



HEIDENHAIN

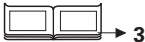

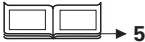






Bedienungsanleitung
Operating Instructions



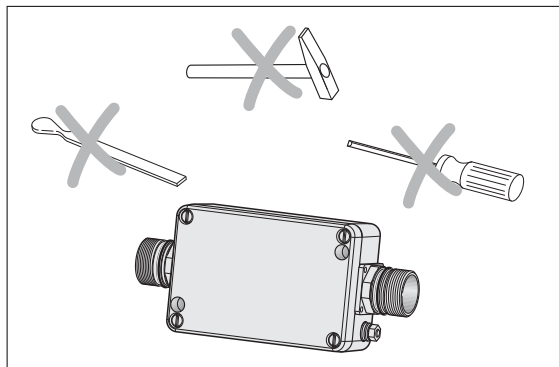
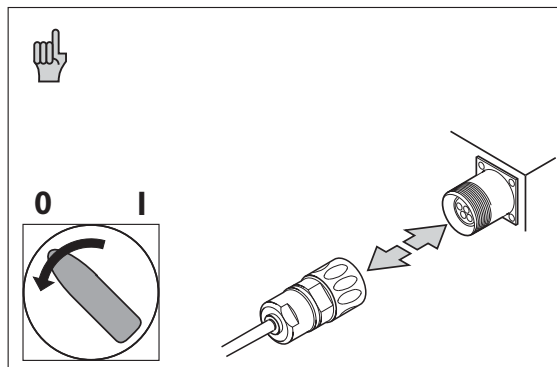
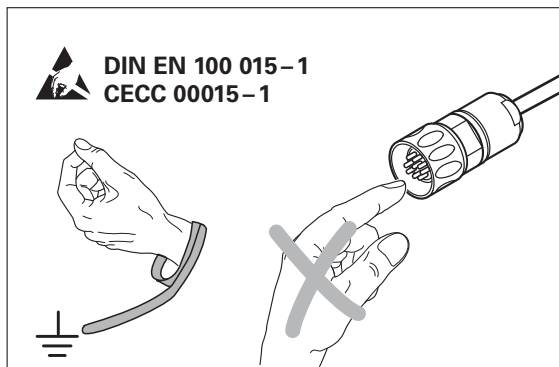
EPC 100
EnDat Parallel Converter

2/2018

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

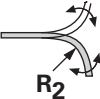
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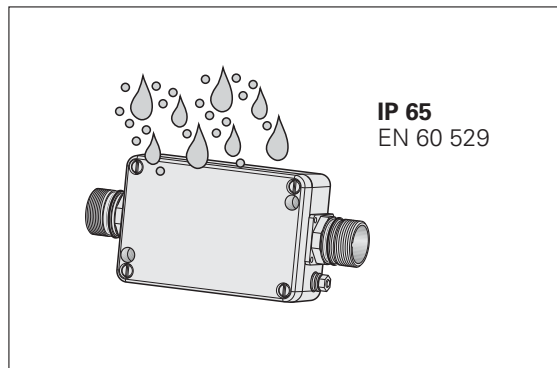
Warnhinweise · Warnings

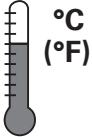
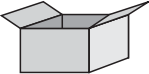


Maße in mm
Dimensions in mm

Technische Kennwerte · Specifications

		
Ø 6 mm	$R_1 \geq 20 \text{ mm}$	$R_2 \geq 75 \text{ mm}$
Ø 8 mm	$R_1 \geq 40 \text{ mm}$	$R_2 \geq 100 \text{ mm}$



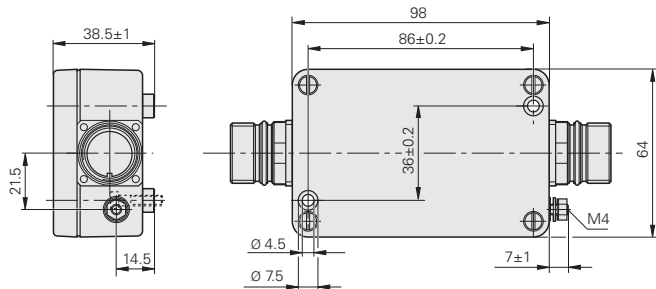
		$-30 \dots 80 \text{ } ^\circ\text{C}$ $(-22 \dots 176 \text{ } ^\circ\text{F})$
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Abmessungen · Dimensions

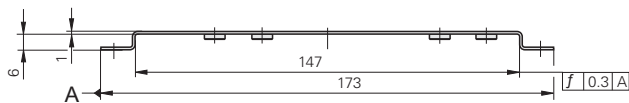
mm



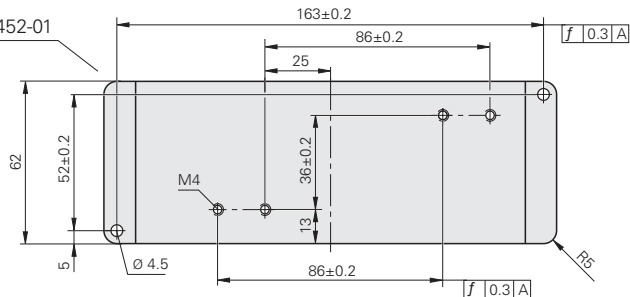
Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ± 0.2 mm



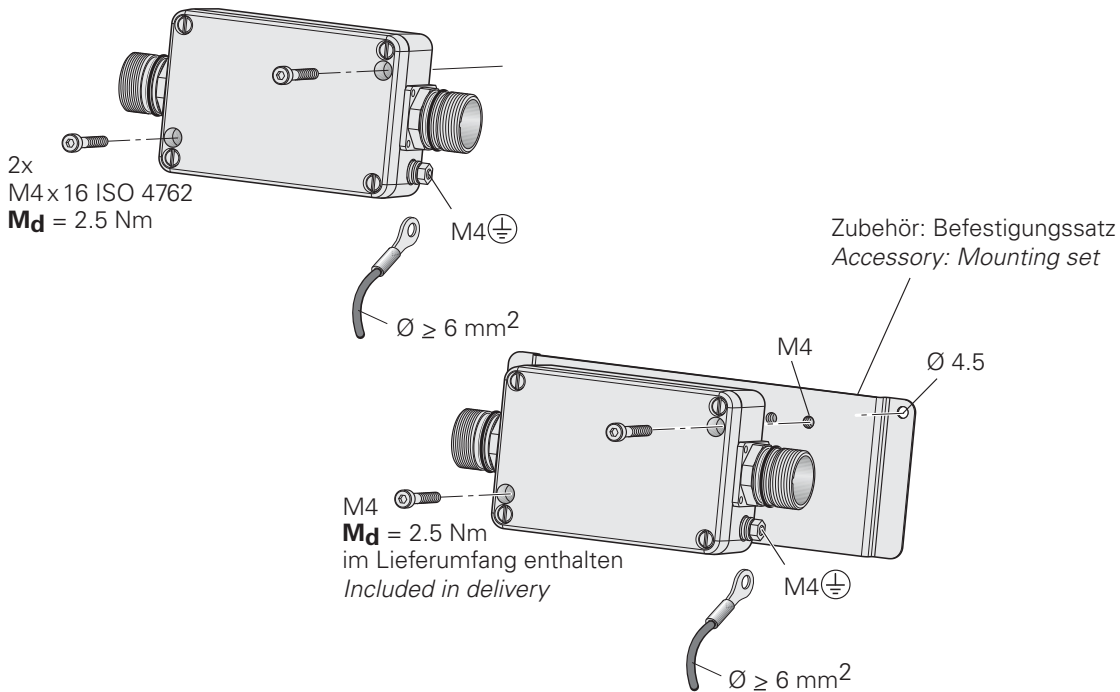
Zubehör: Befestigungsatz
Accessory: Mounting set



Id.-Nr. 536 452-01



Anbau · Mounting



Spannungsversorgung

- Versorgungsspannung $U_B = 4,75 \text{ V}$ bis 30 V
- Integrierter Verpolungsschutz
- Typische Stromaufnahme ohne Encoder:
 - 160 mA bei 5 V
 - 85 mA bei 10 V
 - 40 mA bei 30 V

Encoder-Interface (X1)

- EnDat-Interface 2.1 oder 2.2
- Auslese-Taktfrequenz = 200 kHz
- Inkremental-Signale 1 Vss 2048 Impulse
- Kabellänge max. 100 m

Interface für Folge-Elektronik (X2)

- Freigabesignale A\, B\
 - $V_L = 0 \dots 0,8 \text{ V}$
 - $V_H = 2,4 \dots 5,25 \text{ V}$
 - $I_L < 2 \text{ mA}$
- Ausgangspegel B1 bis B14
 - $V_{L \max} = 0,4 \text{ V}$ bei $I_L \leq 20 \text{ mA}$
 - $V_{H \min} = U_B - 0,4 \text{ V}$ bei $I_L \leq -20 \text{ mA}$
- Kabel-Treiber IC-DL

Power supply

- *Supply voltage $U_B = 4.75 \text{ V}$ to 30 V*
- *Integrated reverse polarity protection*
- *Typical current consumption without encoder:*
 - 160 mA with 5 V*
 - 85 mA with 10 V*
 - 40 mA with 30 V*

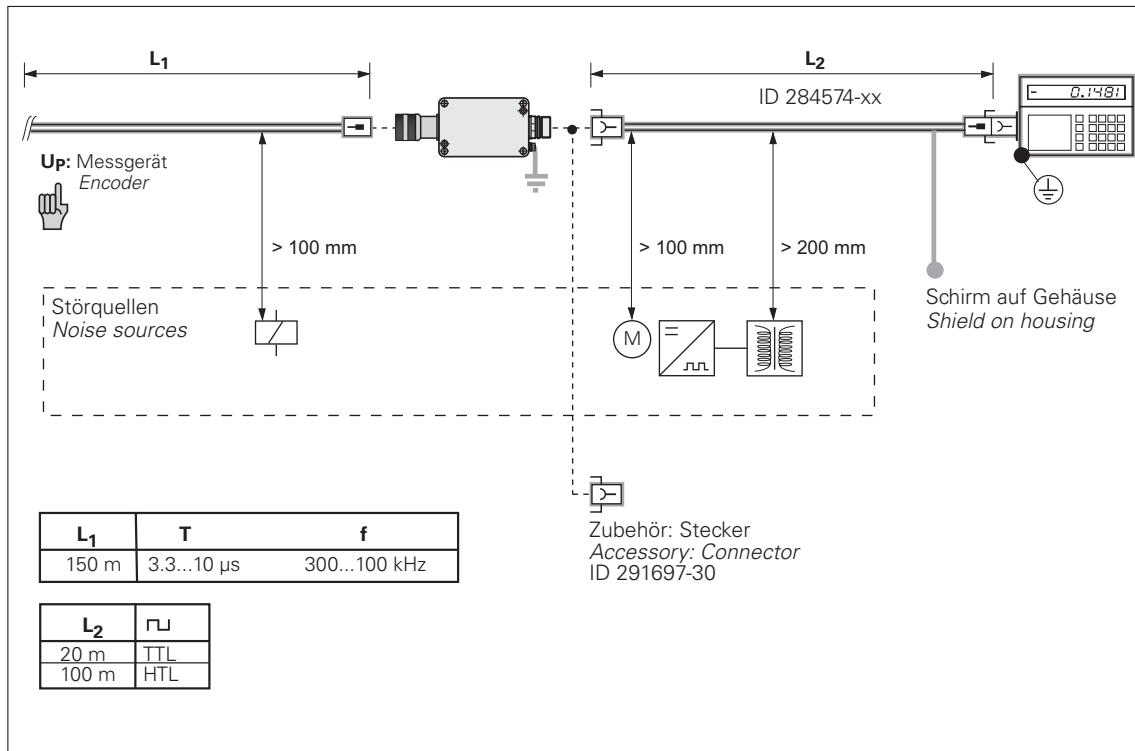
Encoder interface (X1)

- *EnDat interface 2.1 or 2.2*
- *Clock frequency = 200 kHz*
- *1 Vpp incremental signals 2048 pulses*
- *Max. cable length 100 m*

Interface to subsequent electronics (X2)

- *Enabling signals A\, B\
 - $V_L = 0 \dots 0.8 \text{ V}$
 - $V_H = 2.4 \dots 5.25 \text{ V}$
 - $I_L < 2 \text{ mA}$*
- *Output levels B1 to B14
 - $V_{L \max} = 0.4 \text{ V}$ with $I_L \leq 20 \text{ mA}$
 - $V_{H \min} = U_B - 0.4 \text{ V}$ with $I_L \leq -20 \text{ mA}$*
- *Line driver IC-DL*

Anschluss · Connection



Übersicht Schalterstellungen · Overview of switch positions

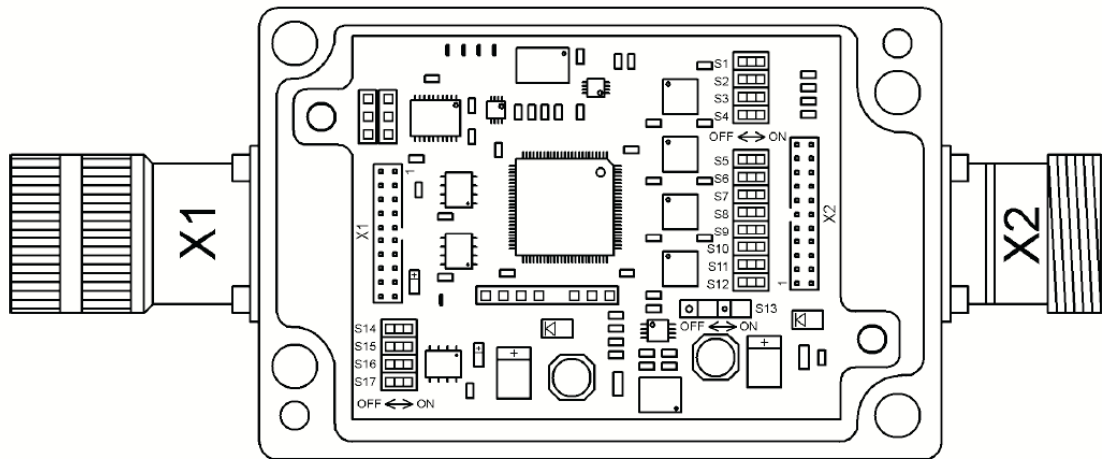
R O C **4 x x** **. 3 G P n**

Up	S12
3	OFF
5	ON

Code	S1
G	OFF
E	ON

Pn	S2	S3	S4
P1	OFF	OFF	ON
P2	OFF	OFF	OFF
P3	ON	OFF	ON
P4	ON	OFF	OFF
P5	OFF	OFF	OFF
P6	OFF	ON	OFF
P7	OFF	ON	OFF

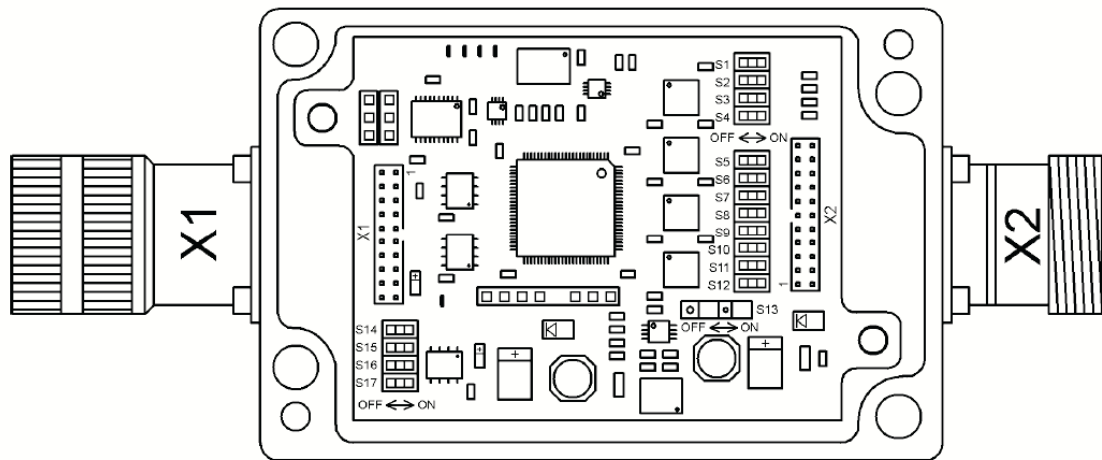
ROC	S5	S6	S7	S8	S9	S10	S11	S13	S14	S15	S16	S17
408	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF
409	OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF
410	OFF	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	OFF
411	OFF	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
412	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
413	OFF	ON	ON	ON	ON	ON	OFF	ON	OFF	OFF	OFF	OFF
414	ON	ON	ON	ON	ON	ON	OFF	ON	OFF	OFF	OFF	OFF



Schalter	OFF	ON
S1	Code-Ausgabe = Gray	Code-Ausgabe Gray Excess
S2	Zählrichtung normal	Zählrichtung invers
S3 ¹	Freigabesignal A\ u. B\ ohne Funktion	A\ = Freigabesignal für Bit 3 - Bit 14 B\ = Freigabesignal für Bit 1 und Bit 2
S4 ¹	Freigabesignal A\ u. B\ ohne Funktion	A\ = Freigabesignal für Bit (7 ²)8 bis Bit 14 B\ = Freigabesignal für Bit 1 bis Bit 6(7 ²)
S5	X2 Pin 21 offen	X2 Pin 21 verbunden mit B14
S6	X2 Pin 20 offen	X2 Pin 20 verbunden mit B13
S7	X2 Pin 19 offen	X2 Pin 19 verbunden mit B12
S8	X2 Pin 18 offen	X2 Pin 18 verbunden mit B11
S9	X2 Pin 5 offen	X2 Pin 5 verbunden mit B10
S10	X2 Pin 6 offen	X2 Pin 6 verbunden mit B9
S11	X2 Pin 17 offen	X2 Pin 17 verbunden mit B1\
S12	Verpolungsschutz aktiv	Verpolungsschutz inaktiv (überbrückt)
S13	Ausgangssignal B7 schaltet mit Freigabesignal A (ROC 411/412)	Ausgangssignal B7 schaltet mit Freigabesignal B (ROC 413-414)
S14	Alle Ausgangssignale gesperrt ("0") wenn EnDat-Alarmbit gesetzt ist	Ausgangssignale immer freigegeben (Alarmbit ohne Einfluss)
S15	Reserviert	Reserviert
S16	Reserviert	Reserviert
S17	Reserviert	Reserviert

1 Die Schalter S3 und S4 dürfen nicht gleichzeitig auf ON geschaltet sein!

2 Bit 7 abhängig von Schalter S13



<i>Switch</i>	<i>OFF</i>	<i>ON</i>
<i>S1</i>	<i>Code output = Gray</i>	<i>Code output: Gray Excess</i>
<i>S2</i>	<i>Normal counting direction</i>	<i>Inverse counting direction</i>
<i>S3</i> ¹	<i>Enabling signals A\ and B\ without function</i>	<i>A\ = Enabling signal for bit 3 to bit 14 B\ = Enabling signal for bit 1 and bit 2</i>
<i>S4</i> ¹	<i>Enabling signals A\ and B\ without function</i>	<i>A\ = Enabling signal for bit (7²)8 to bit 14 B\ = Enabling signal for bit 1 to bit 6(7²)</i>
<i>S5</i>	<i>X2 pin 21 not connected</i>	<i>X2 pin 21 connected to B14</i>
<i>S6</i>	<i>X2 pin 20 not connected</i>	<i>X2 pin 20 connected to B13</i>
<i>S7</i>	<i>X2 pin 19 not connected</i>	<i>X2 pin 19 connected to B12</i>
<i>S8</i>	<i>X2 pin 18 not connected</i>	<i>X2 pin 18 connected to B11</i>
<i>S9</i>	<i>X2 pin 5 not connected</i>	<i>X2 pin 5 connected to B10</i>
<i>S10</i>	<i>X2 pin 6 not connected</i>	<i>X2 pin 6 connected to B9</i>
<i>S11</i>	<i>X2 pin 17 not connected</i>	<i>X2 pin 17 connected to B1\</i>
<i>S12</i>	<i>Reverse polarity protection active</i>	<i>Reverse polarity protection inactive (bridged)</i>
<i>S13</i>	<i>Output signal B7 triggered by enabling signal A (ROC 411/412)</i>	<i>Output signal B7 triggered by enabling signal B (ROC 413-414)</i>
<i>S14</i>	<i>Output signals disabled when EnDat alarm bit set</i>	<i>Output signals always enabled (alarm bit has no influence)</i>
<i>S15</i>	<i>Reserved</i>	<i>Reserved</i>
<i>S16</i>	<i>Reserved</i>	<i>Reserved</i>
<i>S17</i>	<i>Reserved</i>	<i>Reserved</i>

¹ The switches S3 and S4 must not be ON simultaneously!

² Bit 7 addicted from switches S13

Elektrischer Anschluss · Electrical Connection

Eingangssignale EnDat X1/ *Input signals EnDat X1*

EPC 100 1ZB17 27S21 ID 685162-01

EPC 100 1ZB17 27S12 ID 685162-02

Pin	Signal
1	+5 V (Sensor)
2	NC
3	NC
4	0 V (Sensor)
5	NC
6	NC
7	+5 V
8	Clock
9	Clock\
10	0 V
11	0 V (Innenschirm) <i>0 V (internal shield)</i>
12	B+
13	B-
14	Data
15	A+
16	A-
17	Data\

Ausgangssignale X2/ Output signals X2
EPC 100 1ZB17 27S21 ID 685162-01

Pin	Signal	Signal
1	0 V (U_N)	0 V (U_N)
2	U_P	U_P
3	Freigabe A\	Enable A\
4	Freigabe B\	Enable B\
5	offen oder B10 (abhängig von S9)	Not connected or B10 (depending on S9)
6	offen oder B9 (abhängig von S10)	Not connected or B9 (depending on S10)
7	Bit 8	Bit 8
8	Bit 7	Bit 7
9	Bit 6	Bit 6
10	Bit 5	Bit 5
11	Bit 4	Bit 4
12	Bit 3	Bit 3
13	Bit 2	Bit 2
14	Bit 1 (MSB)	Bit 1 (MSB)
15	0 V (Sensor)	0 V (sensor)
16	U_P (Sensor)	U_P (sensor)
17	offen oder Bit 1 (abhängig von S11)	Not connected or bit 1 (depending on S11)
18	offen oder Bit 11 (abhängig von S8)	Not connected or bit 11 (depending on S8)
19	offen oder Bit 12 (abhängig von S7)	Not connected or bit 12 (depending on S7)
20	offen oder Bit 13 (abhängig von S6)	Not connected or bit 13 (depending on S6)
21	offen oder Bit 14 (abhängig von S5)	Not connected or bit 14 (depending on S5)

Elektrischer Anschluss · *Electrical Connection*

Ausgangssignale X2/ *Output signals X2*
EPC 100 1ZB17 27S12 ID 685162-02

Pin	Signal	Signal
1	0V (U_N)	0V (U_N)
2	offen oder B9 (abhängig von S10)	<i>Not connected or B9 (depending on S10)</i>
3	Bit 8	<i>Bit 8</i>
4	Bit 7	<i>Bit 7</i>
5	Bit 6	<i>Bit 6</i>
6	Bit 5	<i>Bit 5</i>
7	Bit 4	<i>Bit 4</i>
8	U_P	U_P
9	Bit 3	<i>Bit 3</i>
10	Bit 2	<i>Bit 2</i>
11	Bit 1 (MSB)	<i>Bit 1 (MSB)</i>
12	offen oder Bit 1 (abhängig von S11)	<i>Not connected or bit 1 (depending on S11)</i>
Gehäuse <i>Housing</i>	Außenschirm	<i>External shield</i>

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