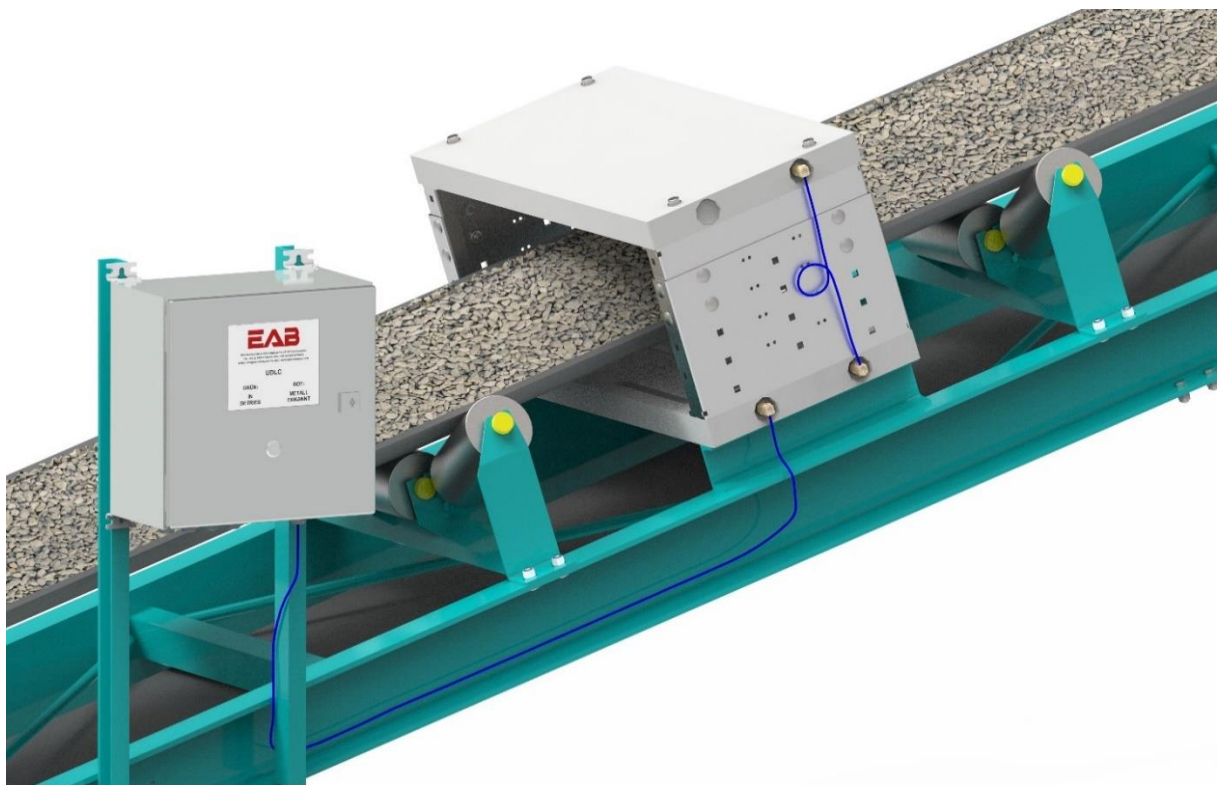


METAL DETECTOR

Q-System

Protective equipment for crushers, mills and other processing machines



-
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-

General

The Q-System metal detectors are protection and surveillance devices. They are used wherever disturbing and dangerous foreign objects in the material to be conveyed have to be detected. A metal detector avoids damage, prevents business interruptions and saves considerable repair costs.

Operating Principle

The functional principle of the Q-System is that a generator in the control unit builds up an electromagnetic field around a copper coil in the probe. If a metal part, steel or non-ferrous metal, moves over the probe, the electromagnetic field is influenced in such a way that the control unit recognizes it and generates standard-compliant output signals through signal evaluation.

Functional Features

- All metal detector, reacts to ferrous and non-ferrous metals
- Self-adjustment, i.e. stationary metallic constructions are automatically compensated
- Self-monitoring for malfunctions, e.g. cable damage, defective probe, etc.
- Optional: FT version for iron oxide compensation, optimizes detection of metal in magnetite, basalt, hematite and other materials that are strongly magnetizable
- Probe and control unit solid and weatherproof

Installation Requirements

- 50 mm distance, lower probe - belt
- 50 mm distance, top probe - material layer
- 1.5 m to electric motors and electromagnets
- Textile belts have an advantage, steel cord belts only with reduced search accuracy

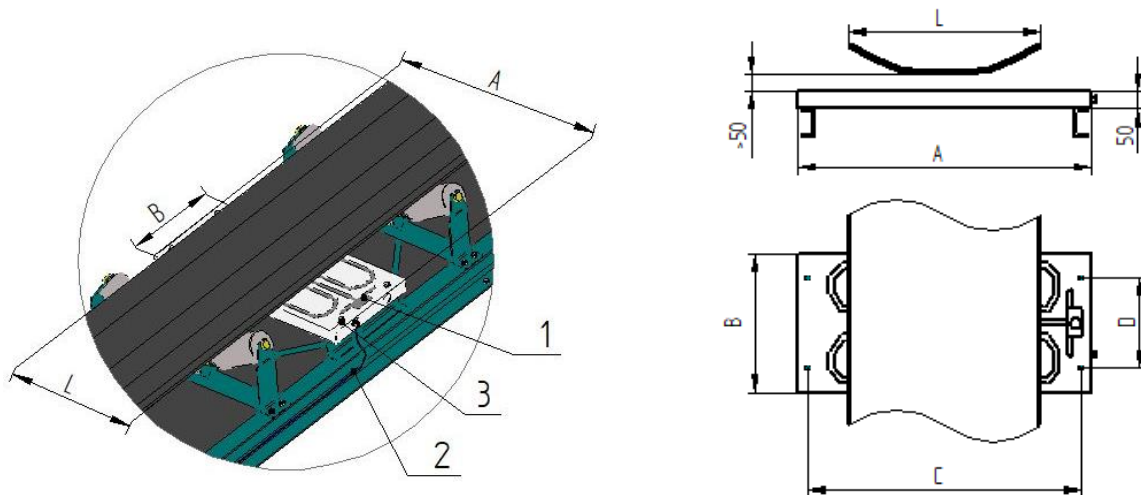
Advice on correct specification

- the dimensions of the probe match the conveyor belt
- Depending on the desired search accuracy and material layer height, either a single probe or a tandem probe must be selected
- In the case of the tandem probe, the correct spacers must be selected
- the cable length should be selected so that the distance to the control unit is as short as possible and there is no interference nearby.

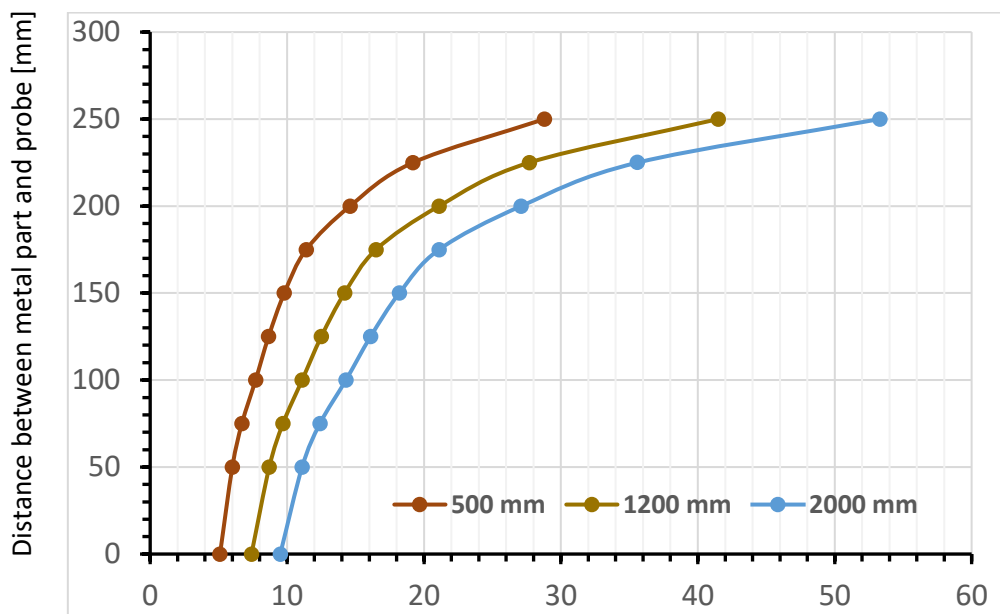
Single Device

Scope of delivery includes:

1. Single probe, (1 coaxial socket)
2. 50 Ω coaxial cable 10 m long for electrical connection to a control unit; (5, 15, 20, 25 and 30 m optionally available)
3. 1x M10 screw set (steel and stainless steel available)
4. 1x set of insulation bushings for isolating idler roller axles (SW30 and SW38 available)
5. Control unit. (UDLC), see page 8



Installation of a single probe on the conveyor



detectable size metric steel nut M...

Sensitivity chart, Q-System, single device

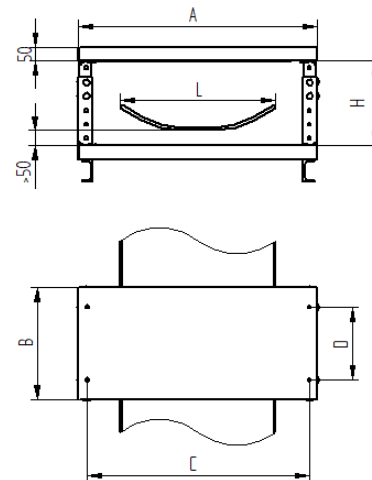
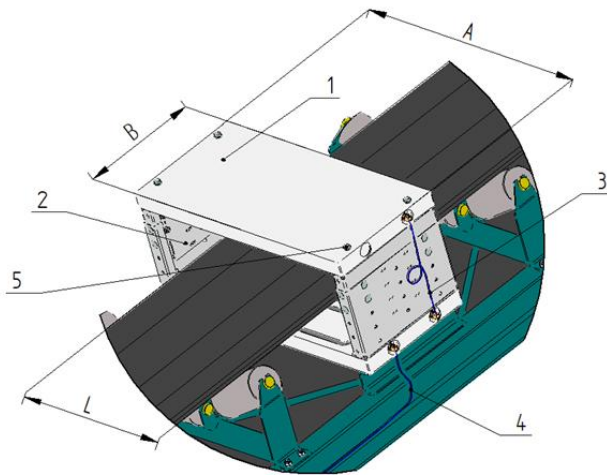
Conveyor belt width L [mm]	Probe width A [mm]	Length B [mm]	Mounting distance C [mm]	Distance between holes D [mm]	Visible steel nut at 0 / 100 / 175 mm distance from the belt	Article designation of the individual probe	Weight of the single device [kg]
500	700	400	640	260	M5 / M10 / >M40	Q 500-125-A	28
650	850		790		M6 / M12 / >M40	Q 650-125-A	31
800	1000		940		M6 / M14 / >M40	Q 800-125-A	34
500	700	500	640	300	M8 / M10 / M20	Q 500-171-A	33
650	850		790		M8 / M12 / M22	Q 650-171-A	37
800	1000		940		M8 / M12 / M24	Q 800-171-A	40
1000	1250		1170		M10 / M14 / M28	Q 1000-171-A	47
1200	1500		1420		M10 / M14 / M28	Q 1200-171-A	53
1400	1700		1620		M10 / M16 / M30	Q 1400-171-A	59
1600	1900		1740		M12 / M16 / M32	Q 1600-171-A	72
1800	2100		1940		M12 / M18 / M34	Q 1800-171-A	79
2000	2300		2140		M12 / M18 / M36	Q 2000-171-A	86
1000	1250		620		1170	300	M14 / M16 / M22
1200	1500	1420		M14 / M16 / M22	Q 1200-218-A		56
1400	1700	1620		M16 / M18 / M24	Q 1400-218-A		62
1600	1900	1740		M16 / M20 / M26	Q 1600-218-A		84
1800	2100	1940		M18 / M20 / M28	Q 1800-218-A		92
2000	2300	2140		M18 / M22 / M30	Q 2000-218-A		100

Table 1 Selection of the single probe (to match the conveyor belt)

Tandem Device

Scope of delivery includes:

1. Probes: single probe (1 coaxial socket) and extension probe (2 coaxial sockets);
 2. 1 pair of spacers, adjustable in height; (4 variants, see table)
 3. Connection cable 1m long for connecting the two probes to each other;
 4. 50 Ω coaxial cable 10 m long for electrical connection to a control unit; (5, 15, 20, 25 and 30 m available)
 5. 2x M10 screw set (steel and stainless steel available)
 6. 1x set of insulation bushings for isolating idler roller axles (SW30 and SW38 available)
- control unit. (UDLC), see page 8



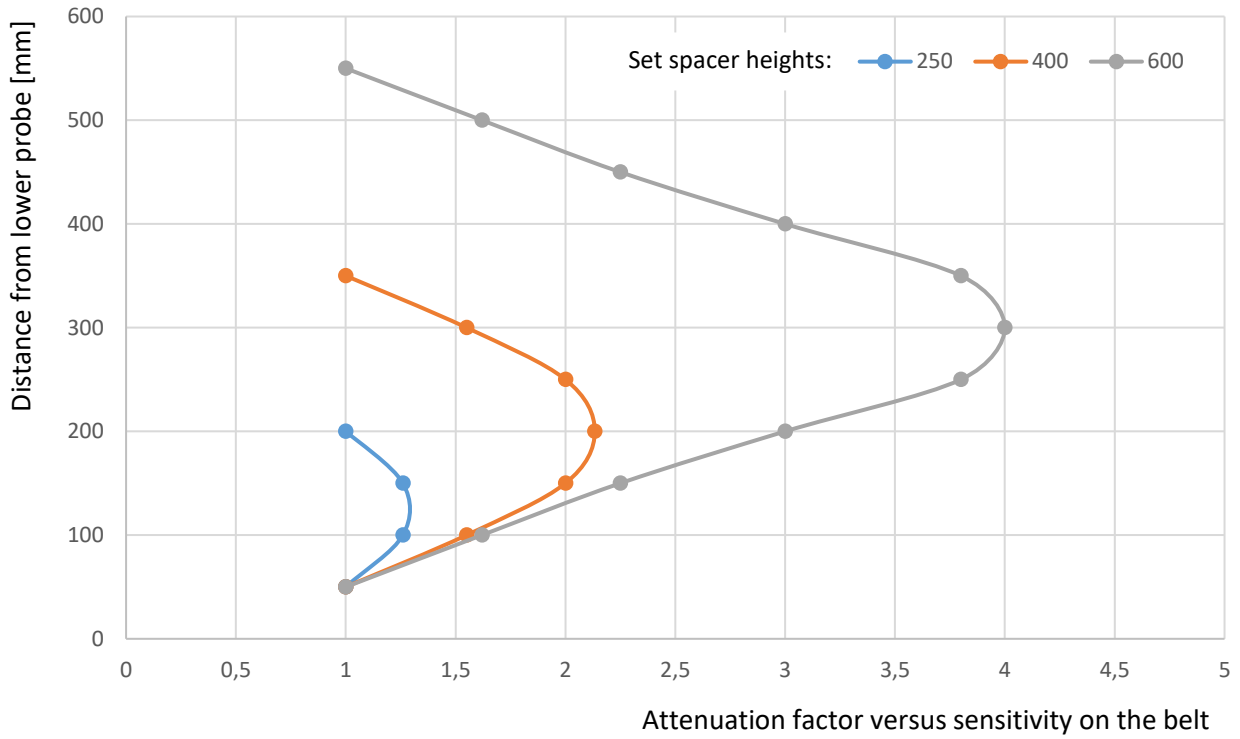
Installation of the tandem probe on the conveyor



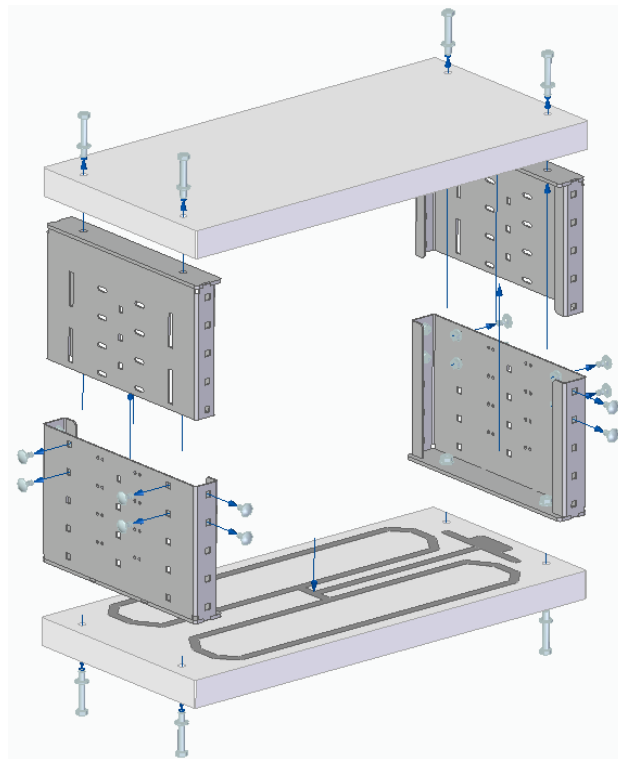
Conveyor belt width L [mm]	Probe width A [mm]	Length B [mm]	Mounting distance C [mm]	Distance between holes D [mm]	Visible steel nut at 50mm distance from lower/upper probe	Detectable steel nut in the center of the tunnel at spacer heights: 250 / 400 / 600mm	Article designation of the individual probe	Article number of spacers / adjustment range of H [mm]	Article designation of the extension probe	Weight of the tandem system [kg]
500	700	400	640	260	M6	M8 / M20 / -	Q 500-125-A	GD2003.400 / 250 - 400	Q 500-125-B	56
650	850	400	790		M6	M10 / M22 / -	Q 650-125-A		Q 650-125-B	62
800	1000	400	940		M8	M10 / M22 / -	Q 800-125-A		Q 800-125-B	68
500	700	500	640	300	M8	M10 / M14 / M30	Q 500-171-A	GD2003.300 / 250 - 350	Q 500-171-B	85
650	850	500	790		M8	M10 / M16 / M30	Q 650-171-A		Q 650-171-B	93
800	1000	500	940		M8	M10 / M16 / M30	Q 800-171-A		Q 800-171-B	99
1000	1250	500	1170		M10	M12 / M16 / M30	Q 1000-171-A		Q 1000-171-B	113
1200	1500	500	1420		M10	M12 / M18 / M33	Q 1200-171-A	Q 1200-171-B	125	
1400	1700	500	1620		M10	M12 / M18 / M33	Q 1400-171-A	Q 1400-171-B	137	
1600	1900	500	1820		M10	M12 / M18 / M33	Q 1600-171-A	Q 1600-171-B	163	
1800	2100	500	2020		M12	M14 / M20 / M36	Q 1800-171-A	Q 1800-171-B	177	
2000	2300	500	2220		M12	M14 / M20 / M39	Q 2000-171-A	Q 2000-171-B	191	
									GD2003.200 / 400 - 600	

Conveyor belt width L [mm]	Probe width A [mm]	Length B [mm]	Mounting distance C [mm]	Distance between holes D [mm]	Visible steel nut at 50mm distance from lower/upper probe	Detectable steel nut in the center of the tunnel at spacer heights: 250 / 400 / 600mm	Article designation of the individual probe	Article number of spacers / adjustment range of H [mm]	Article designation of the extension probe	Weight of the tandem system [kg]
1000	1250	620	1170	300	M14	M24 / M30 / M42	Q 1000-218-A	GD2003.600 / 550 - 800	Q 1000-218-B	137
1200	1500	620	1420		M14	M30 / M33 / M45	Q 1200-218-A		Q 1200-218-B	149
1400	1700	620	1620		M14	M30 / M33 / M48	Q 1400-218-A		Q 1400-218-B	161
1600	1900	620	1820		M16	M30 / M36 / M48	Q 1600-218-A		Q 1600-218-B	205
1800	2100	620	2020		M16	M30 / M36 / M52	Q 1800-218-A		Q 1800-218-B	221
2000	2300	620	2220		M16	M30 / M39 / M52	Q 2000-218-A		Q 2000-218-B	237

Table 2- Selection of the tandem system



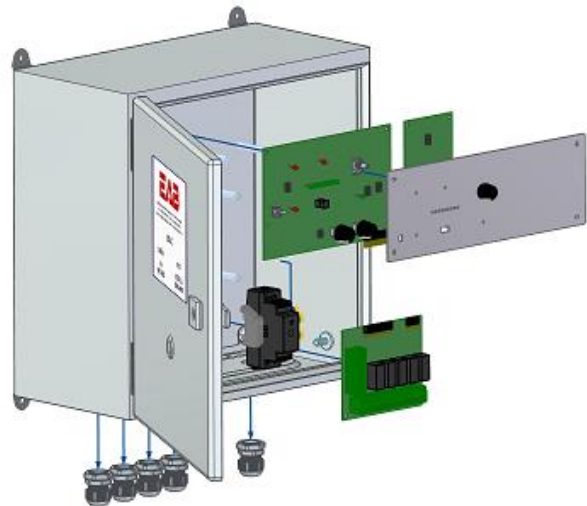
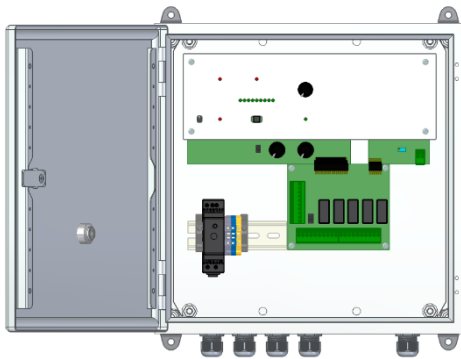
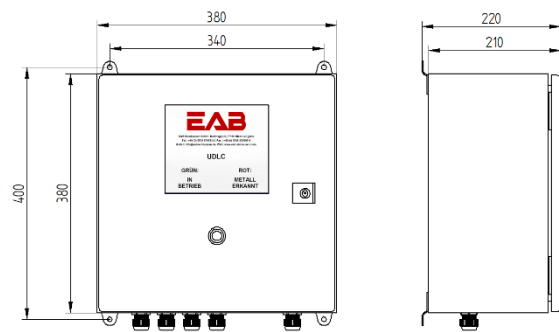
Sensitivity diagram, Q-System, tandem device



The appearance of the tandem device

UDLC control unit

- Control unit realized with analogue technology
- Metal housing (steel, optional stainless steel)
- 2 impulse relay outputs (NO/NC)
- 2 acknowledgeable relay outputs (NO/NC)
- Fault message with a relay output (NO/NC)
- integrated 2-color illuminated pushbutton (green->no fault, red->metal, button->acknowledgment)
- A bar graph display to indicate all important signals
- Large adjustable sensitivity range
- adjustable interference filter for increased operational reliability



Images of the UDLC control unit

Power supply	100-240VAC, 50-60 Hz, 15 VA
Permissible belt speed	0,3 - 6 m/s
operating temperature	- 20°C bis + 55°C, - 40°C bis + 55°C with heating module (optional)
Inputs	Coax cable, 50 Ohm
Outputs	Metal notification: 2x relay output (NO/NC) pulsed, 2x relay output (NO/NC) with reset, 230 V/5A Fault message: 1x relay output (NO/NC), 230 V/5A
housing material	Sheet steel with powder coating, stainless steel (optional)
colour	Steel: RAL 7035 Stainless steel: Line sanding, grain 400
protection class	IP65
weight	12 kg
mounting method	wall mounting

Technical characteristics of the UDLC control unit