement data re-play off-line analysis off-editing, protocoling and documentation	**HST Analyser 1006 Online - SWP -1**
HST Analyser Online Software Package - five user license - same features as the one user license of the Online Software Package	**HST Analyser 1006 Online - SWP -5**
HST Analyser Offline Software Package - one user license - off-line measurement data re-play off-line analysis off-editing, protocoling and documentation	**HST Analyser 1006 Offline - SWP -1**
HST Analyser Offline Software Package - five user license - same features as the one user license of the Offline Software Package	**HST Analyser 1006 Offline - SWP -5**

Technical Data

Signal Processing Unit :

function :	high speed sensor signal processing and conversion, data transfer to the PC
signal conversion rate :	max. 5 kHz
signal inputs :	start and clock signal, 24V&10mA
signal output :	switching output 24V PNP, for product ejection and weight calibration
sensor interface :	0 ... 10V, +24V, 15-pin SUB-D connector
PC interface :	USB
PLC and power supply interface :	12-pin screw fastening connector
indicators :	status LEDs , sensor signal bar-graph
operation voltage :	+24VDC +- 10%
dimension, HxWxD incl. interface connector housing :	145 x 240 x 68 mm
weight :	2000 gr.
mounting of the interface connector housing :	four 4 mm holes for wall mounting
mounting of the electronic housing :	by plugging into the interface connector housing
operation temperature range :	10...40° C
storage temperature range :	0...50°C
meets or exceeds standard and requirements :	EN 50011:2007 class A EN 61326-1:2006
protection type :	IP 50

CE

Technical Data

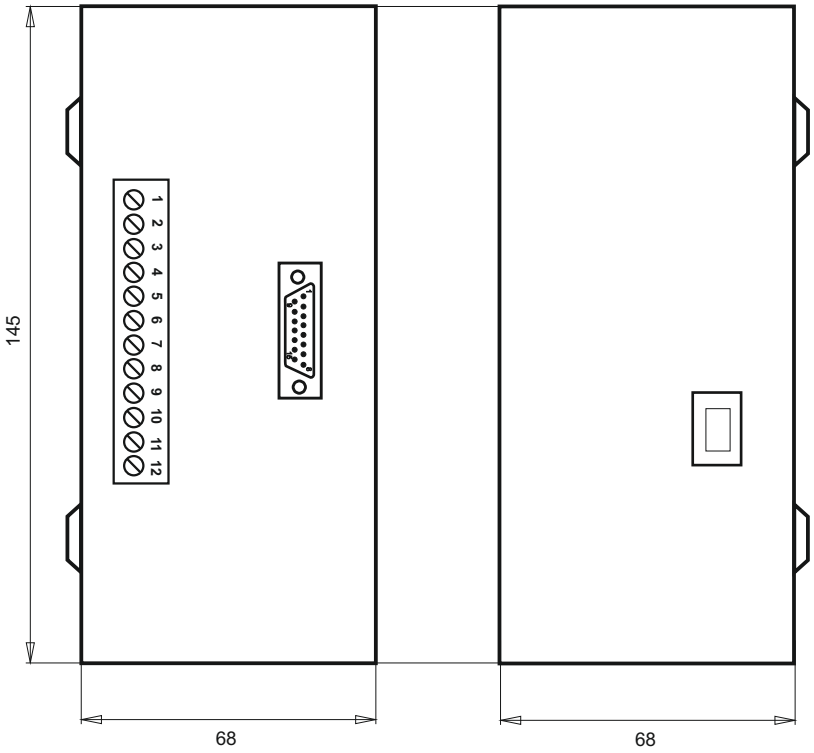
Software Packages :

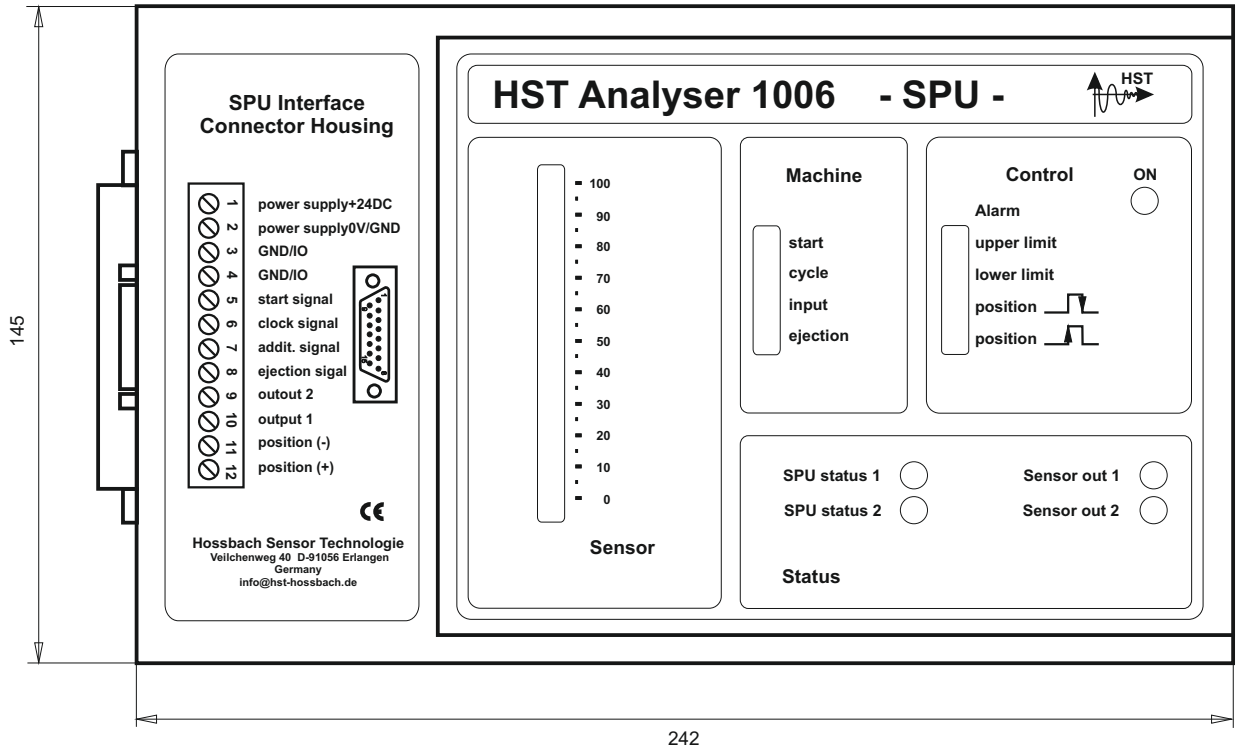
Online Software Package :	1) on-line measurement 2) on-line recording 3) on-line analysis 4) off-line production data re-play 5) off-line analysis 6) off-data editing, protocoling and documentation
Online Software Package :	1) off-line production data re-play 2) off-line analysis 3) off-data editing, protocoling and documentation
delivery extent :	licensed software on CD, incl. operation manual

Demands on Customer PC :

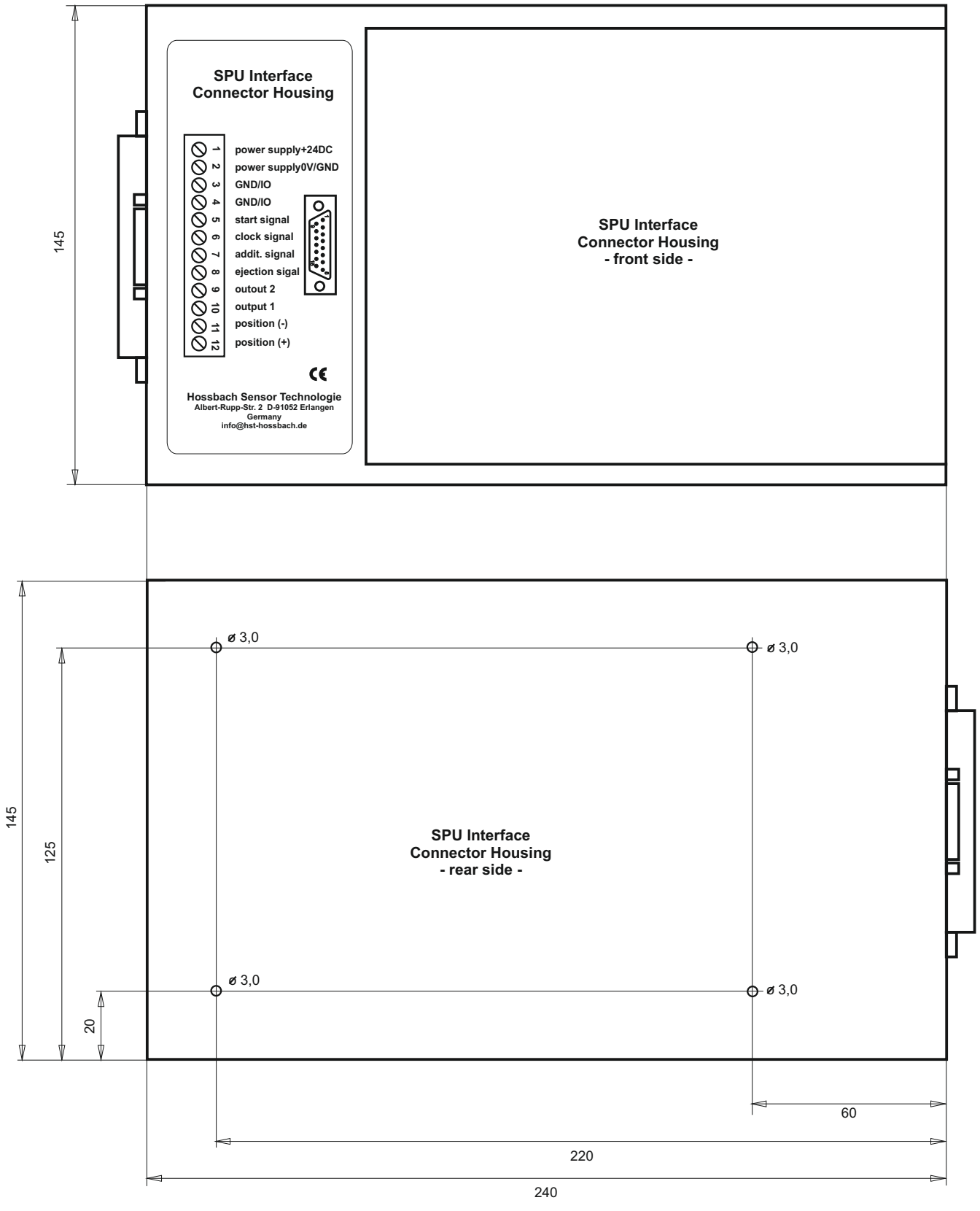
personal computer :	high performance PC
graphic resolution :	optimised for 1074x768 pixel, higher resolution possible
operation system :	Windows 7,8,10, 11
processor frequency :	min. true 2 Ghz
RAM :	min. 1 GByte
needed hard disk space :	program: 20Mbyte ; Data : >= 500MByte
interface :	USB
max. conversion rate :	> 1000 measuring values / second
stored data format :	CSV or DAT

Dimensions


145
1 2 3 4 5 6 7 8 9 10 11 12
68
68


145
SPU Interface
Connector Housing
1 power supply+24DC
2 power supply0V/GND
3 GND/IO
4 GND/IO
5 start signal
6 clock signal
7 addit. signal
8 ejection sigal
9 outout 2
10 output 1
11 position (-)
12 position (+)
Hossbach Sensor Technologie
Veilchenweg 40 D-91056 Erlangen
Germany
info@hst-hossbach.de
HST Analyser 1006 - SPU -
HST
100
90
80
70
60
50
40
30
20
10
0
Sensor
Machine
start
cycle
input
ejection
Control
ON
Alarm
upper limit
lower limit
position
position
SPU status 1
SPU status 2
Sensor out 1
Sensor out 2
Status
242

Dimensions


SPU Interface
Connector Housing
1 power supply+24DC
2 power supply0V/GND
3 GND/IO
4 GND/IO
5 start signal
6 clock signal
7 addit. signal
8 ejection sigal
9 outout 2
10 output 1
11 position (-)
12 position (+)
Hossbach Sensor Technologie
Albert-Rupp-Str. 2 D-91052 Erlangen
Germany
info@hst-hossbach.de
145
SPU Interface
Connector Housing
- front side -
ø 3,0
ø 3,0
ø 3,0
ø 3,0
145
125
20
SPU Interface
Connector Housing
- rear side -
60
220
240

Sensor System for Production and Quality Control

Sensor System

Cotton Wool Weighing System

Hossbach Sensor Technologie

Cotton Wool Weighing System

the packaging weight control and
regulation system
for continuous webs

=

+ Weight Evaluation
+ Packaging Weight Regulation
+ Web Feed Regulation
+ Saving Money

=

Being Competitive

HST Cotton Wool Weighing System 1004

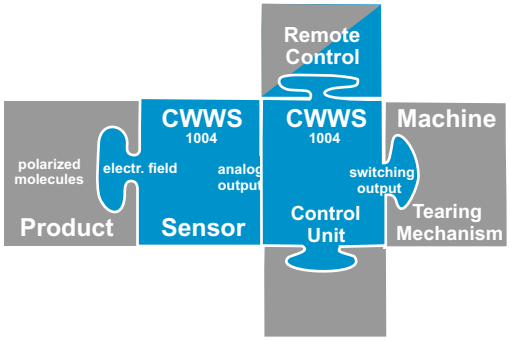
Features :

- evaluations of material quantities of continuous non-woven products like cotton wool webs
- dosing of weight equal material cords on-line before getting packaged
- weight evaluation independent of web thickness and width
- speed independent measurement procedure selectable
- weight re-adjustments by remote control (manually) or by external balance
- activation of the tearing device, when package weight is achieved
- synchronisation of teasel and packaging speed due to the sag regulation control of duration and tearing moment of the tearing procedure
- visualisation of weight, set weight value and dosing and control status

Description :

The Cotton Wool Weighing System 1004 is since decades the approved dosing system for zig-zag cotton wool cords to be packaged in plastic bags. It had substituted the ancient x-ray based dosing systems.
The Cotton Wool Weighing System 1004 can easily integrated as well in new as in already existing packaging machines.
The cotton wool web running through the lower gap of the sensor gets measured for weight evaluation.
When the pre-set weight is achieved a switching output is set, to signalise that the tearing device has to be activated to separate the cotton wool web to be packaged in the next plastic bag. The switching output signal can be connected directly to an electric contactor or first to a logic control unit to initiate the tearing device.
The operation of the Cotton Wool Weighing System 1004 meets also the demands on continuous cotton wool web transport. The stop and go of the cotton wool web in front of the tearing device as well as the dis-continuity of the web transport speeds are balanced by the sag regulation feature. The sag regulation lets cotton wool web sag more or less creating a cotton wool reservoir that prevents the web from thinning out or jamming.
An external tachometer, whose output voltage is proportional to the transport speed can be connected to the tachometer input of the Control Unit to balance changing transport speeds.

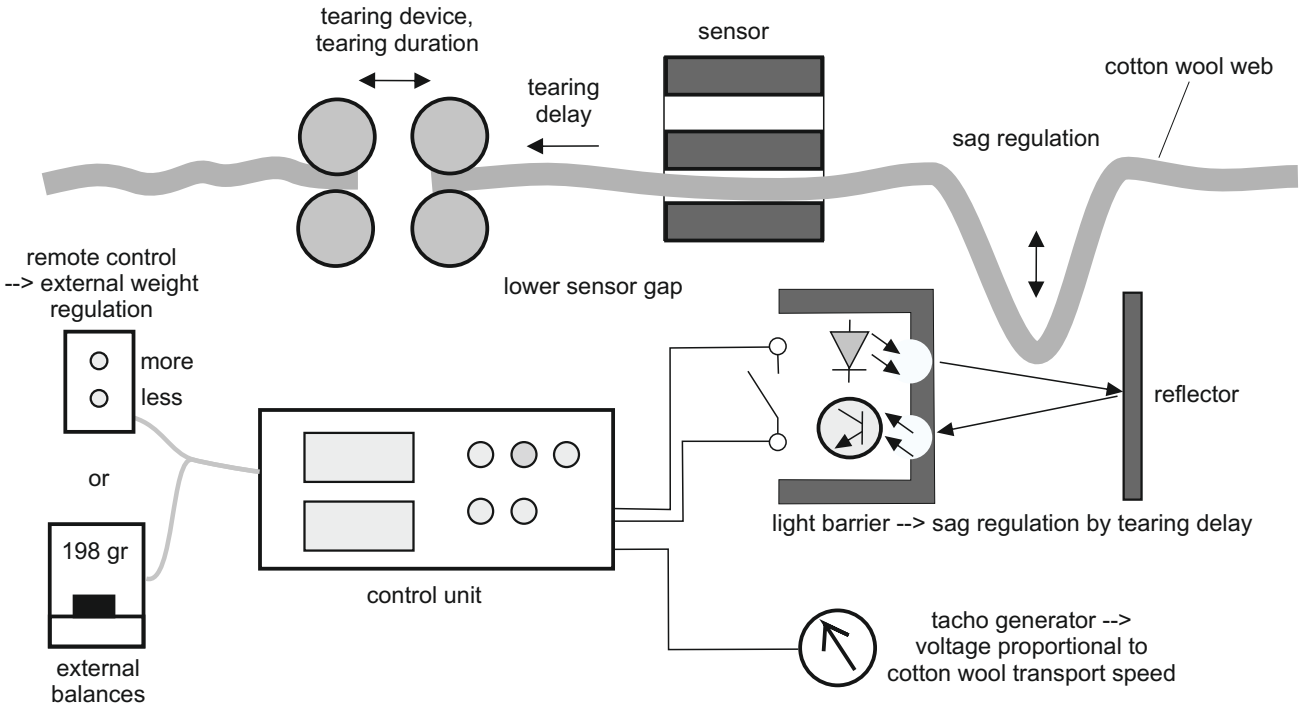
Building Blocks :



Hossbach equipment

machine line device

System Oberview



The Cotton Wool Weighing System 1004 consists of the Control Unit, the Sensor and the manual Remote Control. The Sensor is installed into the production line the way, that the cotton wool web runs through the lower Sensor slot. The Control Unit is the active station for weighing, dosing, operation and displaying. It evaluates equal weight quantities at constant line speed or if tachometer function is utilized at varying line speeds. The tachometer input of the Control Unit needs a DC voltage of 0...5VDC...10VDC.
At the moment, when the Cotton Wool Weighing System 1004 has evaluated the preset weight quantity, the switching output is set immediately or after a preset tearing delay. The last to synchronize the tearing process and the web conveying speed. Synchronisation is performed by using the sag regulation. Each time when the cotton wool interrupts the light barrier, the light barrier sends a signal to the Control Unit to abbreviate the tearing duration. Generally the sag regulation must be adjusted the way, that the cotton wool web tends to hang through, i.e. sag a little bit.
The Cotton Wool Weighing System 1004 disposes of two further functions : The external “Adjusting” and “Displaying”. The external “Adjusting” is utilized to correct weight drifts during running production either by help or the manual Remote Control or by the help of an external balance half- or full-automatically. The function “Displaying” allows, to visualize the weight proportional values or the correction value of the performed re-adjustments.

tearing device : device to tear, separate the continuous, endless cotton wool web for packaging

tearing delay : time adjusted at the Control Unit, which can be calculating by considering the distance of the sensor to the tearing device and the web conveying speed.

tearing duration : the time needed by the tearing device, to separate the web cord to be packaged. The tearing duration is adjusted at the Control Unit and gets abbreviated a little bit by the light barrier of the sag regulation. This prevents the cotton wool web from getting strained or to touch the floor.

sag regulation : mechanism to let the cotton wool web sag, to create a cotton wool reservoir.

light barrier : part of the sag regulation, that detects, when the cotton wool web is sagging too much.

abbreviation of the tearing duration : When the cotton wool web sags too much, by interrupting the light of the light barrier, the light barrier activates the control unit to shorten the tearing time. The abbreviation of the tearing duration is adjusted at the Control Unit.

HST Cotton Wool Weighing System 1004

Delivery Extent

Control Unit

Remote Control

Sensor

Sensor Cable

Order Data : **- complete system -**

system version	order no.
HST Cotton Wool Weighing System 1004 **Control Unit** Sensor Interface machine line interface tachometer voltage input sag regulation interface remote (weight) control interface 24VDC operation voltage **Remote Control** manual weight correction **Sensor** interface analog output 0...10V **Sensor Cable, 6m** interconnection cable between Sensor and Control Unit	**HST CWWS1004**

HST Cotton Wool Weighing System 1004

Technical Data

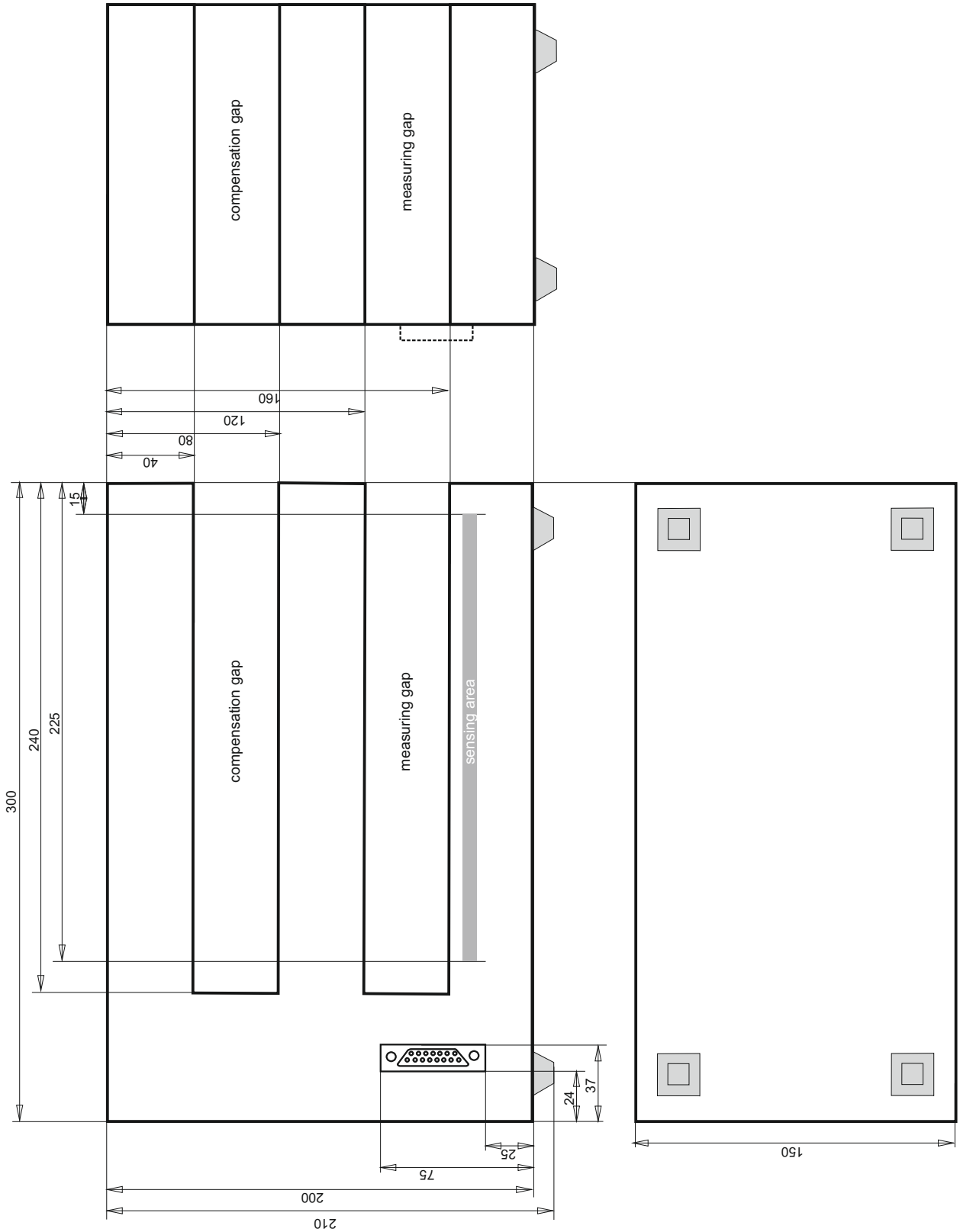
measuring principle :	harmless, maintenance free, capacitive sensor technique
products :	cotton wool, in other versions : cellulose, acrylic fibres, foam, textiles, non-wovens, pastes, glue and other non-metallic materials
line speed :	all speeds occurring during normal cotton wool production
evaluation :	real time, last evaluation is valid
accuracy :	<1 % typical of 200gr cotton wool using on-line weight correction
displays :	a) bar graph - indicator for showing weighing process b) 31/2 -digit LED indicator for weight/meter (relative value) and for weight correction value c) LED indicator for tearing-process and tearing-delay-time
set value :	input by 4 digit wheel switch
adjustment :	a) zeroing b) tearing time c) tearing delay time d) hanging through, sag regulation
power supply :	+24VDC +-10%, 200mA, stabilized
switching output :	PNP, opto-coupler for Activating the tearing device high level : +18V...+26V / 20mA low level : rest current <0,5mA
signal inputs :	opto-coupler high level : +16V....+28V low level : 0...+5V for functions : - reset dosing process - halt dosing process - hanging through, sag regulation - weight adjustment by remote control or external balance - reset weight adjustment value
control input :	speed regulation by tachometer voltage 0...+5V...+10V, +5V corresponds to normal speed
operation temp. range :	15...35 °C
storage temp. range :	0...50 °C
warming up time :	1 hour
dimension : (HxDxW)	control unit : 175 x 320 x 340 mm sensor : 210 x 150 x 300 mm sensor gap : 40 x 150 x 240 mm
weight :	control unit : 6 kg incl. remote control sensor unit : 7 kg, incl. sensor cable

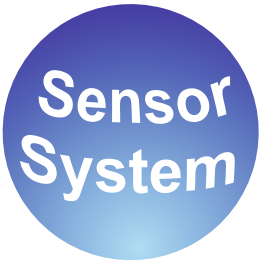
CE

Dimensions

Sensor :

dimensions [mm]




Sensor
System

General Terms & Conditions of Business

General Terms & Conditions

0. Definition
0.1 The Hossbach Sensor Technologie company, referred to in the following as HST, is a supplier of products and services. In most cases HST is also the developer and manufacturer.
0.2 The term Customer in the following not only refers to the actual customer but also to potential customers, ordering parties and users who enter into a business relationship with HST.

1. Scope
These General Terms and Conditions of Business, Offer, Delivery and Payment apply for all purchase agreements and all HST business relationships. No other terms and conditions than these, in particular the general purchasing conditions of the customer, shall apply even if not expressly contradicted by HST.
1.2 The Customer shall recognise these General Terms and Conditions of Business, Offer, Delivery and Payment at the latest on receipt of the goods.
1.3 Deviations from these General Terms and Conditions of Business, Offer, Delivery and Payment shall only be valid if recognised expressly in writing by HST. Without this recognition, they shall not be deemed to be agreed and shall therefore not be applicable.
1.4 Should part of these General Terms and Conditions of Business, Offer, Delivery and Payment be invalid, this shall not affect the applicability of the other terms and conditions.
1.5 The Customer agrees to the processing of his data relating to business transactions.

2. Quotations
2.1 All quotations, cost estimates, drafts, drawings and calculations shall remain the property of HST and may not be used, reproduced nor made accessible to third parties without prior agreement. They shall be returned or destroyed without delay in the event of non-placement of order.
2.2 In general, all HST quotations are subject to change without notice provided no written agreement has been made regarding a binding quotation.
2.3 The present General Terms and Conditions of Business, Offer, Delivery and Payment are part of any quotation of HST.
2.4 HST is entitled to estimate an advance payment in the case of custom designs and development contracts.
2.5 In the case of deliveries abroad, HST is entitled to deliver following agreed advance payment.

3. Delivery time
3.1 Unless special arrangements have been made in writing in individual cases, delivery deadlines and dates (delivery time) shall be viewed as approximate and are in all cases subject to clarification of all the facts required by HST for fulfilment of the order.
3.2 The delivery time shall be seen as met if the supplied object has left the company before expiry of this period or if readiness to dispatch has been notified.
3.3 If a prospective delivery date is delayed unreasonably for the Customer, he shall have the right to set HST a reasonable final deadline of at least 4 weeks and withdraw fully or partially from the purchase agreement if this final deadline passes without delivery. No more far-reaching claims shall be accepted, including compensation claims for non-fulfilment of contract.
3.4 The prospective delivery time originally set in the written purchase agreement shall be extended in the event of operational disruptions, strikes, lockouts, non-delivery by sub-contractors or other factors over which HST has no influence.

4. Orders
4.1 All contract negotiations between HST and the Customer, telephone agreements or other arrangements, particularly changes to the order, must be set down in writing by both sides and if they deviate from the originally agreed purchase agreement require written confirmation of the change.
4.2 Orders issued to HST by the Customer shall not become legally binding until confirmed in writing by HST. The invoice takes the place of the written order confirmation if the order is executed immediately or within a few days.
4.3 HST is not generally obliged to accept an offer to buy, particularly where orders are received in response to a website or trade fair or in response to circulars or price lists.
4.4 Assurance of the characteristics of a product shall only become part of the contract if expressly confirmed in writing. Brochure details shall only be accepted as expressly assured characteristics within the meaning of legislation governing the sale of goods if these are agreed expressly in writing in the individual case.

General Terms & Conditions

5. Development contracts

5.1 Development contracts include new developments, partial developments and adaptations as well as custom designs executed by HST at the wishes of the Customer.
5.2 The requirements in terms of development contracts must be made in writing.
5.3 Changes to the characteristics of development contracts must also be made in writing. Generally, changes result in additional expenditure that must be also be agreed in advance in writing.
5.4 The hardware and software products, components or services arising from a development contract shall be handed over subject to a special duty of care on the part of the Customer.
5.5 Claims particularly in terms of replacement or free modifications arising after performance of development contracts based on different, new or only subsequently notified conditions of use, requests etc. are excluded.
5.6 The development contract is successfully completed when this has either been confirmed by the Customer or a period of 4 weeks has passed without complaint by the Customer or if a subsequent order has been issued by the Customer for products or services that were the basis of the development contract.

6. Prices

6.1 All prices shall generally be in Euro, excluding packing for delivery ex Erlangen / Fuerth, plus the VAT applicable on the date of invoice for deliveries within Germany, as well as any other statutory delivery charges.

7. Shipment

7.1 If shipment of the goods has been agreed by HST, this shall be ex works at the risk and expense of the Customer. The Customer shall bear the shipping risk even if HST executes the shipment for the Customer free of charge by means of his own transportation personnel or third parties. In all cases the risk of destruction passes to the Customer with handover to the shipping personnel.
7.2 If, after completion, the goods cannot be sent or taken at the contractually agreed time as a result of circumstances that are not the responsibility of HST, risk passes to the Customer at the time when notification of readiness for shipment is sent to the Customer. The contractor shall inform HST immediately of the delay. Storage costs shall be paid by the Customer.
7.3 Partial deliveries by HST are permitted.

8. Terms of payment

8.1 HST accounts receivable shall become due for payment without deduction 14 days from date of invoice unless otherwise agreed in writing. In addition, where accounts receivable are deferred, they shall become due without deduction immediately if the customer is in default to HST with a payment or if HST become aware of a significant deterioration in his financial situation. If the period of payment is exceeded, standard bank interest shall be charged at a rate of 4% above the relevant discount rate of the German Bundesbank; this shall be without prejudice to any more far-reaching rights.
8.2 Payment with bills of exchange shall not be accepted.
8.3 If a Customer does not meet his payment or other obligations arising from the HST General Terms and Conditions of Business, Offer, Delivery and Payment, or if he stops his payments, or an application for opening bankruptcy proceedings is initiated against his assets or those of his legal representatives, the entire legal debt shall become payable immediately. In this case HST shall be entitled to declare its withdrawal from all contracts and to reclaim previously delivered goods that are still subject to retention of title as well as to demand reimbursement of all costs relating to withdrawal (e.g. retrieval, loss of value etc.).
8.4 In respect of due payments, there shall be no right of withholding payment arising from claims that do not relate to the supplied object itself; offsetting against the outstanding purchase price is only possible in the case of uncontested or legally established claims.
8.5 The Customer shall not be entitled to withhold payments nor to offset against any counterclaims unless these are recognised by HST or legally established.

9. Retention of title

9.1 HST retains the title to the delivered goods until complete payment of the purchase price, including default interest and legal costs.
9.2 Up until transfer of ownership of the goods supplied by HST to the Customer, the Customer may neither pledge them nor assign them to third parties as security. If the goods are distrained or seized, the Customer is obliged to inform HST immediately and shall bear all costs relating to release of the goods. The Customer may sell the goods in normal business operations if he is not in default with HST in respect of fulfilment of his obligations. The risk of destruction, damage or wear and tear during the period of retention of title is borne by the Customer. If the Customer combines the goods with other objects, HST acquires joint ownership of the combined items in proportion to the value of the items combined with the HST goods.

General Terms & Conditions

9.3 The Customer hereby assigns for security to HST his claims arising from the passing on of the goods subject to retention of title amounting to the relevant net value of the goods; HST hereby accepts this assignment.
9.4 The right of the customer to sell goods supplied by HST shall end if the Customer is in default with payment or is unable to pay. In this case the Customer can only dispose of the goods subject to retention of title with the written permission of HST.
9.5 In the event of default of payment, uncertainty regarding the financial situation or worsening of the financial situation of the Customer, the Customer shall be obliged to surrender the goods subject to retention of title at the request of HST. The taking back and distraint/seizure of the goods by HST shall only constitute withdrawal from the contract if this is stated expressly in writing. In the event of distraint/seizure or other actions by third parties, the Customer shall inform HST without delay.
9.6 The retention of title and the securities to which HST is entitled shall apply until complete release from any contingent liabilities that HST has entered into in the interests of the Customer.

10. Right of first refusal
The Customer gives HST the right of first refusal for the stock of HST products in any case of insolvency or inappropriate use.

11. Cancellation of delivery
11.1 If the Customer completely or partially cancels purchase orders and does not fulfil his obligation to take delivery, HST shall be entitled to claim compensation.
11.2 The contractual items already produced at the time of withdrawal from the contract shall be paid for at the full purchase price.
11.3 In respect of items that have not yet been produced, a compensation sum of 60% shall be paid if the cancellation did not take place earlier than 3 days before the planned delivery date.
11.4 In all other cases a compensation sum of 40% of the net delivery value shall be paid.
11.5 If the customer cancels development contracts or custom designs, a compensation sum of 60% of the order value shall be paid to HST. If the cancelled development contracts or custom design are subdivided into performance stages according to the contract, the Customer shall be obliged to make 100% payment for commenced and completed performance stages. In respect of development stages that have not yet started, the Customer shall pay 60%.
11.6 Irrespective of the above, HST retains the right to demand compensation for non-fulfilment of contract if the Customer does not pay for partial deliveries in accordance with contract and to refuse to make remaining deliveries.

12. Warranty and other liability
12.1 The following provisions apply in terms of warranty and other liability of HST resulting from defects in delivery or performance, including incorrect deliveries or services. If the contractual product or service of HST also includes assembly/installation or commissioning or if it is an independent repair order or other type of work/service contract, the following conditions shall also apply for any assembly, installation, commission, repair or other work.
12.2 HST provides a warranty in accordance with the current state of the art. In the case of representations regarding characteristics, HST shall only be liable if this is expressly stated in writing by the Customer. General changes to the design or execution before delivery of an order shall not justify any claims. The same applies for changes that represent an improvement in design or delivery.
12.3 HST accepts no liability for loss or damage as a result of unsuitable or improper use, nor as a result of any incorrect assembly, installation, commissioning, modification or repair not performed by HST, nor for incorrect or negligent treatment and natural wear and tear. The same applies in respect of parts supplied by the Customer.
12.4 At the discretion of HST, the warranty shall cover either repair or replacement of the defective products or part. In individual cases HST reserves the right to issue a credit note for the amount charged to the Customer for the defective product. At the request of HST, faulty products shall be sent cost-free to HST for repair.
If the products supplied by HST are repaired or modified without the involvement of HST or if maintenance and/or installation requirements have not been complied with, the warranty and other liability of HST are rendered null and void.
12.5 Only in urgent cases where operational safety or reliability is endangered or in order to avoid disproportionately large loss or damage, the Customer shall have the right after informing HST of rectifying the defect at his own cost. These costs shall be recompensed by HST insofar as they would have arisen if HST had undertaken the repair.

General Terms & Conditions

12.6 In the case of repair or replacement, HST shall be liable in the same manner as for the original delivery or service up until expiry of the period of limitation applicable for the original delivery or service, and at least for a period of three months from completion of the repair or performance of the replacement delivery or service.
12.7 The Customer is obliged to give HST the opportunity to make repairs after prior consultation. If the product is not repaired nor replaced, the Customer is entitled to withdraw from the contract after the passing of a reasonable final deadline. In all cases of justified complaints, claims over and above the claim for repair or replacement, e.g. compensation for warranty claims or for positive contractual infringement or tortious act or because of impossibility, delay, failure or non-performance of the repair, shall be limited in accordance with Point 12.
12.8 If the supplied item is not usable in accordance with contract as a result of culpable infringement of ancillary contractual obligations particularly operating and maintenance instructions HST shall also be liable only to the extent specified in Points 12.4 to 12.7 and 13. In the case of consultations or advice, HST shall only be liable if separate payment was agreed in writing.
12.9 Warranty and other claims expire 12 months after delivery. The making of warranty or other claims shall not affect payment obligations and dates. If the Customer does not fulfil his payment obligations or is in default with them, the above obligations of HST shall be suspended until the payment obligations are met.
12.10 Products and services based on development contracts or that are delivered in the form of Customer-specific designs are excluded from the obligation for replacement.

13. Liability for damages
13.1 Insofar as HST is liable for compensation, this liability is restricted to gross negligence by the organs of the company and executive staff.

14. Prohibition of set-off
Setting-off against claims that are not uncontested or legally established is not permitted.

15. Drawings and other documents
HST reserves its rights of ownership and copyright over cost estimates, drawings and other documents provided to the Customer. They may not be used for purposes other than those stated by HST nor made accessible to third parties.

16. Exporting
16.1 All deliveries by HST shall be made subject to export authorisation pursuant to German international trade law; it is the responsibility of the Customer to ensure knowledge of the relevant law.

17. Place of jurisdiction
17.1 The place of jurisdiction for all disputes arising from contractual relationships between HST and Customer is Nuremberg/Germany. This also applies for claims arising from cheques as well as for tort claims, third-party notices and "summary procedures" (i.e. entirely reliant on documentary evidence).
17.2 The legal relationships between HST and Customer are subject exclusively to the law of the Federal Republic of Germany.

18. Copyright
18.1 Copyright and rights of use and exploitation of the sold products and the services performed remain with HST, irrespective of the contractually agreed delivery to the Customer. The copying of individual delivered parts or systems of HST is not permitted. The licence agreements for the supplied software shall apply.

19. Other matters
19.1 If the Customer does not meet his obligations from the purchase agreement, HST may refuse further deliveries without prejudice to the enforcement of its other rights.
19.2 If a provision in these General Terms and Conditions of Business, Offer, Delivery and Payment is legally declared invalid, replacement by a regulation that comes as close as possible to the meaning of the now invalid provision in its economic effect shall be assumed.
19.3 The Customer may not assign his rights to third parties without the prior written permission of HST.
19.4 Where a Customer falls under the personal sphere of protection of the Data Privacy Act, he gives his agreement to the processing of his data insofar as it is required for the purpose of the contract.
19.5 Products of HST or parts thereof may not be used in life-sustaining, medical or military systems without

Contact Hossbach Sensor Technologie , Heinrich-Stranka-Str. 3-5, D 90765 Fuerth, Germany

e-Mail: info@hst-hossbach.de // Fax: xx49 (0)911 37677528 // Phone: xx49 (0)911 37677529

For your request, please share the following details:

- Your product type
- Product arrangement (discrete product, endless product)
- Range of product dimensions (thickness, width, volume...)
- Composition of materials in the product
- Measurement task (weight / weight distribution measurement, basis weight measurement, coating, dosing and filling, flaws on product, missing material, object detection, object positioning, edge detection...)
- Your company name and address

For special applications and measurement tasks we develop customized Sensor Solutions according to your demands

We are looking forward to support you in any application with our Sensor Technology and bring Quality Control to an ever higher level