



HEIDENHAIN

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

IBV/EXE 101
IBV/EXE 102

7/2013



Achtung: Die Montage und Inbetriebnahme ist von einer qualifizierten Fachkraft unter Beachtung der örtlichen Sicherheitsvorschriften vorzunehmen.

Die Steckverbindung darf nur spannungsfrei verbunden oder gelöst werden.

Note: *Mounting and commissioning is to be conducted by a qualified specialist under compliance with local safety regulations.*

Do not engage or disengage any connections while under power.

Attention: Le montage et la mise en service doivent être assurés par un personnel qualifié dans le respect des consignes de sécurité locales.

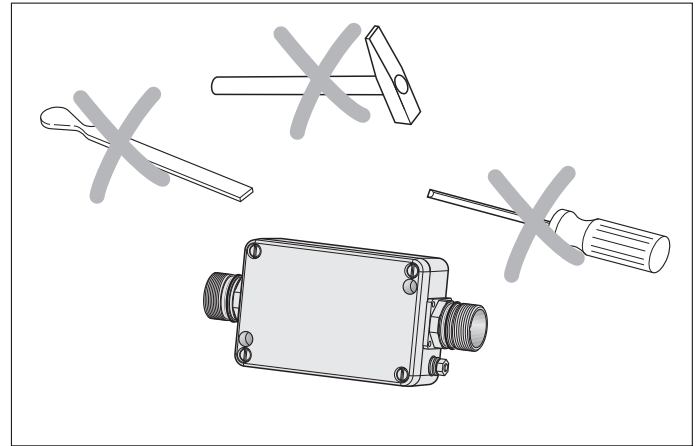
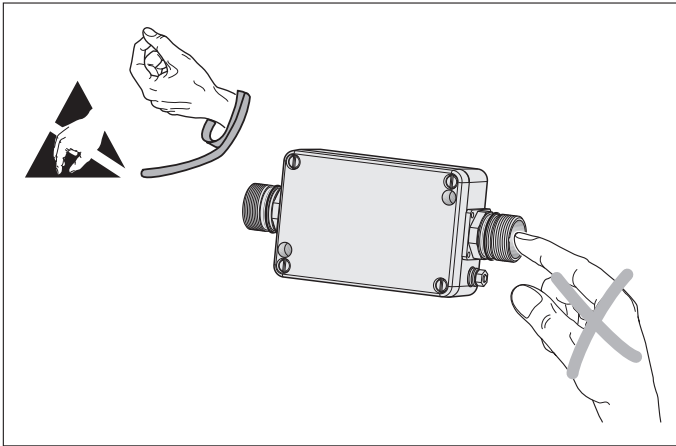
Le connecteur ne doit être connecté ou déconnecté qu'hors potentiel.


Attenzione: *Il montaggio e la messa in funzione devono essere eseguite da personale qualificato nel rispetto delle norme di sicurezza locali.*

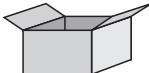
I cavi posso essere collegati o scollegati solo in assenza di tensione.

Atención: El montaje y la puesta en marcha deben ser realizados por un especialista cualificado, observando las prescripciones locales de seguridad.

Conectar o desconectar el conector sólo en ausencia de tensión.



 °C
(°F)

 -30 ... 80 °C
(-22 ... 176 °F)

Lagertemperatur
Storage temperature
Température de stockage
Temperatura di immagazzinaggio
Temperatura en almacén

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

Abmessungen · Dimensions · Dimensions · Dimensioni · Dimensiones

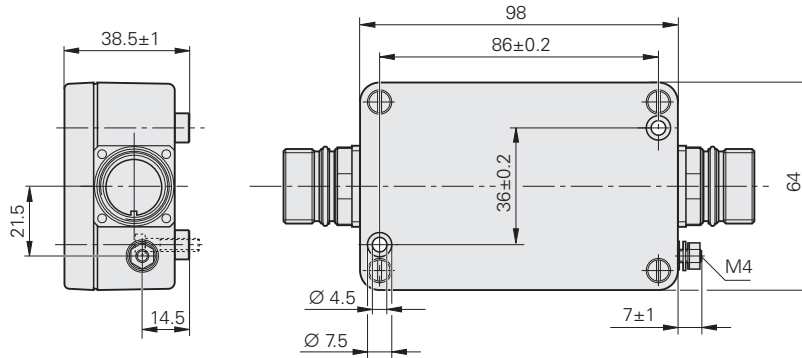
mm



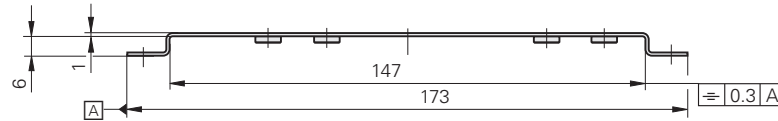
Tolerancing ISO 8015

ISO 2768 - m H

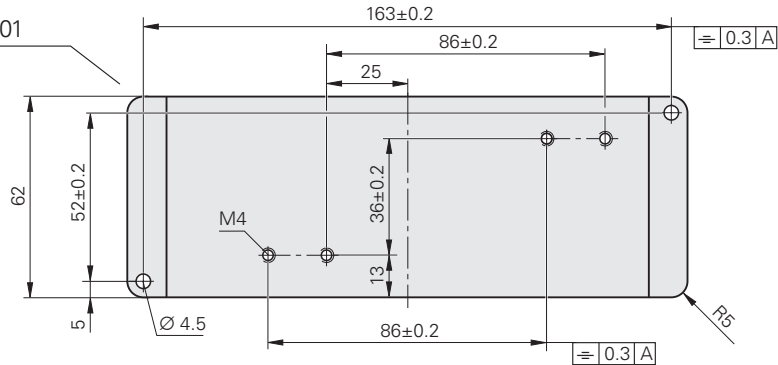
< 6 mm: ±0.2 mm



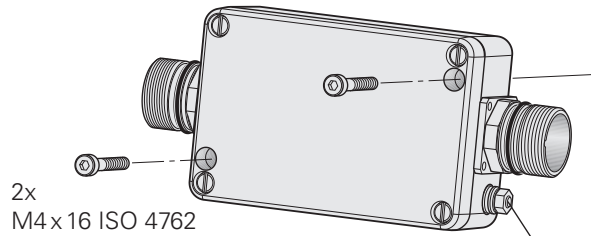
Zubehör: Befestigungssatz
 Accessory: Mounting set
 Accessoire: kit de fixation
 Accessori, minuteria di fissaggio
 Accesorios: Juego de fijaciones



ID 536 452-01

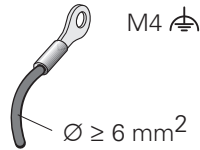


Anbau · *Mounting* · Montage · *Montaggio* · Instalación



2x
M4x16 ISO 4762

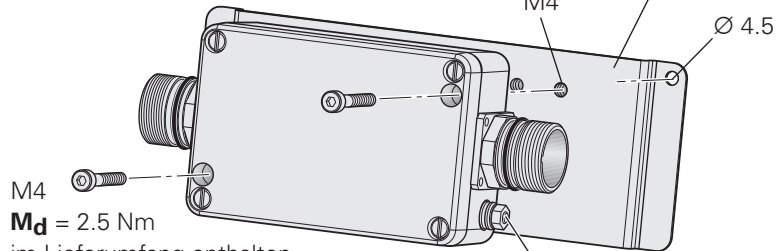
M_d = 2.5 Nm



M4

Ø ≥ 6 mm²

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



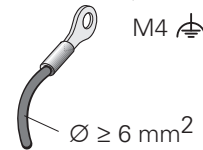
M4

M_d = 2.5 Nm

im Lieferumfang enthalten
Included in delivery
Contenu dans la fourniture
Nello standard di fornitura
Incluido en el suministro

M4

Ø 4.5



M4

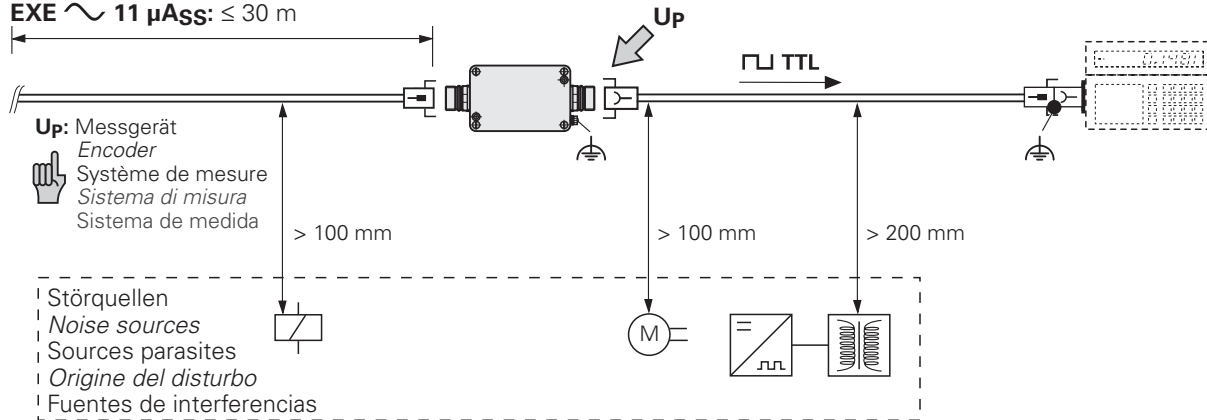
Ø ≥ 6 mm²

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

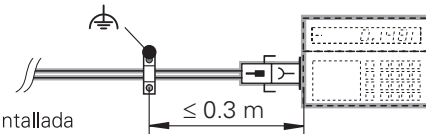
Up: DC 5 V ± 0.25 V
 IBV 101: (max. 120 mA)
 IBV 102: (max. 130 mA)
 EXE 101: (max. 120 mA)
 EXE 102: (max. 140 mA)

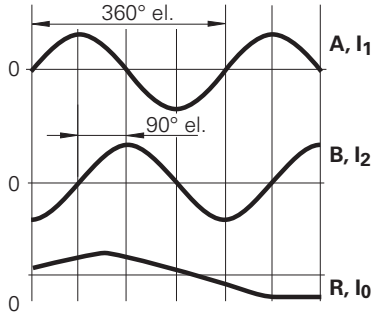
IBV \sim **1 V_{SS}**: ≤ 30 m (≤ 60 m; $U_p > 4.9$ V)

EXE \sim **11 μ Ass**: ≤ 30 m



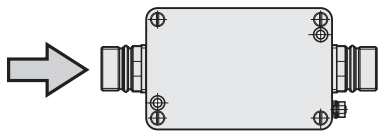
⚡ Ersatzweise mit Schirmschelle
Shield clamp as substitute
 Collier de blindage en alternative
 Schermatura alternativa con clip
 Modo de sustitución con abrazadera apantallada





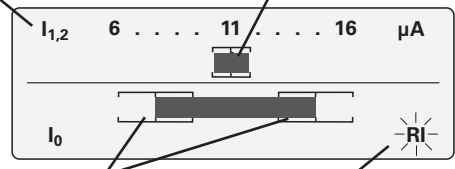
IBV
A: 0.6 ... 1.2 V_{SS}
B: 0.6 ... 1.2 V_{SS}
R: 0.2 ... 0.85 V

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



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

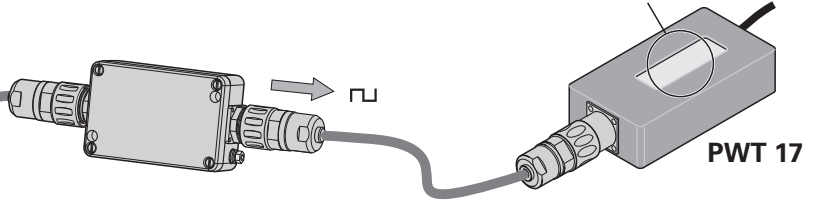
Signalqualität
Signal quality
 Qualité du signal
Qualità del segnale
 Calidad de la señal



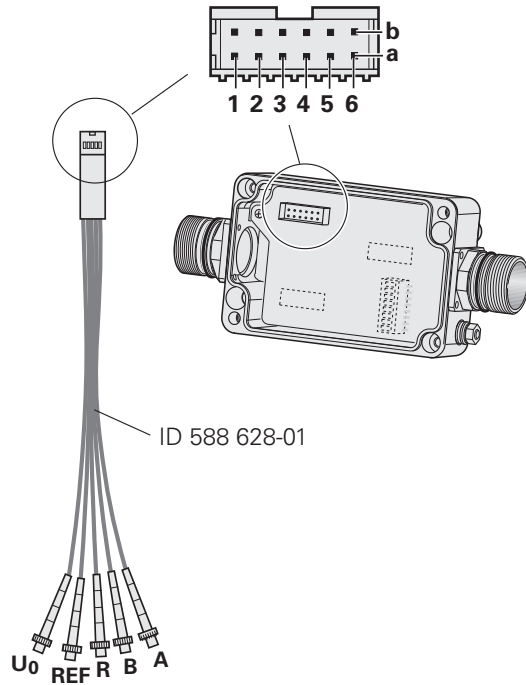
Toleranz des Nulldurchganges der Referenzmarke
Tolerance of zero crossover of the reference mark
 Tolérance de passage à zéro de la marque de référence
Tolleranza di posizione dell'indice di riferimento
 Tolerancia de paso por cero de la marca de referencia

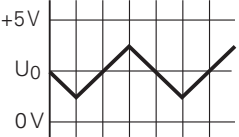
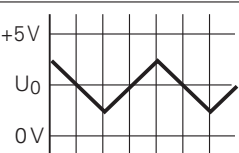
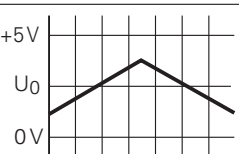
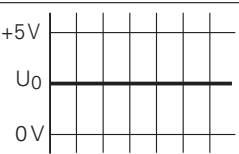
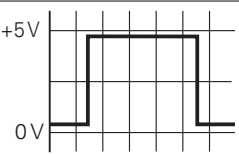
Messung der Referenzmarke
Reference mark measurement
 Mesure de la marque de référence
Rilevazione dell'indice
 Medición de la marca de referencia

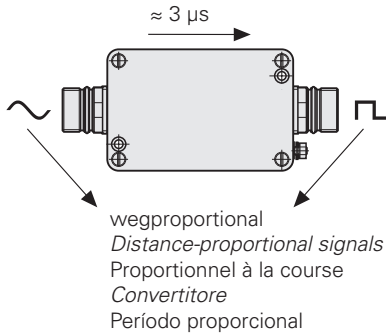
Messgerät
Encoder
 Système de mesure
Encoder
 Sistema de medición



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

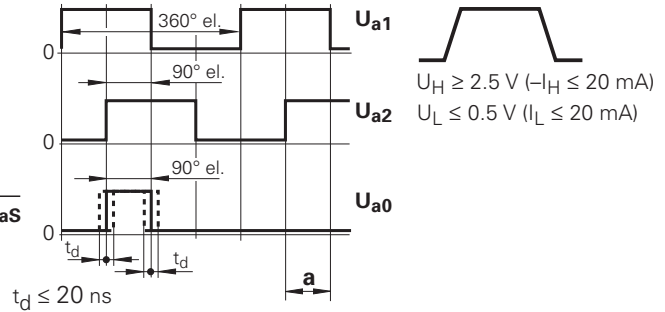


4a	 <p>A (0° el.)</p>	<p>IBV/EXE 10x: 1.6 V_{SS} ... 4 V_{SS} IBV/EXE 10x: 1.6 V_{PP} ... 4 V_{PP} IBV/EXE 10x: 1.6 V_{CC} ... 4 V_{CC}</p>
5a	 <p>B (90° el.)</p>	<p>IBV/EXE 10x: 1.6 V_{SS} ... 4 V_{SS} IBV/EXE 10x: 1.6 V_{PP} ... 4 V_{PP} IBV/EXE 10x: 1.6 V_{CC} ... 4 V_{CC}</p>
6a	 <p>R (REF) Nutzanteil <i>usable component</i> Partie utile <i>Componente utilizzabile</i> Parte utilizzabile</p>	<p>IBV/EXE 10x: 0.5 V_{SS} ... 2.8 V_{SS} IBV/EXE 10x: 0.5 V_{PP} ... 2.8 V_{PP} IBV/EXE 10x: 0.5 V_{CC} ... 2.8 V_{CC}</p>
2b	 <p>U₀</p>	<p>IBV/EXE 10x: $\approx 2.5 \text{ V} \left(\frac{U_P}{2}\right)$</p>
3a	 <p>REF</p>	<p>Referenzimpuls getriggert <i>Reference pulse triggered</i> Impulsion de référence déclenchée <i>Impulso di riferimento triggerato</i> Impulso de referencia disparado</p>
3b	<p>0 V</p>	



TTL

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



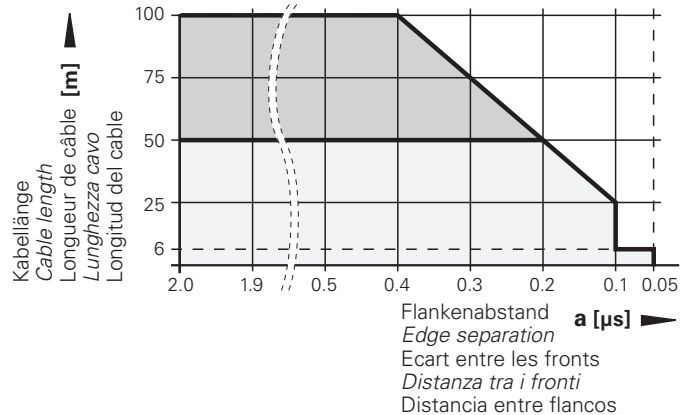
$\overline{U_{aS}}$: Störungssignal
Fault detection signal
Signal de perturbation
Segnale di malfunzionamento
Señal de avería

$\overline{U_{aS}}$ = High: ✓

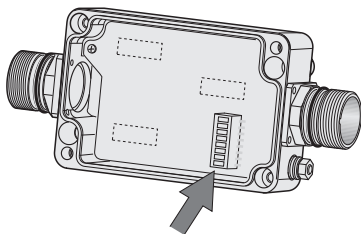
$\overline{U_{aS}}$ = Low: ⚠

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

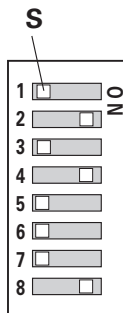
mit $\overline{U_{aS}}$
With $\overline{U_{aS}}$
avec $\overline{U_{aS}}$
con $\overline{U_{aS}}$
con $\overline{U_{aS}}$



IBV 101



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

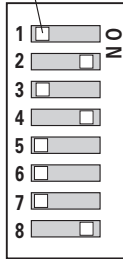


S1 = reserviert
 (immer auf off)
Reserved
 (always set to off)
 Réservé
 (toujours sur off)
Riservato
 (sempre su off)
 Reservado
 (siempre en off)

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

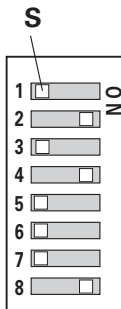
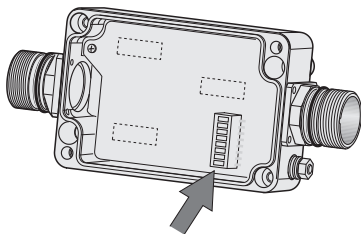
Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

$\overline{U_{a1}}, \overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a2}}, \blacktriangleright \overline{U_{aS}} = \text{low}$	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

S

				max. Eingangs-Frequenz, Toleranz $\pm 5\%$ <i>Max. input frequency, tolerance $\pm 5\%$</i> fréquence d'entrée max., tolérance $\pm 5\%$ <i>max frequenza ingresso, Tolleranza $\pm 5\%$</i> frecuencia máx. de entrada, tolerancia $\pm 5\%$	
	S6	S7	S8	TTL x 5	TTL x 10
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 μs	off	off	on	200 kHz	200 kHz
0.220 μs	off	on	off	200 kHz	100 kHz
0.345 μs	off	on	on	133 kHz	66 kHz
0.465 μs	on	off	off	100 kHz	50 kHz
0.585 μs	on	off	on	80 kHz	40 kHz
0.950 μs	on	on	off	50 kHz	25 kHz
1.925 μs	on	on	on	25 kHz	12.5 kHz

IBV 102



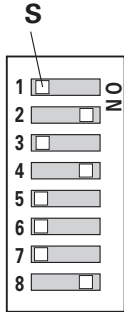
Funktionseinstellung
Function selection
 Réglage de la fonction
Selezione funzioni
 Selección de funciones

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 20	off	off
TTL x 25	off	on
TTL x 50	on	off
TTL x 100	on	on

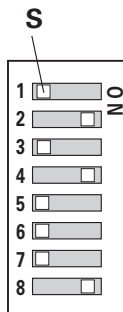
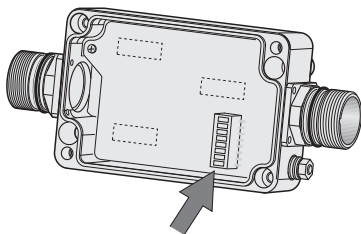
Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

$U_{a1}, \overline{U_{a1}}, U_{a2}, \overline{U_{a2}}, \triangleright \overline{U_{aS}} = \text{low}$	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, Toleranz $\pm 5\%$ Max. input frequency, tolerance $\pm 5\%$ fréquence d'entrée max., tolérance $\pm 5\%$ max frequenza ingresso, Tolleranza $\pm 5\%$ frecuencia máx. de entrada, tolerancia $\pm 5\%$			
	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 μs	off	off	on	100 kHz	80 kHz	40 kHz	20 kHz
0.220 μs	off	on	off	50 kHz	40 kHz	20 kHz	10 kHz
0.345 μs	off	on	on	33 kHz	26 kHz	13 kHz	6.6 kHz
0.465 μs	on	off	off	25 kHz	20 kHz	10 kHz	5 kHz
0.585 μs	on	off	on	20 kHz	16 kHz	8 kHz	4 kHz
0.950 μs	on	on	off	12.5 kHz	10 kHz	5 kHz	2.5 kHz
1.925 μs	on	on	on	6.25 kHz	5 kHz	2.5 kHz	1.25 kHz

EXE 101



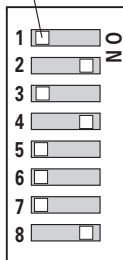
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 Reservado
 (siempre en off)

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

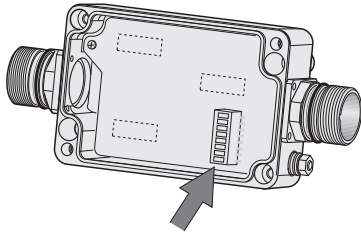
Referenzimpuls-Breite <i>Reference pulse width</i> Largeur impulsion de référence <i>Ampiezza impulso di riferimento</i> Ancho del impulso de referencia	S2
270°	on
90°	off

$\overline{U_{a1}}, \overline{U_{a1}}, \overline{U_{a2}}, \overline{U_{a2}}, \blacktriangleright \overline{U_{aS}} = \text{low}$	S5
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nicht hochohmig <i>Low impedance</i> à basse impédance <i>bassa impedenza</i> sin alta impedancia	off

S

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, Toleranz $\pm 5\%$ <i>Max. input frequency, tolerance $\pm 5\%$</i> fréquence d'entrée max., tolérance $\pm 5\%$ <i>max frequenza ingresso, Tolleranza $\pm 5\%$</i> frecuencia máx. de entrada, tolerancia $\pm 5\%$	
				TTL x 5	TTL x 10
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EXE 102



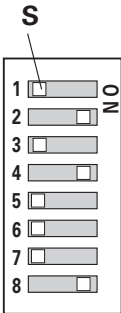
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Interpolation <i>Interpolation</i> Interpolation <i>Interpolazione</i> Interpolación	S3	S4
TTL x 20	off	off
TTL x 25	off	on
TTL x 50	on	off
TTL x 100	on	on

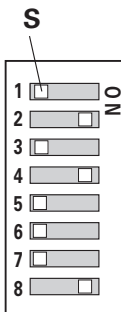
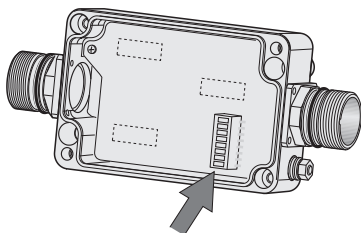
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270°	on
90°	off

$U_{a1}, \overline{U_{a1}}, U_{a2}, \overline{U_{a2}}, \triangleright \overline{U_{aS}} = \text{low}$	S5
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	S6	S7	S8	TTL x 20	TTL x 25	TTL x 50	TTL x 100
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0.585 μs	on	off	on	20 kHz	16 kHz	8 kHz	4 kHz
0.950 μs	on	on	off	12.5 kHz	10 kHz	5 kHz	2.5 kHz
1.925 μs	on	on	on	6.25 kHz	5 kHz	2.5 kHz	1.25 kHz

EXE 102 ID 536 421-41
ID 536 421-51



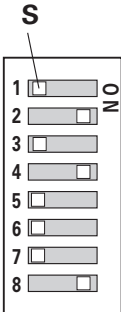
Funktionseinstellung
Function selection
 Réglage de la fonction
Selezione funzioni
 Selección de funciones

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, Toleranz $\pm 5\%$ <i>Max. input frequency, tolerance $\pm 5\%$</i> <i>fréquence d'entrée max., tolérance $\pm 5\%$</i> <i>max frequenza ingresso, Tolleranza $\pm 5\%$</i> <i>frecuencia máx. de entrada, tolerancia $\pm 5\%$</i>			
	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 μs	off	off	on	60 kHz	60 kHz	50 kHz	25 kHz
0.175 μs	off	on	off	50 kHz	50 kHz	25 kHz	12.5 kHz
0.275 μs	off	on	on	41.67 kHz	33.33 kHz	16.67 kHz	8.33 kHz
0.370 μs	on	off	off	31.25 kHz	25 kHz	12.5 kHz	6.25 kHz
0.465 μs	on	off	on	25 kHz	20 kHz	10 kHz	5 kHz
0.760 μs	on	on	off	15.63 kHz	12.5 kHz	6.25 kHz	3.13 kHz
1.540 μs	on	on	on	7.81 kHz	6.25 kHz	3.13 kHz	1.56 kHz

IBV 101/IBV 102

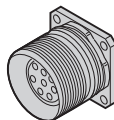
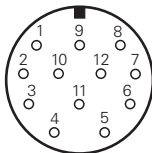
Eingangssignale 1 V_{SS}

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-	/	/	/
BNGN	BU	WHGN	WH	BN	GN	GY	PK	RD	BK	VT		YE

EXE 101/EXE 102

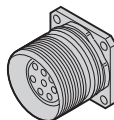
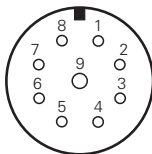
Eingangssignale 11 µA_{SS}

Input signals 11 µA_{PP}

Signaux d'entrée 11 µA_{CC}

Segnali in ingresso 11 µA_{PP}

Señales de entrada 11µA_{PP}



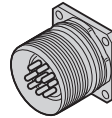
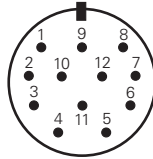
1) Außenschirm auf Gehäuse
External shield on housing
Blindage externe sur boîtier
Schermo esterno sulla carcassa
Blindaje externo a carcasa

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₋
BN	WH	/	WHBN	GN	YE	BU	RD	GY	PK

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)
BNGN	BU	WHGN	WH	BN	GN	GY	PK	RD	BK	VT	YE

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.



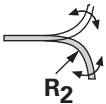
In funzionamento normale collegare con 0 V alla elettronica successiva.

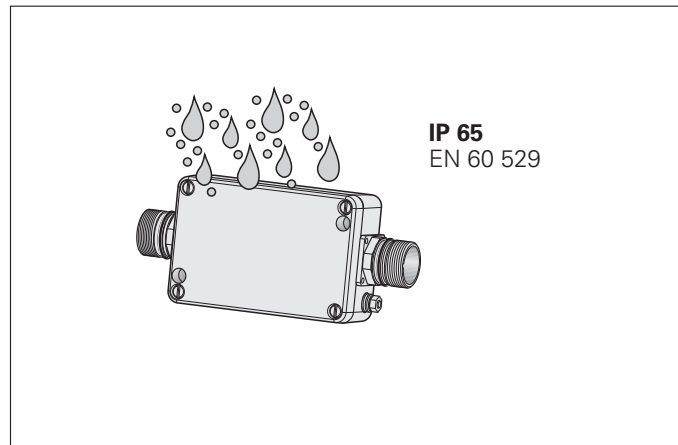
Per applicare 5 V commutazione TTL/11 μ ASS.

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

Al aplicar 5 V conmutación TTL/11 μ App.

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	$R_1 \geq 40 \text{ mm}$	$R_2 \geq 100 \text{ mm}$



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