p·u·l·s·o·t·r·o·n·i·c
ANLAGENTECHNIK

PRODUCT CATALOG

Issue: 0701

Company profil

Pulsotronic is situated in the strive industry region Chemnitz-Zwickau. Our company buildings edified in 2001, next to the freeway A72, could be extended by two other modern industry buildings in 2006 due to the successful development of our company. As a result of our structural capacities and manufactoring plants state-of-the-art we provide ideal conditions for efficient manufacturing and high-quality products. Since 2001 the quality management of Pulsotronic was certified according to ISO 9001. In addition since 2007 Pulsotronic was certified according environmental management system ISO 14001.

Based on long experience Pulsotronic Anlagentechnik develops, manufactures and sales metal detectors and metal separators including the construction of stainless steel devices and special facilities with innovatives technology. In detail that comprehends:

- Metal detectors in flat, tunnel or ring design
- Metal separators for bulk material
- Metal separators as conveying plants
- Metal separators for fluid and paste-like products
- Special plants for transporting, portioning, sorting and separating

Pulsotronic is a precursor for metal separators in the plastics and the recycling industry. Further innovative products for the food industry as well as in other industrial branches could be established. Our products are characterised by high reliability, high sensitivity, durability just as user friendiness. A team of engineers constantly is improving our plants and developping customized solutions. The manufacturing of all devices is realised in our headquarters in Niederdorf. Thus it is possible to put to test all kind of new processes and principles and to enhance them continuously. The information flow is not interrupted resulting in high-quality products and high flexibility.

Does our catalogue not include the right product for your application? Do you have any questions or suggestions? Please don‘t hesitate to contact our sales engineers. They will provide for professional consultation according to your specific requirements and will be available for any questions occuring.

We are looking forward to fulfil your assignment - according to our philosophy:

Pulsotronic - This is the solution.

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Industry	Kind of product	
Food	Piece goods	
	Liquids & paste-like products	
	Bulk solids (free falling & free flowing)	
Plastic	Piece goods	
	Bulk solids (free falling & free flowing)	
	Bulk solids (free falling or pond)	
	Bulk solids (vacuum transported)	
	Foil (or other plastic yard ware)	
Pharmaceutics	Pills	
Recycling	Inspection goods on conveyor	
	Bulk solids	
Chemical	Liquids	
Textil	Drapery (or other yard ware)	
Wood & paper	Raw wood; boles	
	Shelves & flak boards	
	Paper	
	Bulk solids (sawdust; wood snippets)	

If your branche is not listed or if you need any help choosing the right product for your application, please feel free to contact our service staff or our foreign distributors.

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	Complete assembly		Single sensors	
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	Conveyor HQW with detector Digital+	p. 6.5	Tunnel detector TU	S. 3.19
	InLine	p. 5.1	Ring sensor RG	S. 3.41
	InFlex	p. 5.5	Ring sensor KJR	S. 3.23
	GF	p. 4.5	Ring sensor RG	S. 3.41
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			MESEP AR / RE / SP	S. 3.1
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			MESEP AR / RE / SP	S. 3.1
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Application of metal detectors

Metal detectors are used for various applications in industry. Classic fields of application are machine protection (damage on tools, mills, automats etc. caused by metallic pieces), object counting or sensing in automated manufacturing. The use for quality control processes is gaining more and more importance for example in the plastics industry (control of purity of materials and products), in the food industry (consumer protection) or in the pharmaceutical industry. We provide the appropriate solution for each application. In order to achieve optimum results using a metal detector there are facts that should be considered previous to the use of the device. Especially high-sensitivity sensors have to be applied accurately to tap their full potential. Please take into account the following information so that you can work efficiently with our devices right from the beginning. If there are any questions left unanswered, please contact our sales engineers. They will be at your disposal - on-site if necessary. For difficult applications it is possible to use machines on hire in order to collect and to take into account important criteria previous to purchase.

Choosing the right detector

There are various characteristics qualifying each type of metal detector for specific applications. The principal characteristics at a glance:

1. Dimension: The sensor should be adapted to the size of the product. If the detector is too large, this causes a loss of sensitivity. For each of our series we provide different dimensions. If the right dimension for your applications is not mentioned in the catalogue we are at your disposal. Please contact our sales department or our distributors.

2. Sensitivity: Please choose the sensitivity on the criterion of the expected contamination. A too little sensitivity causes deficient results. Devices with a very high sensitivity generally are more expensive and more difficult to handle. Just choose the right operating electronics from our modular design system. Data concerning the sensitivity are given on each data sheet.

3. Equipment: If you require special features - no problem. Addional to various operating electronics we offer a wide range of accessories. On request we also realise customised solutions.

4. Design: Along with the dimension of the device characteristics as the operating temperature, the protection class and the material are of great importance. Sensors are available in all possible protection classes as well as in various materials. Especially for applications in the food industry or in other branches requiring high hygienic standards we provide sensors and devices in stainless steel or in food safe plastic. Please consider these facts and try to fix your requirements in the run-up in order to choose the right device.

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Finding the right place of installation

Beside the selection of the appropriate device the choice of the right place of installation is of great importance. Please inspect carefully where pollution can emerge, where people can be injured or machines damaged and where contaminated or faulty material can be locked out efficiently. In many cases the use of several metal detectors is reasonable. Furthermore please pay attention to the fact that metal detectors sensitively react on external interferences. For this reason our metal detectors are checked on their interference susceptibility in our in-house EMC-laboratory. Within the CE-declaration of conformity these values are complemented by external testing laboratories and laboratories accredited from the Technical Control Board. If necessary we will give advice to you for finding the right place of installation.

Which sensitivity?

Contrary to many of our competitors we provide precise information concerning the sensitivity of all of our devices. We know about the high-capacity of our products and we take practical values as a basis, that cannot only be achieved in a laboratory but also in the real application. Each device passes several tests previous to the delivery in which all parameters are collected and checked. The constancy of our production is guaranteed by ISO 9001. Thus not realiable data and bad surprises are impossible. Please check carefully which values are presented to you. If you want to we will check your product gratis in advance in our headquarters. By this you receive precise information concerning the sensitivity.

In practice a reduction of the sensitivity can be caused by:

- vibrations
- the product effect
- electromagnetic pollution
- the place or the position of installation

Our detectors are equipped with features restraining interferences. This allows application also under difficult conditions. Nevertheless our sensors are subject to physical barriers and will be influenced negatively by strong interferences as above mentionned.

How to determine the sensitivity

The sensitivities stated in this catalogue respectively in the data sheets have been measured under the following conditions:

- The device is switched-on for at least 5 minutes.
- The ambient temperature is at 20 .. 25°C.
- There is no interference caused by electromagnetic fields.
- There is no interference caused by mechanical vibrations.
- The vibration filters of the operating electronics are deactivated.
- The sensitivity test is effected using certified test objects. The test objects are either ferrous, non-ferrous (brass) or made of stainless steel 316.
- The smallest available dimensions of these test objects are: ferrous objects 0,3 mm, non-ferrous objects 0,3 mm and stainless steel objects 0,5 mm. The test objects are not available in all in-between sizes. That is why certain data has been determined arithmetically and can be verified using the nearest big test object size available.
- For the sensitivity test the test objects are always led centrically (most unfavourable position) through the sensor.
- For downstream sensors and extractors the test velocity is at 3000 mm/s. The fall height for downstream sensors is at maximum 0,6 m. The test velocity for conveyor detectors is at 300 mm/s. Inline and Inflex sensors are tested at 500 mm/s.

What does product effect mean?

The working principle of metal detectors generally is based on sensors with one or several coils. These coils excite electromagnetic fields. By this fields products are tested on metallic residua. Metal changes the electromagnetic field e.g. in its shape or it attenuates the field (it withdraws energy from the field). These effects are registered and analysed by the operating electronics. Anyhow not only metallic objects can influence electromagnetic fields. Conductive materials or materials with certain dielectric characteristics cause similar effects as a piece of metal. This so-called product effect excites an alarm for the detection of metal although there is no metal contained in the product. There are two possibilities for avoiding this effect:

1. Reduce the sensitivity until there are no more faulty alarms:
   Advantage: cost-effective
   Disadvantage: high loss of sensitivity
2. Multi-coil-system with digital evaluation for product effect elimination
   Advantage: Minimum loss or no loss of sensitivity

With our M-PULSE and Digital+ we offer two high-capacity electronics with precise fade-out of the product effect. The M-PULSE electronics is able to collect and save several product adjustments

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as well as the information concerning the product effect. This data are memorised in the device (memory capacity for 199 products) and recallable if necessary. The data also can be transferred to a pc, adapted, re-transferred or archived via network. The smaller Digital+ electronics represents the connection between high-end devices and standard devices. Due to the attractive price and the easy handling customers can now profit from modern electronics with fade-out of the product effect also for simple and cost-sensitive applications.

Application in the food industry

Many of our devices are used in the food industry. The compliance with legal restraints and requirements of the markets concerning the adherence with several quality standards (IFS; HACCP; ISO; FDA) is no problem due to our M-PULSE electronics with logging and cross-linking. Thus all data can be collected, processed and achived completely and centrally. Many series are made of stainless steel or food safe plastic. Furthermore most devices are available in protection class IP65 or higher. This makes cleaning easy.

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD Management Service

CERTIFICATE

The Certification Body
of TÜV SÜD Management Service GmbH
certifies that

Pulsotronic GmbH & Co. KG

Neue Schichtstraße 14
D-09366 Niederdorf

has established and applies
a Quality Management System for

Development, production, distribution and service of electronic components, proximity switches, foreign body detection and separating systems and combined with customers applications, image processing systems and there components for industrial use

An audit was performed, Report No. **70029415**
Proof has been furnished that the requirements according to

ISO 9001: 2000

are fulfilled. The certificate is valid until **2009-06-07**
Certificate Registration No. **12 100 16905 TMS**

TÜV SÜD

Munich, 2006-06-30

IAF

QMS-TGA-ZM-07-92

TÜV SÜD Management Service GmbH • Zertifizierstelle • Ridlerstraße 65 • 80339 München • Germany

MS01/10.05

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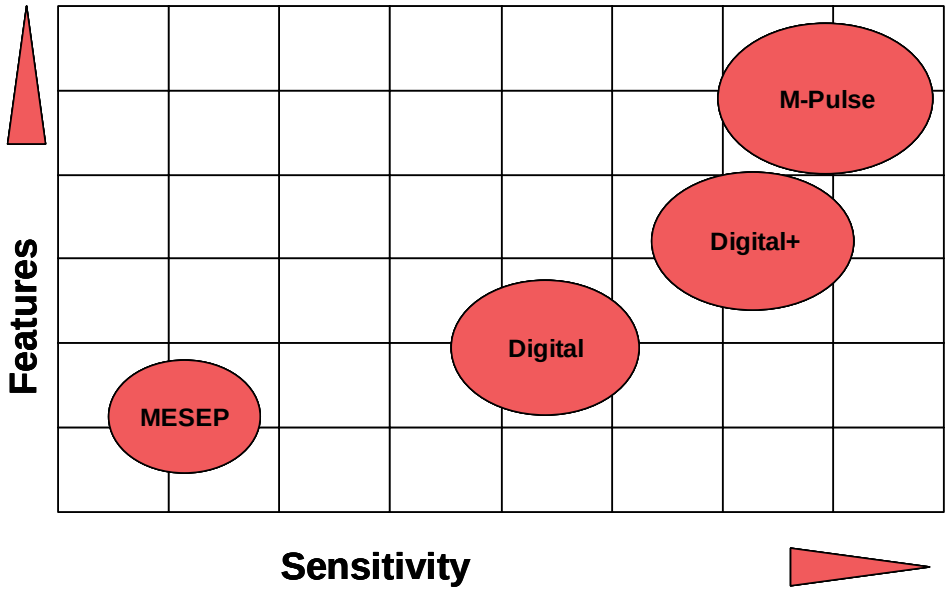
Control units
MESEP / Digital / Digital+ / M-Pulse

Overview

Different fields of application require accordingly adapted solutions. Pulsotronic provides the solutions for your application - not only for sensors but also for the corresponding operating electronics. We offer four different electronics:

- MESEP
- Digital
- Digital+
- M-PULSE



The simple MESEP-electronics works completely analog and is characterised by an easy handling. The Digital-electronics possesses a digital evaluation unit and several additional functions. The sensibility is much higher than that of a MESEP-electronics. The Digital+ offers digital filters, evaluation and a high-sensitivity operating electronics with self-monitoring. The sensitivity is considerably higher as the Digital-electronics. Furthermore it is possible to operate much more peripheral units. The display and the keyboard provide for concise and uncomplicated indication. The M-PULSE-electronics stands for highest sensitivity and equipment. Additionally to the functions of the Digital+ the M-PULSE permanently monitores the sensor. A multiprocessor system serves for signal analysis. Similar to the Digital+ the analysis is based on a high-sensitive HDC-IQ receiver (homodyn direct conversion quadrature receiver). Further optional components complete the M-PULSE-electronic perfectly. The connection to Ethernet oder WLAN for example is no problem. Alternative control units, signal transmitter oder printers are available.

Technical data - short overview

Type	MESEP	Digital	Digital+	M-Pulse
	Standard	→	→	High-End
Function				
Signal generation	analog	digital	digital	digital
Signal processing	analog	analog	analog & digital	analog & digital
Signal analysis	analog	digital	digital	digital
Self-monitoring	-	-	yes	yes
Sensor-monitoring	-	-	-	yes
Operating frequency	~100 kHz	292 kHz	50 - 650 kHz	50 - 650 kHz
Logging & real-time clock	-	-	-	yes
Product fade-out	-	-	yes (3 products)	yes (199 products)
Digital filter	-	-	yes	yes
Networking	-	-	-	Ethernet; WLAN; RS232/485
Operating elements	potentiometer	plastic foil key-board (4 Keys)	plastic foil key-board (6 Keys)	plastic foil key-board (11 Keys)
Display	LED	LED (4 Stk.)	LED & LC-Dis-play (2x20 characters)	LED & LC-Dis-play (4x20 characters)
Transducer (optional)	-	-	1x sirene o. flash-ligth	1x sirene 2x flashligth
Interfaces	-	-	parallel interface (10 I/O)	parallel interface (34 I/O) 3x serial interface
External operating panels (optional)	-	-	-	M-Pulse Touch-panel M-Pulse Keypa-nel
Option to control a fre-quency converter	-	-	start / stop	start / stop speed
Perfomance validation system	-	-	-	yes
Password protection	-	-	yes (fix)	yes (configurable)

Further information is given in the data sheets of the particular operating electronics respectively of the particular devices and sensors. If you need any help choosing the right electronics, the right sensor or device, please feel free to contact our service department.

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M-Pulse

Control unit

Application

The control and evaluation electronics M-PULSE combines highest sensitivity with reliability and an easy handling. Due to the latest electronics in its‘ inside the M-PULSE provides an effecient fade-out of the product effect and adapting digital filters. 18 switching outputs, 16 switching inputs, 2 analog inputs and several interfaces allow great flexibility for the control of peripheral units or other equipment as well as for processing commands. The entire workflow is logged and saved. Even in case of a voltage drop the maximum 2048 data records will not get lost. Via the network connection all data can be analysed and archived easily on a pc. Thus the M-PULSE especially is appropriate for quality control applications - for example in the food industry.

Function

The device constantly checks the correct functioning of the sensor and the electronics. The electronics is able to adjust automatically on each sensor. This allows entirely maintenance-free operation. Drift actions caused by temperature or deterioration are eliminated. Expensive calibration and production downtimes can be avoided. The sensor signals are dressed using modern DDS-technology. A 32-Bit processor system analyses the dressed data in real time and filters out product effects and interferences realibly. The device provides several interfaces. Thus it can be integrated perfectly in automated manufacturing and is able to realise control tasks itself. The device also provides for connection with LAN/WLAN. The entire workflow can be logged and analysed according to HACCP, ISO or IFS.

Equipment & specific characteristics

Intuitional handling

The uncomplicated handling concept is supported by usable features as the displays‘ reduction on the required information. Depending on the particular adjustments of each user certain menus can be blanked entirely.

Message- and reporting system

The device has an internal memory which is able to collect maximum 2048 messages. Every change of the user, of the charge and each metal alarm are recorded without interruption. Via network the data can be transferred to a pc and there be evaluated. With our software „M-Pulse Control“ the user is able to write and to archive reports according to HACCP or IFS.

Product memory & -fade-out

Different products may require different adjustments on a device - for example concerning the stream velocity. These specific adjustments as well as the data of the product effect are stored in the electronic memory for 199 products. This data can be recalled if necessary with a simple keystroke. As easy as saving and recalling this data also is the breaking-in of the product effect. A demonstrator will accompany you step by step through the whole process - from the input of the name until the data acquisition.

Performance check

If regular tests for the validation (HACCP; IFS; ISO) of the sensor functioning are necessary, the electronics will support that using the integrated testing system. The tests will be requested from the user in optional intervals. Supported by a demonstrator the user operates the test successively. The device itself does not require such tests as it works maintenance-free. Additionally it constantly is controlled by internal self tests.

Modern electronics

Developping the electronics we attached great importance to savety and reliability. All important function blocks are equipped with self diagnostics systems. If errors occur, they will be identified, logged and displayed. The sensor is supplied via a high-power amplifier. All signals are generated by modern DDS signal transducers which work crystal stable and without drift. The modern HDS-IQ-receiver detects even smallest signals. A 32 bit multiprocessor system allows a fast and efficient evaluation of the signals. For the connection of the system to the environment there are several serial and parallel interfaces are available.

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Technical data

Mechanical data	
Dimensions	W x H x D: 200 x 300 x 80 mm
Weigth	4 kg
Handling	
Keyboard	11 keys (4x arrow; ESC; enter; password; 4x function key)
Display	4 x 20 characters; illuminated (blue); brightness & contrast adjustable
Conditions of use	
Storage temperature	-10°C .. 60°C
Operating temperature	0°C .. 50°C
Protection class	IP 65
Supply voltage	85 - 264 VAC; 50/60Hz
Power consumption	typ. 20W; max. 100W
Electrical connection	3m cable; L1,N,PE; 1,5 mm²
Sensitivity	(see sensor or device)
Interfaces	
Sensor - transmitter	50 Ohm; overload- & short-circuit proof (50 .. 650 kHz)
Sensor - receiver	HDC-IQ - receiver with sensor-readjustment and monitoring
Digital inputs	16 Stk.; optical isolated; V_{IL} = -5 .. 1,5V; V_{IH} = 6 .. 50V multifunction-key external product selection ejection and level guard light barrier for synchronize the ejector transitfunction; external stop; external failure
Analog inputs	2 pieces; 0 .. 10V; resolution 10bit (one for external speed gathering)
Digital Outputs (low power)	12 pieces; high-side/open-drain; max. 20mA; overload- & short circuit proof device state outputs to control a frequency converter
Digitale outputs (high power)	6 pieces; high-side/open-drain; max. 200mA; overload- & short circuit proof 3x transducer ejector device is in stopped state
Interface - printer	RS232 & power supply for M-Pulse printer
Interface - touchpanel	interface & power supply for M-Pulse touchpanel
Interface - networking	optional RS232; RS485; ethernet or WiFi
Relay	2x change-over contact; 48V, 5A; function eligible
Voltage output	24VDC; stabiliszed, overload- & short circuit proof; max. 25W for external components

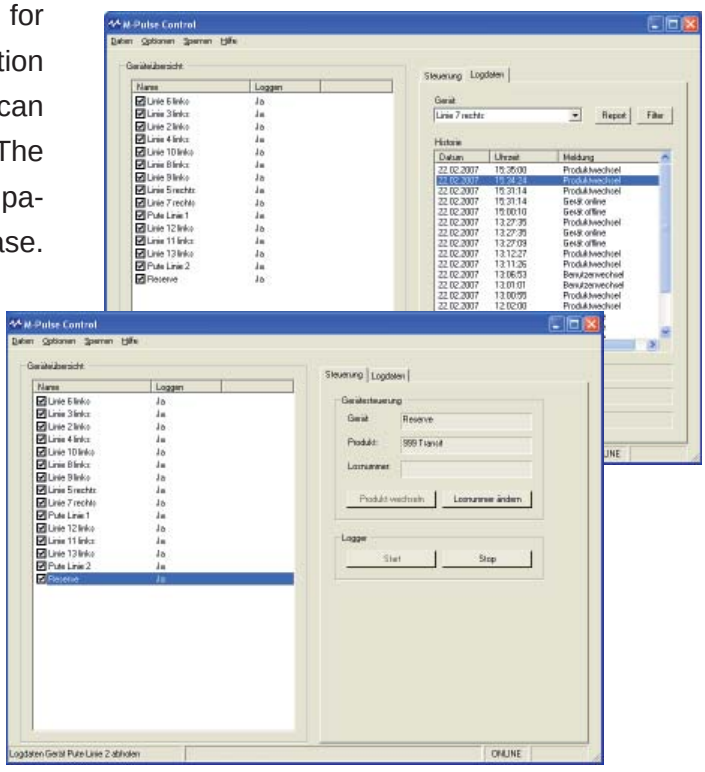
Order information & accessories

Designation	Order number
M-Pulse control unit with wall holder	16730000021
M-Pulse control unit	16730000020
M-Pulse printer IP 65	08410000114
M-Pulse printer IP 20	08410000113
M-Pulse connecting kit ethernet (non pluggable)	08410000108
M-Pulse connecting kit ethernet (pluggable)	with 5m cable: 08410000107 with 10m cable: 08410000124 with 15m cable: 08410000125
M-Pulse connecting kit WiFi	08410000109
M-Pulse connecting kit RS485 (pluggable)	08410000101
recommended RS485-PCI-card for PC	08410000009
M-Pulse connecting kit RS232	08410000104
M-Pulse touchpanel	08410000110
M-Pulse touchpanel with wall holder	08410000111
Software M-Pulse Control & Tools	08410000106

Beyond the components listed above many other optional components are available depending on the type of device. Exact information is given in the particular data sheets.

Software M-Pulse Control

The software M-PULSE Control serves for a complete documentation of the production process. By the software all detectors can be linked via RS485, Ethernet or WLAN. The software permanently collects all relevant parameters und archives them in the data base. The data can be recalled, analysed or exported as requested. The program contains further tools for processing and diagnostics. Thus product adjustments can be edited and archived on the pc and the measured value acquisition can be pursuit live. If you are interested please ask for a gratis demo version of the software.



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Control Unit Digital+

Application

The Digital+ electronics is the enhancement of our approved digital electronics. New equipment as digital filters, the possibility to fade out the product effect, the memory capacity for three products and an improved display provide for a superior sensitivity. The electronics is used where high sensitivity, reliability and operator convenience are required - in the plastics as well as in the recycling industry.

Function

The device constantly controls the correct functioning of the electronics. The adjustment to the connected sensor is done fully automatically. This allows maintenance-free operation. Drift actions caused by thermal fluctuation or deterioration are eliminated. Expensive calibration and production downtimes can be avoided. The sensor signals are dressed using modern DDS-technology. A 32-Bit processor system analyses the dressed data in real time and filters out product effects and interferences realiably. The device can be controlled via several in- and outputs. Piloting and supply of signal transmitters, sensors and plants are directly effected via the control system. Contrary to the Digital electronics the Digital+ electronics enables the user to operate conveyor plants etc. with our BD- or TU-sensors.

Equipment and specific characteristics

Easy handling

The device is operated easily. Generally the user only varies the sensitivity and teaches-in the parameters for the product effect. There are no complex menus. Further modulations are possible via an access code. Thus the function of filters and peripheral units can be adjusted. All values are already preset. Normally changes are not necessary.

Product memory & product fade-out

If the test material has a product effect, this can be faded out by the electronics. The effect is taught-in and saved with pushing a button. There is a memory capacity for three products. Each memory space can be adressed fast via a button. Three LEDs signalise if there is a product loaded and which product it is. New products are taught-in fully automatically by pushing a button. Complex adjustments are redundant.

Operation & maintenance

The device is entirely maintenance-free. An integrated self-diagnosis function immediately signalises malfunctions. All components are placed on a modern multilayer circuit board. The connections are completely pluggable. By this it is possible to change the circuit board in only a few minutes on-site. Due to modern technology and the latest semiconductor technology the energy consumption is at only 10W. This reduces costs and protects the environment.

Designs

According to the application the customer chooses among two different housings. For normal environmental conditions the powdered metal housing in protection class IP 54 is appropriate. For applications with rough environmental conditions a stainless steel housing with protection class IP 65 is available.

Control system

The electronics is equipped with several in- and outputs. Thus the external peripheral units can be piloted and important signals can be collected via the sensor. The device can be integrated in conveyor lines or separators without the need of modifications.

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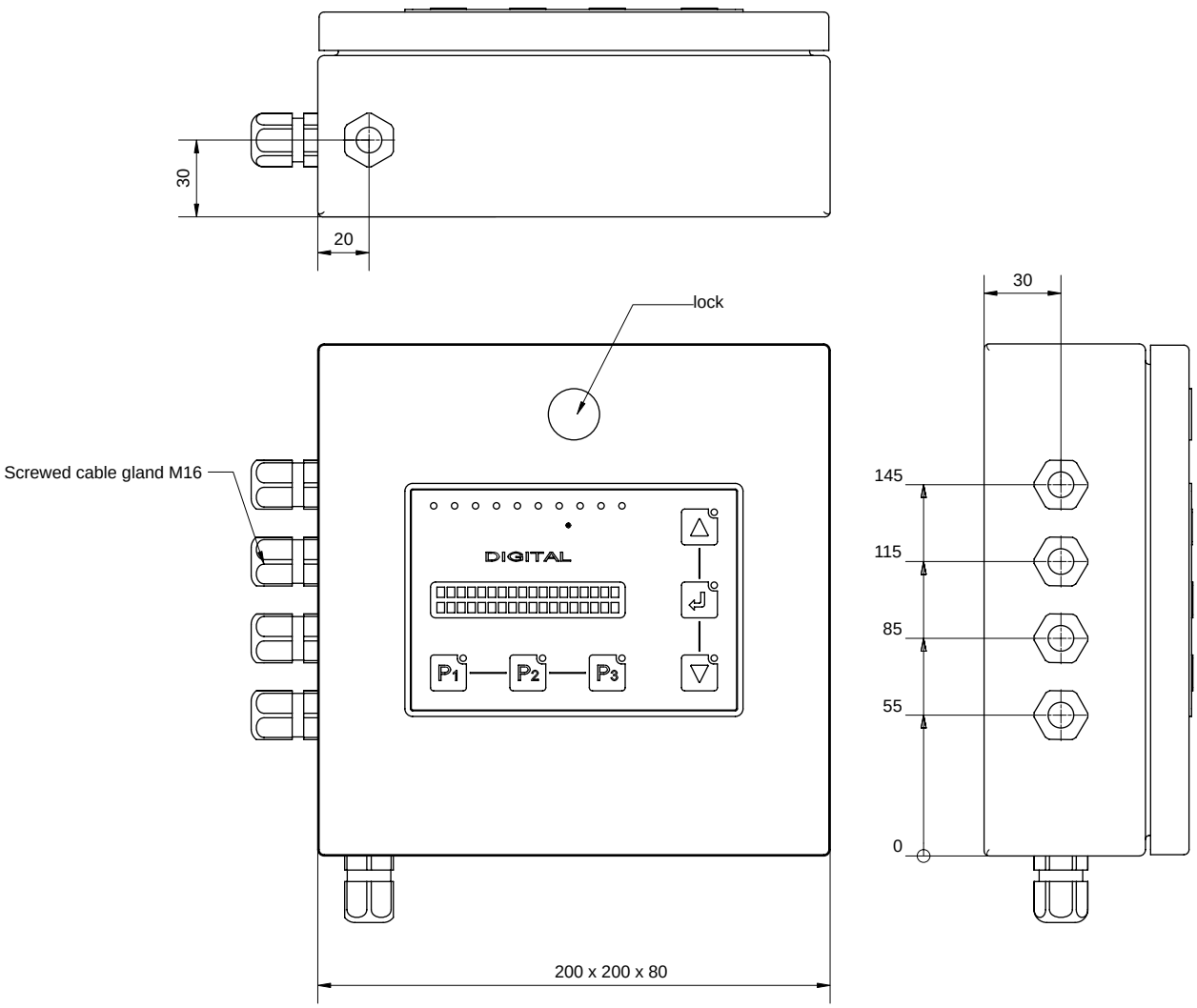
Technical data

Mechanical data	
Dimensions IP54	B x H x T: 200 x 200 x 80 mm
Dimensions IP65	B x H x T: 200 x 300 x 80 mm
Weigth	3 kg
Handling	
Keyboard	6 Keys (2x arrow; enter; 3x Keys for products)
Display	2 x 20 characters; illuminated (blue)
Conditions of use	
Storage temperature	-10°C .. 60°C
Operating temperature	0°C .. 50°C
Protection class	IP 65 / IP 54
Supply voltage	85 - 264 VAC; 50/60Hz
Power consumption	typ. 10W; max. 40W
Electrical connection	3m connecting cable; L1,N,PE; 1,5 mm²
Sensitivity	(see sensor or device)
Interfaces	
Sensor - transmitter	50 Ohm; overload- & short-circuit proof (50 .. 650 kHz)
Sensor - receiver	HDC-IQ - receiver with sensor-readjustment
Digitale inputs	4 piece; optical isolated; V_{IL} = -5 .. 1,5V; V_{IH} = 6 .. 50V multifunction-key ejector-guard
Digitale outputs	6 piece; high-side/open-drain; max. 200mA; overload- & short-circuit proof transducer ejector device state
Serial interface	2x (mode of operation on request)
Relay	2x change-over contact; 250V, 1A; function eligible
Voltage output	24VDC; stabilized, overload- & short-circuit proof; max. 2,5W for external components
Ordering information	
Digital+ control unit ferros housing IP 54	16730000025
Digital+ control unit stainless steel IP 65	16730000024

Dimensions



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Flat sensor MESEP®

AR

Application

These flat sensors are detectors for all types of metal for the use in conveyor belts and chutes. Using them it is possible to inspect bulk material as well as finished goods. Foils or other roll goods can be led directly over the sensor and thus be detected on metallic contamination. The sensors serve for quality assurance as well as for machine protection. Beyond that the flat detectors are also appropriate for applications of the process control e.g. for object counting or for completeness checks. The flexible system of three different sensors allows variations in width. Starting from 95 mm there is no limit upwards. Moreover the sensors can be mounted above and below the conveyor belt (sandwich combination) in order to increase the sensitivity. In combination with the optionally available control unit conveyor plants and discharging units can be controlled directly.

Function & handling

The sensor has a dynamic working principle which means it only detects moving metallic pieces in the sensor range. If a non-moving metal piece is situated in the detection range, it does not excite a signal and therefore is not detected. Contrary to sensors with a static workling principle this system allows operation with a much higher sensitivity. Thus even small metallic pieces can be detected dead reliable. The operation of the sensor requires a control unit. This realises the voltage supply for the sensors and allows the adjustment of all parameters. The detailed functioning and handling depends on the control unit.

Specific characteristics

- sensors endlessly alignable (>95mm)
- no metal-free zones necessary
- stable and shook-proofed aluminium housing
- easy mounting
- separate control electronics with freely adjustable functions
- protection class IP67
- sensitivity adjustable via control electronics

Rules for combining sensors

In order to avoid dysfunctions caused by the combination of several sensors please pay attention to the following facts:

1. Between sensors belonging to the same family of frequencies it is necessary to respect a minimum distance of 300mm (see illustration 1).
2. Flat sensors with different designs can be aligned without paying attention to the frequency (illstr. 2).
3. For sandwich combination it is necessary to respect a minimum distance of 40 mm between the upper and the lower sensors.

Rules for sandwich combination

For assembling flat sensors as a sandwich there are different possibilities:

1. Sensors with the same housing design are placed on top of each other in the same position (illstr. 3).[1]
2. In one layer there are only broad sensors, in the other one only small sensors (illstr. 4).[2]

Combination examples

belt width [mm]	necessary flat sensors
95	95R
140	140
150 - 160[3]	95L-95R
195 - 200[3]	95L-140
240	240
250 - 260[3]	95L-140-95R
295 - 300[3]	95L-240
340	140-240
350 - 360[3]	95L-240-95R
395 - 400[3]	95L-140-240
440	240-240
450 - 460[3]	95L-140-240-95R
495 - 500[3]	95L-240-240
540	140-240-240
550 - 560[3]	95L-240-240-95R
595 - 600[3]	95L-140-240-240
640	240-240-240
650 - 660[3]	95L-140-240-240-90R
695 - 700[3]	95L-240-240-240
740	140-240-240-240
750 - 760[3]	95L-240-240-240-95R
795 - 800[3]	95L-140-240-240-240
840	240-240-240-240
850 - 860[3]	95L-140-240-240-240-95R
895 - 900[3]	95L-240-240-240-240
940	140-240-240-240-240
950 - 960[3]	95L-240-240-240-240-95R
995 - 1000[3]	95L-140-240-240-240-240
1.040	240-240-240-240-240

[1] Repeating a module number in such a construction is not allowed. Thus the maximum width is limited on 750 mm. 95‘er modules in a sandwich basically should have different frequency numbers.

[2] In this case there is no limit set to the combination. But it is necessary to keep a distance of at least 600 mm between identical sensors. The modules 1F1 to 1F4 are applicable as in illustration 1.

[3] Between a 95‘er module and its‘ neighbour element it is possible to keep a crack of 5 mm which does have no influence on the sensitivity. By this the entire width can be varied accordingly.

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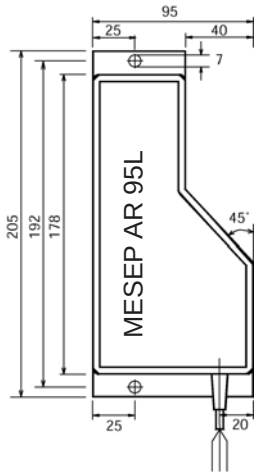
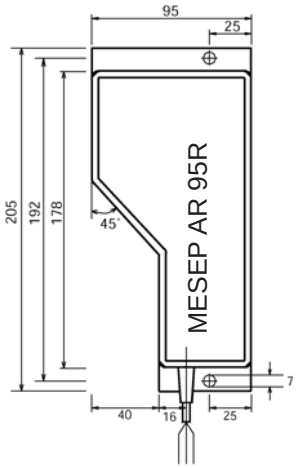
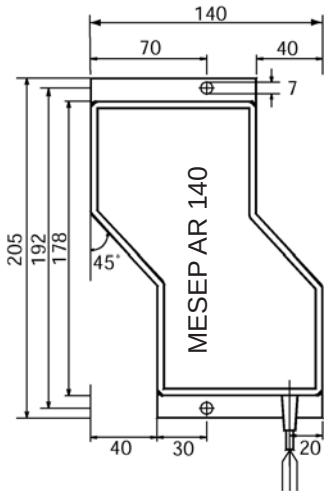
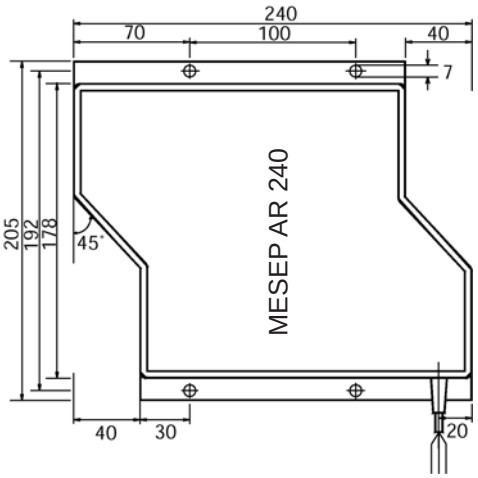
Type	MESEP® AR 95R	MESEP® AR 95L	MESEP® AR 140	MESEP® AR 240
Mechanical data				
Dimensions	L x W x H: 205 x Width x 30 mm			
Housing	Aluminium; blue; powder-coated (active surface polyurethane)			
Weigth	800 g		1.250 g	2.500 g
Electrical data				
Supply voltage	15VDC			
Output	Analog voltage output			
Electrical connection	PVC - cable; 2 m or 5 m			
Conditions of use				
Storage temperature	-10°C .. 70°C			
Operaing temperature	-10°C .. 60°C			
Protection class	IP67			
Speed	1 - 120 m/min			
Sensitivity	(Maximum distance between the sensor and the test piece)			
Fe-plate 30 x 30 x 1mm	75 mm			
Fe-plate 12 x 12 x 1mm	55 mm			
Nut M6	45 mm			
Fe-ball Ø 7,0mm	35 mm			
Nut M4	35 mm			
Washer M4	29 mm			
Nut M2,5	26 mm			
Fe-ball Ø 4,5mm	24 mm			
Fe-ball Ø 3,0mm	15 mm			
Fe-ball Ø 2,5mm	10 mm			
Fe-ball Ø 2,0mm	5 mm			
Order information	(All order numbers for sensors with 2 m cable; 5m on request)			
Frequency group 1	08317690900	-	08317691000	08317691100
Frequency group 2	08317690930	-	08317691030	08317691130
Frequency group 3	-	08317690931	08317691031	08317691131
Frequency group 4	-	08317690932	08317691032	08317691132
Control unit	Standard	for top hat rail	with reverting contactor	
	08349005000	08349005001	08349005002	

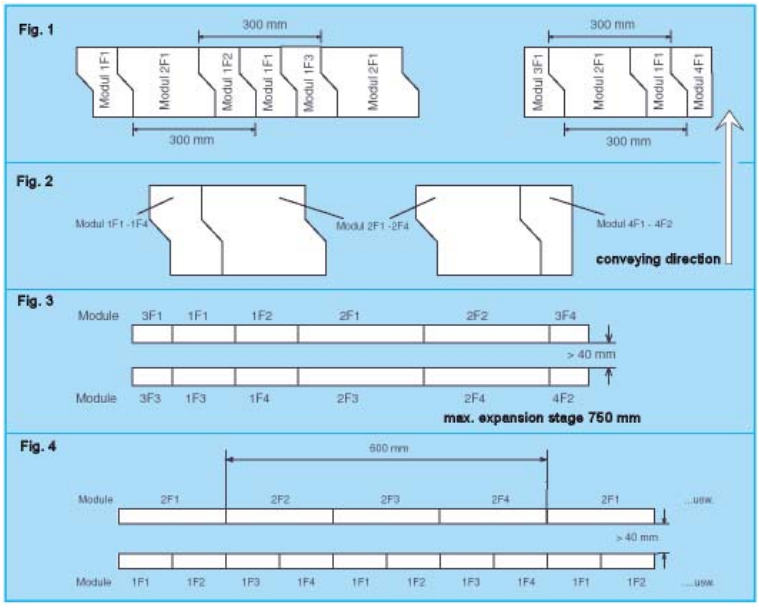
Dimensions











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Flat sensor MESEP®

SP

Application

These flat sensors are detectors for all types of metal for the use in conveyor belts and chutes. Using them it is possible to inspect bulk material as well as finished goods. Foils or other roll goods can be led directly over the sensor and thus be detected on metallic contamination. The sensors serve for quality assurance as well as for machine protection. Beyond that the flat detectors are also appropriate for applications of the process control e.g. for object counting or for completeness checks. In combination with the optionally available control unit conveyor plants and discharging units can be controlled directly.

Function & handling

The sensor has a dynamic working principle which means it only detects moving metallic pieces in the sensor range. If a non-moving metal piece is situated in the detection range, it does not excite a signal and therefore is not detected. Contrary to sensors with a static workling principle this system allows operation with a much higher sensitivity. Thus even small metallic pieces can be detected dead reliable. The operation of the sensor requires a control unit. This realises the voltage supply for the sensors and allows the adjustment of all parameters. The detailed functioning and handling depends on the control unit.

Specific characteristics

- different sensor widths available (150 mm - 1200 mm)
- no metal-free zones necessary
- stable and shook proofed aluminium housing
- easy mounting
- separate control electronics with freely adjustable functions
- protection class IP67
- sensitivity adjustable via control electronics

Type	MESEP® SP 150 - 1200		
Mechanical data			
Dimension	L x W x H: Length x 210 x 60,5 mm		
Length	150 mm - 1.200 mm (available in steps of 50 mm)[2]		
Housing	aluminium - strand profil		
Active surface	polyurethane		
Electrical data			
Supply voltage	15 VDC		
Output	analog voltage output		
Electrical connection	PVC - cable; 2 m		
Conditions of use			
Storage temperature	-10°C .. 70°C		
Operating temperature	-10°C .. 60°C		
Protection class	IP67		
Speed[1]	1 - 120 m/min		
Order information			
	Order number	Length[2]	
MESEP® SP 150	08317696900	150 mm	
MESEP® SP 200	08317697124	200 mm	
MESEP® SP 250	08317697240	250 mm	
MESEP® SP 300	08317697341	300 mm	
MESEP® SP 350	08410697442	350 mm	
MESEP® SP 400	08317697601	400 mm	
MESEP® SP 450	08317697702	450 mm	
MESEP® SP 500	08317697803	500 mm	
MESEP® SP 550	08317697912	550 mm	
MESEP® SP 600	08410698020	600 mm	
MESEP® SP 650	08317698114	650 mm	
MESEP® SP 700	08317698164	700 mm	
MESEP® SP 750	08410698264	750 mm	
MESEP® SP 800	08317698296	800 mm	
MESEP® SP 850	08317698348	850 mm	
MESEP® SP xxx	auf Anfrage	> 850 mm	
Control unit (10 fold)	standard	for top hat rail	with reverting conductor
	08349005000	08349005001	08349005002
Control unit (1 fold)	230VAC/24VDC → 08349005010	115VAC/24VDC → 08349005012	

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Type	MESEP® SP 150 - 1200
Sensitivity	
	Maximum distance between sensor and test piece.
Fe-plate 30 x 30 x 1mm	95 mm
Fe-plate 12 x 12 x 1mm	68 mm
Nut M6	56 mm
Fe-ball Ø 7,0mm	44 mm
Nut M4	44 mm
Washer M4	37 mm
Washer M3	33 mm
Nut M2,5	33 mm
Fe-ball Ø 4,5mm	30 mm
Fe-ball Ø 3,0mm	20 mm
Fe-ball Ø 2,5mm	14 mm
Fe-ball Ø 2,0mm	8 mm

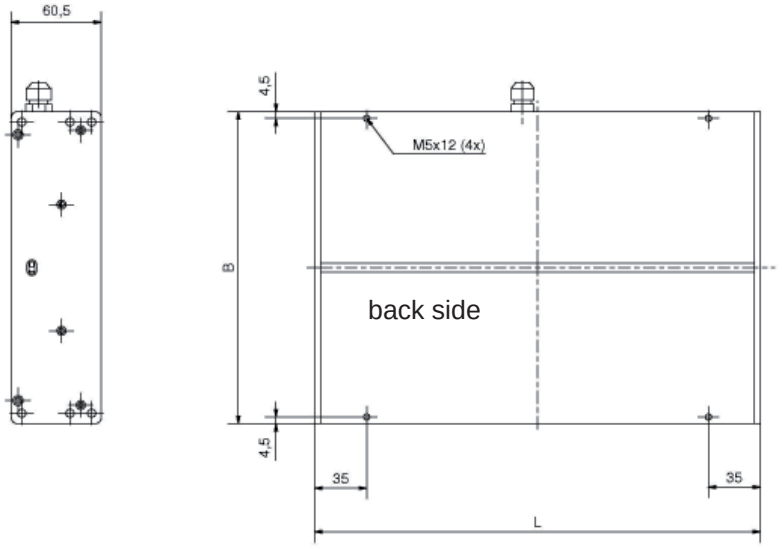
Instructions for operation with control unit

Depending on the size of the sensor it has a certain number of analog outputs. Each output has to be operated using a control unit. Additionally it is possible to use several single control units or one multi control unit.

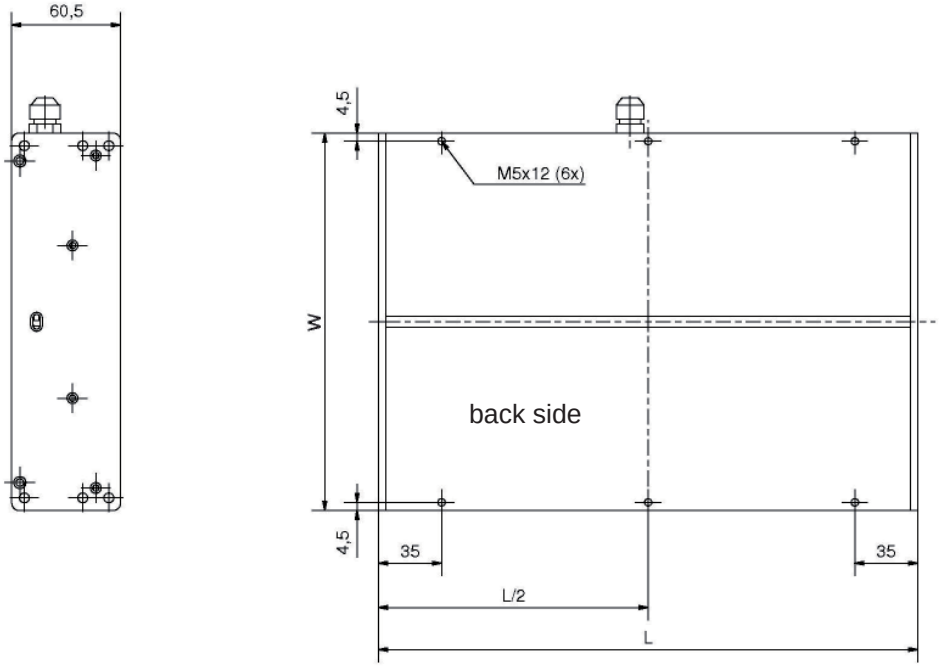
Sensor width [mm]	Analog outputs
150 - 250	2
251 - 450	3
451 - 650	4
651 - 800	5
801 - 901	6
901 - 1000	7
1001 - 1200	8

[1] Other lengths and in-between sizes on request.
[2] Higher stream velocities can alloy the sensitivity.

Dimesions MESEP® SP 150 - 350



Dimensions MESEP® SP 350 - SP 1200



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Flat sensor MESEP®

RE

Application

These flat sensors are detectors for all types of metal for the use in conveyor belts and chutes. Foils or other roll goods can be detected on metallic contamination. Thus the sensors serve for quality assurance as well as for machine protection. Beyond that the flat detectors are also appropriate for applications of the process control e.g. for object counting or for completeness check.

Function & handling

The sensor has a dynamic working principle which means it only detects moving metallic pieces in the sensor range. If a non-moving metal piece is situated in the detection range, it does not excite a signal and therefore is not detected. The operation of the sensor requires a control unit. This realises the voltage supply for the sensors and allows the adjustment of all parameters. The detailed functioning and handling depends on the control unit.

Arrangement with several sensors

Each sensor of the RE series is available with two different frequencies. Thus it is possible to eliminate interferences between two close-by sensor. Several sensors can be arranged directly on top of or next to each other. Sensors with different frequencies can be arranged next to each other with no need for a lateral distance. If the sensors are arranged on top of each other it is compulsory to keep a distance of minimum 20 mm! Between sensors with the same frequency a minimum distance of 1 m has to be kept!

Specific charateristics

- compact dimensions - installation height 23mm
- no metal-free areas necessary
- stable and shook proofed aluminium housing
- easy mounting
- separate control electronics with freely adjustable functions
- protection class IP67
- sensitivity adjustable via control electronics

Type	MESEP® RE 100	MESEP® RE 350
Mechanical data		
Dimensions	L x B x H: 100 x 130 x 40 mm	L x B x H: 350 x 194 x 23 mm
Housing	stainless steel	aluminium
Active surface	polyurethane	
Electrical data		
Supply voltage	15 VDC	
Output	analog voltage output	
Electrical connection	PVC - cable; 2 m	
Conditions of use		
Storage temperature	-10°C .. 70°C	
Operating temperature	-10°C .. 70°C	
Protection class	IP67	
Speed[1]	1 - 120 m/min	
Order information		
Frequency group 1	08317690011	08317690000
Frequency group 2	08317690012	08317690030
Control unit (10 fold)	standard: 08349005000	for top hat rail: 08349005001	with reverting contactor: 08349005002
Control unit (1 fold)	230VAC/24VDC → 08349005010	115VAC/24VDC → 08349005012
Sensitivity		
	Maximum distance between the sensor and the test piece.	
Fe-plate 220 x 330 mm	150 mm	
Fe-plate 30 x 30 mm	70 mm	
Fe-plate 12 x 12 mm	50 mm	
Nut M6	40 mm	
Washer M4	24 mm	
Fe-ball Ø 4,0 mm	18 mm	
Fe-ball Ø 3,5 mm	15 mm	
Fe-ball Ø 3,0 mm	12 mm	
Fe-ball Ø 2,0mm	6 mm	

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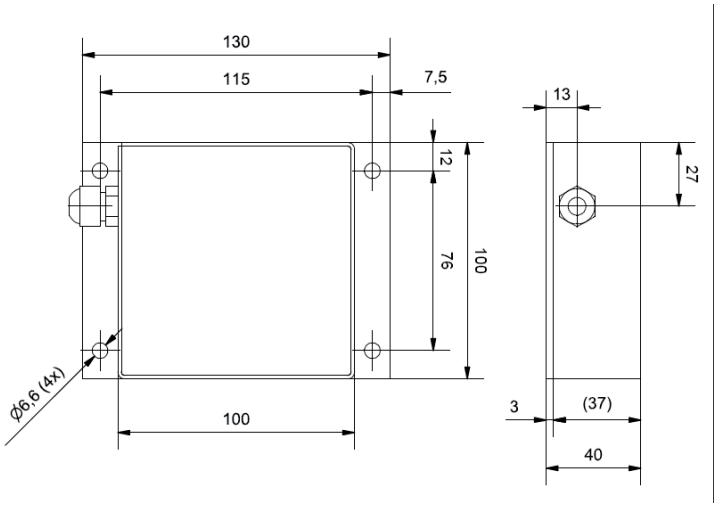
Mounting instructions

The sensors can be mounted shielded in metal.

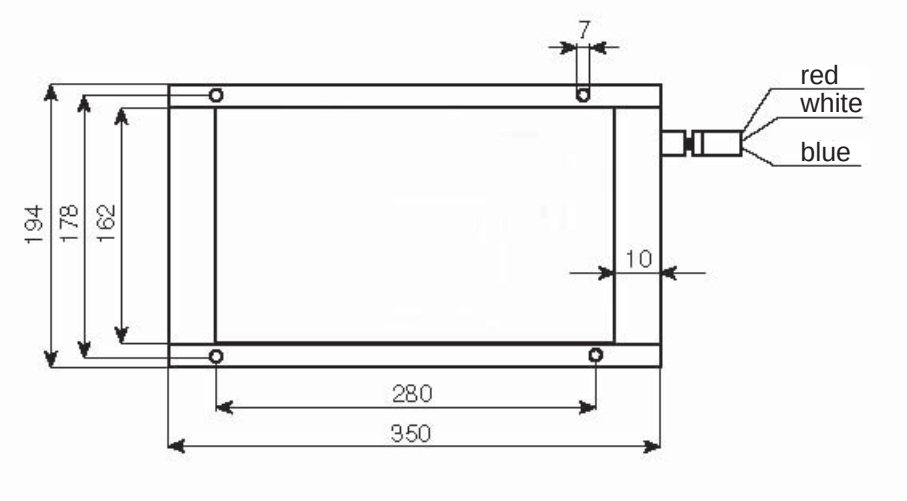
That means:

Metal can approximate the housing sideways and from below. But metal must not protrude on the sensor face! Shielded mounting does not have influence on the detection performance.

Dimensions MESEP® RE 100



Dimensions MESEP® RE 350



Notes

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Flat sensor
M-Pulse / Digital+

FL

Application

Flat sensors are proper for applications where the test material is transported planely on a conveyor belt or a chute. Products like fabric or foil can also be checked on metal without problems. Unlike other flat sensors the FLs‘ working principle is based on a balanced coil system which provides for highest sensitivities. In combination with our high-capacity operating electronics it is possible to fade out product effects and other interferences. The robust, long-living stainless steel housing can be mounted easily.

Function

The working principle of the FL allows a precise analysis of the signals. It is prossible to draw conclusions on the signals‘ origin. Signals can be distinguished into vibration, product or metal. This additional data allows a more sensible reaction on metallic residua. The sensors do not need calibration or maintenance.

Handling

Depending on the operating electronics the handling is realised via a membrane keyboard and a LC-display. Thus all important parameters can be viewed easily and fast and changed if necessary. The sensitivity of the detector also is adjustable this way. Detailed information you will find in the documentation of the electronics M-PULSE and Digital+.

Mounting

The sensing range of the sensor partially is situated above and under the opening of the detector. Big metal pieces can already be detected in this sector. In order to guarantee the accurate functioning of the sensor, these sectors must be kept free of metal. This so-called metal-free zones are divided into two types:

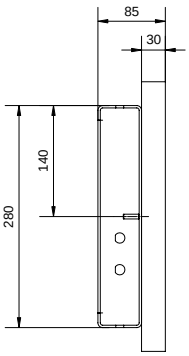
- Metal-free zones for movable pieces
- Metal-free zones for non movable pieces

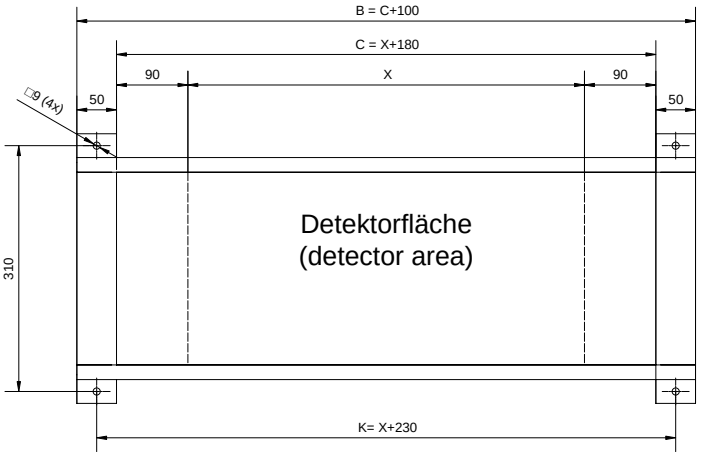
The dimension of these zones are specified in the particular data sheets.

Type	FL 300 .. FL 2500		
Mechanical data			
Active sensor width X	300 .. 2500 mm (100 mm steps)		
Material	strainless steel (sensor surface epoxy)		
Metal free zone for static parts	300 mm		
Metal free zone for moving parts[2]	500 mm		
Conditions of use			
Storage temperature	-10 .. 50°C		
Operating temperature	0 .. 50°C		
Protection class	IP54		
Electrical connection	Supply via control unit (Attached with 3 m cable).		
Sensitivity[1]			
Detection width [mm]	ferrous-ball	stainless steel - ball	used sensor
400 mm	1,1	2,2	M-Pulse FL 400
500 mm	1,2	2,2	M-Pulse FL 500
600 mm	1,3	2,3	M-Pulse FL 600
1200 mm	1,5	2,5	M-Pulse FL 1200

Ordering code:

Elektronic	Type of sensor	Dimension [mm]	Example
M-Pulse Digital+	FL	Sensorwidth X	M-Pulse FL 1400





[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters.

[2] Large metallic pieces can cause faulty activation even from great distances. The data referes to smaller pieces like deviating pulleys etc.. For precise information please contact our service or sales department.

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Tunnel Detector
M-Pulse / Digital+

BD

Application

Tunnel detectors are used where high detection capacity and reliability are requested. For operation the user chooses among various operating electronics according to his application. Thus even complex tasks can be realised. The stainless steel housing and the smoothly grouting are the advantages making this sensor first class for the use in the food industry. Products with conductive components can be faded out easily due to modern digital technology. The sensors are maintenance- and calibration free.

Function

Contrary to classic metal sensors the working principle of this device is based on a system of three coils. This enables the user to analyse signals precisely and to draw conclusions on their origin. By this it is for example possible to distinguish the signals into vibration, product or metal. This additional data allows a more sensible reaction on metallic residua.

Handling

Depending on the operating electronics the handling is realised via a membrane keyboard and a LC-display. Thus all important parameters can be viewed easily and fast and changed if necessary. The sensitivity of the detector also is adjustable this way. Detailed information you will find in the documentation of the electronics M-PULSE and Digital+.

Mounting

The sensing range of the sensor partially is situated above and under the opening of the detector. Big metal pieces can already be detected in this sector. In order to guarantee the accurate functioning of the sensor, these sectors must be kept free of metal. This so-called metal-free zones are divided into two types:

- Metal-free zones for movable pieces
- Metal-free zones for non-movable pieces

The dimensions of these zones are specified in the particular data sheets.

Type	BD 100x50 .. BD 1400x750		
Mechanical data			
Sensor aperture - height	50 .. 750 mm (25 mm steps)		
Sensor aperture - width	100 .. 1400 mm (50 mm steps)		
Material	Stainless steel (Interior zone: Epoxy)		
Mounting	4x thread pin M12 x 45		
Metall free zone for static parts	1,0 x Sensor‘s heigth		
Metall free zone for moving parts[2]	1,5 x Sensor‘s heigth		
Conditions of use			
Storage temperature	-10 .. 50°C		
Operating temperature	0 .. 50°C		
Protection class	IP65 (IP67 for versions HPW und LPW)		
Electrical connection	Supply via control unit; Control unit mounted directly at the sensor or optionaly mounted up to 3 m away		
Sensitivity[1]			
Detection heigth [mm]	Fe-ball	Stainless steel - ball	Used sensor
Detection heigth 75 mm	0,7 mm	1,4 mm	M-Pulse BD 200x75
Detection heigth 100 mm	0,8 mm	1,8 mm	M-Pulse BD 350x100
Detection heigth 150 mm	1,0 mm	2,0 mm	M-Pulse BD 350x150
Detection heigth 200 mm	1,2 mm	2,2 mm	M-Pulse BD 400x200
Detection heigth 250 mm	1,5 mm	2,5 mm	M-Pulse BD 450x250
Detection heigth 300 mm	1,6 mm	2,8 mm	M-Pulse BD 450x300
Detection heigth 350 mm	2,0 mm	2,8 mm	M-Pulse BD 600x350
Detection heigth 400 mm	3,0 mm	4,0 mm	M-Pulse BD 750x400

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters.

[2] Large metallic objects can cause faulty activation even from great distances. The data referes to smaller pieces like deviating pulleys etc.. For precise information please contact our service or sales department.

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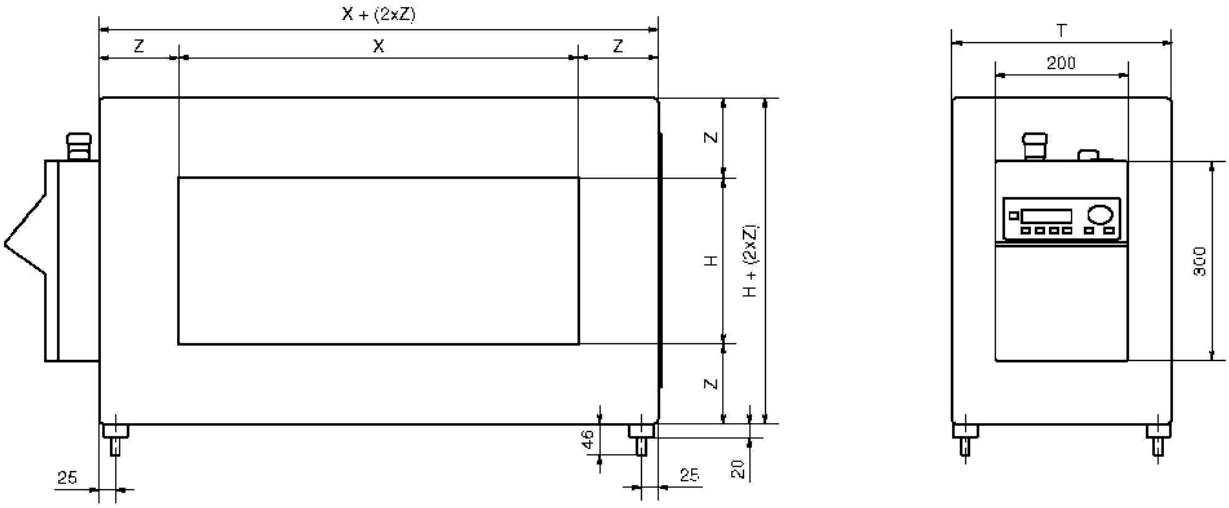
Dimensions



(Illustration with M-PULSE electronics)

Dimension H or X (minor dimension)	Dimension T	Dimension Z
< 100 mm	available on request	available on request
101 - 175 mm	280 mm	100 mm
176 - 250 mm	330 mm	120 mm
251 - 300 mm	380 mm	140 mm
301 - 350 mm	380 mm	160 mm
351 - 400 mm	430 mm	180 mm
401 - 500 mm	470 mm	200 mm
501 - 600 mm	520 mm	220 mm
> 600 mm	available on request	available on request

Notes

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Tunnel detector (divisible) M-Pulse / Digital+

TU

Application

The TU sensor serves for retrofitting a metal detector on existing lines as well as for mounting on conveyor belts and chutes that cannot be split. Though it is possible to split the sensor for mounting and to re-assemble it afterwards, the tunnel detector TU provides highest sensitivity for metal detection. Due to this characteristics and the possible fade-out of vibrations and of the product effect the sensor can be applied almost universally. Contrary to other sensors this one is completely made of stainless steel. This allows application in the plastics as well as in the food industry.

Function

Contrary to classic metal sensors the working principle of this device is based on a system of three coils. This enables the user to analyze signals precisely and to draw conclusions on their origin. By this it is for example possible to distinguish the signals into vibration, product or metal. This additional data allows a more sensible reaction on metallic residua. The sensor is maintenance- and calibration-free.

Handling

Depending on the operating electronics the handling is realised via a membrane keyboard and a LC-display. Thus all important parameters can be viewed easily and fast and changed if necessary. The sensitivity of the detector also is adjustable this way. Detailed information is stated in the documentation of the electronics M-PULSE and Digital+.

Mounting

The sensing range of the sensor partially is situated above and under the opening of the detector. Big metallic pieces can already be detected in this sector. In order to guarantee the accurate functioning of the sensor, these sectors must be kept free of metal. This so-called metal-free zones are divided into two types:

- Metal-free zones for movable pieces
- Metal-free zones for non-movable pieces

The dimension of these zones are specified in the particular data sheets.

Type	TU 300x100 .. TU 2500x800		
Mechanical data			
Active aperture	heigth: 100 .. 800 mm (50 mm steps)		
Active aperture	width: 300 .. 2500 mm (100 mm steps)		
Material	stainless steel (interior zone: epoxy)		
Mounting	4x drill hole		
Metall free zone for static parts	1,0 x sensor heigth		
Metall free zone for moving parts[2]	1,5 x sensor heigth		
Conditions of use			
Storage temperature	-10 .. 50°C		
Operating temperature	0 .. 50°C		
Protection class	IP54		
Electrical connection	Supply via control unit (Attached with 3 m cable).		
Sensitivity[1]			
Detection heigth [mm]	ferrous ball	stainless steel ball	used sensor
Detection heigth 200 mm	2,5	4,0	M-Pulse TU 200x200
Detection heigth 300 mm	3,0	5,0	M-Pulse TU 300x300
Detection heigth 400 mm	3,5	6,0	M-Pulse TU 600x400
Detection heigth 500 mm	7,0	9,0	M-Pulse TU 1000x500
Detection heigth 1000 mm	nut M16	nut M16	M-Pulse TU 1000x1000

Order code:

Electronic	Type of sensor	Dimension [mm]
M-Pulse Digital+	TU	sensor width X x sensor heigth H

(e.g.: M-Pulse TU 1200x350)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters.

[2] Large metallic pieces can cause faulty activation even from great distances. The data referes to smaller pieces like deviating pulleys etc.. For precise information please contact our service or sales department.

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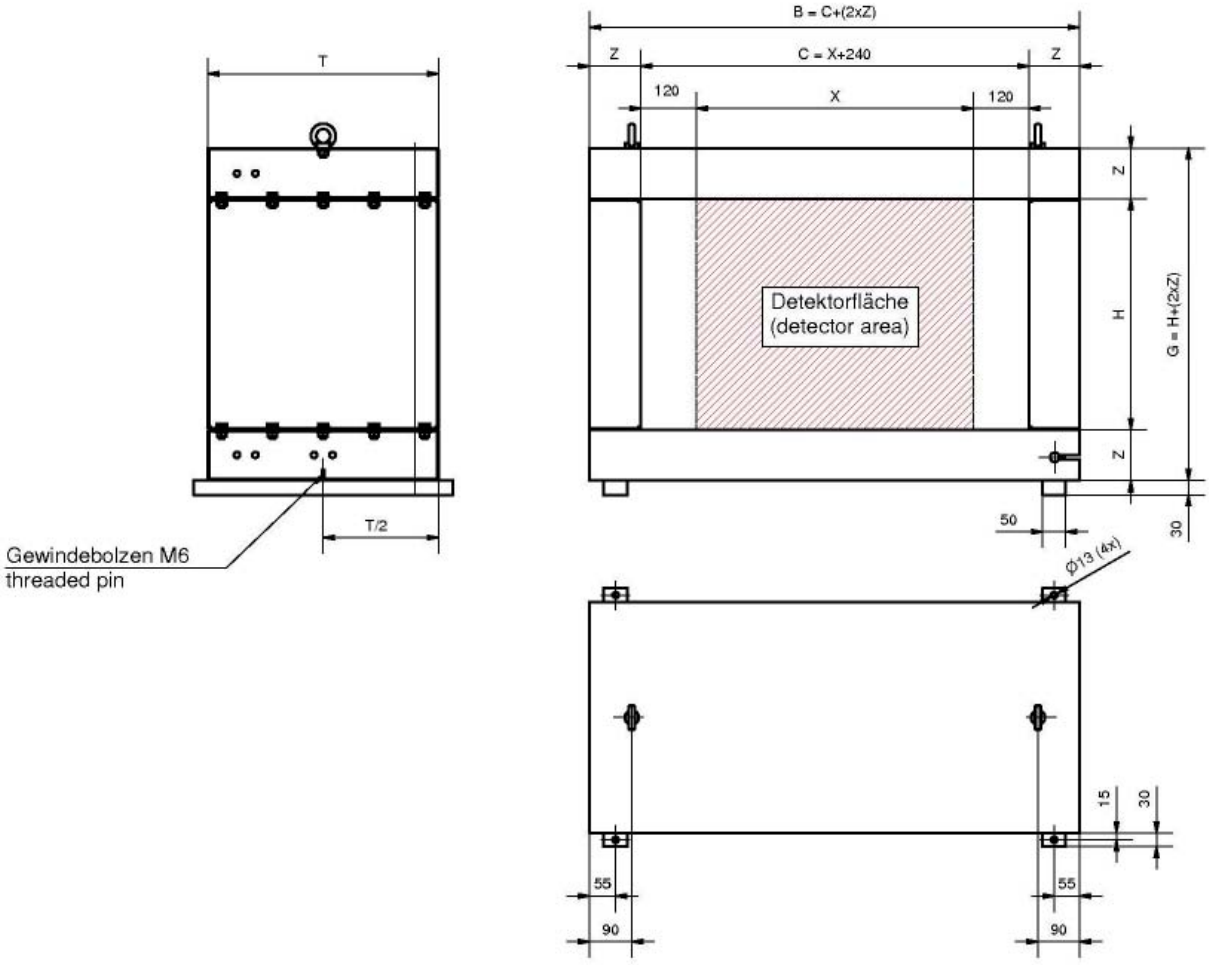
Dimensions



Dimension H	Dimension T	Dimension Z
< 175 mm	on request	on request
176 - 1000 mm	500 mm	110 mm
1001 - 1200 mm	600 mm	120 mm
> 1200 mm	on request	on request

Notes

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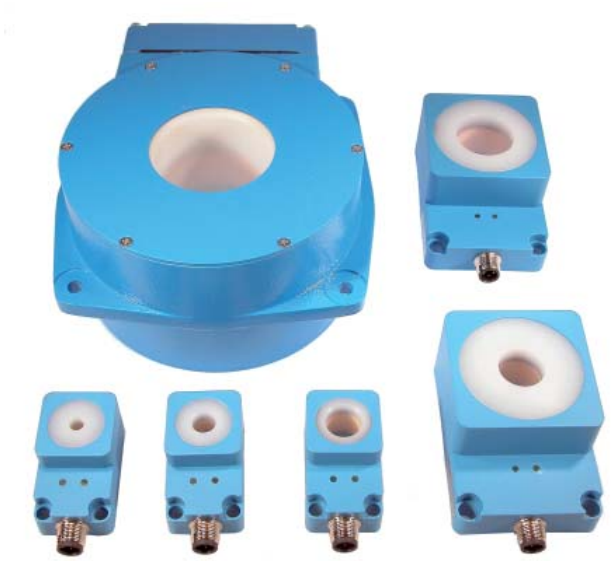
Ring Sensors

KJR

Application

The ring sensors that are used in our metal separating systems are also applied as singular components in various branches of industry. As sensor for piece counting or for ejection control of stamping parts, for wire breakage monitoring or for the detection of metallic objects. The output signals of the ring sensors can be used for controlling, regulating, signalling or for evaluating processes. We provide a large program of ring sensors that differ in design, sensitivity or the type of the output signal.

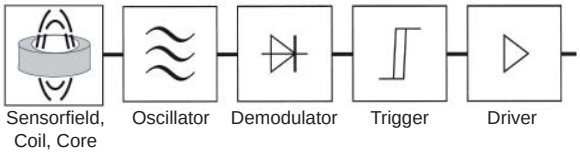


Function

A ring sensor consists of a coil with ferrite core, an oscillator, a demodulator, a signal evaluation unit and a switching amplifier (see illstr. 1). The oscillator excites a high-frequency electro-magnetic alternating field in the ring coil. Due to the ferrite core and the housing the streamlines of the field are focused and aligned in the centre of the ring. If a metallic object passes the ring sensor, turbulent flows are induced in it and thus energy is withdrawn from the field. This loss of energy causes a damping of the oscillator. The damping degree is a measure of the dimension of the metallic object. Generally there are two types of ring sensors - those with a dynamic working principle and those with a static working principle. The advantage of static sensors is their ability to detect non-moving pieces. If there is metal in the sensor range, the sensor excites a constant signal. Only when metal is removed, the signal deactivates. Static sensors serve for presence check or for the detection of large pieces. Due to their working principle their sensitivity is considerably lower than it is at dynamic sensors. Dynamic sensors only excite a short pulse when they detect metal. Metallic objects are only detected when they are moved in the sensor range. For operation normally switching amplifiers are necessary. Using them pulses can be amplified and lengthened. Large metallic objects can excite several pulses. Free-falling metallic pieces generally excite only one pulse.

Function

Similar to static sensors analog sensors excite a permanent signal. However they excite an analog voltage signal which depends on the metals‘ dimensions and its‘ position in the sensor range. Only when there is no metal left in the the sensor range, the output voltage decreases to the minimum value.



Illstr. 1: working principle of inductive ring sensors

Accessories

For operating the sensor the use of a control unit is recommendable. Our control units can be operated with 24V direct current or alternatively 24V line voltage. These devices do not only allow the regulation of the pulse length but also provide for relay outputs for high switching currents as well as transistor switching steps. The power supply for the sensors can also be realised via the control unit.

Specific characteristics

- compact and robust
- easy Initiation and operating
- wide product range
- customized solutions
- fast and competent support, delivery and service

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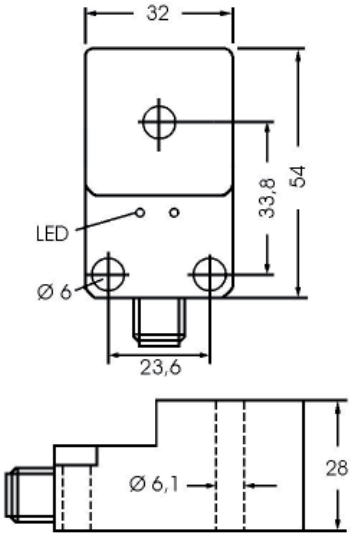
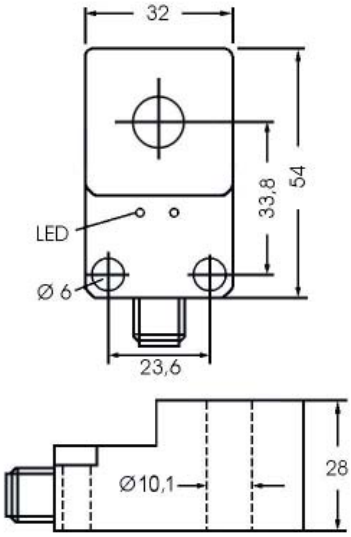
Inductive ring sensors - Dimension Ø 6 mm



Type	KJR-D6KN-DNA-V2	KJR-D6KN-DPA-V2	KJR-D6KN-DPIA-V2	KJR-D6KN-ANU-V2
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - PNP (changeover)	Analog [0 .. 10V]
Operating voltage	10 - 30 VDC		11 - 30 VDC	15 - 30 VDC
Off-state current	15 mA			10 mA
Max. Load current	200 mA			> 1kΩ
Residual current	< 10µA			
Max. switching frequency	600 Hz		10 Hz	100 Hz
Switching state	LED			
Linearity error	-			≤ ±5%
Conditions of use				
Sensibility	FE-ball 1,5 mm		FE-ball 0,4 mm	FE-stick 0,3 - 4 mm
Operating temperature	-25°C .. 70°C			
Protection class	IP67			
Housing material	Ultramid B3EG3			
Electrical connection	Plug connector M12; 4-pin			
Order information				
Order number	08310000983	08310000982	08310001003	08310000894

Inductive ring sensors - Dimension Ø 10 mm



Type	KJR-D10KN-DNA-V2	KJR-D10KN-DPA-V2	KJR-D10KN-DPIA-V2	KJR-D10KN-ANU-V2
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Analog [0 .. 10V]	
Operating voltage	10 - 30 VDC		15 - 30 VDC	
Off-state current	15 mA			
Max. Load current	200 mA			
Residual current	<10µA			
Maximum switching frequency	600 Hz		100Hz	
Switching state	LED			
Linearity error	-		≤ ±5%	
Conditions of use				
Sensibility	FE-ball 1,8 mm		FE-ball 0,5 mm	FE-stick 0,3 - 6 mm
Operating temperature	-25°C .. 70°C			
Protection class	IP67			
Housing material	Ultramid B3EG3			
Electrical connection	Plug connector M12; 4-pin			
Order information				
Order number	08310000985	08310000984	08310001004	08310000895

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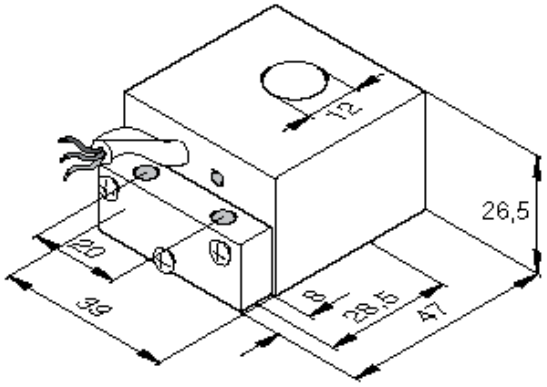
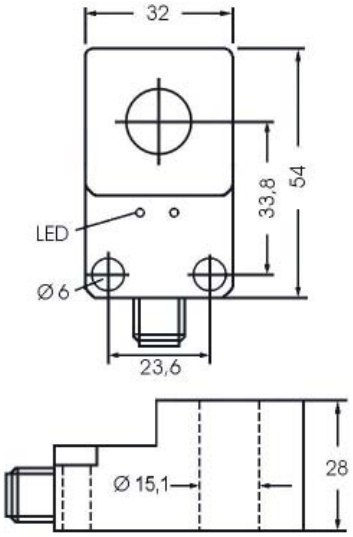
Induktive ring sensors - Dimension Ø 12 mm



Type	KJR-D12KN-DPS
Electrical data	
Output function	Static - PNP (normally open)
Operating voltage	10 - 30 VDC
Off-state current	10 mA
Max. Load current	400 mA
Residual current	<10µA
Maximum switching frequency	800 Hz
Switching state	LED
Conditions of use	
Sensibility	FE-ball 2,5 mm
Operating temperature	-25°C .. 70°C
Protection class	IP67
Housing material	Aluminium; PUR
Electrical connection	2 m Cable; 3 x 0,34 mm²
Order information	
Order number	08317020400

Inductive ring sensors - Dimension Ø 15 mm



Type	KJR-D15KN-DNA-V2	KJR-D15KN-DPA-V2	KJR-D15KN-DPIA-V2	KJR-D15KN-ANU-V2
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - PNP (changeover)	Analog [0 .. 10V]
Operating voltage	10 - 30 VDC		11 - 30 VDC	15 - 30 VDC
Off-state current	15 mA			10 mA
Max. Load current	200 mA			>1kΩ
Residual current	<10µA			
Maximum switching frequency	500 Hz		10 Hz	80 Hz
Switching state	LED			
Linearity error	-			≤ ±5%
Conditions of use				
Sensibility	FE-ball 1,5 mm		FE-ball 0,6 mm	FE-stick 0,3 - 4 mm
Operating temperature	-25°C .. 70°C			
Protection class	IP67			
Housing material	Ultramid B3EG3			
Electrical connection	Plug connector M12; 4-pin			
Order information				
Order number	08310000987	08310000986	08310001005	08310000896

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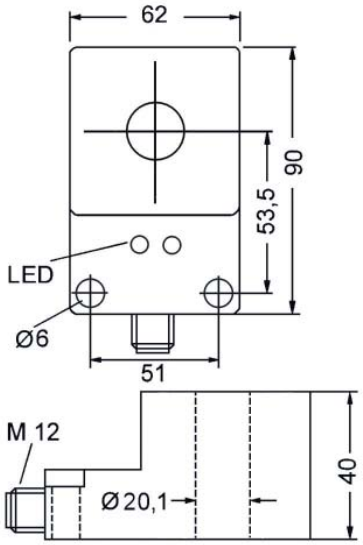
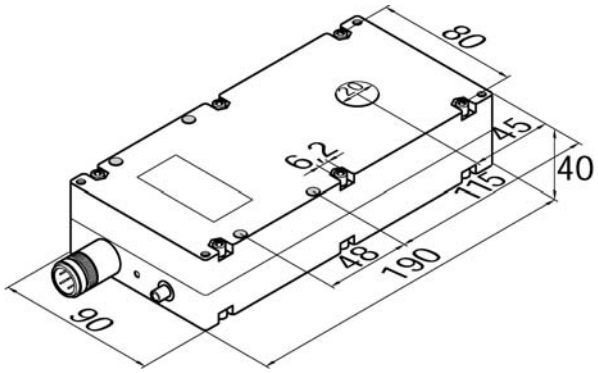
Inductive ring sensors - Dimension Ø 20 mm

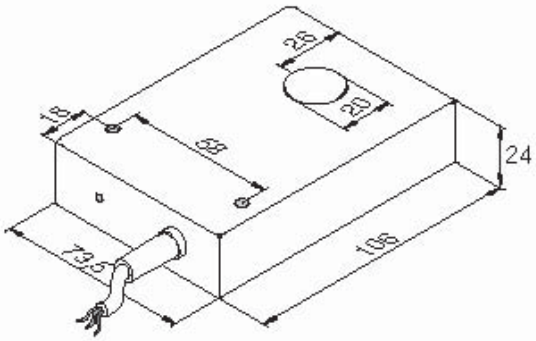


Type	KJR-D20KN-DNA-V2	KJR-D20KN-DPA-V2	KJR-D20KN-DPIA-V2	KJR-D20KN-ANU-V2
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - PNP (changeover)	Analog [0 .. 10V]
Operating voltage	10 - 30 VDC		11 - 30 VDC	15 - 30 VDC
Off-state current	15 mA			10 mA
Max. Load current	200 mA			>1kΩ
Residual current	<10µA			
Maximum switching frequency	400 Hz		10 Hz	80 Hz
Switching state	LED			
Linearity error	-			≤ ±5%
Conditions of use				
Sensibility	FE-ball 3,0 mm		FE-ball 0,7 mm	FE-stick 0,5 - 15 mm
Operating temperature	-25°C .. 70°C			
Protection class	IP67			
Housing material	Ultramid B3EG3			
Electrical connection	Plug connector M12; 4-pin			
Order information				
Order number	08310000989	08310000988	08310001006	08310000897

Inductive ring sensors - Dimension Ø 20 mm (continuation)



KJR-D20AN-DNIA-VE



KJR-D20KN-xxx

Type	KJR-D20AN-DNIA-VE	KJR-D20KN-DPS	KJR-D20KN-ANU
Electrical data			
Output function	Dynamic - NPN (changeover)	Static - PNP (normally open)	Analog [0 .. 10V]
Operating voltage	20 - 30 VDC	10 - 30 VDC	18 - 30 VDC
Off-state current	25 mA	10 mA	5 mA
Max. Load current	50 mA	200 mA	
Residual current	<50µA	<10µA	-
Maximum switching frequency	100 Hz	1000 Hz	50 Hz
Switching state	LED		
Linearity error	-		≤ ±5%
Conditions of use			
Sensibility	FE-ball 0,5 mm (adjustable)	FE-ball 6,0 mm	FE-stick 5,0 - 6,0 mm
Operating temperature	-25°C .. 70°C		
Protection class	IP67		
Housing material	Aluminium	ABS	
Electrical connection	Euchner plug connector	2 m Cable; 3 x 0,34 mm²	
Order information			
Order number	08317020259	08317020500	08317142000

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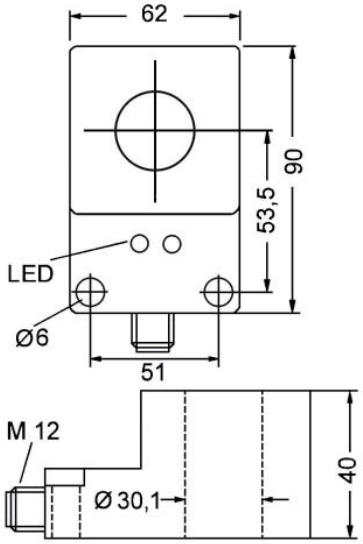
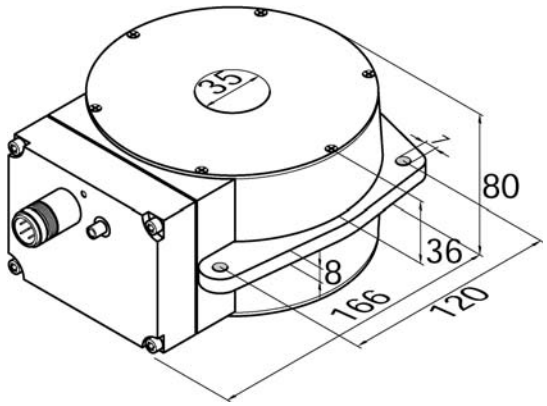
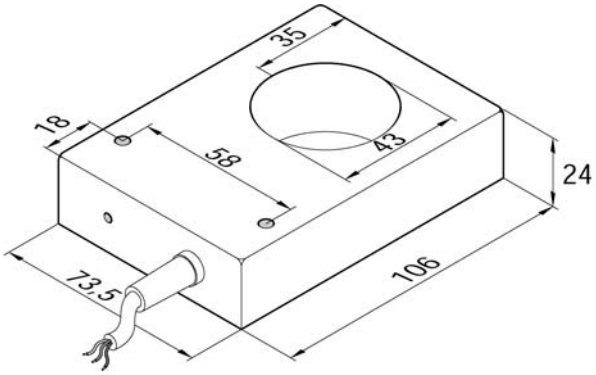
Inductive ring sensors - Dimension Ø 30 mm



Type	KJR-D30KN-DNA-V2	KJR-D30KN-DPA-V2	KJR-D30KN-DPIA-V2	KJR-D30KN-ANU-V2
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - PNP (changeover)	Analog [0 .. 10V]
Operating voltage	10 - 30 VDC		11 - 30 VDC	15 - 30 VDC
Off-state current	15 mA			10 mA
Max. Load current	200 mA			>1kΩ
Residual current	<10µA			
Maximum switching frequency	300 Hz		10 Hz	80 Hz
Switching state	LED			
Linearity error	-			≤ ±5%
Conditions of use				
Sensibility	FE-ball 4,0 mm		FE-ball 1,0 mm	FE-stick 1,0 - 20 mm
Operating temperature	-25°C .. 70°C			
Protection class	IP67			
Housing material	Ultramid B3EG3			
Electrical connection	Plug connector M12; 4-pin			
Order information				
Order number	08310000991	08310000990	08310001007	08310000898

Inductive ring sensors - Dimension Ø 35 mm & Ø 43mm





Type	KJR-D35AN-DNIA-VE	KJR-D43KN-DPS	KJR-D43KN-ANU
Electrical data			
Output function	Dynamic - NPN (changeover)	Static - PNP (normally open)	Analog [0 .. 10V]
Operating voltage	20 - 30 VDC	10 - 30 VDC	18 - 30 VDC
Off-state current	25 mA	10 mA	1 mA
Max. Load current	50 mA	200 mA	5 mA
Residual current	<50µA	<10µA	<1µA
Maximum switching frequency	100 Hz	500 Hz	50 Hz
Switching state	LED		
Conditions of use			
Sensibility	FE-ball 0,5 mm (adjustable)	FE-ball 9,0 mm	FE-stick 1,0 - 20 mm
Operating temperature	-25°C .. 70°C		
Protection class	IP67		
Housing material	Aluminium	ABS	
Electrical connection	Euchner plug connector	2 m Cable; 3 x 0,34 mm²	
Order information			
Order number	08317020259	08317050500	08317144300

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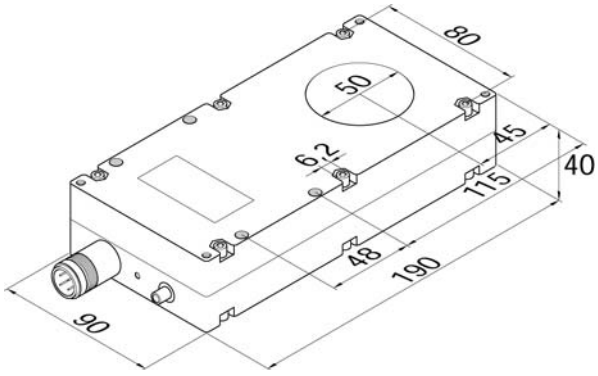
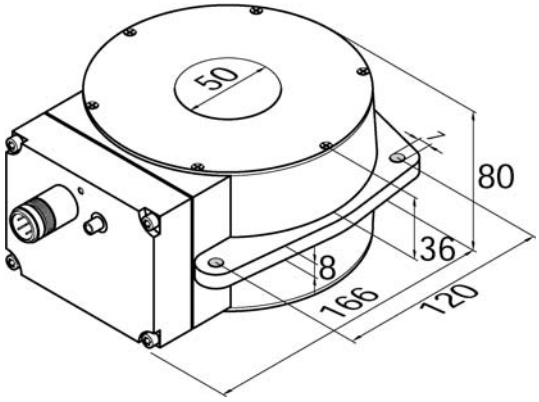
Inductive ring sensors - Dimension Ø 50 mm



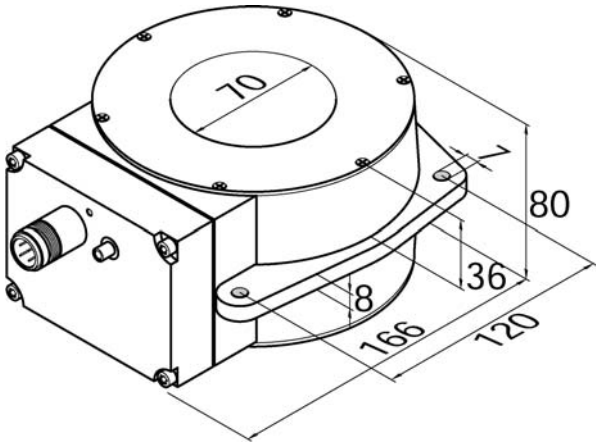
KJR-D50FAN-DNIA-VE
KJR-D50AN-DxA-Vx



KJR-D50AN-DNIA-Vx

Type	KJR-D50AN-DNA-Vx	KJR-D50AN-DPA-Vx	KJR-D50AN-DNIA-Vx	KJR-D50FAN-DNIA-VE
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - NPN (changeover)	Dynamic - NPN (changeover)
Operating voltage	10 - 30 VDC		20 - 30 VDC	
Off-state current	15 mA		25 mA	
Max. Load current	200 mA		50 mA	
Residual current	<10µA		<50µA	
Maximum switching frequency	500 Hz		100 Hz	
Switching state	LED			
Conditions of use				
Sensibility	FE-ball 3,0 mm		FE-ball 0,6 mm	FE-ball 1,0 mm
Operating temperature	-25°C .. 70°C			
Protection class	IP67			
Housing material	Aluminium			
Electrical connection	Plug connector M12; 4-pin or Euchner plug connector			Euchner plug connector
Order information				
order number (M12)	on request	on request	08317010765	-
order number (Euchner)	08317050259	08317050659	08317010759	08317010259

Inductive ring sensors - Dimension Ø 70 mm



Type	KJR-D70AN-DNIA-VE
Electrical data	
Output function	Dynamic - NPN (changeover)
Operating voltage	20 - 30 VDC
Off-state current	25 mA
Max. Load current	50 mA
Residual current	<50µA
Maximum switching frequency	100 Hz
Switching state	LED
Conditions of use	
Sensibility	FE-ball 1,0 mm (adjustable)
Operating temperature	-25°C .. 70°C
Protection class	IP67
Housing material	Aluminium
Electrical connection	Euchner plug connector
Order information	
Order number	08317110059

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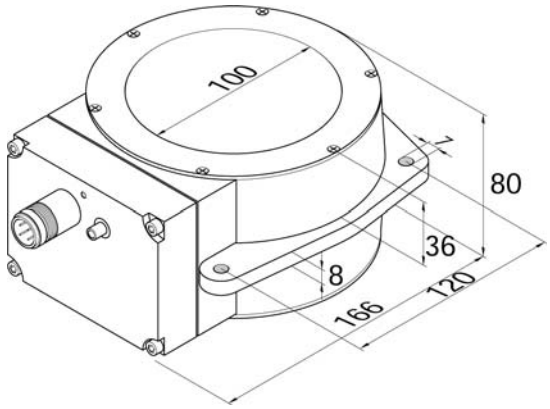
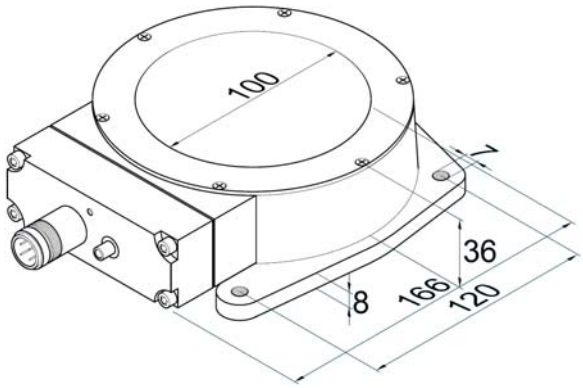
Inductive ring sensors - Dimension Ø 100 mm



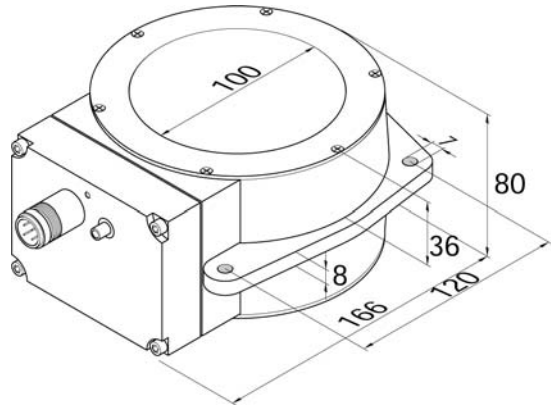
KJR-D100AN-DxA-Vx



KJR-D100FAN-DxA-Vx

Type	KJR-D100FAN-DNA-Vx	KJR-D100FAN-DPA-Vx	KJR-D100AN-DNA-Vx	KJR-D100AN-DPA-Vx
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Static - NPN (changeover)	Static - PNP (changeover)
Operating voltage	18 - 30 VDC		10 - 30 VDC	
Off-state current	15 mA		10 mA	
Max. Load current	200 mA			
Residual current	<10µA			
Maximum switching frequency	500 Hz			
Switching state	LED			
Conditions of use				
Sensibility (adjustable)	FE-ball 8,0 mm		FE-ball 6,0 mm	
Operating temperature	-10°C .. 60°C			
Protection class	IP67			
Housing material	Aluminium			
Electrical connection	Euchner plug connector		Plug connector M12; 4-pin or Euchner plug connector	
Order information				
Order number (M12)	on request	on request	on request	on request
Order num. (Euchner)	08317080059	08317080559	08317080159	08317080659

Inductive ring sensors - Dimension Ø 100 mm (continuation)



KJR-D100AN-DNIA-Vx

Type	KJR-D100AN-DNIA-Vx
Electrical data	
Output function	Dynamic - NPN (changeover)
Operating voltage	20 - 30 VDC
Off-state current	25 mA
Max. Load current	50 mA
Residual current	<50µA
Maximum switching frequency	100 Hz
Switching state	LED
Conditions of use	
Sensibility	FE-ball 1,3 mm (adjustable)
Operating temperature	-25°C .. 70°C
Protection class	IP67
Housing material	Aluminium
Electrical connection	Plug connector M12; 4-pin or Euchner plug connector
Order information	
Order number (M12)	08317000165
Order num. (Euchner)	08317000159

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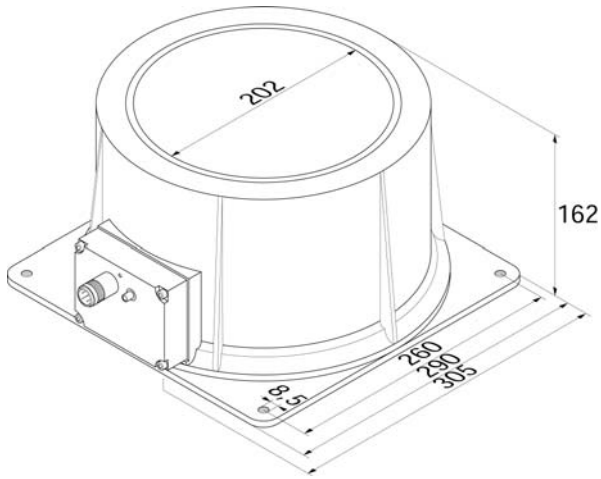
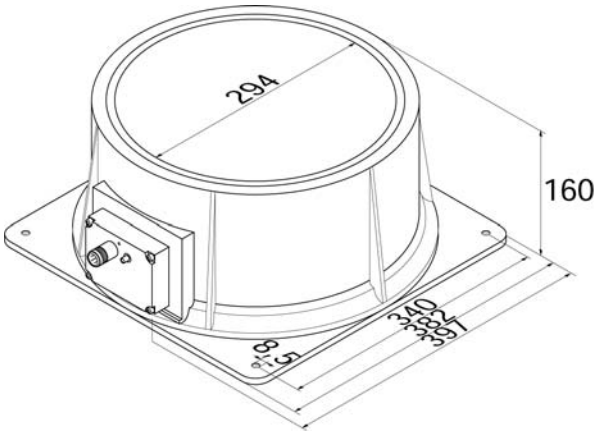
Inductive ring sensors - Dimension Ø 200 mm



Type	KJR-D200AN-DNA-Vx	KJR-D200AN-DPA-Vx	KJR-D200AN-DNIA-VE
Electrical data			
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - NPN (changeover)
Operating voltage	10 - 30 VDC		20 - 30 VDC
Off-state current	10 mA		25 mA
Max. Load current	200 mA		50 mA
Residual current	<10µA		<50µA
Maximum switching frequency	300 Hz		100 Hz
Switching state	LED		
Conditions of use			
Sensibility	FE-Kugel - 15 mm		FE-Kugel - 3,0 mm
Operating temperature	-10°C .. 60°C		-25°C .. 70°C
Protection class	IP67		
Housing material	Aluminium		
Electrical connection	Euchner plug connector	plug connec. M12; 4-pin or Euchner plug connec.	Euchner plug connector
Order information			
Order number (M12)	on request	08317160665	-
Order num. (Euchner)	08317060159	08317060659	08317030159

Inductive ring sensors - Dimension Ø 300 mm



Type	KJR-D300AN-DNA-VE	KJR-D300AN-DPA-Vx	KJR-D300AN-DNIA-VE
Electrical data			
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - NPN (changeover)
Operating voltage	10 - 30 VDC		20 - 30 VDC
Off-state current	10 mA		25 mA
Max. Load current	200 mA		50 mA
Residual current	<10µA		<50µA
Maximum switching frequency	300 Hz		100 Hz
Switching state	LED		
Conditions of use			
Sensibility	FE-ball - 30 mm		FE-ball - 4,0 mm
Operating temperature	-10°C .. 60°C		-25°C .. 70°C
Protection class	IP67		
Housing material	Aluminium		
Electrical connection	Euchner plug connector	plug connec. M12; 4-pin or Euchner plug connec.	Euchner plug connector
Order information			
Order number (M12)	-	08317070665	-
Order num. (Euchner)	08317070159	08317070659	08317040159

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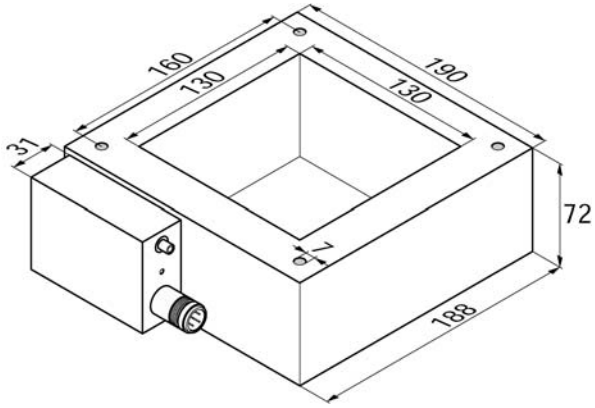
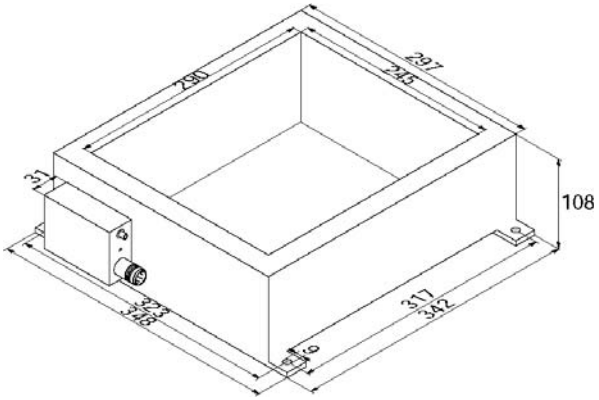
Inductive square sensors - Dimensions 130 mm & 290 mm



KJR-Q130AN-DxA-VE
KJR-Q130AN-DNIA-VE



KJR-Q290AN-DNIA-VE

Type	KJR-Q130AN-DNA-VE	KJR-Q130AN-DPA-VE	KJR-Q130AN-DNIA-VE	KJR-Q290AN-DNIA-VE
Electrical data				
Output function	Static - NPN (changeover)	Static - PNP (changeover)	Dynamic - NPN (changeover)	Dynamic - NPN (changeover)
Operating voltage	10 - 30 VDC		20 - 30 VDC	
Off-state current	10 mA		25 mA	
Max. Load current	50 mA			
Residual current	<10µA		<500µA	
Maximum switching frequency	300 Hz		100 Hz	
Switching state	LED			
Conditions of use				
Sensibility (adjustable)	FE-ball 12 mm		FE-ball 5,0 mm	FE-ball 12 mm
Operating temperature	-10°C .. 60°C		-25°C .. 70°C	
Protection class	IP67			
Housing material	Aluminium			
Electrical connection	Euchner plug connector			
Order information				
Order number	08317090159	08417090659	08317090359	08317090259

Remarks

As long as there are no other specifications all sensors from Pulsotronic have the following characteristics:

- switching outputs with short circuit protection and overload protection
- reverse voltage protection of all connections
- EMV-conformity according to EN 60947-5-2; 2004

Accessories

Designation	Article number
Control unit	
230 VAC; 24 VDC	08349005011
115 VAC: 24 VDC	08349005013
Connecting cable	
connecting cable 2 m f. connection to M12	44505125310
connecting cable 5 m f. connection to M12	44505125312
connecting cable 2 m f. connection to M12 (right-angle plug)	44505123910
connecting cable 5 m f. connection to M12 (right-angle plug)	44505123912
connecting cable 2 m f. connection to Euchner	44505120200
connecting cable 5 m f. connection to Euchner	44505120202

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Ring sensor
M-Pulse / Digital+ / Digital

RG

Application

This ring detector is used in our metal separators as well as in many other branches of industry. In applications in which the performance of analog ring sensors is not sufficient the detectors of the RG series do have great advantages due to their capacity. Especially the extremely high sensitivity and the possibility to eliminate product effects with the appropriate electronics allow outstanding solutions in the fields machine protection, process control and monitoring.

Handling

Depending on the electronics operation is realised via a membrane keyboard and a LC-display. By this all important parameters can be displayed and if necessary changed easily. The sensitivity of the sensor also is adjustable this way. Precise information is stated in the documentation of the operating electronics Digital, M-PULSE and Digital+.

Function

Contrary to classical metal sensors the working principle of this detector is based on a system of three coils. This enables the user to analyse signals precisely and to draw conclusions on their origin. By this it is for example possible to distinguish the signals into vibration, product or metal. This additional data allows a more sensible reaction on metallic residua. The sensors do not require maintenance or calibration.

Mounting

The sensing range of the sensor partially is situated above and under the opening of the detector. Big metal pieces can already be detected in this sector. In order to guarantee the accurate functioning of the sensor, these sectors must be kept free of metal. This so-called metal-free zones are divided into two types:

- Metal-free zones for movable pieces
- Metal-free zones for non movable pieces

The dimensions of these zones are specified in the particular data sheets.

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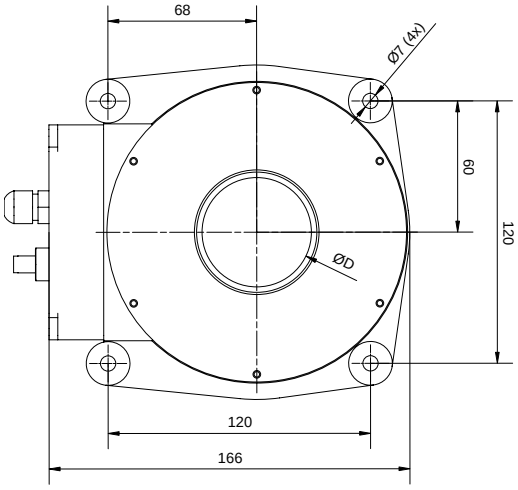
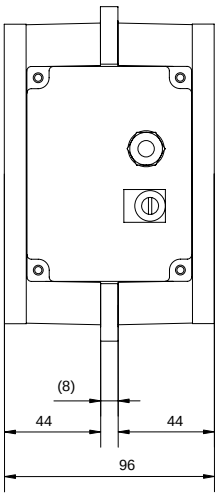
Type	RG 25		RG 35		RG 50		RG 70		RG 100	
Mechanical data										
Heigth	95 mm								120 mm	
Inner diameter - D	25 mm		35 mm		50 mm		70 mm		102 mm	
Metal free zone for static parts	1 x inner diameter									
Metal free zone for moving parts	1,5 x inner diameter									
Conditions of use										
Storage temperature	-10 .. 60°C									
Operating temperature	0 .. 60°C									
Protection class	IP65									
Electrical connection	Supply via control unit (Attached with 3 m cable).									
Sensitivity[1]										
Material - test pieces	FE	SS	FE	SS	FE	SS	FE	SS	FE	SS
M-Pulse	0,15	0,4	0,2	0,5	0,25	0,8	0,4	0,9	0,5	1,0
Digital+	0,2	0,5	0,3	0,6	0,35	1,0	0,5	1,2	0,5	1,2
Digital	not available				0,5	1,5	0,7	2,0	not available	

Order code:

electronic	type of sensor	
M-Pulse / Digital+ / Digital	RG 25 - RG 100	(e.g.: Digital+ RG 70)





(Drawing for RG 100 on request)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can decrease the sensitivity. as well as conductive test material can inflluence it. For precise information please contact or service or sales department. Our service includes product tests in our headquarters.

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Control unit for ring sensors

Application

The control unit for ring sensors can be operated with all detectors of the KJR series. It not only serves for evaluating the ring sensors‘ signals but also realises the voltage supply for the sensor. It is designed specially for mounting on a 35 mm top hat rail. The device additionally can be operated with all switching sensors and with 24 V operating voltage.

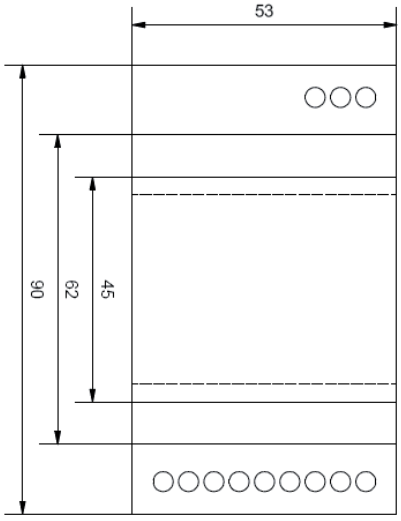
Function

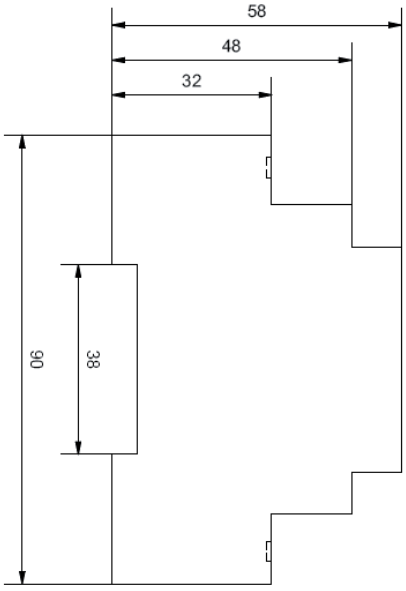
If the connected sensor excites a signal, it will be collected and lengthened on the adjusted period by the control unit. When during that time another signal is excited, it will be lengthened on the adjusted period again. After that the signal is output via a relay and a transistor output. The active switching state is indicated by an LED. The device can be operated with 24V direct current or alternatively with line voltage. All outputs provide short circuit protection as well as overload protection. All voltage inputs are protected against reverse polarity.

Handling

The period for a switching pulse is adjusted via a potentiometer. For a more exact adjustment the user chooses among two time ranges. The adjustment of the time domain is effected via a rotary coding switch. Via this switch the user also defines if the relay shall be activated or if the connected sensor is NPN or PNP switching. Changeover sensors don‘t need an adjustement for NPN or PNP.

Type	Control unit for ring sensors 230 VAC / 24 VDC	Control unit for ring sensors 115 VAC / 24 VDC
Mechanical data		
Dimension	L x B x H: 90 x 53 x 58 mm	
Weigth	290 g	
Mounting	35 mm - top hat rail	
Electrical data		
Supply voltage	230 V; 50/60 Hz bzw. 24 VDC	115 V; 50/60 Hz bzw. 24 VDC
Supply for sensor	24 VDC; max. 80 mA (overload and short-circuit proof)	
Low power output	1 x low-side/open-collector; 1 x high-side/open-collector; 20 mA; (overload and short-circuit proof)	
Relay output	1 x change-over contact; max 250 VAC, 5 A	
Pulse duration	1 .. 10 / 1 .. 60 s (adjustable)	
Conditions of use		
Storage temperature	-10°C .. 60°C	
Operating temperature	-10°C .. 50°C	
Protection class	IP20	
Order information		
Order number	08349005011	08349005013
Cable set for sensors	2 m	5 m
with plug M12	44505125310	44505125312
with plug Euchner	44505120200	44505120202





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Control unit for flat sensors

Application

This control unit can be operated with all flat detectors of the series MESEP SP, MESEP RE and MESEP AR. By a decoder switch the control unit can be adapted easily to the sensor and the application. The supply voltage for the sensor is provided by the device. The control unit can be mounted on a 35 mm top hat rail.

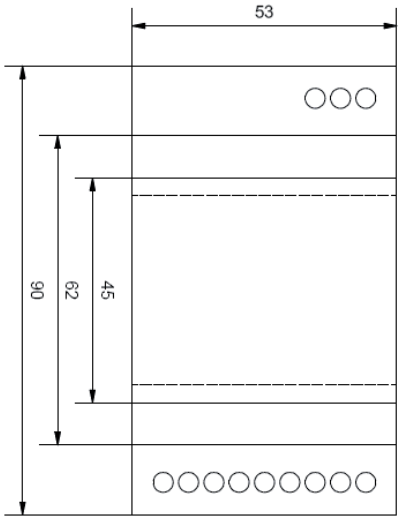
Function

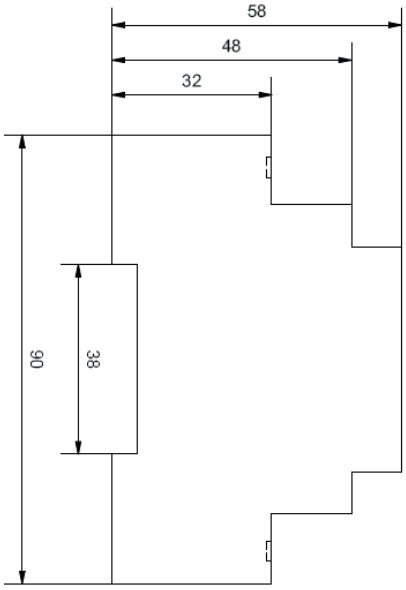
If the connected flat sensor excites a signal, it will be collected and lengthened on the adjusted period by the control unit. When during that time another signal is excited, it will be lengthened on the adjusted period again. After that the signal is output via a relay and a transistor output. The active switching state is indicated by an LED. Drift effects on the sensor caused by deterioration or thermal fluctuation are balanced by the control unit. The device can be operated with 24V direct current or alternatively with line voltage. The voltage supply for the sensor is realised directly via the control unit. All outputs provide short circuit protection as well as overload protection. All voltage inputs are protected against reverse polarity.

Handling

The period for a switching pulse and the sensitivity can be adjusted via a potentiometer. For a more exact adjustment the user chooses among two time ranges. The adjustment of the time domain is effected via a rotary coding switch. Via this switch the user also defines if the relay shall be activated. Furthermore the switch serves for the selection of the appropriate speed range. Altogether there are four different ranges from minimum 10 m/min up to maximum 150 m/min.

Type	Control unit for flat sensors 230 VAC / 24 VDC	Control unit for flat sensors 115 VAC / 24 VDC
Mechanical data		
Dimension	L x W x H 90 x 53 x 58 mm	
Weigth	290 g	
Mounting	35 mm - top hat rail	
Electrical data		
Supply voltage	230 V; 50/60Hz or 24 VDC	115 V; 50/60Hz or 24 VDC
Supply for sensor	15 VDC; max. 80 mA (overload and short-circuit proof)	
Low power output	1 x low-side/open-collector; 1 x high-side/open-collector; 20 mA; (overload- and short-circuit proof)	
Relay output	1 x change-over contact; max 250 VAC, 5 A	
Speed	1-10 / 1-30 / 1-100 / 1-150 m/min	
Pulse duration	1 .. 10 s / 1 .. 60 s (adjustable)	
Conditions of use		
Storage temperature	-10°C .. 60°C	
Operating temperature	-10°C .. 50°C	
Protection class	IP20	
Order information		
Order number	08349005010	08349005012





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Control unit for flat sensors (10-channel)

Application

This control unit can be operated with all flat detectors of the series MESEP SP, MESEP RE and MESEP AR. The unit particularly is appropriate for applications in which flat sensors detect the test material transported on conveyor belts or chutes on metallic contamination and separate it subsequently. The control of the conveyor belt can be realised directly by the control unit. The device provides 10 inputs and can either analyse large SP faces or several AR faces. The control unit is operated with 24VDC or with line voltage. It is available in three versions. The model with reversing contactor circuit allows the complete control of threephase-motors. For this reason the device can be applied worldwide in all branches of industry.

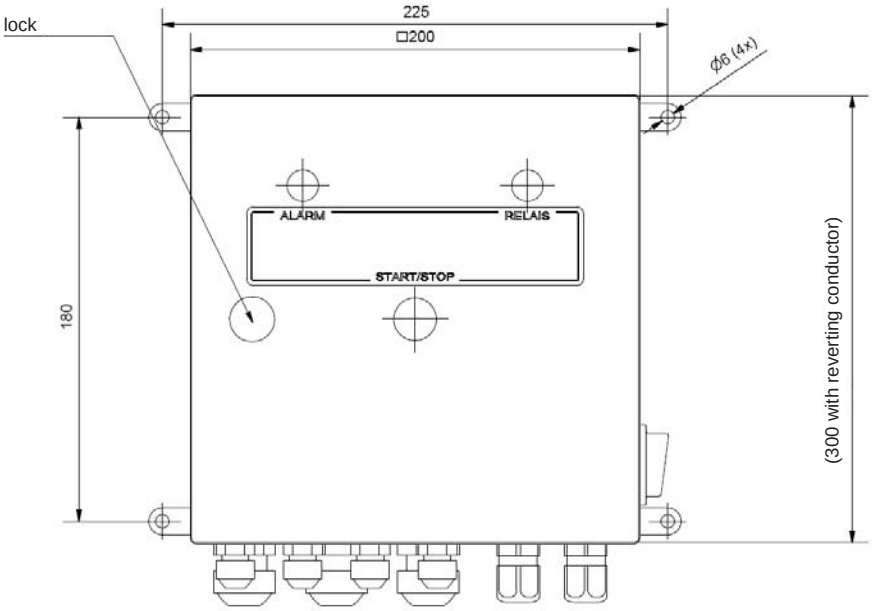
Function

If one of the connected sensors (max. 10) sends a signal this will be evaluated by the device. Thus the control unit can for example stop the belt or activate the reverse motion of the belt. After this the belt restarts - automatically or by pushing the start button. The actual state is indicated by two signal lights. By the reverse motion the user can make sure that really all metallic pieces have been removed. If any metallic residua is not removed from the belt, it passes the detector again and will be detected. This will be repeated until the contamination has been removed.

Handling

On the device there are buttons for Start, Stop and for actuating alarms. Two potis in the inside of the control unit realise the adjustment of the sensitivity as well as the time. Via DIP-switch further features as automatic belt motion, the belt speed and time domains can be adjusted.

Type	standard	with reverting conductor	for top hat rail
Mechanical data			
Dimension	200 x 200 x 80 mm	200 x 300 x 80 mm	195 x 125 x 67 mm
Weigth	2.500 g	3.500 g	425 g
Mounting	4 x fixing hole Ø6	4 x fixing hole Ø8	35 mm - top hat rail
Housing	metal - powder coated	stainless steel	plastic
Electrical data			
Supply voltage	110 VAC - 250 VAC; 50/60Hz or 24 VDC		
Supply for sensors	15 VDC; max. 120 mA (overload- and short-circuit proof)		
Low power output	1 x high-side/open-collector; max. 20mA (overload- and short-circuit proof)		
Relay output	1 x change-over contact; max 250VAC, 5A		
Speed	1-10 / 1-30 / 1-100 / 1-150 m/min		
Pulse duration	1 .. 60 s		
Reverting conductor	-	3phase 380 VAC; 9 A	-
Conditions of use			
Storage temperature	-10°C .. 60°C		
Operating temperature	-10°C .. 50°C		
Protection class	IP54	IP65	IP20
Order information			
Order number	08349005000	08349005002	08349005001



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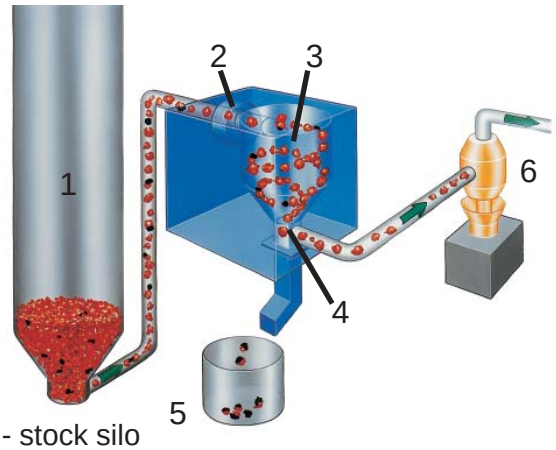
Metal separator
M-Pulse / Digital+
Digital / MESEP

Extraktor

Application

These separators are used for different applications in the plastics industry. The Extractor has been developped exclusively for the operation on suction conveyors. The entire path through the Extraktor is completely airproof. Thus for example injection moulding machines with automatic feeding via a suction conveyor can be protected efficiently. The device is available in seven different connection types. Therefore the Extraktor can be operated with nearly each suction conveyor.

Function



1 - stock silo
2 - sensor
3 - cyclone
4 - separating filter
5 - special outlet for metallic residua
6 - suction conveyor

The suction conveyour sucks the material through the Extraktor. Thereby the material passes the sensor, streams afterwards through a cyclone and finally quits the device through a separating filter. If metal is detected, the filter opens and metal is led out. Simultaneously the sensor and the cyclone are blown out with compressed air in order to eliminate potentially left metallic residua. After that the separating filter is closed and the feeding continues. This mechanism is fully independent of the stream velocity. The correct functioning of the mechanics can be checked at the push of a button.

Type	Extraktor 38 - 70						
	38	45	50	55	60	65	70
Mechanical data							
Dimensions	L x W x D: 450 x 450 x 300 mm						
Outer diameter of the inlet and outlet nozzle	38 mm	45 mm	50 mm	55 mm	60 mm	65 mm	70 mm
Material-ejection unit	stainless steel						
Material-base frame	ferrous						
Material-protection tube[2]	PU & phenolic resin						
Material-gasket	Linatex						
Weigth	~ 32 kg						
Conditions of use							
Storage temperature	-10°C .. 60°C						
Operating temperature	0°C .. 60°C						
Protection class	IP50						
Electrical connection	see datasheet of the control unit						
Pneumatic connection	4-6 bar, filtered, free of water & oil; self-sealing-coupling - fitting NW 7,2						
Troughput[3]	600 l/h	1000 l/h	1.300 l/h	1.700 l/h	2.200 l/h	2.700 l/h	3.300 l/h

Sensitivity[1]				
Material - test pieces	Fe	SS	Fe	SS
M-Pulse	0,3 mm	0,9 mm	0,4 mm	0,9 mm
Digital+	0,35 mm	1,1 mm	0,5 mm	1,2 mm
Digital	0,5 mm	1,5 mm	0,7 mm	2,0 mm
MESEP	0,6 mm		1,0 mm	

Ordering code:

Elektronic	Type of separator	
M-Pulse / Digital+ / Digital / MESEP	Extraktor 38 - Extraktor 70	(e.g.: MESEP Extraktor 50)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters.
[2] Other materials available (glas, antistatic; wear-resistant)
[3] Measured with granulate PET - grain dimension 2 - 3 mm.

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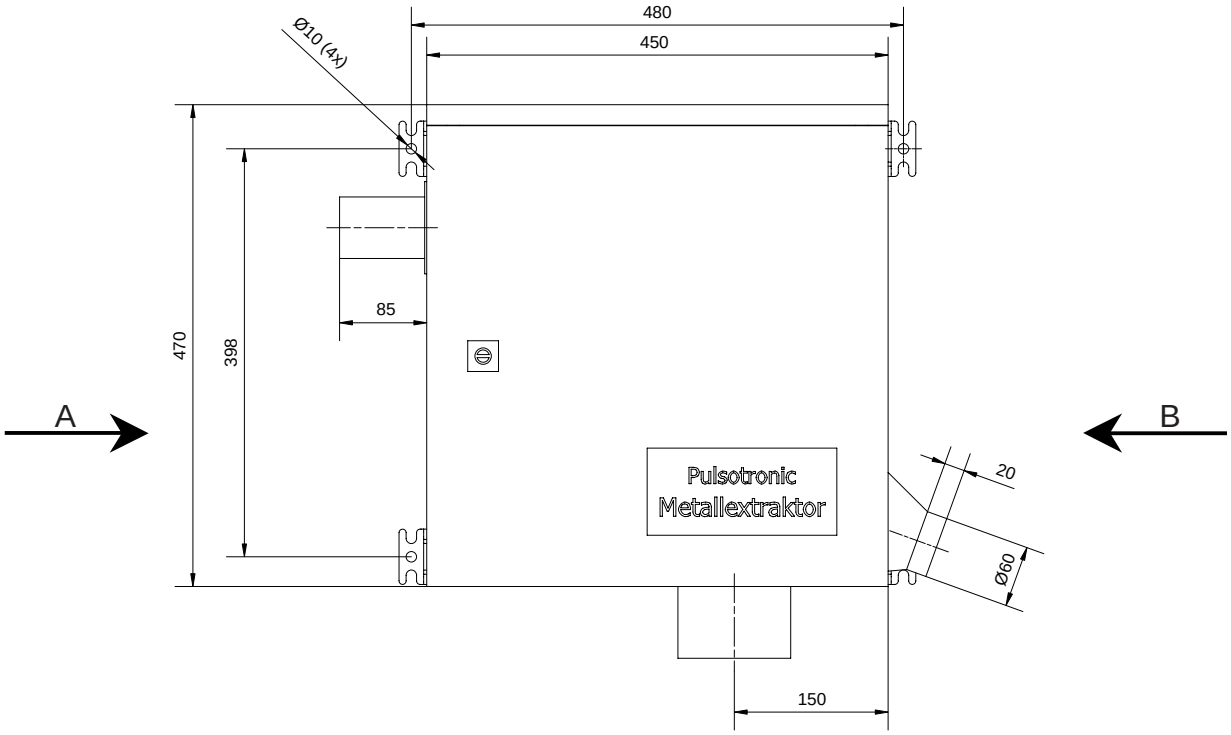
Special designs & accessories

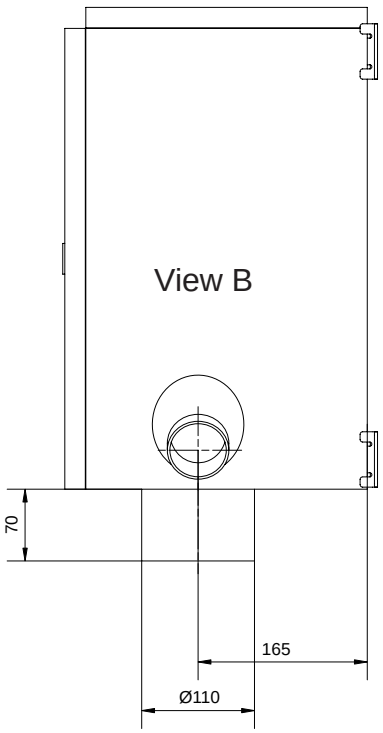
Designation	Order number
Pneumatic guard	When ordering please add option 45
Wear-resistent model (for very abrasive bulk material)	When ordering please add option 44
Pneumatic cooling	Please specify when ordering

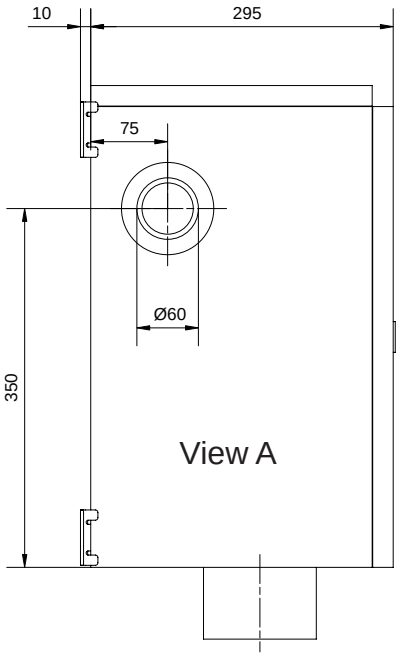
Application example

Three MESEP Extraktor 70 provide for metal-free products.

Dimensions







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Metal separator
M-Pulse / Digital+ / MESEP

GF

Application

Due to its‘ design this separator can be used in nearly all branches of industry. Because of the stainless steel housing the GF also is appropriate for applications in the food industry. Transmission ports with a maximum diameter of 300 mm allow an extremely high material throughput at maximum sensitivity. This brings advantages for the use in filling systems. The device can be equipped with various separating filters. The operating electronics can be fixed in a maximum distance of 3 meters. By this the GF is easy to handle even in places that are difficult to access.

Function

In the upper part of the separator the sensor coil of the metal detector is situated. If metal falls through the sensor the signal is collected and processed by the operating electronics. Subsequently the electronics precisely excites the pulse for piloting the ejection flap. The flap is opened and metal is separated from the product stream. The robust, pneumatic-driven mechanics guarantees durability. Depending on the electronics the function of the ejection can be monitored. Further installations, for example a pressure control device, constantly control the correct function.

Specific Characteristics

- maintenance-free mechanics
- very big transmission ports available
- robust, pneumatic-driven ejection mechanics (optional)
- according to the application different electronics available
- design with or without ejection mechanics available
- protection class IP65
- stainless steel housing
- supporting frame can be integrated in existing constructions

Type[4]	GF 100	GF 120	GF 150	GF 200	GF 250	GF 300
Mechanical data						
Heigth with ejection unit	600 mm	720 mm	850 mm	1.200 mm	1.395 mm	1.605 mm
Dimensions (W x D)	318 x 450 mm	338 x 450 mm	400 x 502 mm	508 x 615 mm	685 x 800 mm	800 x 940 mm
Material-ejection unit	stainless steel					
Material-base frame	stainless steel					
Material-protection tube[2]	POM					
Conditions of use						
Storage temperature	-10°C .. 60°C					
Operating temperature	0°C .. 50°C					
Protection class	IP65					
Electrical connection	see datasheet of the control unit					
Pneumatic connection	4-6 bar, filtered, free of water and oil; self-sealing-coupling - fitting NW 7,2					
Troughput[3]	16.000 l/h	25.000 l/h	43.000 l/h	82.000 l/h	135.000 l/h	200.000 l/h
Bulk characteristics	free flowing					

Sensitivity[1]												
Material - Test pieces	Fe	SS	Fe	SS	Fe	SS	Fe	SS	Fe	SS	Fe	SS
M-Pulse	0,5	1,0	0,7	1,2	0,8	1,4	1,2	2,0	1,5	2,2	1,7	2,5
Digital+	0,5	1,2	0,8	1,4	0,9	1,6	1,3	2,2	1,6	2,5	1,8	2,8
MESEP	not available				3,0	4,0	4,0	5,0	4,0	5,0	n. available	

Ordering code:

Electronic	Type of seperator	
M-Pulse / Digital+ / MESEP	GF 100 - GF 300	(e.g.: MESEP GF 300)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters. (all data in mm)
[2] Other materials available.
[3] Measured with granulate PET - grain dimension 2 - 3mm.
[4] Bigger dimensions and in-between sizes available on request.

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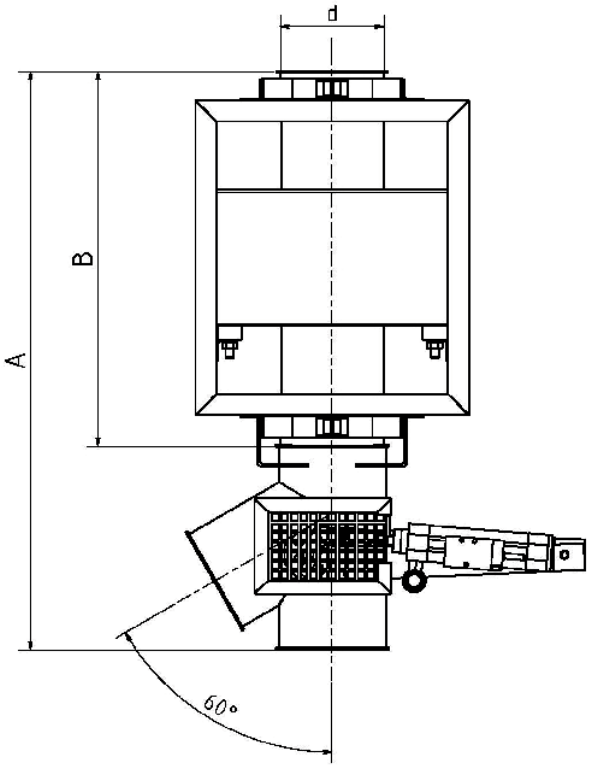
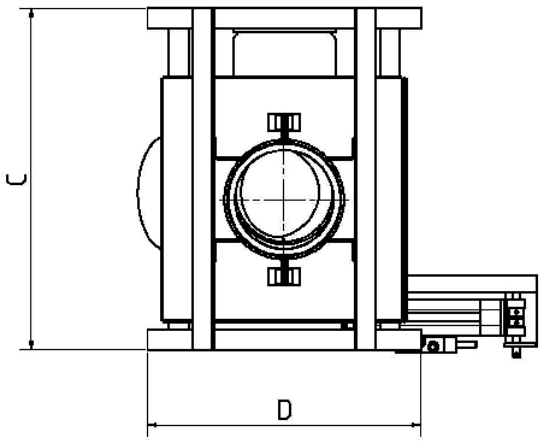
Delivery programm & accessories

All devices of the GF series are serially delivered without ejection mechanics. Adapted mechanics are separately available for all dimensions. For the connecting of the device to a piping optionally a kit consisting of 3 welding socket pieces, 3 snap closing circlips and 3 cooper gaskets are available. Please inform us about the necessary accessories when placing your order.

Designation	Order number
Pneumatic guard	When ordering please add option 45
Wear-resistent model (for very abrasive bulk material)	When ordering please add option 44
Ejector guard (Indicats malfunction of the ejection unit)	When ordering please specify
Ejection flap EX-S-100	08410192011
Ejection flap EX-S-120	08410192012
Ejection flap EX-S-150	08410192013
Ejection flap EX-S-200	08410192014
Ejection flap EX-S-250	08410192015
Ejection flap EX-S-300	08410192016
Ejection flap EX-K-100 wear-resistant w. maintenance opening	08410193022
Ejection flap EX-K-100 wear-resistant w. window	08410193015
Ejection flap EX-K-120 wear-resistant w. maintenance opening	08410193023
Ejection flap EX-K-120 wear-resistant w. window	08410193012
Ejection flap EX-K-150 wear-resistant w. maintenance opening	08410193024
Ejection flap EX-K-150 wear-resistant w. window	08410182013
Ejection flap EX-K-200 wear-resistant w. maintenance opening	08410193025
Ejection flap EX-K-200 wear-resistant w. window	08410182016
Ejection flap EX-K-250 wear-resistant w. maintenance opening	08410193026
Ejection flap EX-K-250 wear-resistant w. window	08410182014
Ejection flap EX-K-300 wear-resistant w. maintenance opening	08410193027
Connecting kit GF / GFC 100	08410310000
Connecting kit GF / GFC 120	08410310001
Connecting kit GF / GFC 150	08410310002
Connecting kit GF / GFC 200	08410310003
Connecting kit GF / GFC 250	08410310004
Connecting kit GF / GFC 300	08410310005

Dimensions





Type	GF 100	GF 120	GF 150	GF 200	GF 250	GF 300
Dimension A	600 mm	710 mm	850 mm	1200 mm	1395 mm	1605 mm
Dimension B	400 mm	490 mm	550 mm	790 mm	935 mm	1100 mm
Dimension C	450 mm	450 mm	500 mm	615 mm	800 mm	940 mm
Dimension D	318 mm	338 mm	400 mm	508 mm	685 mm	800 mm

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Metal separator
M-Pulse / Digital+

GFC

Application

The GFC has been developped as a compact version of the GF series for applications where separators from the GF series cannot be used because of restricted space conditions. For this reason the detection performance is lower than that of the GF series. Like the GF series the GFC also has a stainless steel housing and a stable supporting frame. Typical fields of application are on filling systems or separating plants.

Function

In the upper part of the separator the sensor coil of the metal detector is situated. If metal falls through the sensor the signal is collected and processed by the operating electronics. Subsequently the electronics precisely excites the pulse for piloting the ejection flap. The flap is opened and metal is separated from the product stream. The robust, pneumatic driven mechanics guarantees durability. Depending on the electronics the function of the ejection can be monitored. Further installations, for example a pressure control device, constantly control the correct function.

Specific characteristics

- maintenance-free mechanics
- very big transmission ports available
- robust, pneumatic-driven ejection mechanics (optional)
- according to the application different electronics available
- design with or without ejection mechanics available
- protection class IP65
- stainless steel housing
- compact design

Type[4]	GFC 100		GFC 120		GFC 150		GFC 200		GFC 250		GFC 300	
Mechanical data												
Heigth with ejection unit (A)	450 mm		530 mm		600 mm		910 mm		1.050 mm		1.095 mm	
Dimension (X x C)	320 x 450 mm		340 x 450 mm		400 x 505 mm		510 x 615 mm		640 x 800 mm		800 x 940 mm	
Nominal width - D	100 mm		120 mm		150 mm		200 mm		250 mm		300 mm	
Material-ejection unit	stainless steel											
Material-base frame	stainless steel											
Material-protection tube[2]	POM											
Conditions of use												
Storage temperature	-10°C .. 60°C											
Operating temperature	0°C .. 50°C											
Protection class	IP65											
Electrical connection	see datasheet of the control unit											
Pneumatic connection	4-6 bar, filtered, free of water and oil; self-sealing-coupling - fitting NW 7,2											
Troughput[3]	16.000 l/h		25.000 l/h		43.000 l/h		82.000 l/h		135.000 l/h		200.000 l/h	
Bulk characteristics	free falling											
Sensitivity[1]												
Material - Test pieces	Fe	SS	Fe	SS	Fe	SS	Fe	SS	Fe	SS	Fe	SS
M-Pulse	0,7	1,1	1,0	1,4	1,1	1,8	1,6	2,4	2,0	3,1	2,6	4,1
Digital+	0,8	1,3	1,1	1,5	1,2	2,0	1,8	2,5	2,2	3,5	2,8	4,5

Order code:

Electronic	Type of seperator	
M-Pulse / Digital+	GFC 100 - GFC 300	(e.g.: M-Pulse GFC 150)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters. (all data in mm)
[2] Other materials available.
[3] Measured with granulate PET - grain dimension 2 - 3mm.
[4] Bigger dimensions and in-between sizes available on request.

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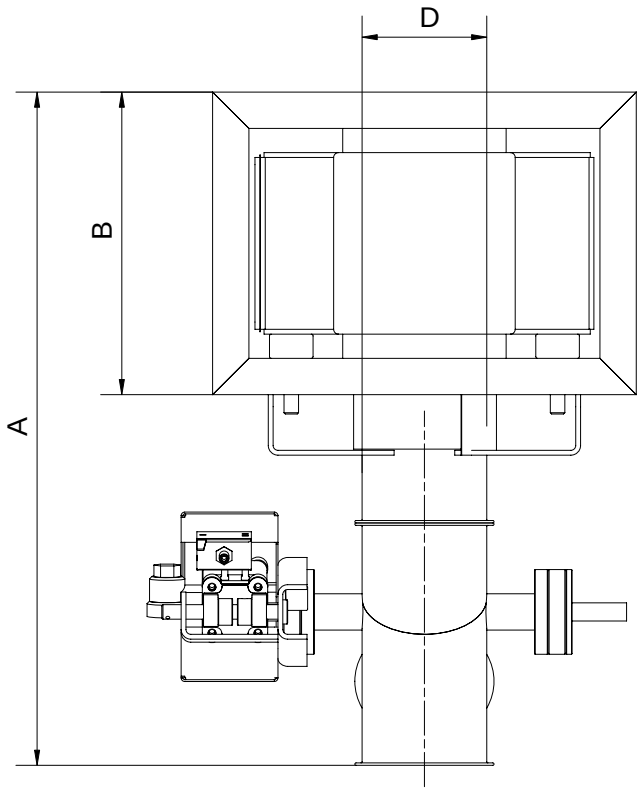
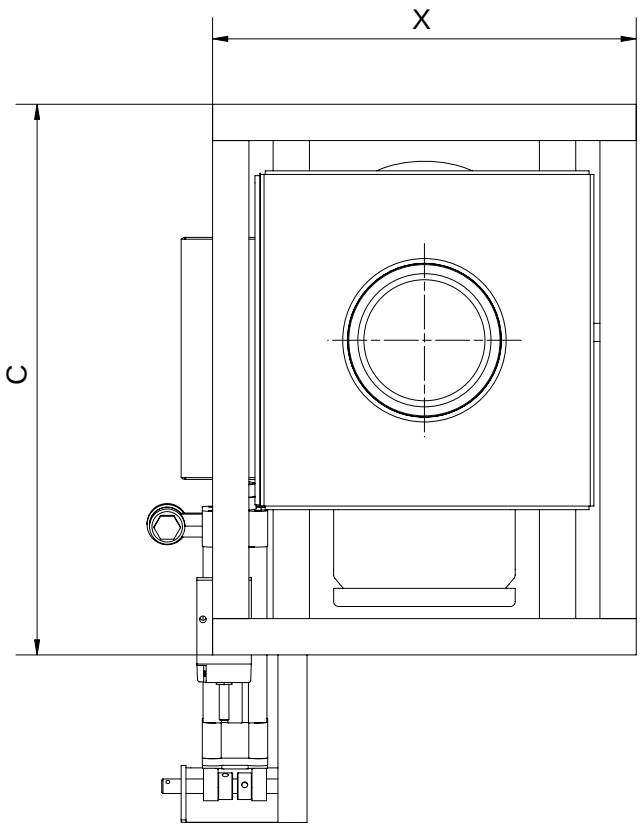
Special designs & accessories

All devices of the GFC series are serially delivered without ejection mechanics. Adapted mechanics are separately available for all dimensions. For the connecting of the device to a piping optionally a kit consisting of 3 welding socket pieces, 3 snap closing circlips and 3 cooper gaskets is available. Please inform us about the necessary accessories when placing your order.

Designation	Order number
Pneumatic guard	When ordering please add option 45
Wear-resistant model (for very abrasive bulk material)	When ordering please add option 44
Ejector guard (Indicats malfunctions of the ejection unit)	When ordering please specify
Ejection flap EX-S-100	08410192011
Ejection flap EX-S-120	08410192012
Ejection flap EX-S-150	08410192013
Ejection flap EX-S-200	08410192014
Ejection flap EX-S-250	08410192015
Ejection flap EX-S-300	08410192016
Ejection flap EX-K-100 wear-resistant w. maintenance opening	08410193022
Ejection flap EX-K-100 wear-resistant w. window	08410193015
Ejection flap EX-K-120 wear-resistant w. maintenance opening	08410193023
Ejection flap EX-K-120 wear-resistant w. window	08410193012
Ejection flap EX-K-150 wear-resistant w. maintenance opening	08410193024
Ejection flap EX-K-150 wear-resistant w. window	08410182013
Ejection flap EX-K-200 wear-resistant w. maintenance opening	08410193025
Ejection flap EX-K-200 wear-resistant w. window	08410182016
Ejection flap EX-K-250 wear-resistant w. maintenance opening	08410193026
Ejection flap EX-K-250 wear-resistant w. window	08410182014
Ejection flap EX-K-300 wear-resistant w. maintenance opening	08410193027
Connecting kit GF / GFC 100	08410310000
Connecting kit GF / GFC 120	08410310001
Connecting kit GF / GFC 150	08410310002
Connecting kit GF / GFC 200	08410310003
Connecting kit GF / GFC 250	08410310004
Connecting kit GF / GFC 300	08410310005

Dimensions incl. separating filter





ØD [mm]	A [mm]	B [mm]	C [mm]	X [mm]
100	450	200	450	320
120	530	250	450	340
150	600	250	505	400
200	910	300	615	510
250	1050	390	800	640
300	1095	390	940	800

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Metal separator
M-Pulse / Digital+ / Digital / MESEP

VA

Application

The VA separator is appropriate for applications in the plastics, the pharmaceutical, the chemical or the food industry. The separating mechanics consists of durable stainless steel. Different operating electronics allow adapted solutions for each application. All kinds of free-falling bulk material are detected fast and reliably on metallic contamination. The compact design and transmission ports in different sizes make this separator appropriate for most applications.

Function

In the upper part of the separator the sensor coil of the metal detector is situated. If metal falls through the sensor the signal is collected and processed by the operating electronics. Subsequently the electronics precisely excites the pulse for piloting the ejection flap. The flap is opened and metal is separated safely from the product stream. The robust, pneumatic driven mechanics guarantees durability. The functioning of the mechanics can be monitored constantly by several alerters. Thus the device permanently ensures that all metallic pieces have really been separated from the product stream.

Specific characteristics

- maintenance-free mechanics
- different transmission ports available
- robust, pneumatic-driven ejection mechanics
- electronics adapted to the application available
- large range of accessories available
- all devices mechanically compatible

Type	VA 25		VA 35		VA 50		VA 70		VA 100	
Mechanical data										
Aperture - D model Digital VA	not available				45 mm		65 mm		not available	
Aperture - D model MESEP VA	not available		29 mm		45 mm		65 mm		94 mm	
Aperture - D model Digital+ VA model M-Pulse VA	24 mm		29 mm		45 mm		65 mm		94 mm	
Material-ejection unit	stainless steel									
Material-base frame	aluminium / stainless steel									
Material-protection tube[2]	phenolic resin									
Payload	max. 50 kg									
Weigth	~ 17 kg									
Conditions of use										
Storage temperature	-10 .. 60°C									
Operating temperature	0 .. 60°C									
Protection class	IP50									
Electrical connection	see datasheet of the control units									
Pneumatic connection	4-6 bar, filtered, free of water and oil; 1/8“ - male nippel									
max. drop heigth of the bulk material	0 .. 600 mm (from top edge)									
Troughput[3]	450 l/h		600 l/h		2.000 l/h		5.400 l/h		14.000 l/h	
Sensitivity[1]										
Material - test pieces	FE	SS	FE	SS	FE	SS	FE	SS	FE	SS
M-Pulse	0,15	0,4	0,2	0,5	0,3	0,9	0,4	0,9	0,5	1,0
Digital+	0,2	0,5	0,3	0,6	0,35	1,1	0,5	1,2	0,5	1,2
Digital	not available				0,5	1,5	0,7	2,0	not available	
MESEP	not available		0,5	a.A.	0,6	a.A.	1,0	a.A.	1,3	o.R.

Order code:

Electronic	Type of seperator	
M-Pulse / Digital+ / Digital / MESEP	VA 25 - VA 100	(e.g.: Digital VA 50)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensibility. Conductive test material can also influence the sensibility. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters. (all data in mm)
[2] Other materials available. (glas, antistatic; wear-resistant)
[3] Measured with granulate PET - grain dimension 2 - 4 mm.

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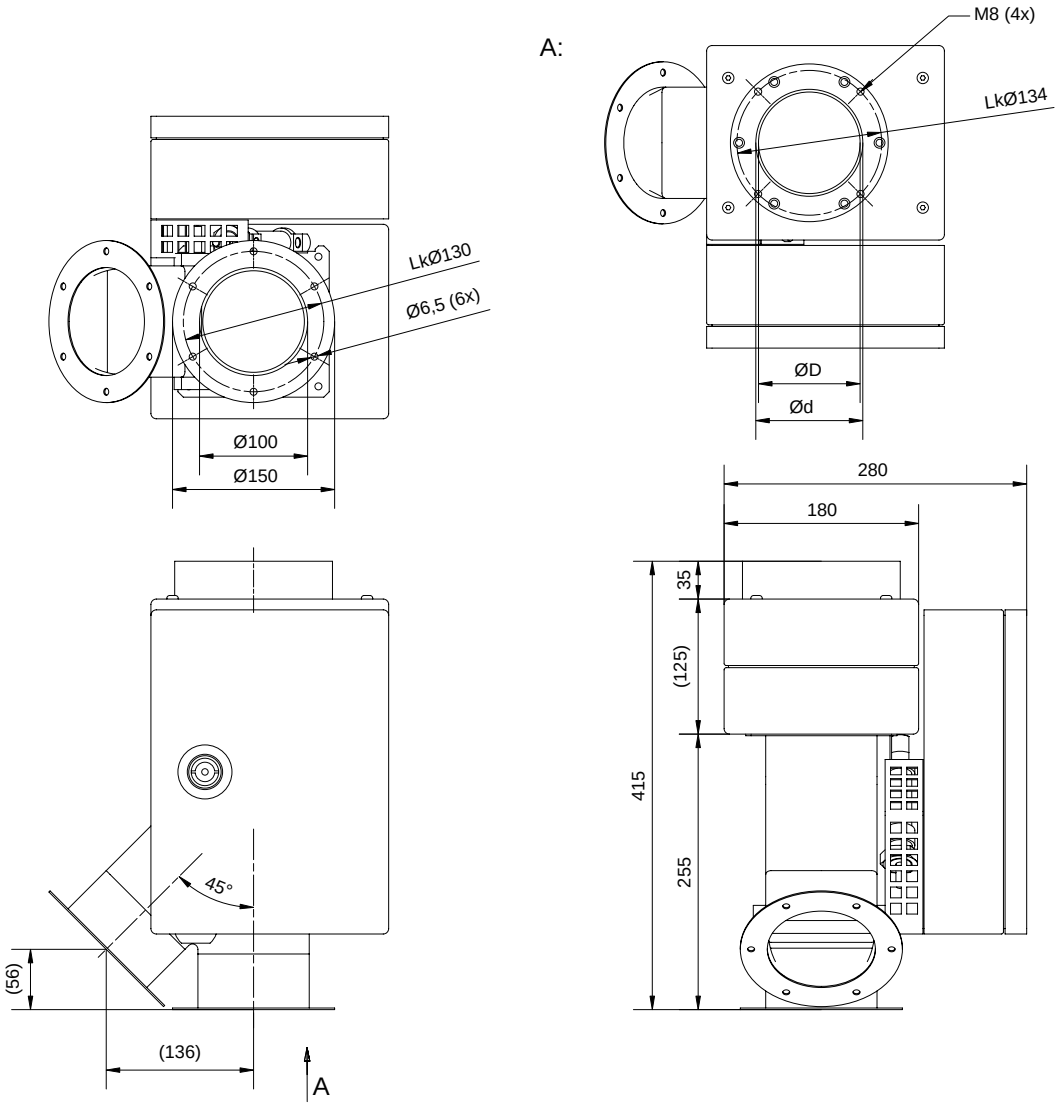
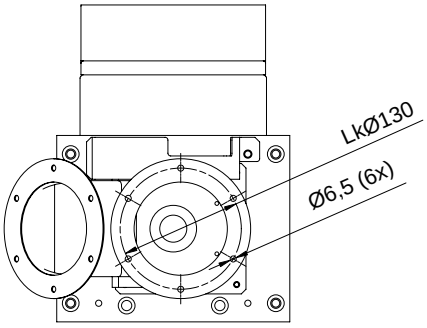
Special designs & accessories

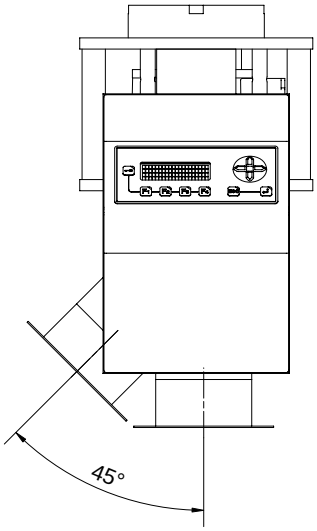
Designation	Order number
Pneumatic guard	When ordering please add option 45.
Voltage- und pneumatic guard (Flap automatic switchs into throw-off position at blackout or falling preasure)	When ordering please add option 40.
Remote terminal (max. 3 m cable length) (only M-Pulse/Digital+/Digital)	When ordering please specify
Wear-resistent model (for very abrasive bulk material)	When ordering please add option 44.
Test pieces - certifi ed - Fe/NonFe/SS	on request
Pneumatic cooling (product temperature up to 90°C)	When ordering please specify
Fan cooling (product temperature up to 70°C)	When ordering please specify

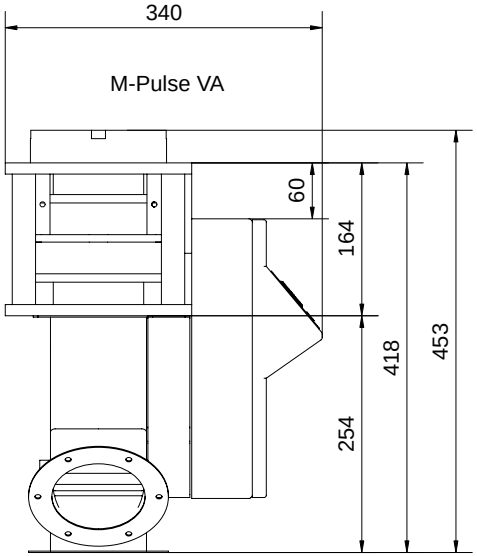
Dimensions - MESEP VA 35 .. 100

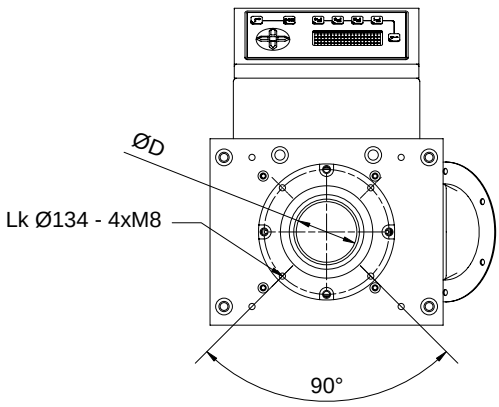


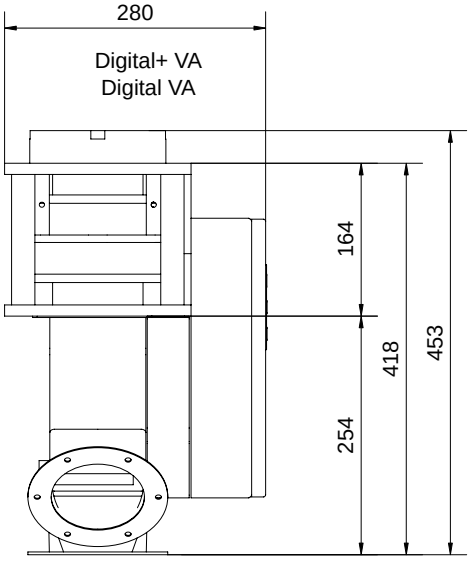
Dimensions











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Metal separator
M-Pulse / Digital+ / Digital

Y

Application

Fields of application for the Y series are the plastics and the chemical industry. The separating mechanics allows the separation of metallic objects from free-falling bulk material. The device also is appropriate for applications in which the bulk material is accumulating into the separator. By this for example injection moulding machines can be protected safely from damage caused by metallic contamination. This patented separating technique makes the Y unique. The separator can be applied flexibly in many branches.

Function

In the upper part of the separator the sensor coil of the metal detector is situated. If metal falls through the sensor the signal is collected and processed by the operating electronics. Subsequently the electronics precisely excites the pulse for piloting the ejection flap. The flap is opened and metal is separated safely from the product stream. The robust, pneumatic driven mechanics guarantees longevity. The function of the mechanics can be monitored constantly by several alerter. Thus the device permanently ensures that all metallic pieces have really been separated from the product stream.

Specific characteristics

- maintenance-free mechanics
- different transmission ports available
- robust, patented pneumatic-driven ejection mechanics
- appropriate for free-falling bulk material
- large range of accessories available
- all devices mechanically compatible
- compact design
- ejection monitoring

Type	Y 25		Y 35		Y 50		Y 70	
Mechanical data								
Heigth	370 mm (405 mm with flange)							
Sensor aperture model Digital Y	not available				50 mm		70 mm	
Sensor aperture model Digital+ VA und M-Pulse VA	24 mm		29 mm		45 mm		65 mm	
Material-ejection flap	Aluminium							
Material-base fram	Aluminium							
Material-protection tube[2]	Phenolic resin							
Payload	max. 150 kg							
Weigth	~ 18 kg							
Conditions of use								
Storage temperature	-10 .. 60°C							
Operating temperature	0 .. 60°C							
Protection class	IP50							
Electrical connection	s. datasheet of the control unit							
Pneumatic connection	4-6 bar, filtered, water- & oilfree; self-sealing-coupling - fitting NW 7,2							
max. drop heigth of the bulk material	0 .. 600 mm (from top edge)							
Troughput[3]	450 l/h		600 l/h		2.000 l/h		5.400 l/h	
Sensitivity[1]								
Material - test piece	FE	SS	FE	SS	FE	SS	FE	SS
M-Pulse	0,15	0,4	0,2	0,5	0,3	0,9	0,4	0,9
Digital+	0,2	0,5	0,3	0,6	0,35	1,1	0,5	1,2
Digital	not available				0,5	1,5	0,7	2,0

Ordering code:

Elektronic	Separator type	
M-Pulse / Digital+ / Digital	Y 25 - Y 70	(e.g.: Digital+ Y 70)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensibility. Conductive test material can also influence the sensibility. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters. (all data in mm)
[2] Other materials available. (glas, antistatic; wear-resistant)
[3] Measured with granulate PET - grain dimension 2 - 4 mm.

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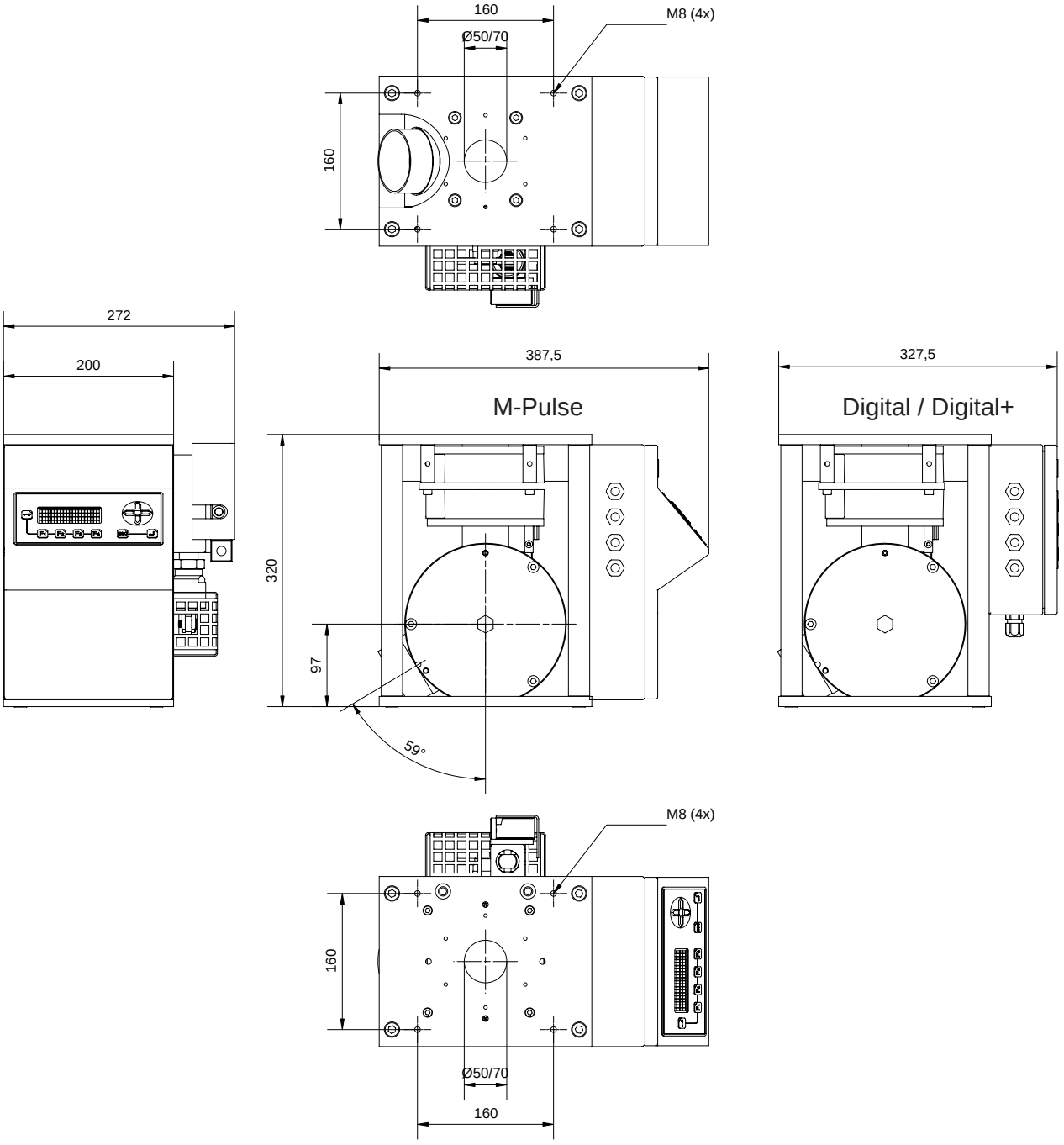
Special designs & accessories

Designation	Order number
Pneumatic guard	When ordering please add option 45
Voltage and Pneumatic guard (Flap automatic switchs into throw-off position at blackout or falling preasure)	When ordering please add option 40
Remote terminal (max. 3 m)	When ordering please specify
Test pieces - certified - Fe/NonFe/SS (several diameters)	on request
Pneumatic cooling (Product temperature up to 90°C)	When ordering please specify
Fan cooling (Product temperatur up to 70°C)	When ordering please specify

Application example

Digital Y 70 for the inspection of granulates in the plastics industry

Dimensions



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Metal separator
M-Pulse / Digital+ / Digital / MESEP

SE

Application

This type of separators is used for various applications in the plastics and the chemical industry. All important components of the SE are made of stable die-cast aluminium. Due to this the separator is indestructible and guarantees durability and longevity even under adverse conditions.

Function

In the upper part of the separator the sensor coil of the metal detector is situated. If metal falls through the sensor the signal is collected and processed by the operating electronics. Subsequently the electronics precisely excites the pulse for piloting the ejection flap. The flap is opened and metal is separated safely from the product stream. The robust, pneumatic driven mechanics guarantees durability. The function of the mechanics can be monitored constantly by several alerter. Thus the device constantly ensures that all metallic pieces have really been separated from the product stream.

Specific characteristics

- maintenance-free mechanics
- different transmission ports available
- robust, pneumatic-driven ejection mechanics
- large range of accessories available
- all devices are mechanically compatible
- compact design

Type	SE 35		SE 50		SE 70		SE 100	
Mechanical data								
Heigth	365,5 mm (400 mm with flange)							
Sensor aperture - D model MESEP SE	29 mm		45 mm		65 mm		94 mm	
Sensor aperture - D model Digital+ SE model M-Pulse SE	29 mm		45 mm		65 mm		not available	
Sensor aperture - D model Digital+ SE	not available		45 mm		65 mm		not available	
Material-ejection flap	stainless steel							
Material-base frame	cast aluminium / stainless steel							
Material-protection tube[2]	phenolic resin							
Payload	max. 150 kg							
Weigth	~ 21 kg							
Conditions of use								
Storage temperature	-10 .. 60°C							
Operating temperature	0 .. 60°C							
Protection class	IP50							
Electrical connection	see datasheet of the control units							
Pneumatic connection	4-6 bar, filtered, from of water and oil; self-sealing-coupling - fitting NW 7,2							
max. drop heigth ot the bulk material	0 .. 600 mm (from top edge)							
Troughput[3]	600 l/h		2.000 l/h		5.400 l/h		14.000 l/h	
Sensitivity[1]								
Material - test pieces	FE	SS	FE	SS	FE	SS	FE	SS
M-Pulse	0,2	0,5	0,3	0,9	0,4	0,9	not available	
Digital+	0,3	0,6	0,35	1,1	0,5	1,2	not available	
Digital	not available		0,5	1,5	0,7	2,0	not available	
MESEP	0,5		0,6		1,0		1,3	

Order code:

Electronic	Type of seperator	
M-Pulse / Digital+ / Digital	SE 35 - SE 100	(e.g.: Digital+ SE 70)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensibility. Conductive test material can also influence the sensibility. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters. (all data in mm)
[2] Other materials available. (glas, antistatic; wear-resistant)
[3] Measured with granulate PET - grain dimension 2 - 4 mm.

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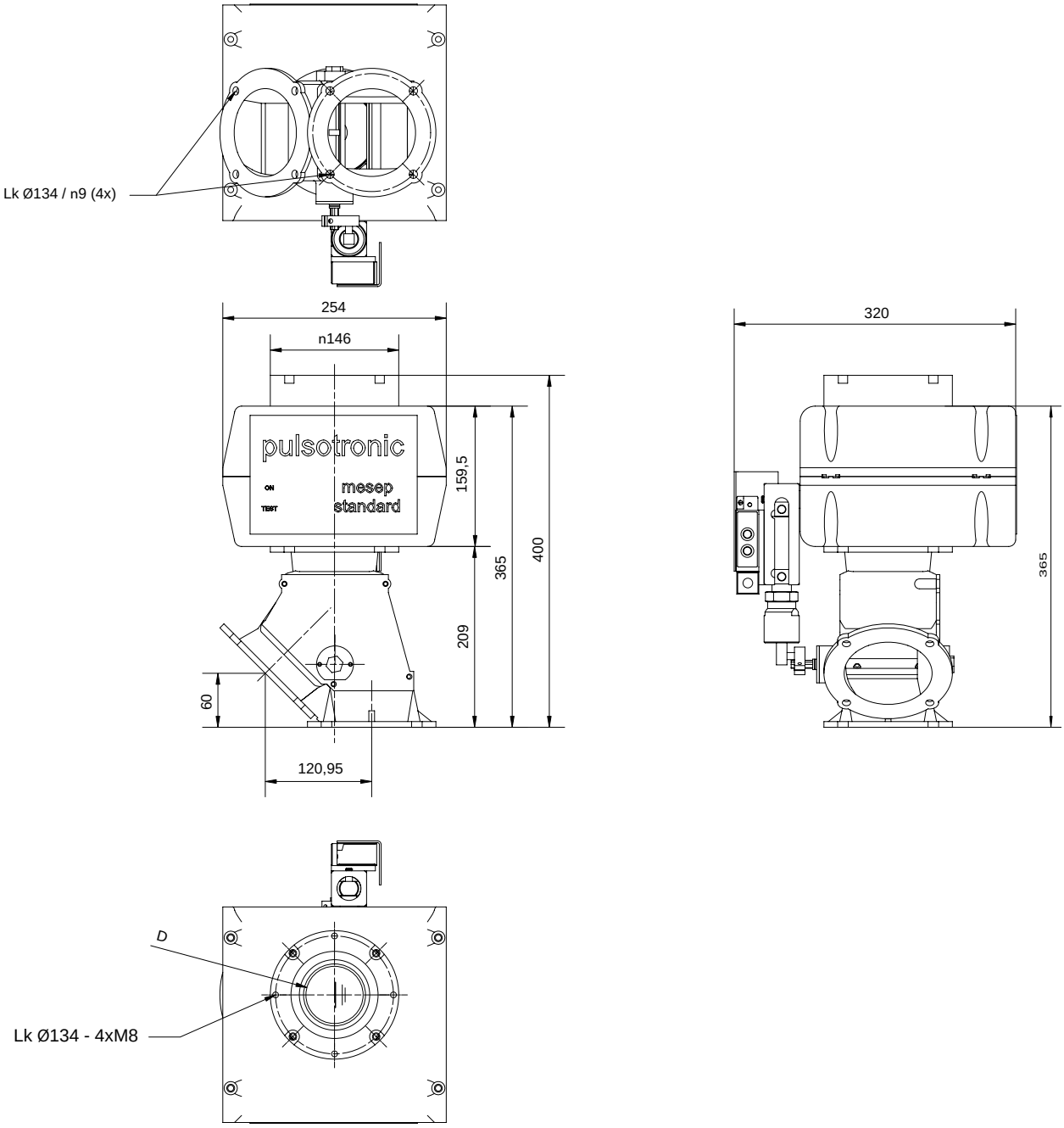
Special design & accessories

Designation	Order number
Voltage- und pneumatic guard (Flap automatic switchs into throw-off position at blackout or falling preasure)	When ordering please add option 40.
Wear-resistent model (for very abrasive bulk material)	When ordering please add option 44.
Test pieces - certifi ed - Fe/NonFe/SS (several diameters)	on request

Application example

MESEP SE 50 for the inspection of granulates in the plastics industry.

Dimensions



Devices with the operating electronics M-PULSE, Digital oer Digital+ request an external control electronics which is connected via a 3 m connecting cable with the separator. The dimensions of the electronics are given in the particular data sheets.

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Metal separator Digital+ / Digital Compact

Application

These separators are used for various applications in the plastics or the chemical industry. The separation of metal is realized using compressed air - metallic pieces are blown out. There are no mechanically stressed parts. The device is compact and the installation height is at only 225 mm. This makes the separator appropriate for applications with restricted space conditions or for retrofitting.

Function

In the upper part of the separator the sensor coil of the detector is situated. If metal falls through the sensor the signal is collected and processed by the operating electronics. Subsequently the electronics precisely excites the pulse for piloting the valves. The valves are opened and metal is blown out sideways by the air stream. As the device does not have movable or mechanically stressed pieces, there is no abration and no need for maintenance.

Specific characteristics

- separating system free of maintenance
- different outlet dimensions available
- all devices mechanically compatible
- compact design
- proper for ponding bulk material

Type	Compact 25		Compact 50		Compact 70	
Mechanical data						
Heigth	225 mm					
Sensor aperture model Digital Compact	not available		50 mm		70 mm	
Sensor aperture model Digital+ Compact	24 mm		45 mm		65 mm	
Material-ejection unit	Aluminium					
Material-base frame	Aluminium					
Material-protection tube[2]	GF30					
Payload	max. 150 kg					
Weigth	~ 14 kg					
Conditions of use						
Storage temperature	-10 .. 60°C					
Operating temperature	0 .. 60°C					
Protection class	IP50					
Electrical connection	see Datasheet of the control unit					
Pneumatic connection	4-6 bar, filtered, water- & oilfree; self-sealing-coupling - fitting NW 7,2					
max. drop heigth of the bulk material	Use only for sagging material!					
Troughput[3]	450 l/h		2.000 l/h		5.400 l/h	
Sensitivity[1]						
Material-Test piece	FE	SS	FE	SS	FE	SS
Digital+	0,2	0,5	0,35	1,1	0,5	1,2
Digital	not available		0,5	1,5	0,7	2,0

Ordering code:

Electronic	Separator type	
Digital+ / Digital	Compact 25 - Compact 70	(e.g.: Digital+ Compact 50)

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters.
[2] Other materials available (glas, antistatic; wear-resistant)
[3] Measured with granulate PET - grain dimensions 2 - 4 mm.

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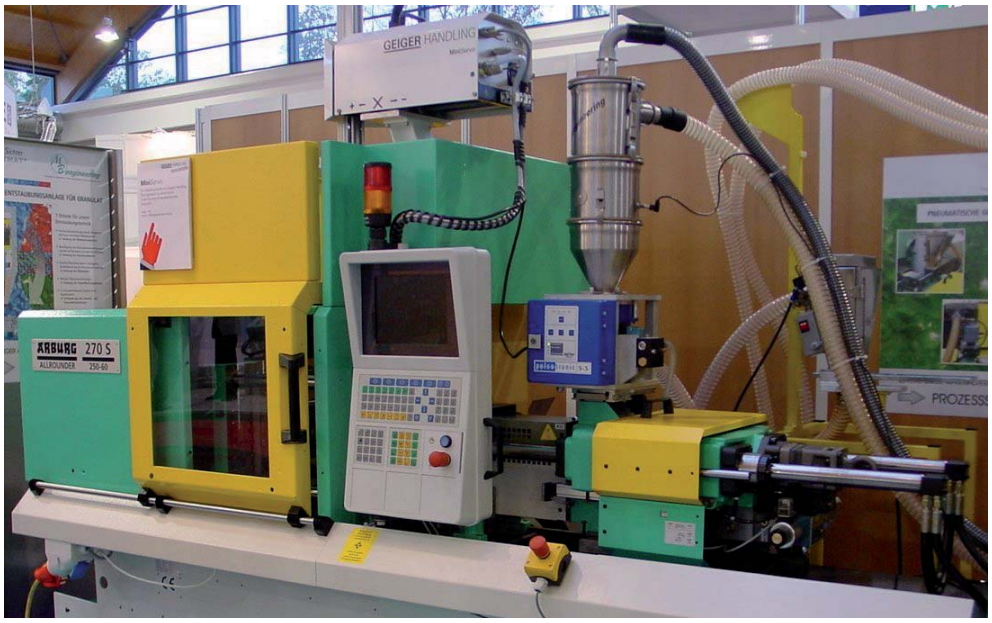
Special designs & accessories

Designation	Order number
Pneumatic guard	When ordering pleas add option 45

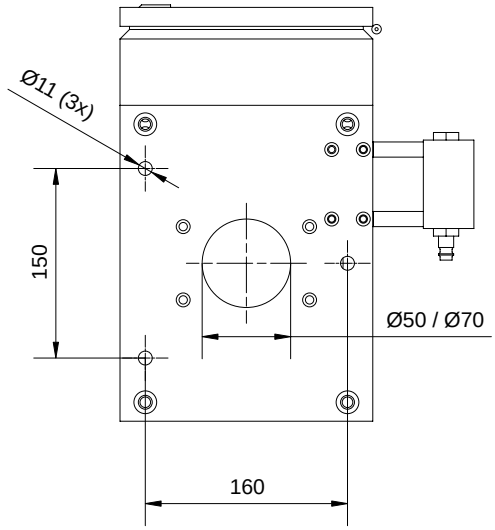
Application examples

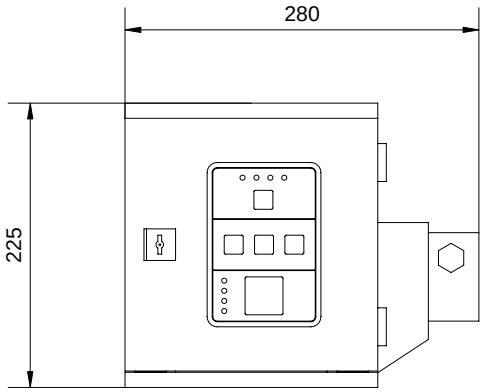


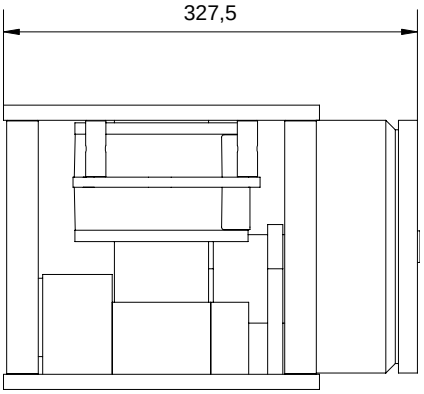
Digital Compact 50 directly mounted on an injection moulding machine.

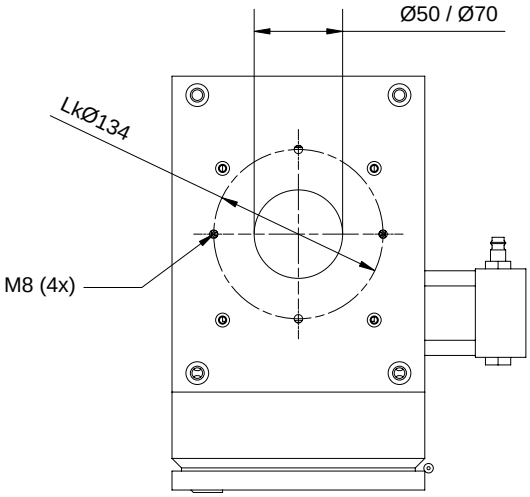
Digital Compact 50 for control of plastic granulate with mounted silo and vacuum conveying plant.

Dimensions









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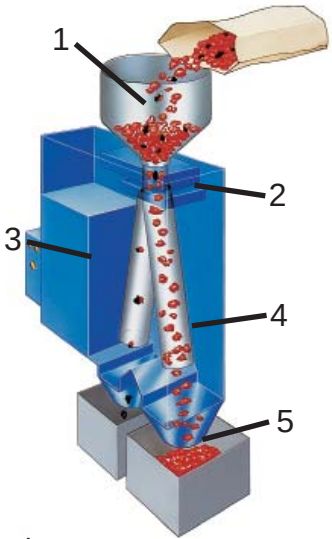
Metal separator MESEP Classic

Application

The detectors of the Classic series are appropriate for simple applications in all branches of industry. In contrast to many other detectors the separating system does not need compressed air supply. A high capacity electromagnet serves for engine. Due to that the device can be installed and operated nearly on any place. Just connect the detector and start operation.

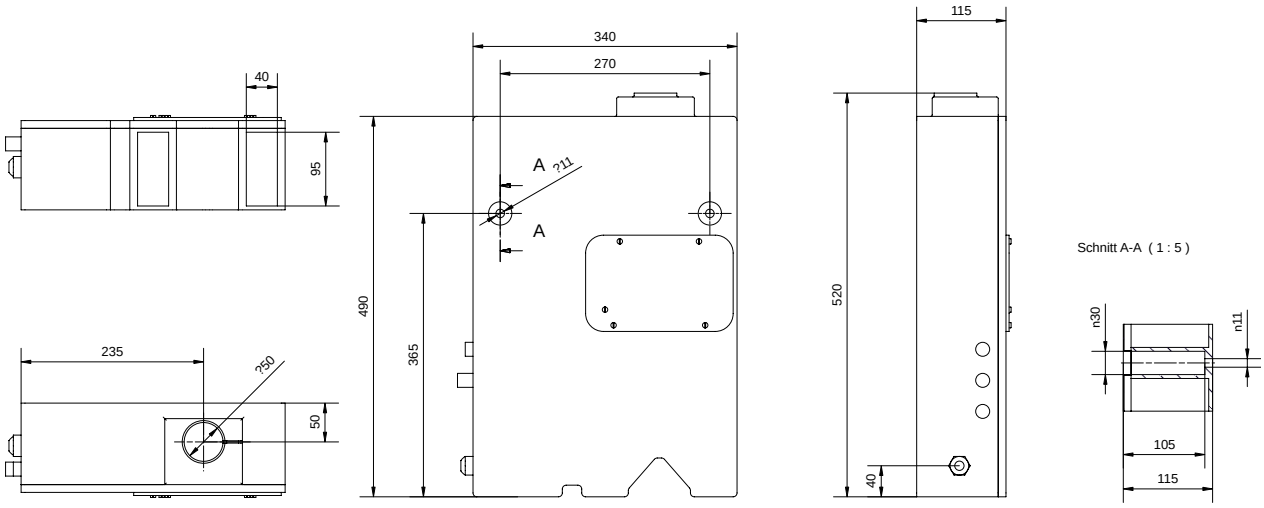
Function



1 - feeding hopper
2 - sensor
3 - electro-magnetic engine
4 - movable tube
5 - special outlet for metallic residua

The detector is feeded with the test material via an optional hopper or a conveyor line. The sensor coil in the upper part checks it on metallic residua. If the sensor detects metal, he excites a signal directly triggering the electro-magnetic engine. By this a movable tube is powered which separates the metallic pieces from the product stream via a special outlet. Due to the electro-magnetic engine compressed air becomes redundant. Thus the device instantly is ready for operation when the operating voltage is connected.

Type	MESEP Classic 50
Mechanical data	
Dimensions	L x B x H: 340 x 112 x 491 mm (without funnel)
Aperture	40 mm
Material - pendular tube	Stainless steel
Material - housing	Plastic
Material - protection tube	Phenolic resin
Material - ejection flap	Linatex
Weigth	13 kg
Conditions of use	
Storage temperature	-10 .. 60°C
Operating temperature	0 .. 60°C
Protection class	IP40
Electrical connection	230 V; 50 Hz oder 115 V; 60 Hz; 3 m cable 3 x 1,5 mm²
max. drop heigth of the bulk material	0 .. 1000 mm (from top edge - without funnel)
Troughput[3]	1.300 l/h
Sensitivity[1]	Ferrous = 1,0 mm
Ordering information	
Ordering number	230VAC; 50Hz → 08419100000; 115VAC; 60Hz → 08419100031
Funnel (optional)	08410001900



[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can decrease the sensitivity.
[3] Measured with granulate PET - grain dimension 2 - 4 mm.

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Metal separator M-Pulse

PH

Application

This separator has been developped for applications making high demands on cleanness. The drive of the separating filter is realised by an electromagnetic rotary drive - compressed air is not required. The PH especially is appropriate for the use in the pharmaceutical industry for the inspection of tablets or the like. A typical application is the integration of the PH next to a tablet press. The device is equipped with two stands and two rolls for movability. The separating filter, the sensor and the electronics are rotatable via a support and height adjustable.

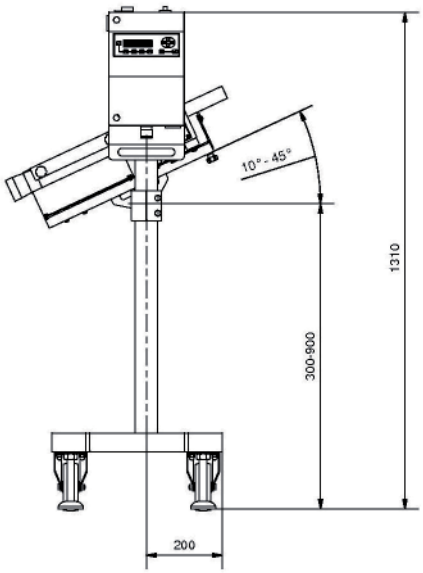
Function

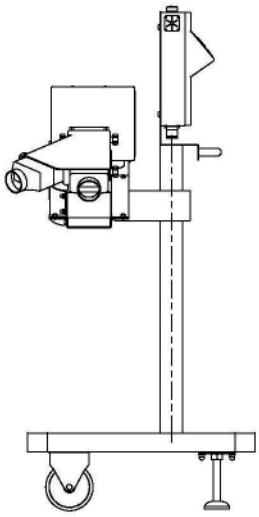
The sensor coil of the detector is situated in the upper part of the separator. The test material passes the sensor on a chute. Detected metal is separated via the separating filter. The separating filter is driven by an electromagnet without compressed air. The device is movable and height adjustable. This allows universal and flexible use.

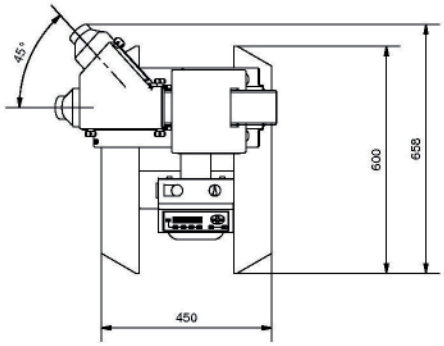
Specific characteristics

- maintenance-free mechanics
- very high sensitivity
- height adjustable and movable
- high-capacity fade-out of product effect
- no need for compressed air for the separating filter
- height adjustable stands for stability
- stainless steel design
- surface electrochemical polished

Type	M-Pulse PH 100 x 50
Mechanical data	
Dimensions	L x B x H: 340 x 112 x 491 mm (without funnel)
Apperture	W x H: 80 x 30 mm
Material	stainless steel (surface electro-chemical polished)
Material - ejector	PMMA
Weigth	on request
Conditions of use	
Storage temperature	-10 .. 60°C
Operating temperature	0 .. 60°C
Protection class	IP 51
Electrical connection	230 V; 50 Hz; 100 W; 3 m cable 3 x 1,5 mm²
Sensitivity[1]	
M-Pulse PH	ferrous = 0,3 mm; stainless steel = 0,5 mm
Order information	
Order number	08410810050







[1] The actual sensitivity depends in various factors. Unfavourable environmental conditions or vibrations can decrease the sensitivity.

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Pipe detector M-Pulse

InLine

Application

Devices from the M-Pulse InLine series particularly are used in the food industry for the detection of fluid products and commodities on metallic contamination. Nevertheless they can also be applied in other industrial branches. The detector can be equipped with different ejection valves. Tubes are available in diameters from 40 mm to 150 mm. The connection to the tubes is either realised with Tri-Clamp binders or with milk thread. Thus the detectors can be installed subsequently with little time and effort. The electronics is connected via a 3 m connecting cable. For this reason the device can alway be operated easily even when the sensor is used in places that are difficult to access.

Functioning

The test material passing through the product tube is detected on metallic contamination by the sensor. If metal is detected, this is identified and analysed by the operating electronics. The electronics identifies in real time if there really is metal or if it is just the product effect. Metal is separated via the ejection valve.

Specific characteristics

- design in stainless steel
- protection class IP65
- fade-out of product-effect
- different ejection valves available
- separate control unit
- stable base frame
- individual construction

Type	InLine 40	InLine 50	InLine 65	InLine 80	InLine 100	InLine 125	InLine 150
Mechanical data							
Material - ejection outlet	stainless steel / POM						
Material - base frame	stainless steel						
Material - product tube	PVDF						
max. delivery pressure	16 bar						
Pipe connection	tri-clamp or milk thread (When ordering please specify!)						
Free pipe diameter	60,5 mm						
Weigth[4]	50 kg	52 kg	55kg	60 kg	63 kg	68 kg	70 kg
Conditions of use							
Storage temperature	-10 .. 60°C						
Operating temperature	-10 .. 50°C						
max. temperature of the product	-10 .. 120°C						
Protection class	IP 65 oder IP 67 (higher on request)						
Electrical connection	230 VAC; 50-60 Hz; 100 W						
Pneumatic connection	5-7 bar, filtered, free of water and oil; self-sealing-coupling - fitting NW 7,2						

Sensitivity[1]														
Material - test pieces	Fe	SS	Fe	SS	Fe	SS	Fe	SS	Fe	SS	Fe	SS	Fe	SS
smallest detectable piece [mm]	0,5	1,3	0,7	1,5	0,7	1,5	1,0	1,8	1,2	2,0	1,3	2,2	1,5	2,5

Order information		
Model	IP 65	IP 67
M-Pulse InLine 40	08410301001	on request
M-Pulse InLine 50	08410302000	08500180002
M-Pulse InLine 65	08410303020	08500180003
M-Pulse InLine 80	08410304000	08500180004
M-Pulse InLine 100	08410302001	08410302002
M-Pulse InLine 125	08410302003	on request
M-Pulse InLine 150	08410302005	on request

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters.
[4] Depends on equipment.

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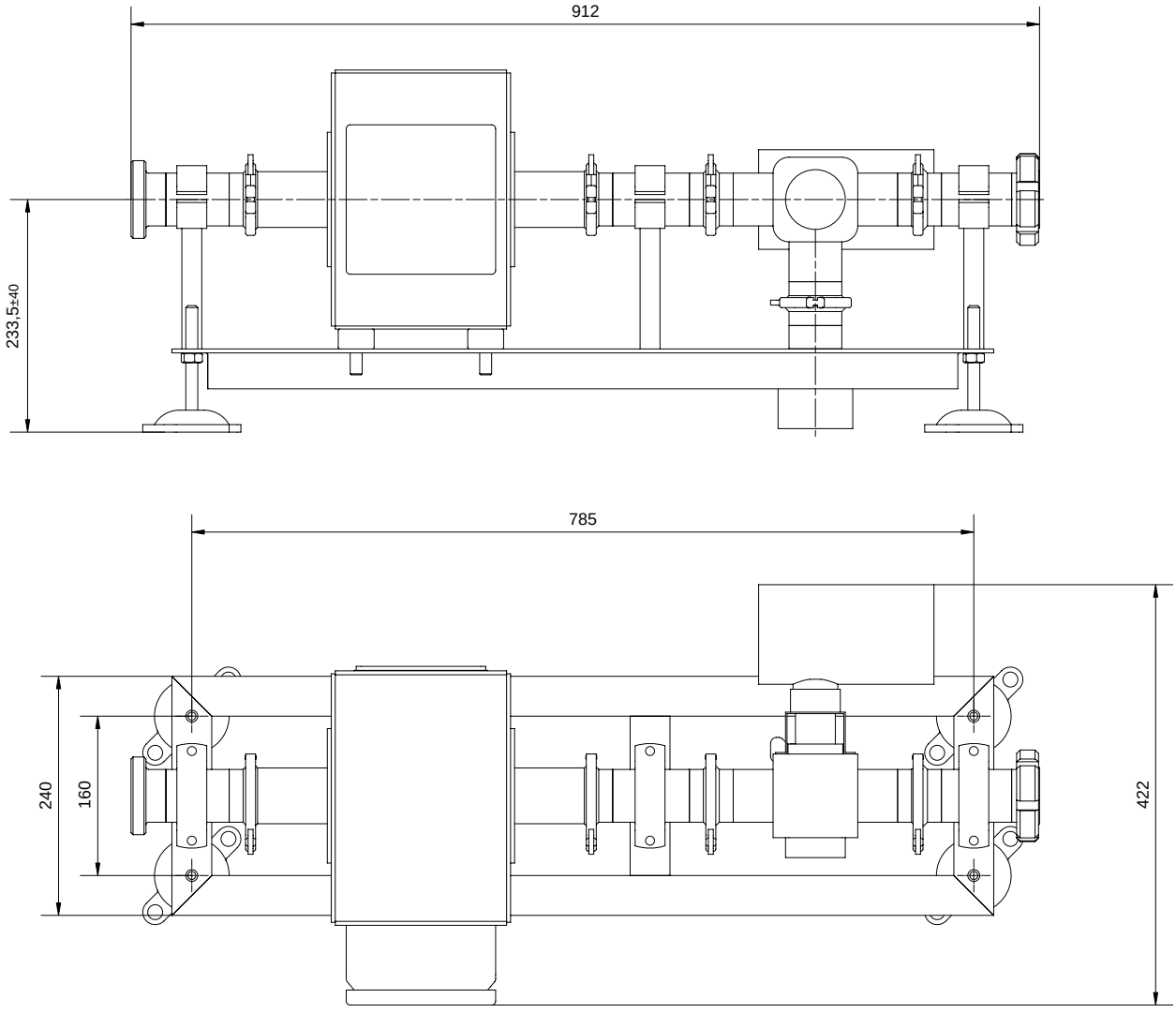
Special designs & accessories

Addionally to different ejection valves we offer many other optional components for our InLine detectors. If you have any other requests going beyond the list shown below, please contact our sales department.

Accessories	
Butterfly valve f. InLine 50	08410502011 (model with tri-clamp-connection)
Butterfly valve f. InLine 65	08410503011 (model with tri-clamp-connection)
Butterfly valve f. InLine 80	08410504011 (model with tri-clamp-connection)
Butterfly valve f. InLine 100	08410505011 (model with tri-clamp-connection)
Bogen valve f. InLine 50	08410502012 (model with tri-clamp-connection)
Bogen valve f. InLine 50	08410502013 (model with thread DN50 - 78 x 1/6“)
Bogen valve f. InLine 65	08410503012 (model with tri-clamp-connection)
Bogen valve f. InLine 65	08410503018 (model with thread DN65 - 95 x 1/6“)
Ejection valve f. InLine 40	08410501002 (model with thread DN40 - 65 x 1/6“)
Ejection valve f. InLine 50	08410502001 (model with thread DN50 - 78 x 1/6“)
Ejection valve f. InLine 65	08410503001 (model with thread DN65 - 95 x 1/6“)
Ejection valve f. InLine 80	08410504001 (model with thread DN80 - 110 x 1/4“)
Ejection valve f. InLine 100	08410505001 (model with thread DN100 - 130 x 1/4“)
Ejection valve f. InLine 125	08410502004 (model with thread DN125 - 160 x 1/4“)
Ejection valve f. InLine 150	on request (model with thread DN150 - 190 x 1/4“)

Example



The drawings show one possible design. Each device will be manufactured individually according at request. Along with different ejection valves you choose among different types of tubes. The frame construction will be adapted according to your specifications in order to allow a smoothly integration in your existing plants.

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Pipe detector M-Pulse

InFlex

Application

This type of detectors especially is used for the manufacture of sausage meat in filling machines. Other high-viscosity products of the food industry, e.g. marzipan, can also be detected on finest metallic residua. The high-strength product tubes resist to pressures of maximum 80 bar. The connection is realised by RD80 screwings. The device is height-adjustable and mobile. By this it can be connected to all common filling machines (e.g. Handtmann; Frey; Vemag, Risco, Rex). On request we provide devices with linking engine for direct connection of wring-off units. To your requirements adapted ejection valves for the separation of metal are available.

Functioning

The test material passing through the product tube is detected on metallic contamination by the sensor. If metal is detected, this is identified by the operation electronics. Metal is separated via the ejection valves (optional). The electronics also is able to interrupt the filler in order to remove the contamination manually.

Specific characteristics

- design in stainless steel
- height adjustable and mobile
- protection class IP65
- fade-out of product effect
- available with wring-off engine
- ejection valves optionally available
- control of filling at the detection of metal

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Type	M-Pulse InFlex 65	
Mechanical data		
Inlet heigth	850 .. 1.200 mm (Stand adjustable in heigth with gas pressure spring)	
Material-ejection unit	stainless steel / POM	
Material-base frame	stainless steel	
Material-product tube	POM	
max. delivery pressure	80 bar	
Pipe connection	RD 80 x 1/4“	
Free pipe diameter	60,5 mm	
Weigth	~50 kg	
Conditions of use		
Storage temperature	-10 .. 60°C	
Operating temperature	-10 .. 50°C	
Protection class	IP65	
Control cable for filling machine	including cable and connector (When ordering please specify your filling machine)	
Electrical connection	230 VAC; 50-60 Hz; 100 W	
Pneumatic connection[3]	5-7 bar, filtered, free of water and oil; self-sealing-coupling - fitting NW 7,2	
Sensitivity[1]		
Material - test pieces	ferrous	stainless steel
smallest detectable piece	0,5 mm	1,0 mm
Order information		
M-Pulse InFlex 65	08410303010	
M-Pulse InFlex 65 with gearbox for Handtmann	08500180000	
M-Pulse InFlex 65 with gearbox for Vemag	08500180005	
Ejection outlet[2]	08410503002	

[1] The actual sensitivity depends on various factors. Unfavourable environmental conditions or vibrations can reduce the sensitivity. Conductive test material can also influence the sensitivity. For obliging information please contact our service or sales department. Our service includes product tests in our headquarters.
[2] Available only for devices without wring-off engine.
[3] Compressed air only necessary in combination with ejection valves.

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Inspection system (highest quality) Belt conveyor & detector M-Pulse BD HQ

Application

The conveyor belts HQ in combination with our metal detectors of the BD series result in a high-sensitivity and highly reliable device for the detection and the separation of metal. All devices are manufactured individually according to your requirements. The construction as well as the manufacturing of the HQ series are completely realised in our headquarters. Due to this fact and to our expertise we provide for the optimum solution for each of your assignments. Our plants are used in all branches of industry. Particularly they serve for the inspection of singular goods or bulk material. The robust design in stainless steel stands for longevity and comes up to strict hygienic standards.

Specific characteristics

- speed-controlled, high-capacity engine
- high-performance fade-out of product effect
- various separating attachments available
- belt available in different materials and designs
- special designs (curved conveyors, elevating conveyors etc.)
- height adjustable and optionally mobile
- clean and solid treatment
- customised designs

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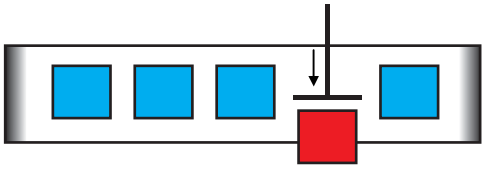
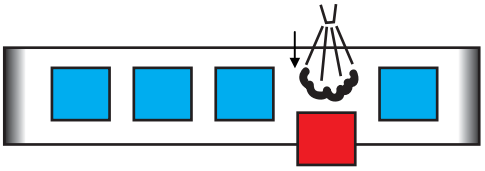
Function

The conveyor belt leads the test material trough the metal detector. The detector scans the products and analyses the data in real-time. Powerful processors allow a high-precision fade-out of the product effect. Furthermore interfering influences as for example vibrations can effectively be eliminated. Even at high velocities the device works reliably and precisely. If metal is detected in the test material, there are different possibilities for the separation of the contamination. The easiest way is to get the conveyor belt stopped automatically and to remove the contamination manually. After that the conveyor belt restarts at the push of a button. For highly automated manufacturing plants we recommend a separating system that works automatically. Thereby the metallic contamination is detected precisely by a light barrier. Thus the position of the contamination in the product stream is clear and the metallic residua can be separated. If there are several products in the sensor range at the moment of the detection of metal, the high-performance technology allows the automatic exclusion of all questionable products. There are different principles for separating the contamination:

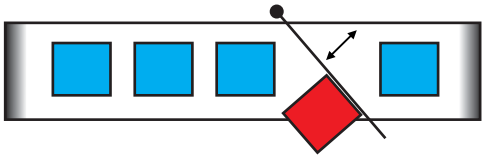
1. Push



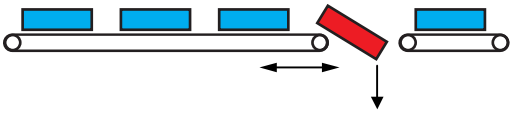
2. Blow-out



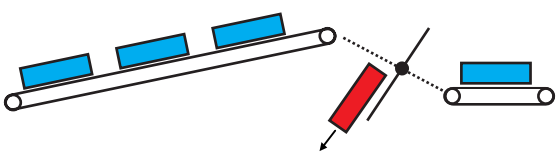
3. Rotary arm



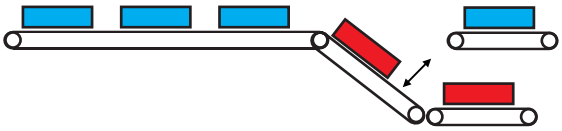
4. Telescopic conveyor



5. Drop flap



6. Fold-away conveyor



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Equipment

All conveying plants are serially equipped with an adjustable engine. The conveyor belt, an open link chain conveyor, is even and without curves. It possessed height adjustable stands (±50 mm) without ear. The power switch, the emergency stop button and the start/stop button are serially integrated. The entire frame construction as well as the switch cabinet are made of stainless steel and are fully capsuled (IP 65). Information concerning the sensitivity are given in the data sheets of the BD series. Equipment for the control electronics you will find in the data sheets of the electronics M-PULSE.

Accessories & options

Next to separating filters there are many other additional components for our conveyor plants. If you have any other requests going beyond the list shown below, please contact our sales department.

Designation
safe for contaminated products
design: elevating conveyor
design: curved conveyor
belt material - link chain closed
belt material - polyurethan
design: belt conveyor
signal light - alarm for metal detection
signal light - performance test
signal transmitter - alarm for metal detection
side guidance fixed
side guidance adjustable
fill level control for safe
compressed air monitoring
ejection monitoring
protection class IP67
guide pulley with fixation
stands with ears
touch panel

Notices

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Inspection system (standard) Belt conveyor & detektor Digital+ BD HQW

Application

The conveyor plants of the HQW series can be used universally in all industrial sectors due to high-performance electronics with fade-out of product effect, digital filters and different mechanic designs. The advantages of this series are the easy handling and the robust stainless steel construction. The series is ideal for the fast and safe inspection of singular products on metallic contamination. According to our philosophy we place great value in longevity. The frame construction is fully capsuled. The entire device corresponds to protection class IP 65.

Function

The conveyor belt leads the test material through the sensor which examines the material on metallic contamination. If metallic pieces are detected, the operating electronics signalises this. Normally the band stops and the contaminated product can be removed. Furthermore there are electric signals available for piloting ejectors.

Specific characteristics

- easy handling
- height adjustable stands
- different sensor dimensions available
- protection class IP65
- fade-out of product effect
- clean and solid treatment

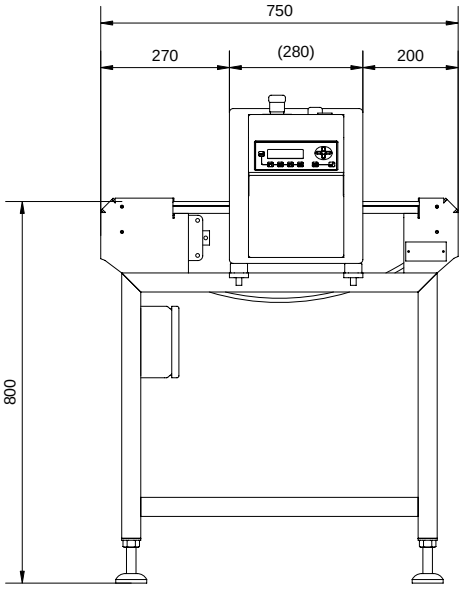
Equipment

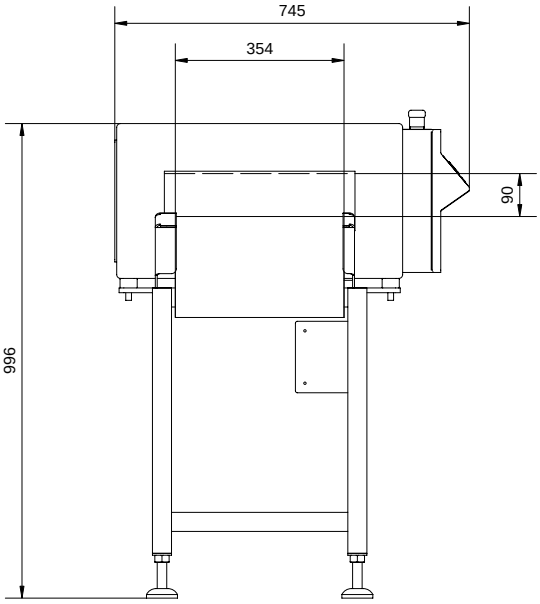
The conveyor plant with integrated metal-free zones is powered by a fully capsuled gear motor. The conveyor height is at 800 mm. By adjusting the disc stands the height can be varied about ±50 mm. The belt consists of an open PE link chain (FDA/USDA). The electronics allows an effective fade-out of the product effect and the elimination of interences by digital filters. The entire frame construction, the sensor and the switch cabinet are made of stainless steel.

Technical data

Electrical data	
Electrical connection	230 VAC; 50 Hz; 100 W
Conditions of use	
Protection class	IP 65
Operating temperature	0° .. 50°C
Conveyor heigth	800 ± 50 mm
Conveyor width	350 mm
Fördergeschwindigkeit	22 m/min
max. load	10 kg
Sensitivity[1]	Fe: 1,2 mm SS: 1,8 mm
Weigth	120 kg
Order information	
Order number	08410207300
When ordering please specify the detector heigth (100; 125; 200 mm)!	

Dimensions





[1] The sensitivity depends on: the detectors‘ dimensions, the product type, the product quantity, the package weight. Obliging information can only be given when a product test has been effected.

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For our terms and conditions please see http:\\www.pulsotronic.de

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