



# crm<sup>+</sup>

Wear-resistant PEEK film protects the sensor membrane from chemicals, contamination and caking.

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## HIGHLIGHTS

- › Ultrasonic transducer protected by PEEK film › for simple cleaning and high resistance to wear
- › Stainless-steel housing
- › Digital display with direct measured value output in mm/cm or %
- › Numeric configuration of the sensor using digital display › permits the complete advance configuration of the sensor
- › Automatic synchronisation and multiplex operation › for simultaneous operation of up to ten sensors in close quarters

## BASICS

- › 1 or 2 switching outputs in pnp variant
- › Analogue output 4–20 mA and 0–10 V › with automatic switching between current and voltage outputs
- › 5 detection ranges with a measurement range of 30 mm to 8 m
- › microsonic Teach-in by using button T1 or T2
- › 0.025 mm to 2.4 mm resolution
- › Temperature compensation
- › 9–30 V operating voltage
- › LinkControl › for configuration of sensors from a PC

0.25 m

0.35 m

1.3 m

3.4 m

6.0 m



*TouchControl with LED display*



*Wear-resistant PEEK protective film*

### Sensor membrane with wear-resistant protective film




In many filling processes, spray on the sensor membrane simply cannot be avoided.

These sprays often harden so that after longer periods of operation contamination can only be removed from the sensor membrane by mechanical means.

The new protective film of the crm<sup>+</sup> sensors now makes it easy to remove caked-on soiling, such as hardened casting compound and cement spatter. The protective film is also highly resistant to corrosive media. The threaded sleeve is made of 1.4571 stainless steel.

### There are three output stages available

for all five detection ranges:

-  1 switching output in pnp switching technology
-  2 switching outputs in npn switching technology
-  1 analogue output 4–20 mA and 0–10 V

### The crm<sup>+</sup> sensors with switching output have three operating modes:

- › Single switching point
- › Two-way reflective barrier
- › Window mode

### With TouchControl

all configuration can be done right at the sensor. The easily legible three-digit LED display continually shows the current distance value and automatically switches between millimetre and centimetre displays.

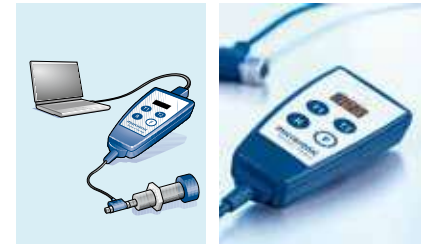
### Setting a switching or analogue output

can optionally be carried out by numeric input of the desired distance values, or using a Teach-in procedure. This permits the user to select the configuration method preferred. The crm<sup>+</sup> sensors support synchronisation and multiplex operation and have extensive parameterisation options via LinkControl.

For detailed information, please see the chapter “mic<sup>+</sup>”.

### LinkControl

consists of the LinkControl adapter and the LinkControl software and facilitates the configuration of the crm<sup>+</sup> sensors via a PC or laptop with any conventional Windows® operating system.



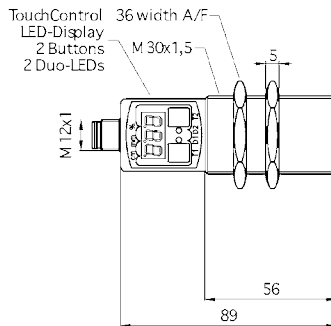
*Sensor connected to the PC via LCA-2 for programming*

crm<sup>+</sup> 25



measuring range

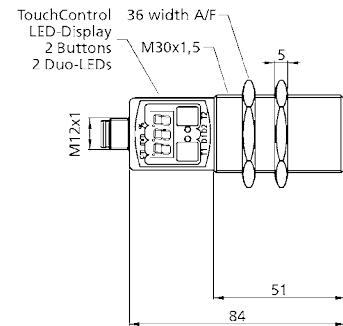
30–350 mm



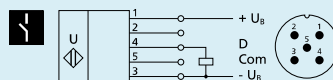
crm<sup>+</sup> 35



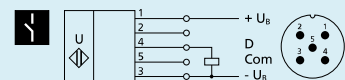
85–600 mm



blind zone	30 mm	85 mm
operating range	250 mm	350 mm
maximum range	350 mm	600 mm
angle of beam spread	please see <a href="#">i</a>	please see <a href="#">i</a>
transducer frequency	320 kHz	360 kHz
resolution/sampling rate	0.025 mm	0.025 mm
reproducibility	± 0.15 %	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)	± 1 % (temperature drift internally compensated)
operating voltage $U_B$	9 V to 30 V DC, reverse polarity protection	9 V to 30 V DC, reverse polarity protection
no-load current consumption	≤ 80 mA	≤ 80 mA
housing	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
class of protection according to EN 60529	IP 67	IP 67
type of connection	5-pin M12 initiator plug	5-pin M12 initiator plug
controls	TouchControl	TouchControl
scope for settings	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>
indicators	3-digit LED display, 2 three-colour LEDs	3-digit LED display, 2 three-colour LEDs
operating temperature	-25°C to +70°C	-25°C to +70°C
storage temperature	-40°C to +85°C	-40°C to +85°C
weight	150 g	150 g
switching hysteresis <sup>1)</sup>	3 mm	5 mm
switching frequency <sup>1)</sup>	25 Hz	12 Hz
response time <sup>1)</sup>	32 ms	64 ms
delay prior to availability	< 300 ms	< 300 ms
order number	crm+25/D/TC/E	crm+35/D/TC/E
switching output	pnp, $U_B$ -2 V, $I_{max}$ = 200 mA NOC/NCC adjustable, short-circuit-proof	pnp, $U_B$ -2 V, $I_{max}$ = 200 mA NOC/NCC adjustable, short-circuit-proof



1 pnp switching output



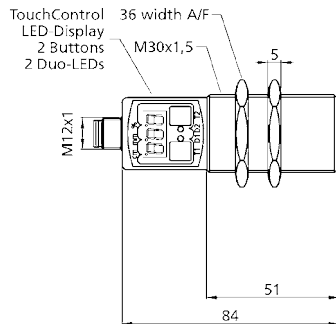
1 pnp switching output

<sup>1)</sup> Can be programmed with TouchControl and LinkControl.

## crm<sup>+</sup> 130



200–2,000 mm



200 mm
1,300 mm
2,000 mm
please see ⓘ
200 kHz
0.18 mm
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU;
ultrasonic transducer: coated with PEEK film,
PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
150 g
20 mm
8 Hz
92 ms
< 300 ms

### crm+130/D/TC/E

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
NOC/NCC adjustable, short-circuit-proof

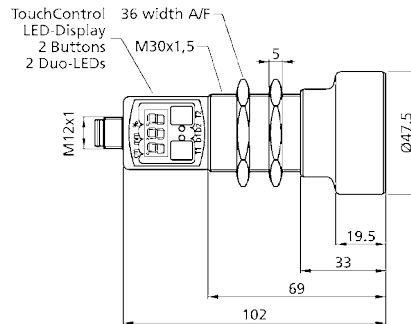


1 pnp switching output

## crm<sup>+</sup> 340



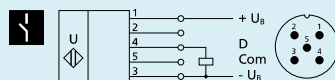
350–5,000 mm



350 mm
3,400 mm
5,000 mm
please see ⓘ
120 kHz
0.18 mm
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU;
ultrasonic transducer: coated with PEEK film,
PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
210 g
50 mm
4 Hz
172 ms
< 380 ms

### crm+340/D/TC/E

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
NOC/NCC adjustable, short-circuit-proof

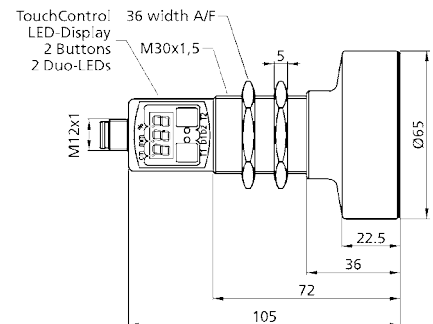


1 pnp switching output

## crm<sup>+</sup> 600



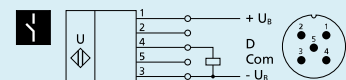
600–8,000 mm



600 mm
6,000 mm
8,000 mm
please see ⓘ
80 kHz
0.18 mm
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU;
ultrasonic transducer: coated with PEEK film,
PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
270 g
100 mm
3 Hz
240 ms
< 450 ms

### crm+600/D/TC/E

pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=200\text{ mA}$   
NOC/NCC adjustable, short-circuit-proof



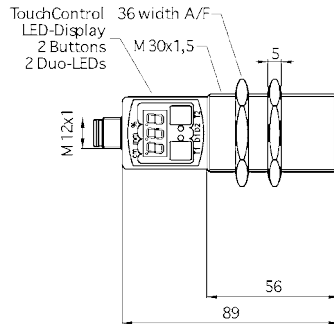
1 pnp switching output

crm<sup>+</sup> 25



measuring range

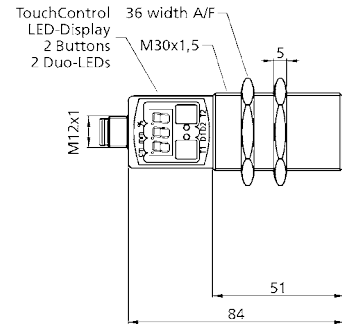
30–350 mm



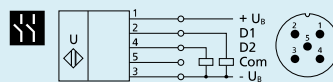
crm<sup>+</sup> 35



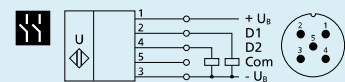
85–600 mm



blind zone	30 mm	85 mm
operating range	250 mm	350 mm
maximum range	350 mm	600 mm
angle of beam spread	please see <a href="#">i</a>	please see <a href="#">i</a>
transducer frequency	320 kHz	360 kHz
resolution/sampling rate	0.025 mm	0.025 mm
reproducibility	± 0.15 %	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)	± 1 % (temperature drift internally compensated)
operating voltage $U_B$	9 V to 30 V DC, reverse polarity protection	9 V to 30 V DC, reverse polarity protection
no-load current consumption	≤ 80 mA	≤ 80 mA
housing	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
class of protection according to EN 60529	IP 67	IP 67
type of connection	5-pin M12 initiator plug	5-pin M12 initiator plug
controls	TouchControl	TouchControl
scope for settings	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>	<ul style="list-style-type: none"> <li>• numeric configuration and Teach-in</li> <li>• LCA-2 with LinkControl</li> </ul>
indicators	3-digit LED display, 2 three-colour LEDs	3-digit LED display, 2 three-colour LEDs
operating temperature	-25°C to +70°C	-25°C to +70°C
storage temperature	-40°C to +85°C	-40°C to +85°C
weight	150 g	150 g
switching hysteresis <sup>1)</sup>	3 mm	5 mm
switching frequency <sup>1)</sup>	25 Hz	12 Hz
response time <sup>1)</sup>	32 ms	64 ms
delay prior to availability	< 300 ms	< 300 ms
order number	crm+25/DD/TC/E	crm+35/DD/TC/E
switching outputs	2 x pnp, $U_B$ -2 V, $I_{max} = 2 \times 200$ mA NOC/NCC adjustable, short-circuit-proof	2 x pnp, $U_B$ -2 V, $I_{max} = 2 \times 200$ mA NOC/NCC adjustable, short-circuit-proof



2 pnp switching outputs



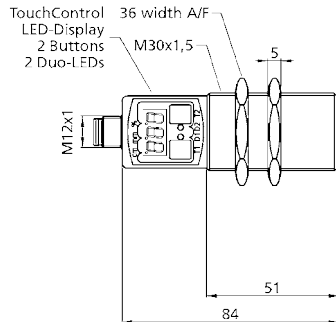
2 pnp switching outputs

<sup>1)</sup> Can be programmed with TouchControl and LinkControl.

## crm<sup>+</sup> 130



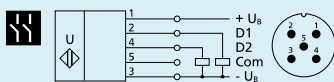
200–2,000 mm



200 mm
1,300 mm
2,000 mm
please see ⓘ
200 kHz
0.18 mm
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
150 g
20 mm
8 Hz
92 ms
< 300 ms

### crm+130/DD/TC/E

2 x pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=2 \times 200\text{ mA}$   
NOC/NCC adjustable, short-circuit-proof

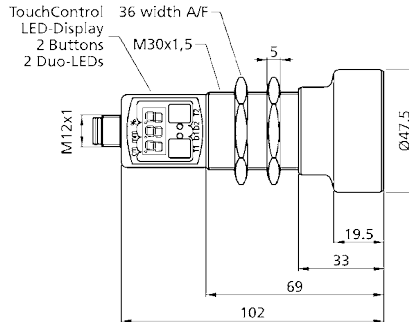


2 pnp switching outputs

## crm<sup>+</sup> 340



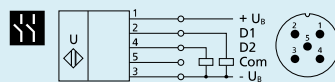
350–5,000 mm



350 mm
3,400 mm
5,000 mm
please see ⓘ
120 kHz
0.18 mm
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
210 g
50 mm
4 Hz
172 ms
< 380 ms

### crm+340/DD/TC/E

2 x pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=2 \times 200\text{ mA}$   
NOC/NCC adjustable, short-circuit-proof

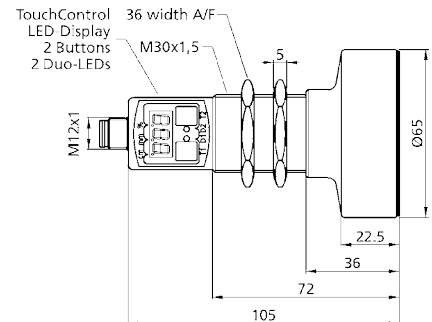


2 pnp switching outputs

## crm<sup>+</sup> 600



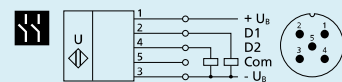
600–8,000 mm



600 mm
6,000 mm
8,000 mm
please see ⓘ
80 kHz
0.18 mm
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
270 g
100 mm
3 Hz
240 ms
< 450 ms

### crm+600/DD/TC/E

2 x pnp,  $U_B=2\text{ V}$ ,  $I_{\max}=2 \times 200\text{ mA}$   
NOC/NCC adjustable, short-circuit-proof



2 pnp switching outputs

crm<sup>+</sup>25

crm<sup>+</sup>35

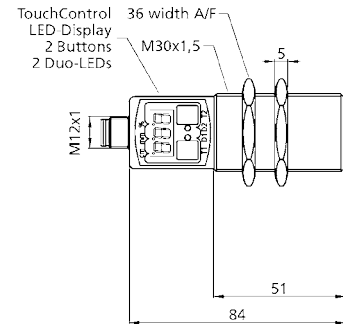
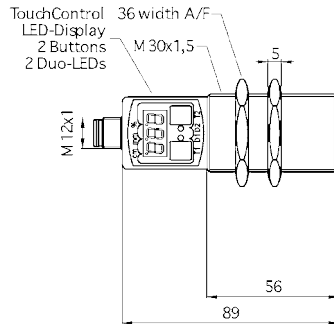
0.25 m

0.35 m

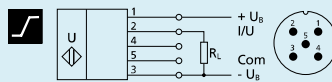
measuring range

30–350 mm

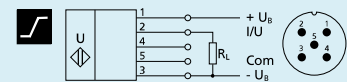
85–600 mm



blind zone	30 mm	85 mm
operating range	250 mm	350 mm
maximum range	350 mm	600 mm
angle of beam spread	please see <a href="#">i</a>	please see <a href="#">i</a>
transducer frequency	320 kHz	360 kHz
resolution/sampling rate	0.025 mm to 0.10 mm, depending on the analogue window	0.025 mm to 0.16 mm, depending on the analogue window
reproducibility	± 0.15 %	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)	± 1 % (temperature drift internally compensated)
operating voltage $U_B$	9 V to 30 V DC, reverse polarity protection	9 V to 30 V DC, reverse polarity protection
no-load current consumption	≤ 80 mA	≤ 80 mA
housing	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring	stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
class of protection according to EN 60529	IP 67	IP 67
type of connection	5-pin M12 initiator plug	5-pin M12 initiator plug
controls	TouchControl	TouchControl
scope for settings	• numeric configuration and Teach-in	• numeric configuration and Teach-in
indicators	• LCA-2 with LinkControl	• LCA-2 with LinkControl
operating temperature	3-digit LED display, 2 three-colour LEDs	3-digit LED display, 2 three-colour LEDs
storage temperature	-25°C to +70°C	-25°C to +70°C
weight	-40°C to +85°C	-40°C to +85°C
response time <sup>1)</sup>	150 g	150 g
delay prior to availability	32 ms	64 ms
	< 300 ms	< 300 ms
order number	crm+25/IU/TC/E	crm+35/IU/TC/E
analogue output	current output 4–20 mA	current output 4–20 mA
	voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof	voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof
	switchable rising/falling	switchable rising/falling



analogue output



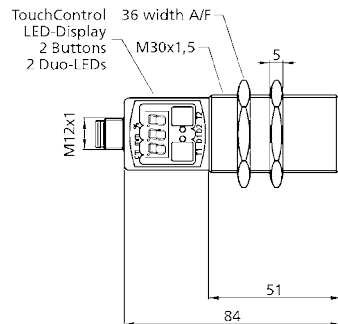
analogue output

<sup>1)</sup> Can be programmed with TouchControl and LinkControl.

## crm<sup>+</sup> 130



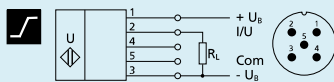
200–2,000 mm



200 mm
1,300 mm
2,000 mm
please see ⓘ
200 kHz
0.18 mm to 0.57 mm, depending on the analogue window
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
150 g
92 ms
< 300 ms

### crm+130/IU/TC/E

current output 4–20 mA
voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof
switchable rising/falling

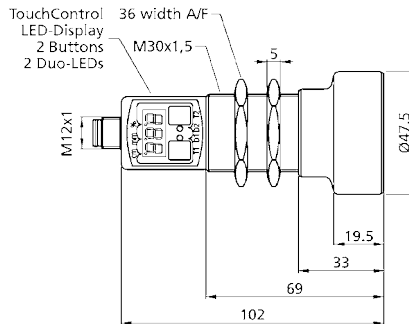


analogue output

## crm<sup>+</sup> 340



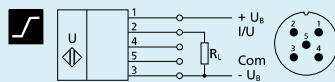
350–5,000 mm



350 mm
3,400 mm
5,000 mm
please see ⓘ
120 kHz
0.18 mm to 1.5 mm, depending on the analogue window
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
210 g
172 ms
< 450 ms

### crm+340/IU/TC/E

current output 4–20 mA
voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof
switchable rising/falling

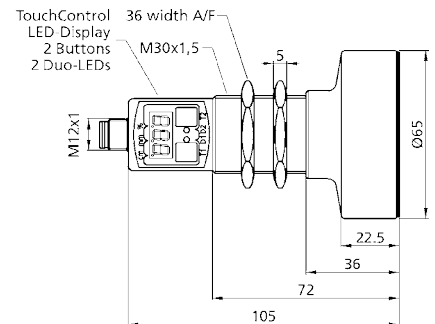


analogue output

## crm<sup>+</sup> 600



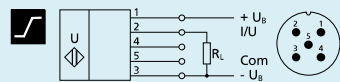
600–8,000 mm



600 mm
6,000 mm
8,000 mm
please see ⓘ
80 kHz
0.18 mm to 2.4 mm, depending on the analogue window
± 0.15 %
± 1 % (temperature drift internally compensated)
9 V to 30 V DC, reverse polarity protection
≤ 80 mA
stainless steel 1.4571, plastic parts: PBT, TPU; ultrasonic transducer: coated with PEEK film, PTFE O-ring
IP 67
5-pin M12 initiator plug
TouchControl
• numeric configuration and Teach-in
• LCA-2 with LinkControl
3-digit LED display, 2 three-colour LEDs
-25°C to +70°C
-40°C to +85°C
270 g
240 ms
< 450 ms

### crm+600/IU/TC/E

current output 4–20 mA
voltage output 0–10 V (at $U_B \geq 15$ V), short-circuit-proof
switchable rising/falling



analogue output