



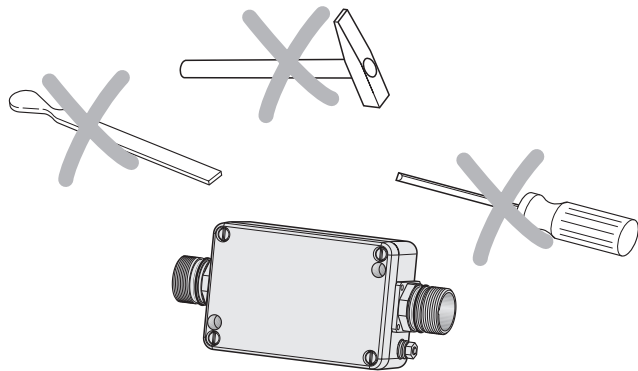
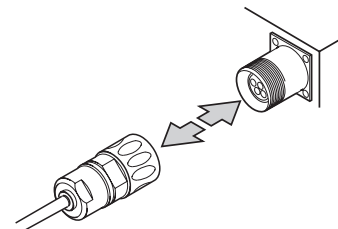
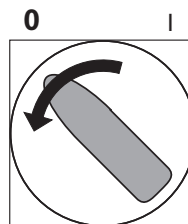
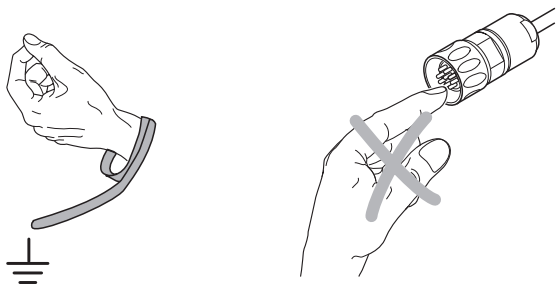
HEIDENHAIN

Betriebsanleitung
Operating Instructions
Mode d'emploi
Manuale operativo
Modo de empleo

IBV/EXE 101
IBV/EXE 102



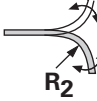
6/2005

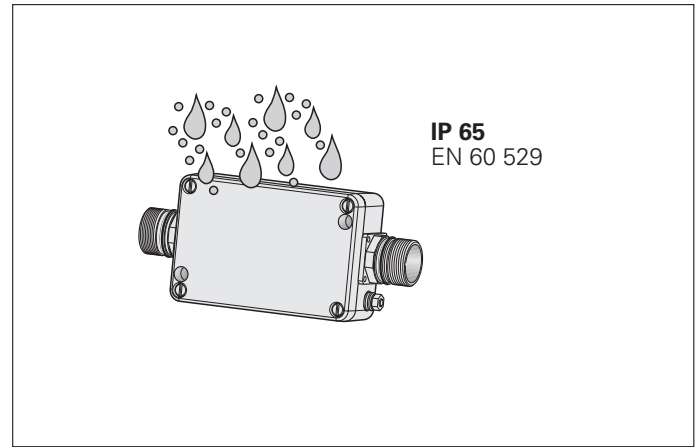
 **DIN EN 100 015 – 1**
CECC 00015 – 1

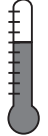
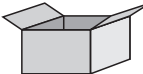


Maße in mm
Dimensions in mm
Cotes en mm
Dimensioni in mm
Dimensiones en mm

Technische Kennwerte · Specifications · Caractéristiques techniques · Dati tecnici · Datos técnicos

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



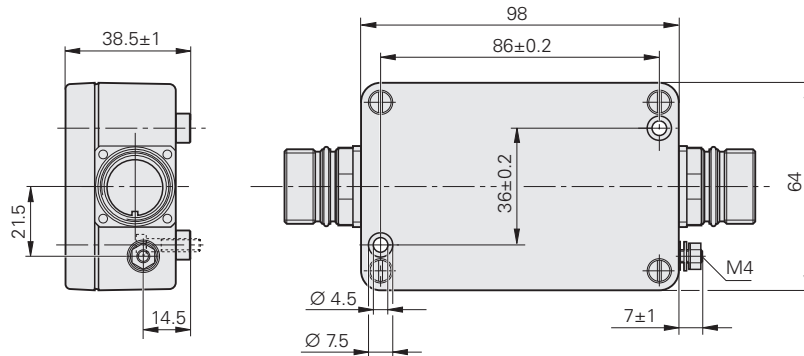
 °C (°F)	 $-30 \dots 80 \text{ °C}$ $(-22 \dots 176 \text{ °F})$
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Abmessungen · Dimensions · Dimensions · Dimensioni · Dimensiones

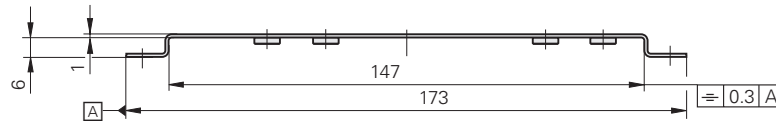
mm



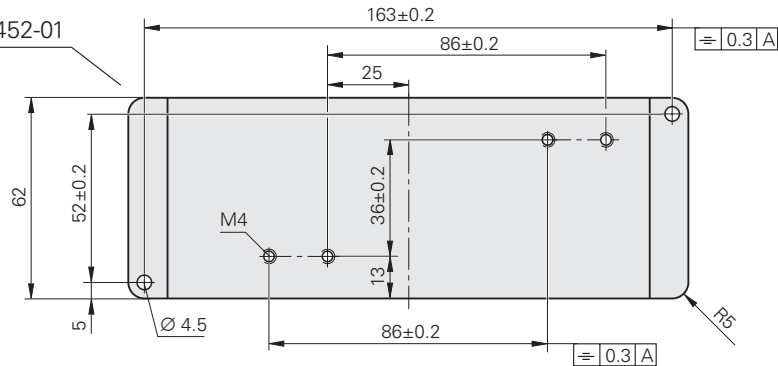
Tolerancing ISO 8015
ISO 2768 - m H
< 6 mm: ±0.2 mm

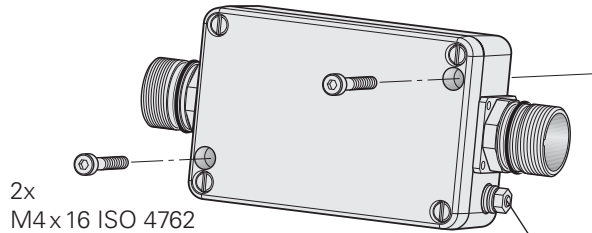


Zubehör: Befestigungsatz
Accessory: *Mounting set*
Accessoire: kit de fixation
Accessori, minuteria di fissaggio
Accesorios: Juego de fijaciones

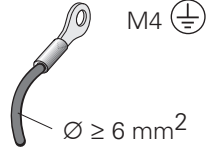


Id.-Nr. 536 452-01

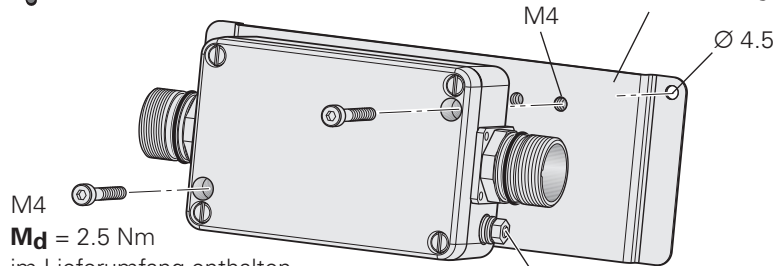




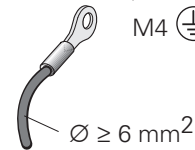
2x
M4x16 ISO 4762
M_d = 2.5 Nm



Zubehör: Befestigungssatz
Accessory: *Mounting set*
Accessoire: kit de fixation
Accessori, *minuteria di fissaggio*
Accesorios: Juego de fijaciones




M4
M_d = 2.5 Nm
im Lieferumfang enthalten
Included in delivery
Contenu dans la fourniture
Nello standard di fornitura
Incluido en el suministro



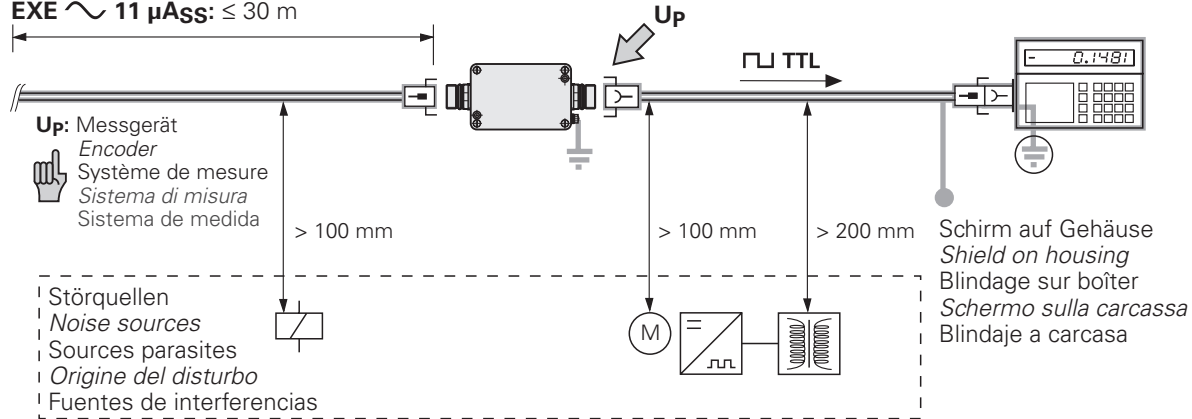
U_P = Spannungsversorgung
Power supply
 Tension d'alimentation
Alimentazione tensione
 Tensión de alimentación

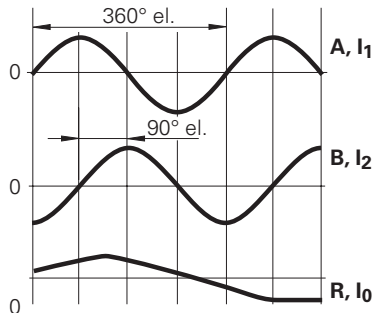
U_P = 5 V ± 5 %
 IBV 101: (max. 120 mA)
 IBV 102: (max. 130 mA)
 EXE 101: (max. 120 mA)
 EXE 102: (max. 140 mA)

 EN 50 178/4.98; 5.2.9.5
 IEC 364-4-41: 1992; 411(PELV/SELV)
 (siehe, see, voir, vedi, véase
 HEIDENHAIN D231 929)

IBV ~ 1 V_{SS}: ≤ 30 m (≤ 60 m; U_P > 4.9 V)

EXE ~ 11 μA_{SS}: ≤ 30 m



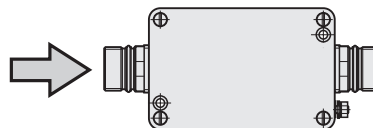


IBV

A: 0.6 ... 1.2 V_{SS}
 B: 0.6 ... 1.2 V_{SS}
 R: 0.2 ... 0.85 V

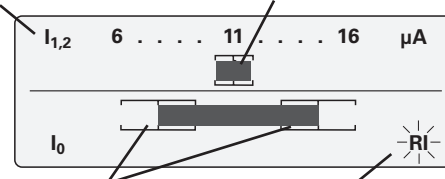
EXE

I₁: 7 ... 16 μA_{SS}
 I₂: 7 ... 16 μA_{SS}
 I₀: 2 ... 8.5 μA



Signalamplitude
 Signal amplitude
 Amplitude du signal
 Ampiezza del segnale
 Amplitud de señales

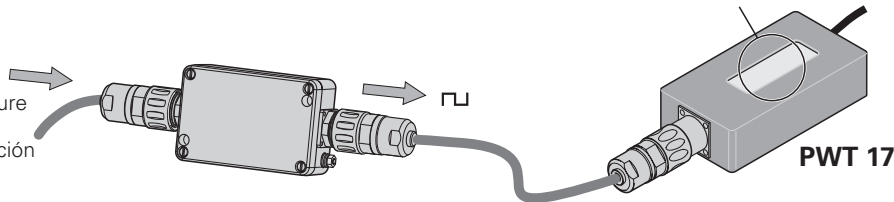
Signalqualität
 Signal quality
 Qualité du signal
 Qualità del segnale
 Calidad de la señal



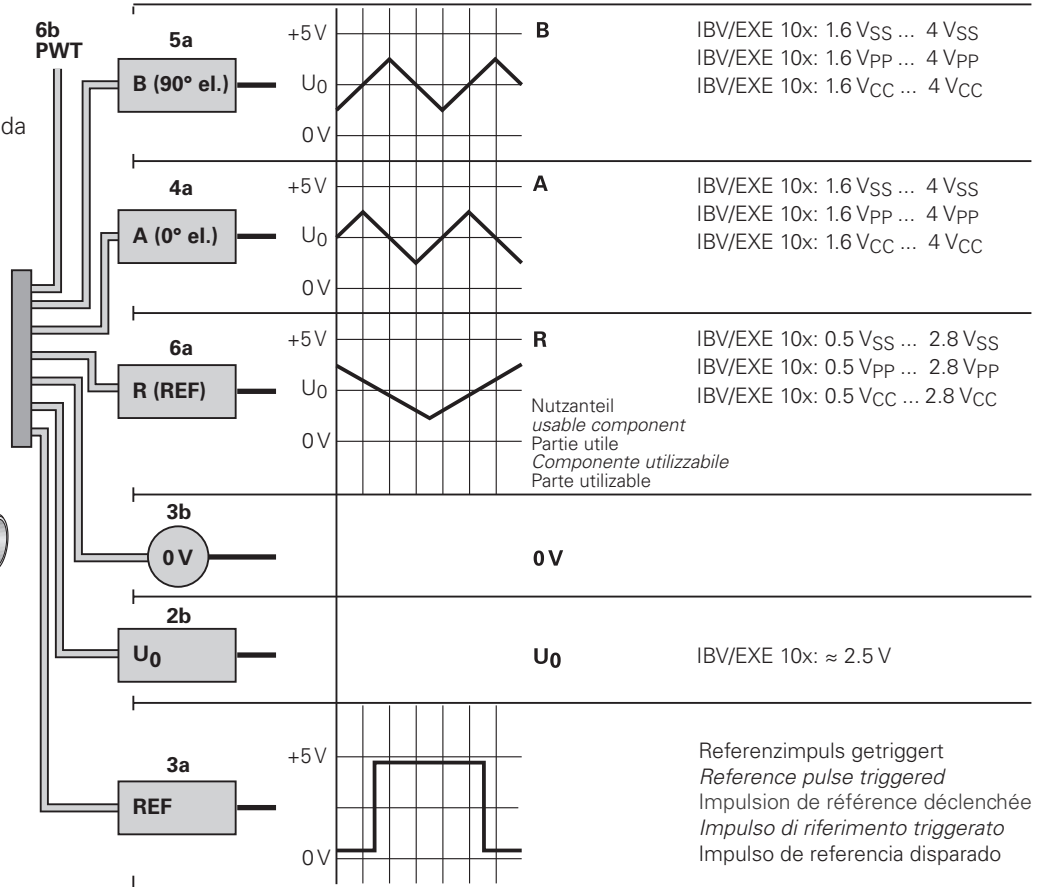
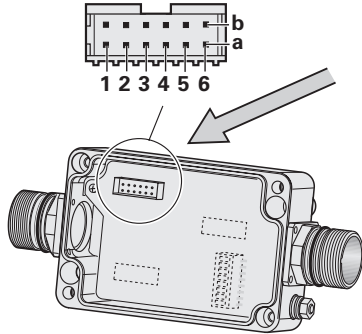
Toleranz des Nulldurchganges der Referenzmarke
 Tolerance of zero crossover of the reference mark
 Tolérance de passage à zéro de la marque de référence
 Tolleranza di posizione dell'indice di riferimento
 Tolerancia de paso por cero de la marca de referencia

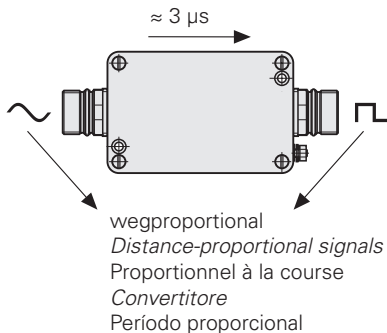
Messung der Referenzmarke
 Reference mark measurement
 Mesure de la marque de référence
 Rilevazione dell'indice
 Medición de la marca de referencia

Messgerät
 Encoder
 Système de mesure
 Encoder
 Sistema de medición



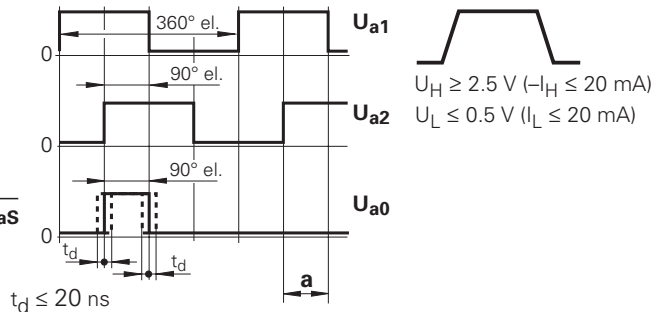
Eingangssignale prüfen
 Check the input signals
 Vérifier les signaux d'entrée
 Verificare impulsi in ingresso
 Comprobar las señales de entrada





TTL

$\overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a0}}$
 $\overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a0}}, \overline{U_{aS}}$



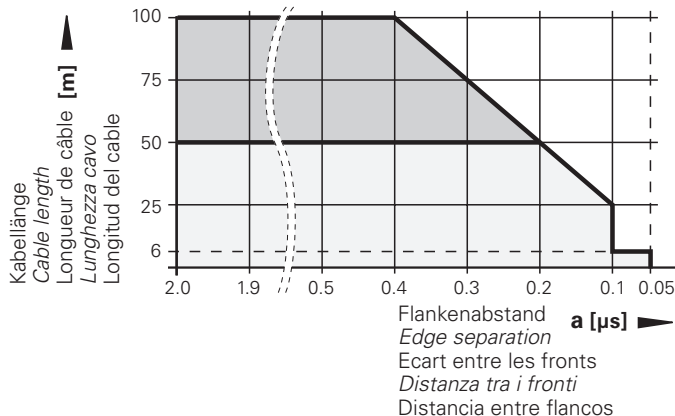
$\overline{U_{aS}}$: Störungssignal
Fault detection signal
Signal de perturbation
Segnale di malfunzionamento
Señal de avería

$\overline{U_{aS}} = \text{High}$: ✓

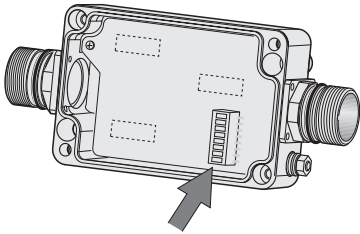
$\overline{U_{aS}} = \text{Low}$: ⚠

ohne $\overline{U_{aS}}$
Without $\overline{U_{aS}}$
sans $\overline{U_{aS}}$
senza $\overline{U_{aS}}$
sin $\overline{U_{aS}}$

mit $\overline{U_{aS}}$
With $\overline{U_{aS}}$
avec $\overline{U_{aS}}$
con $\overline{U_{aS}}$
con $\overline{U_{aS}}$



IBV 101



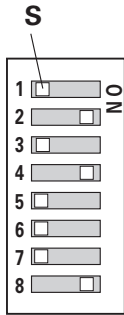
Funktionseinstellung
Function selection
 Réglage de la fonction
Selezione funzioni
 Selección de funciones

S1 = reserviert
 (immer auf off)
Reserved
 (always set to off)
 Réservé
 (toujours sur off)
Riservato
 (sempre su off)
 Reservado
 (siempre en off)

Interpolation <i>Interpolation</i> Interpolation <i>Interpolazione</i> Interpolación		
	S3	S4
TTL x 5	off	off
TTL x 10	off	on

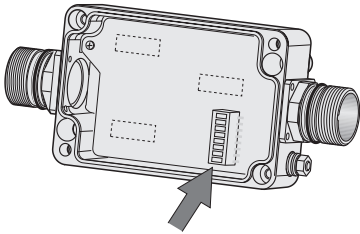
Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

$\overline{U_{a1}}, \overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a2}}, \blacktriangleright \overline{U_{aS}} = \text{low}$	S5
hochohmig (Three State) <i>High impedance (three-state)</i> à haute impédance (tristate) <i>alta impedenza (tristate)</i> alta impedancia (Three State)	on
nicht hochohmig <i>Low impedance</i> à basse impédance <i>bassa impedenza</i> sin alta impedancia	off

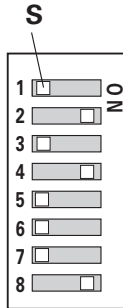


min. Flankenabstand <i>Min. edge separation</i> écart min. entre les fronts <i>min. distanza tra i fronti</i> distancia mín. entre flancos	S6	S7	S8	max. Eingangs-Frequenz <i>Max. input frequency</i> fréquence d'entrée max. <i>max frequenza ingresso</i> frecuencia máx. de entrada	
				TTL x 5	TTL x 10
0.100 μ s	off	off	on	200 kHz	200 kHz
0.220 μ s	off	on	off	200 kHz	100 kHz
0.345 μ s	off	on	on	133 kHz	66 kHz
0.465 μ s	on	off	off	100 kHz	50 kHz
0.585 μ s	on	off	on	80 kHz	40 kHz
0.950 μ s	on	on	off	50 kHz	25 kHz
1.925 μ s	on	on	on	25 kHz	12.5 kHz

IBV 102



Funktionseinstellung
Function selection
 Réglage de la fonction
Selezione funzioni
 Selección de funciones

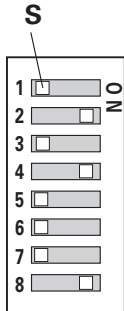


Interpolation <i>Interpolation</i> Interpolation <i>Interpolazione</i> Interpolación	S3	S4
TTL x 20	off	off
TTL x 25	off	on
TTL x 50	on	off
TTL x 100	on	on

Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

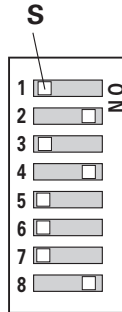
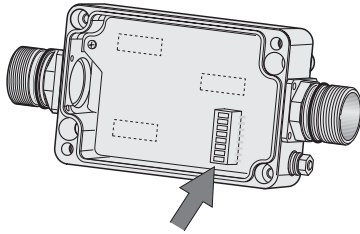
S1 = reserviert
 (immer auf off)
Reserved
 (always set to off)
 Réservé
 (toujours sur off)
Riservato
 (sempre su off)
 Reservado
 (siempre en off)

$U_{a1}, \overline{U_{a1}}, U_{a2}, \overline{U_{a2}}, \blacktriangleright \overline{U_{aS}} = \text{low}$	S5
hochohmig (Three State) <i>High impedance (three-state)</i> à haute impédance (tristate) <i>alta impedenza (tristate)</i> alta impedancia (Three State)	on
nicht hochohmig <i>Low impedance</i> à basse impédance <i>bassa impedenza</i> sin alta impedancia	off



min. Flankenabstand <i>Min. edge separation</i> écart min. entre les fronts <i>min. distanza tra i fronti</i> distancia mín. entre flancos				max. Eingangs-Frequenz <i>Max. input frequency</i> fréquence d'entrée max. <i>max frequenza ingresso</i> frecuencia máx. de entrada			
	S6	S7	S8	TTL x 20	TTL x 25	TTL x 50	TTL x 100
0.100 μ s	off	off	on	100 kHz	80 kHz	40 kHz	20 kHz
0.220 μ s	off	on	off	50 kHz	40 kHz	20 kHz	10 kHz
0.345 μ s	off	on	on	33 kHz	26 kHz	13 kHz	6.6 kHz
0.465 μ s	on	off	off	25 kHz	20 kHz	10 kHz	5 kHz
0.585 μ s	on	off	on	20 kHz	16 kHz	8 kHz	4 kHz
0.950 μ s	on	on	off	12.5 kHz	10 kHz	5 kHz	2.5 kHz
1.925 μ s	on	on	on	6.25 kHz	5 kHz	2.5 kHz	1.25 kHz

EXE 101



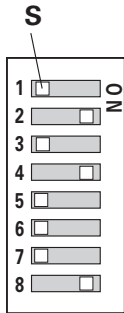
Funktionseinstellung
Function selection
 Réglage de la fonction
Selezione funzioni
 Selección de funciones

S1 = reserviert
 (immer auf off)
Reserved
 (always set to off)
 Réservé
 (toujours sur off)
Riservato
 (sempre su off)
 Reservado
 (siempre en off)

Interpolation <i>Interpolation</i> Interpolation <i>Interpolazione</i> Interpolación		
TTL x 5	off	off
TTL x 10	off	on

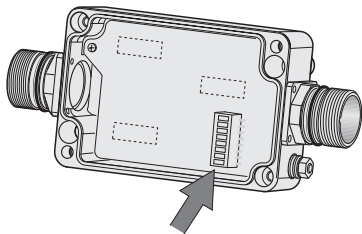
Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

$\overline{U_{a1}}, \overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a2}}, \blacktriangleright \overline{U_{aS}} = \text{low}$	S5
hochohmig (Three State) <i>High impedance (three-state)</i> à haute impédance (tristate) <i>alta impedenza (tristate)</i> alta impedancia (Three State)	on
nicht hochohmig <i>Low impedance</i> à basse impédance <i>bassa impedenza</i> sin alta impedancia	off

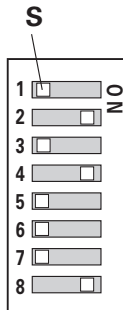


min. Flankenabstand <i>Min. edge separation</i> écart min. entre les fronts <i>min. distanza tra i fronti</i> distancia mín. entre flancos				max. Eingangs-Frequenz <i>Max. input frequency</i> fréquence d'entrée max. <i>max frequenza ingresso</i> frecuencia máx. de entrada	
	S6	S7	S8	TTL x 5	TTL x 10
0.100 μ s	off	off	on	100 kHz	100 kHz
0.220 μ s	off	on	off	100 kHz	100 kHz
0.345 μ s	off	on	on	100 kHz	66 kHz
0.465 μ s	on	off	off	100 kHz	50 kHz
0.585 μ s	on	off	on	80 kHz	40 kHz
0.950 μ s	on	on	off	50 kHz	25 kHz
1.925 μ s	on	on	on	25 kHz	12.5 kHz

EXE 102



Funktionseinstellung
 Function selection
 Réglage de la fonction
 Selezione funzioni
 Selección de funciones



Interpolation <i>Interpolation</i> Interpolation <i>Interpolazione</i> Interpolación	S3	S4
TTL x 20	off	off
TTL x 25	off	on
TTL x 50	on	off
TTL x 100	on	on

Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

S1 = reserviert
 (immer auf off)
Reserved
 (always set to off)
 Réservé
 (toujours sur off)
Riservato
 (sempre su off)
 Reservado
 (siempre en off)

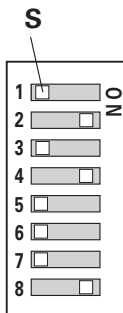
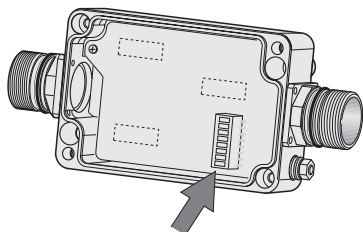
$U_{a1}, \overline{U_{a1}}, U_{a2}, \overline{U_{a2}} \rightarrow \overline{U_{aS}} = \text{low}$	S5
hochohmig (Three State) <i>High impedance (three-state)</i> à haute impédance (tristate) <i>alta impedenza (tristate)</i> alta impedancia (Three State)	on
nicht hochohmig <i>Low impedance</i> à basse impédance <i>bassa impedenza</i> sin alta impedancia	off

S

1	<input type="checkbox"/>	NO
2	<input type="checkbox"/>	
3	<input type="checkbox"/>	
4	<input type="checkbox"/>	
5	<input type="checkbox"/>	
6	<input type="checkbox"/>	
7	<input type="checkbox"/>	
8	<input type="checkbox"/>	

				max. Eingangs-Frequenz Max. input frequency fréquence d'entrée max. max frequenza ingresso frecuencia máx. de entrada			
	S6	S7	S8	TTL x 20	TTL x 25	TTL x 50	TTL x 100
min. Flankenabstand <i>Min. edge separation</i> écart min. entre les fronts <i>min. distanza tra i fronti</i> distancia mín. entre flancos							
0.100 μ s	off	off	on	60 kHz	60 kHz	40 kHz	20 kHz
0.220 μ s	off	on	off	50 kHz	40 kHz	20 kHz	10 kHz
0.345 μ s	off	on	on	33 kHz	26 kHz	13 kHz	6.6 kHz
0.465 μ s	on	off	off	25 kHz	20 kHz	10 kHz	5 kHz
0.585 μ s	on	off	on	20 kHz	16 kHz	8 kHz	4 kHz
0.950 μ s	on	on	off	12.5 kHz	10 kHz	5 kHz	2.5 kHz
1.925 μ s	on	on	on	6.25 kHz	5 kHz	2.5 kHz	1.25 kHz

EXE 102 Id.-Nr. 536 421-41
Id.-Nr. 536 421-51



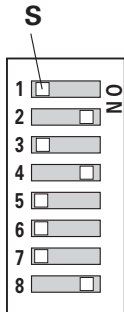
Funktionseinstellung
Function selection
Réglage de la fonction
Selezione funzioni
Selección de funciones

S1 = reserviert
(immer auf off)
Reserved
(always set to off)
Réservé
(toujours sur off)
Riservato
(sempre su off)
Reservado
(siempre en off)

Interpolation <i>Interpolation</i> Interpolation <i>Interpolazione</i> Interpolación	S3	S4
TTL x 20	off	off
TTL x 25	off	on
TTL x 50	on	off
TTL x 100	on	on

Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

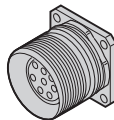
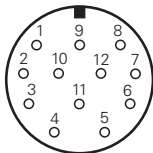
$U_{a1}, \overline{U_{a1}}, U_{a2}, \overline{U_{a2}}, \triangleright \overline{U_{aS}} = \text{low}$	S5
hochohmig (Three State) <i>High impedance (three-state)</i> à haute impédance (tristate) <i>alta impedenza (tristate)</i> alta impedancia (Three State)	on
nicht hochohmig <i>Low impedance</i> à basse impédance <i>bassa impedenza</i> sin alta impedancia	off



				max. Eingangs-Frequenz <i>Max. input frequency</i> fréquence d'entrée max. <i>max frequenza ingresso</i> frecuencia máx. de entrada			
	S6	S7	S8	TTL x 20	TTL x 25	TTL x 50	TTL x 100
min. Flankenabstand <i>Min. edge separation</i> écart min. entre les fronts <i>min. distancia tra i fronti</i> distancia mín. entre flancos							
0.080 μ s	off	off	on	60 kHz	60 kHz	50 kHz	25 kHz
0.175 μ s	off	on	off	50 kHz	50 kHz	25 kHz	12.5 kHz
0.275 μ s	off	on	on	41.67 kHz	33.33 kHz	16.67 kHz	8.33 kHz
0.370 μ s	on	off	off	31.25 kHz	25 kHz	12.5 kHz	6.25 kHz
0.465 μ s	on	off	on	25 kHz	20 kHz	10 kHz	5 kHz
0.760 μ s	on	on	off	15.63 kHz	12.5 kHz	6.25 kHz	3.13 kHz
1.540 μ s	on	on	on	7.81 kHz	6.25 kHz	3.13 kHz	1.56 kHz

IBV 101/IBV 102

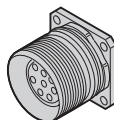
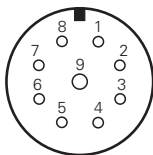
Eingangssignale 1 V_{SS}
Input signals 1 V_{PP}
 Signaux d'entrée 1 V_{CC}
Segnali in ingresso 1 V_{PP}
 Señales de entrada 1 V_{PP}



12	2	10	11	5	6	8	1	3	4	7	9	
5V U_P	5V sensor	0V U_N	0V sensor	A+	A-	B+	B-	R+	R-	/	/	/
br/gn <i>BN/GN</i>	bl <i>BL</i>	ws/gn <i>WH/GN</i>	ws <i>WH</i>	br <i>BN</i>	gn <i>GN</i>	gr <i>GY</i>	rs <i>PK</i>	rt <i>RD</i>	sw <i>WH</i>	vio <i>VI</i>		ge <i>YL</i>

EXE 101/EXE 102

Eingangssignale 11 µA_{SS}
Input signals 11 µA_{PP}
 Signaux d'entrée 11 µA_{CC}
Segnali in ingresso 11 µA_{PP}
 Señales de entrada 11 µA_{PP}



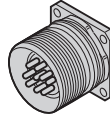
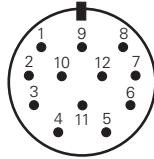
1) Außenschirm auf Gehäuse
External shield on housing
 Blindage externe sur boîtier
Schermo esterno sulla carcassa
 Blindaje externo a carcasa

2) Innenschirm
Internal shield
 Blindage interne
Schermo interno
 Blindaje interno

3	4		9	1	2	5	6	7	8
5V U_P	0V U_N	1)	2)	I₁₊	I₁₋	I₂₊	I₂₋	I₀₊	I₀₋
br <i>BN</i>	ws <i>WH</i>	/	ws/br <i>WH/BN</i>	gn <i>GN</i>	ge <i>YL</i>	bl <i>BL</i>	rt <i>RD</i>	gr <i>GY</i>	rs <i>PK</i>

IBV 10x/EXE 10x

Ausgangssignale TTL
Output signals TTL
 Signaux de sortie TTL
Segnali in uscita TTL
 Señales de salida TTL



12	2	10	11	5	6	8	1	3	4	7	9
5V U_P ●	5V sensor ●	0V U_N ●	0V sensor ●	U_{a1}	$\overline{U_{a1}}$	U_{a2}	$\overline{U_{a2}}$	U_{a0}	$\overline{U_{a0}}$	$\overline{U_{aS}}$	1)
br/gn BN/GN	bl BL	ws/gn WH/GN	ws WH	br BN	gn GN	gr GY	rs PK	rt RD	sw WH	vio VI	ge YL

1) Im Normalbetrieb mit 0 V der Folgeelektronik verbinden.

Bei Anlegen von 5 V Umschaltung TTL/11 μ Ass.

In normal operation, connect with the 0 V line of the subsequent electronics.

Apply 5 V and switch to TTL/11 μ App.

En fonctionnement normal, relier au 0 V de l'électronique consécutive.

Avec application de 5 V commutation TTL/11 μ ACC.

In funzionamento normale collegare con 0 V alla elettronica successiva.

Per applicare 5 V commutazione TTL/11 μ Ass.

En funcionamiento normal conectar con 0 V de la electrónica subsiguiente.

Al aplicar 5 V conmutación TTL/11 μ App.

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