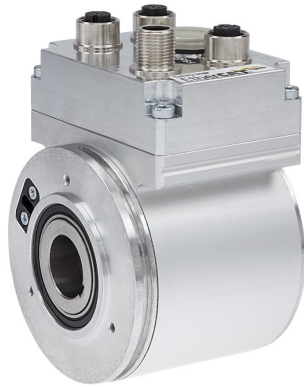


# Absolute-Encoder CDH75M - ETC + FS

[Click Here](#) to go back to Stock Options



Ref.: K-CDH75-ETC-1

30.04.2020

010102007505

## Advantages

- Functional safety
- Position feedback signals
- Redundant scanning system
- SIL3, PLe

## General Data

Nominal voltage	
- Specific value	24 VDC
- Limit values, min/max	13/27 VDC
Nominal current, typically	
- Specific value	165 mA
- Condition	unloaded
Supply	
- SELV/PELV	IEC 60364-4-41
- In case of UL / CSA approval	according to NEC Class 2
Device design	
- Type	Multi-Turn
- Redundant scanning system	yes, double
- Design	optical/magnetic
Total resolution	<= 28 Bit
Number of steps per revolution	<= 8192
Number of revolutions	<= 32768
Accuracy (safety)	8 Bit, Single-Turn
EtherCAT - Interface	
- EtherCAT	IEC 61158-1-6, IEC 61784-2
- Physical Layer	Fast Ethernet, ISO/IEC 8802-3
- Device profile	CoE, CiA DS-406
- Safety over EtherCAT, FSoE	IEC 61784-3

Subject to change.

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 78647 Trossingen  
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# Absolute-Encoder CDH75M - ETC + FS

Ref.: K-CDH75-ETC-1

30.04.2020

010102007505

## General Data continuation

Incremental - Interface	Standard interface
- Equipment	
- Signal form	Square wave
- Signal form, alternative	SIN / COS
- Incremental signals, square	K1± K2±
- Incremental signals, SIN/COS	SIN± COS±, 1 V <sub>ss</sub>
- Impulses, square wave	1024...5120, in steps of 1024
- Impulses, square wave	4096...20480, in steps of 4096
- Impulses, SIN/COS	4096 □
- Output driver, TTL	RS-422, 5 VDC
- Output driver, HTL	Push-Pull, Supply Voltage
- Type of parametrization	Factory setting
Transmission rate	
- Specific value	100 MBit/s
Cycle time	
- Not safety related	0.5 ms
- Safety related	5 ms
Parameter/Function, changeable	Integration time
	Preset parameter
	Monitoring window
	Counting direction
	Velocity parameter
Type of parametrization	programmable
Programming - Tool	Fieldbus-Device
Functional safety	
- Safety principle	Redundance with cross compare
- SIL-Standardization	DIN EN 61508 / DIN EN 62061
- SIL-Level	SIL3 / SIL CL 3
- PL-Standardization	DIN EN ISO 13849
- Performance-Level (PL)	PLe / Cat. 4
- Service life	20 Years
- PFH	3.25E-10 1/h
- PFD <sub>av</sub> , T = 20 a	2.81E-5
- MTTF <sub>d</sub>	197 a
- DC <sub>avg</sub>	98 %
Maximum Speed, mechanically	<= 3000 1/min
Shaft load, axial/radial	Own mass
Bearing life time	>= 3.9E+10 revolutions

Subject to change.

# Absolute-Encoder CDH75M - ETC + FS

Ref.: K-CDH75-ETC-1

30.04.2020

010102007505

## General Data continuation

Bearing life time - Parameter	
- Speed	1000 1/min
- Operating temperature	50 °C
Shaft type	
- Shaft diameter [mm]	12
- Shaft diameter [mm]	14
- Shaft diameter [mm]	20
Angular acceleration	$\leq 10E+4 \text{ rad/s}^2$
Start-up torque, 20 °C	6 Ncm
Mass, typically	1 kg

## Environmental conditions

Vibration	
- Specific value	$\leq 100 \text{ m/s}^2$
- Sine	50...2000 Hz
Shock	
- Specific value	$\leq 600 \text{ m/s}^2$
- Half sine	5 ms
Immunity to disturbance	DIN EN 61000-6-2
Transient emissions	DIN EN 61000-6-3
Working temperature	
- Standard	$T_u = f(n) = -25 \dots +65 \text{ °C}$
Tu for n > 100 1/min, IP54	$T_u = f(n) = 65 \text{ °C} - (0.005 * n)$
Tu for n > 100 1/min, IP65	$T_u = f(n) = 60 \text{ °C} - (0.01 * n)$
Storage temperature, dry	-30...+80 °C
Relative humidity	98 %, non condensing
Protection class	
- Standard	IP54
- Optional	extended to IP65

Subject to change.

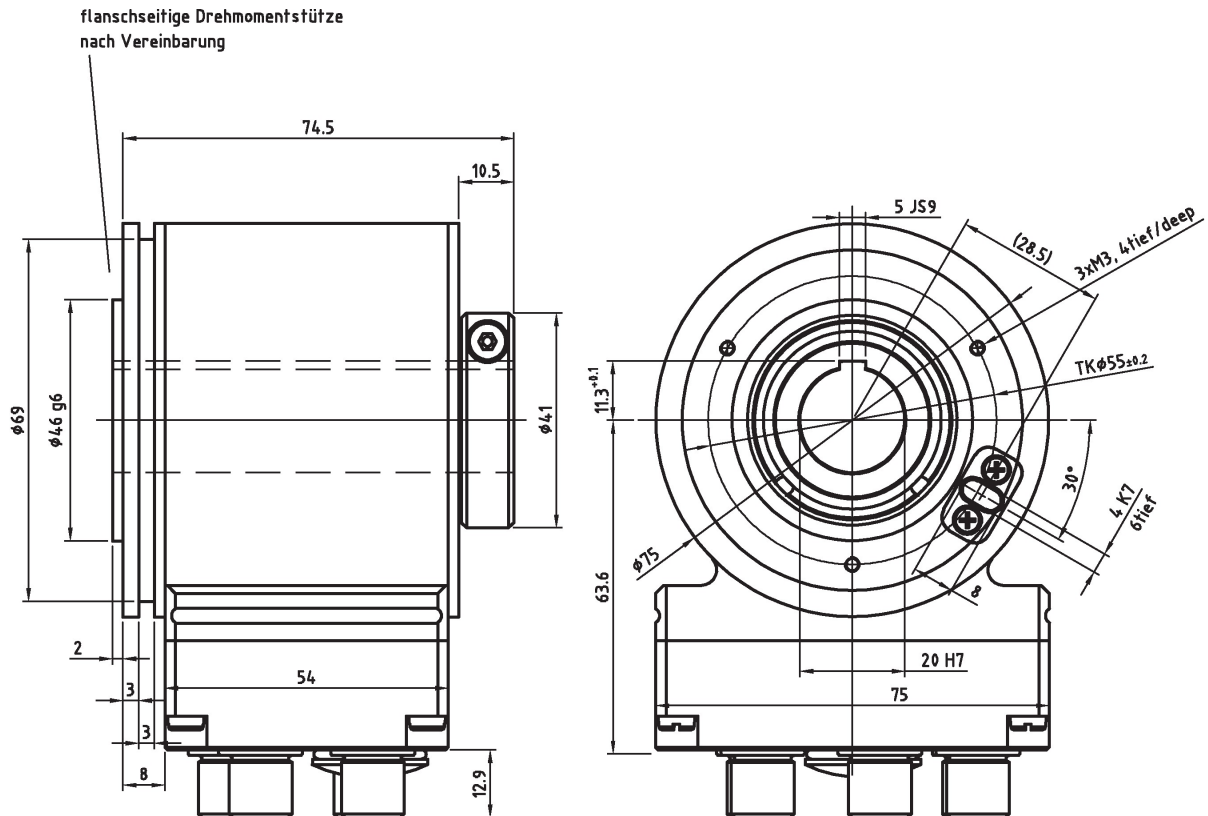
# Absolute-Encoder CDH75M - ETC + FS

Ref.: K-CDH75-ETC-1

30.04.2020

010102007505

## Dimensional drawing



Subject to change.

## Absolute-Encoder CDH75M - ETC + FS

Ref.: K-CDH75-ETC-1

30.04.2020

010102007505

### Quick Delivery Stock Options (Click Article Number for Data Sheet)

Article Number	Mounting Flange	Shaft Bore	Connector Orientation
<u>CDH75M-00043</u>	Pin Groove	20H7/Keyway	Radial
<u>CDV75M-00054</u>	Pin Groove	12H7/Keyway	Radial

Subject to change.

## Absolute rotary Encoder

# CDH75M\*8192/32768 ETC 20H7NT +FS

[Click Here](#) to go back to Stock Options

Order No.: CDH75M-00043

[Click Here](#) for a Quote - [customercare@treletronic.com](mailto:customercare@treletronic.com)

### Technical data

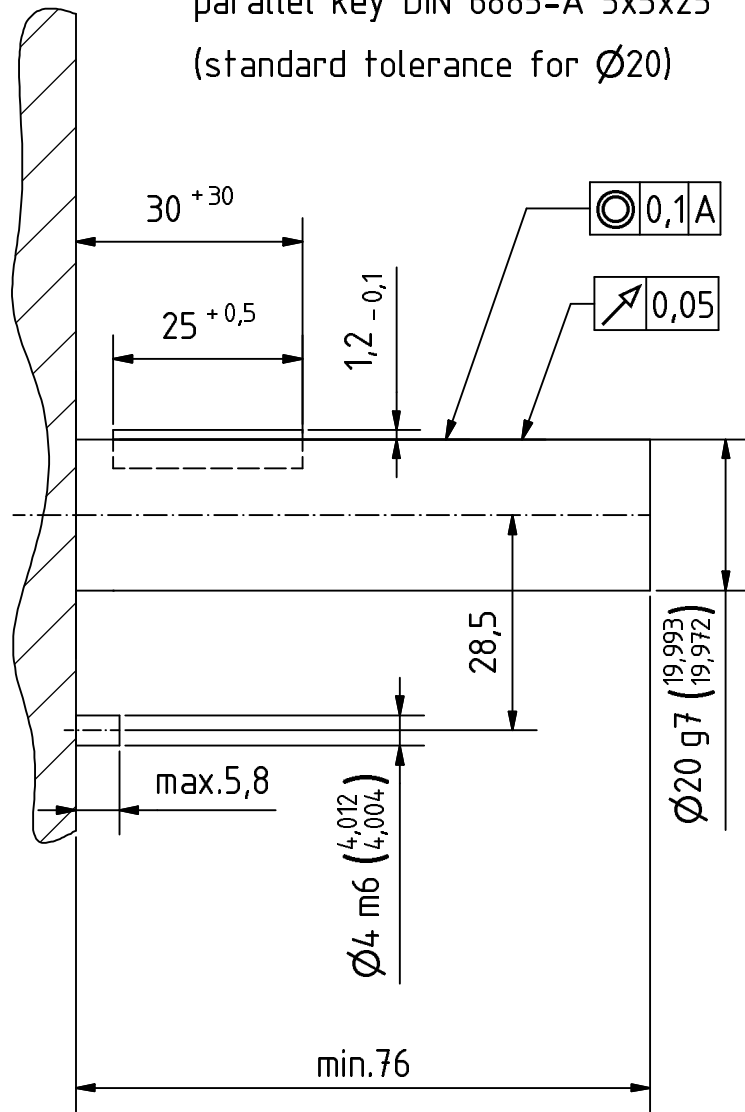
NO.OF STEPS/REV	8.192,000	GL	Wellenausführung glatt / shaft type cylindrical
NO. OF REVOLUTIONS	32.768,000	FL	Wellenausführung mit Fläche / shaft type with flat surface
INTERFACE	ETHERCAT/FSOE	N	Wellenausführung mit Nut / shaft type with slot
STANDARD	EN 61508	Hohlw	Hohlwelle / hollow shaft
STANDARD	EN 62061 / EN ISO 13849	Klemme	mit Klemmring / with clamping ring
SAFETY	CDH75M-ETC01 SIL3/PLe	Grundw	Grundwelle / fundamental shaft
NO. OF INCREMENTS	4096	SLG	Seillängegeber / cable retractor
SIGNALS	K1+K2+NEG	ZB	Zentrierbund / centre ring
SIGNAL LEVEL	5V	Tachofl	Tachoflansch / tachometer flange
SUPPLY VOLTAGE	13V..27V	DAG	DAG-Schutzgehäuse / DAG protective housing
PROTECTION Class	IP54	TK	Teilkreis / pitch circle
TEMPERATURE RANGE	-25C...+65C		
FLANGE TYPE	SLOT FOR PIN D4		
SHAFT TYPE	20H7/KEYWAY HOLLOW SHAFT		
CONNECTOR TYPE	1X4P.M12-CONNECTOR		
CONNECTOR TYPE	1X5P.M12-STECKER(BUCHSE)		
CONNECTOR TYPE	2X4P.M12-CONN., D-COD(FEMALE)		
CONNECTOR-POSITION	RADIAL		
MATING PLUG	NO		
PINOUT NO.	TR-ECE-TI-DGB-0283		
OPTIONS ENC	ETG.1000 S R 1.0.3		
OPTIONS ENC	ETG.5100 S R 1.2.0		
OPTIONS ENC	PRESET 1		
DRAWING NO.	04-CDH75M-M0017		
DOCUMENTATION NO	DOKUMENTE		
AL:	AL:N		
ECCN:	ECCN:N		

Subject to change.

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 info@tr-electronic.de  
[www.tr-electronic.de](http://www.tr-electronic.de)

Anforderung an Kundenwelle  
Requirements for the customer shaft

Passfeder DIN 6885-A 5x5x25  
(Normabweichung für  $\varnothing 20$ )  
parallel key DIN 6885-A 5x5x25  
(standard tolerance for  $\varnothing 20$ )



**A** Geberanbau  
Encoder mounting

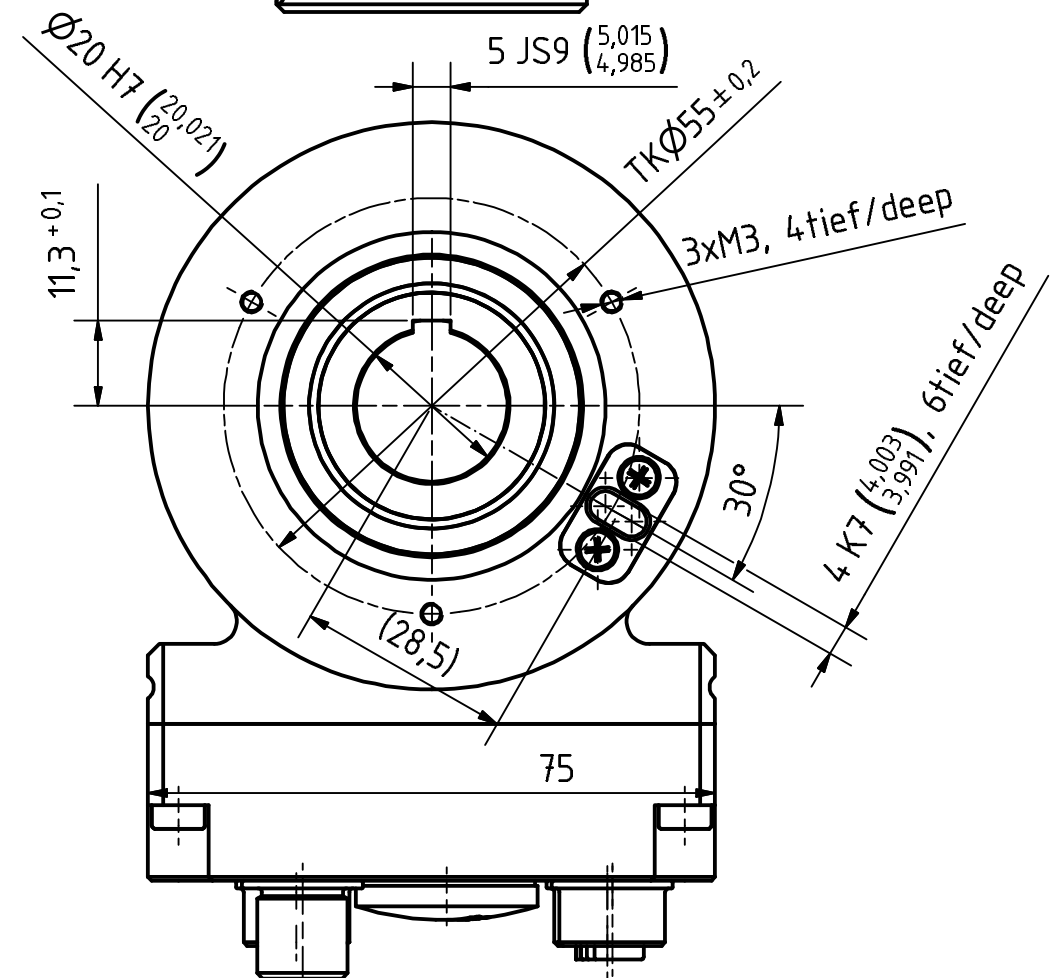
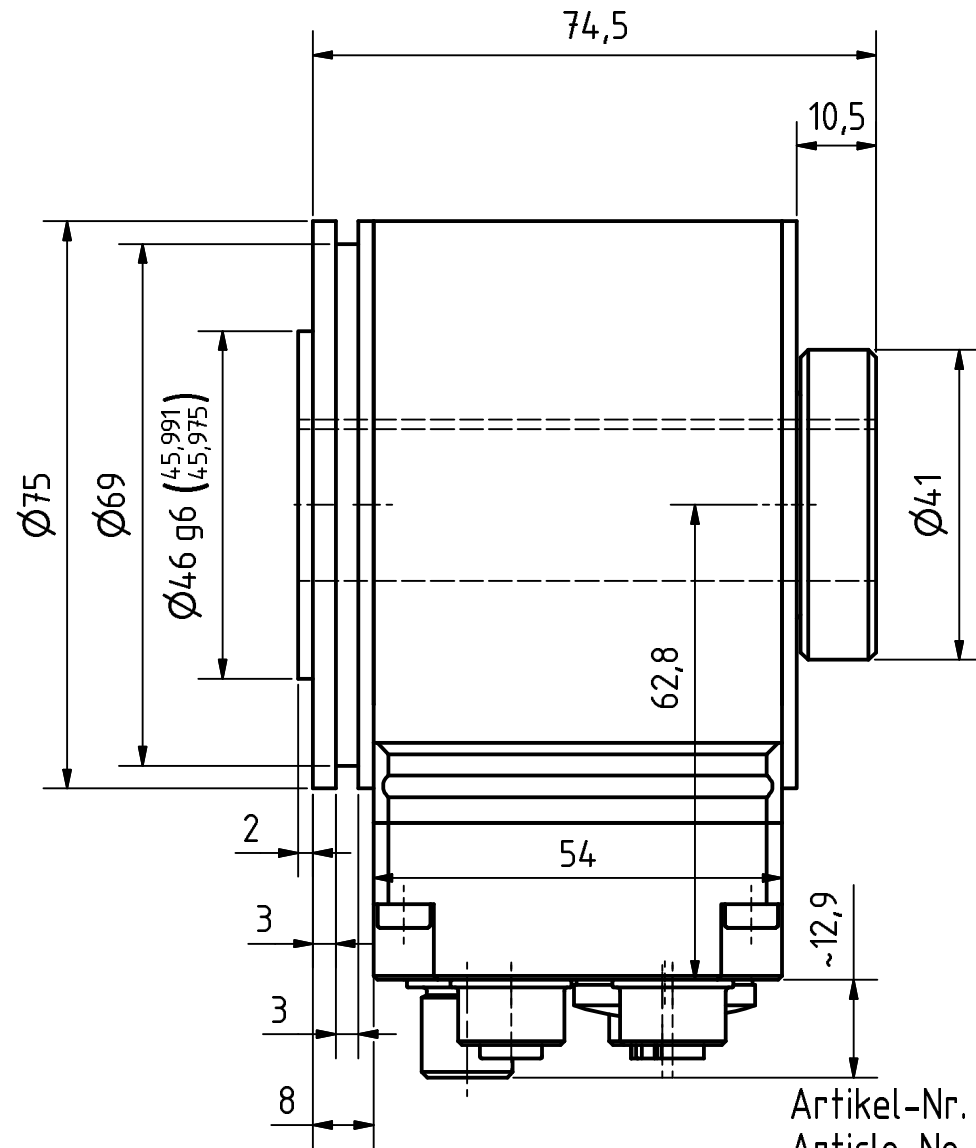
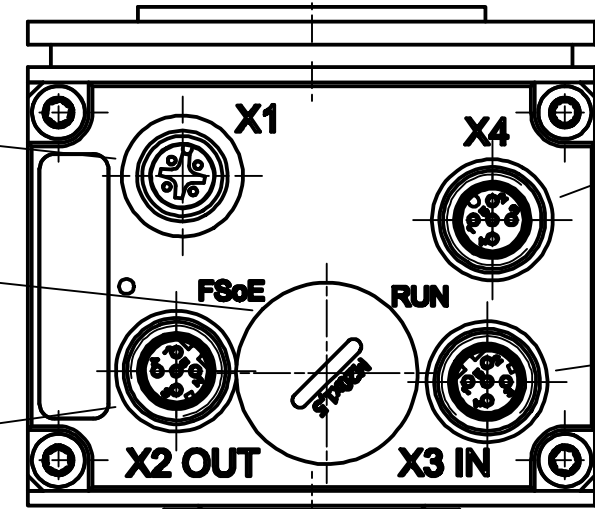
Einbaustecker 4pol. a-codiert  
panel connector 4pin. a-coded

Blindstopfen M20x1,5, transparent  
dummy plug M20x1,5, transparent


Einbaubuchse 4pol. d-codiert  
panel jack 4pin. d-coded

Einbaubuchse  
5pol. a-codiert  
panel jack  
5pin. a-coded

Einbaubuchse  
4pol. d-codiert  
panel jack  
4pin. d-coded

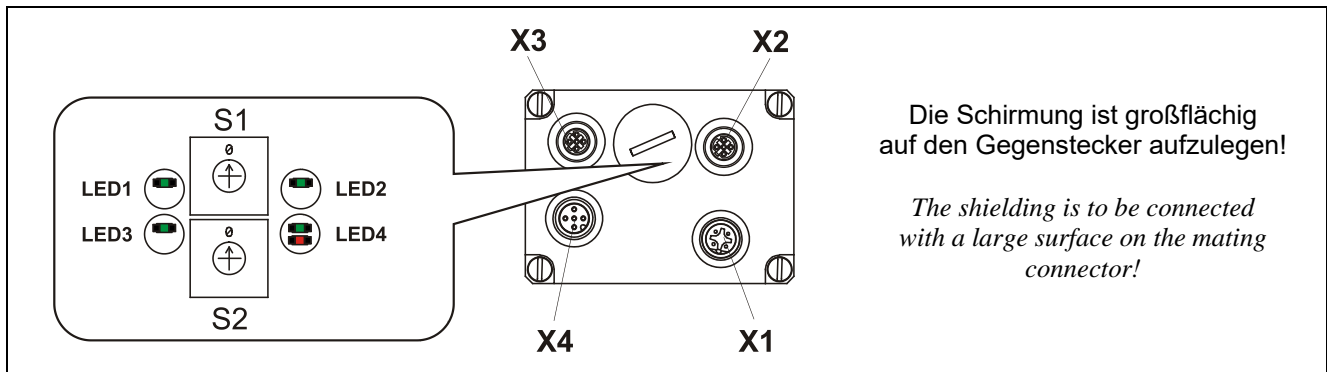


Artikel-Nr. und Steckerbelegung: siehe Datenblatt  
Article-No. and pin connections: see data sheet

 TR-Electronic GmbH Eglisshalde 6 D-78647 Trossingen phone +49 7425 228.0 www.tr-electronic.de	Maßstab 1:1 DIN A3		Projekt-Nr.:	
	Zeichnungs-Nr. nur für diese Ausführung gültig Drawing-No. only for this type valid			
	Datum	Name	CDH-75-M, $\varnothing 20$ H7 Nut	
Erstellt	26.10.2016	FLAIG		
Bearb.	26.10.2016	FLAIG		
Gepr.	27.10.2016	NEMECZ		
	Norm			
	www.tr-electronic.de DXF+Info: info@tr-electronic.de		Zeichnungs-NR./Drawing-No.:	
Zustf.	Änderungen	Datum	Name	Blatt 1 1 BU
				04-CDH75M-M0017

## Steckerbelegung / Pin assignment

### CD\_-75, CDV-115 EtherCAT / FSoE

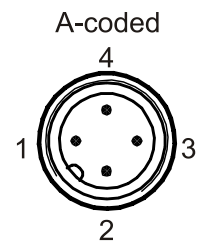


Die Schirmung ist großflächig auf den Gegenstecker aufzulegen!

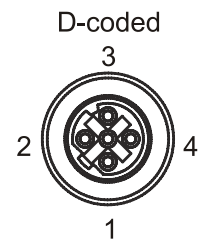
*The shielding is to be connected with a large surface on the mating connector!*

#### Steckseite / Mating Face

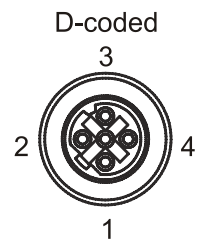
X1	Stift / Male Connector (M12 x 1, 4 pol.)	
1	+24 V DC	Supply Voltage
2	N.C.	
3	0 V, GND	
4	N.C.	



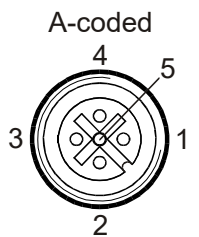
X2	Buchse / Female Connector (M12 x 1, 4 pol.)	
1	TxD+, Transmission Data +	PORT-OUT
2	RxD+, Receive Data +	
3	TxD-, Transmission Data -	
4	RxD-, Receive Data -	



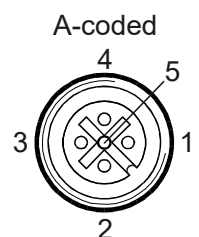
X3	Buchse / Female Connector (M12 x 1, 4 pol.)	
1	TxD+, Transmission Data +	PORT-IN
2	RxD+, Receive Data +	
3	TxD-, Transmission Data -	
4	RxD-, Receive Data -	



X4	Buchse / Female Connector (M12 x 1, 5 pol.)	
1	B +, 5 V differential / 11...27 V DC	INCREMENTAL Pegel siehe Typenschild / Level see name plate
2	B -, 5 V differential / 11...27 V DC	
3	A +, 5 V differential / 11...27 V DC	
4	A -, 5 V differential / 11...27 V DC	
5	0 V, GND	



X4'	Buchse / Female Connector (M12 x 1, 5 pol.)	
1	SIN +, 1 Vss	Alternative SINUS/COSINE, differential
2	SIN -, 1 Vss	
3	COS +, 1 Vss	
4	COS -, 1 Vss	
5	0 V, GND	



Betriebsanleitung beachten! - Observe User Manual!



Änderungen vorbehalten / Subject to change



## Steckerbelegung / Pin assignment

### FSoE-Address

<p>Über die Hex-Adress-Schalter S1 und S2 in der Anschlusshaube wird die Safety-Adresse eingestellt:</p> <p>S1 = 16<sup>0</sup>, S2 = 16<sup>1</sup>. Gültige Adressen = 1...255 (1...0xFF).</p>	<p><i>By means of the hex address switches S1 and S2 in the connection hood the safety-address is adjusted:</i></p> <p><i>S1 = 16<sup>0</sup>, S2 = 16<sup>1</sup>. Valid addresses = 1...255 (1...0xFF).</i></p>
--	---

### Link / Data Activity PORT-IN, LED1 + PORT-OUT, LED2

	grün	green
OFF	keine Ethernet Verbindung	<i>No Ethernet connection</i>
ON	Ethernet Verbindung hergestellt	<i>Ethernet connection established</i>
Flickering	Datenübertragung TxD/RxD	<i>Data transfer TxD/RxD</i>

### RUN, LED3

	grün	green
OFF	Gerät ist im <i>INIT</i> Zustand	<i>Device is in INIT state</i>
Single flash	Gerät ist im <i>PRE-OPERATIONAL</i> Zustand	<i>Device is in PRE-OPERATIONAL state</i>
Double flash	Gerät ist im <i>SAFE-OPERATIONAL</i> Zustand	<i>Device is in SAFE-OPERATIONAL state</i>
ON	Gerät ist im <i>OPERATIONAL</i> Zustand	<i>Device is in OPERATIONAL state</i>

### Safety State, LED4

	grün	green
OFF	Initialisierung, Gerät aus	<i>Initialization, device off</i>
Single flash	INIT-State, Hochlauf	<i>INIT-State, start-up</i>
Double flash	Data State – Ausgabe von Safe-Daten	<i>Data State - output of safe data</i>
ON	Data State – Ausgabe von Prozessdaten	<i>Data State - output of process data</i>

rot / red	grün / green		
Single flash	OFF	Fehlerquittierung durch den Anwender erforderlich	<i>Error acknowledgment by the user required</i>
ON	OFF	System- oder Sicherheitsfehler	<i>System or safety error</i>



Betriebsanleitung beachten! - Observe User Manual!



Änderungen vorbehalten / Subject to change

## Absolute rotary Encoder

**CDH75M\*8192/32768 ETC 12H7NT +FS**

[Click Here](#) to go back to Stock Options

OrderNo.:CDH75M-00054

[Click Here](#) for a Quote - [customercare@treletronic.com](mailto:customercare@treletronic.com)

### Technical data

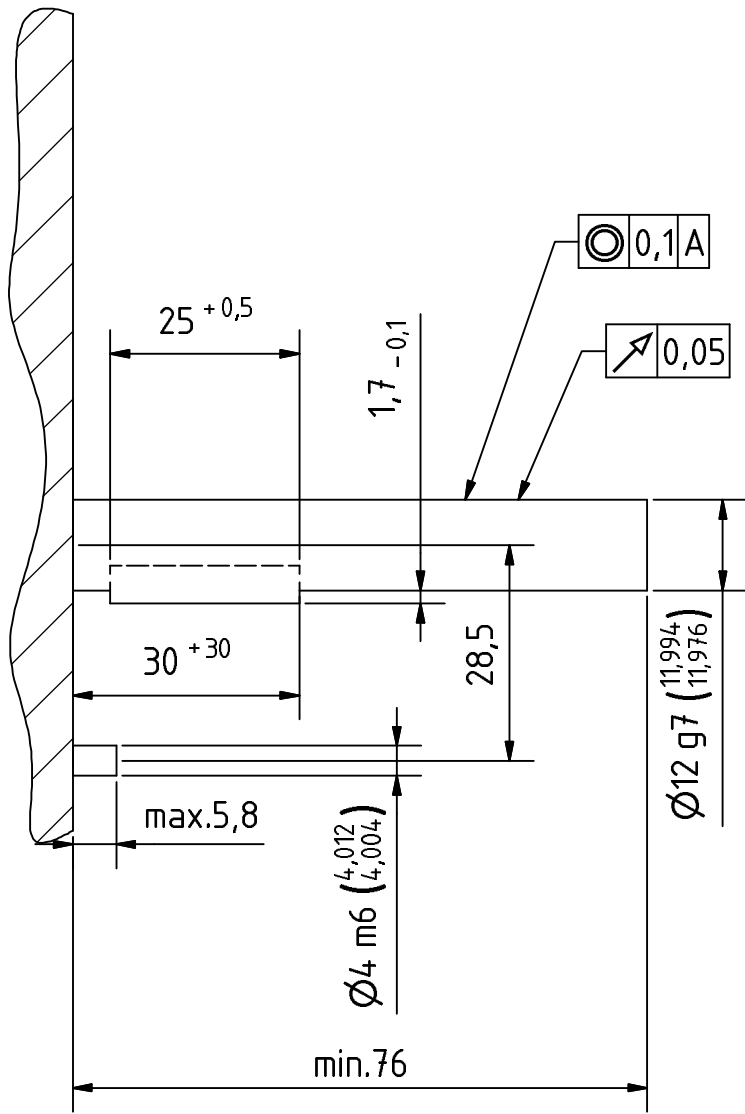
NO.OF STEPS/REV	8.192,000	GL	Wellenausführung glatt / shaft type cylindrical
NO. OF REVOLUTIONS	32.768,000	FL	Wellenausführung mit Fläche / shaft type with flat surface
INTERFACE	ETHERCAT/F50E	N	Wellenausführung mit Nut / shaft type with slot
STANDARD	EN 61508	Hohlw	Hohlwelle / hollow shaft
STANDARD	EN 62061 / EN ISO 13849	Klemme	mit Klemmring / with clamping ring
SAFETY	CDH75M-ETC01 SIL3/PLe	Grundw	Grundwelle / fundamental shaft
NO. OF INCREMENTS	4096	SLG	Seillängegeber / cable retractor
SIGNALS	K1+K2+NEG	ZB	Zentrierbund / centre ring
SIGNAL LEVEL	11V..27V	Tachofl	Tachoflansch / tachometer flange
SUPPLY VOLTAGE	13V..27V	DAG	DAG-Schutzgehäuse / DAG protective housing
PROTECTION Class	IP54	TK	Teilkreis / pitch circle
TEMPERATURE RANGE	-25C...+65C		
FLANGE TYPE	SLOT FOR PIN D4		
SHAFT TYPE	12H7/KEYWAY HOLLOW SHAFT		
CONNECTOR TYPE	1X4P.M12-CONNECTOR		
CONNECTOR TYPE	1X5P.M12-STECKER(BUCHSE)		
CONNECTOR TYPE	2X4P.M12-CONN., D-COD(FEMALE)		
CONNECTOR-POSITION	RADIAL		
MATING PLUG	NO		
PINOUT NO.	TR-ECE-TI-DGB-0283		
OPTIONS ENC	ETG.1000 S R 1.0.3		
OPTIONS ENC	ETG.5100 S R 1.2.0		
OPTIONS ENC	PRESET 1		
DRAWING NO.	04-CDH75M-M0016		
DOCUMENTATION NO	DOKUMENTE		
AL:	AL:N		
ECCN:	ECCN:N		

Subject to change.

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 info@tr-electronic.de  
[www.tr-electronic.de](http://www.tr-electronic.de)

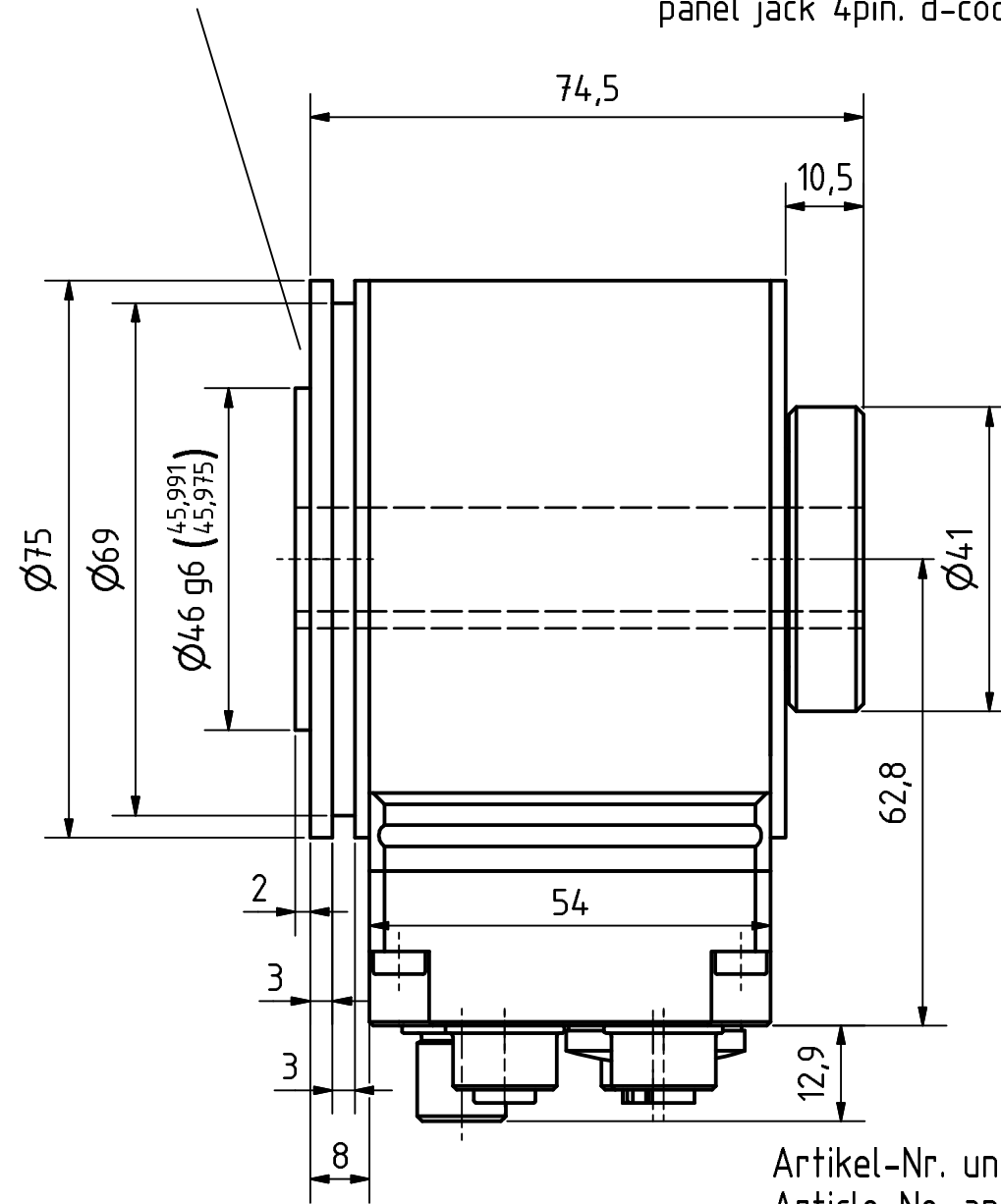
Anforderung an Kundenwelle  
Requirements to the customer shaft

Passfeder DIN 6885-A 4x4x25  
parallel key DIN 6885-A 4x4x25



**A** Geberanbau  
Encoder mounting

Flanschseitige Drehmomentstütze  
nach Vereinbarung  
torque bracket on appointment



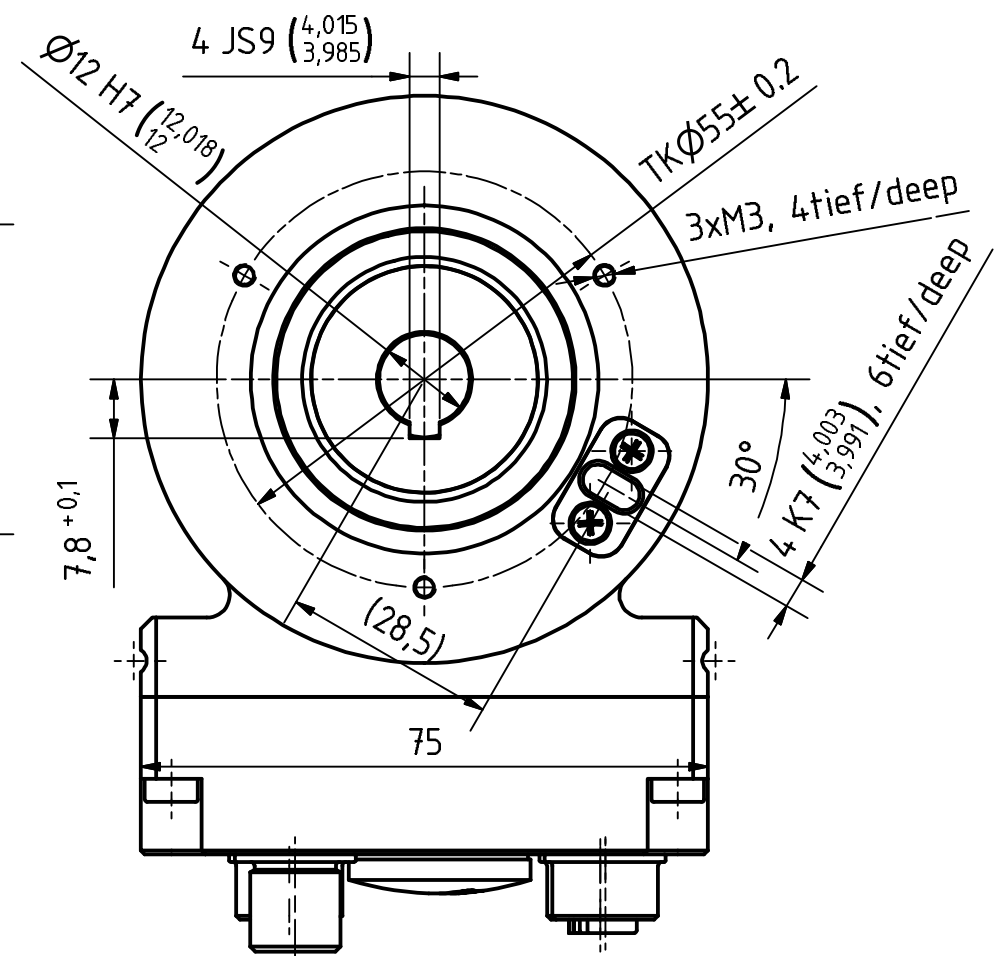
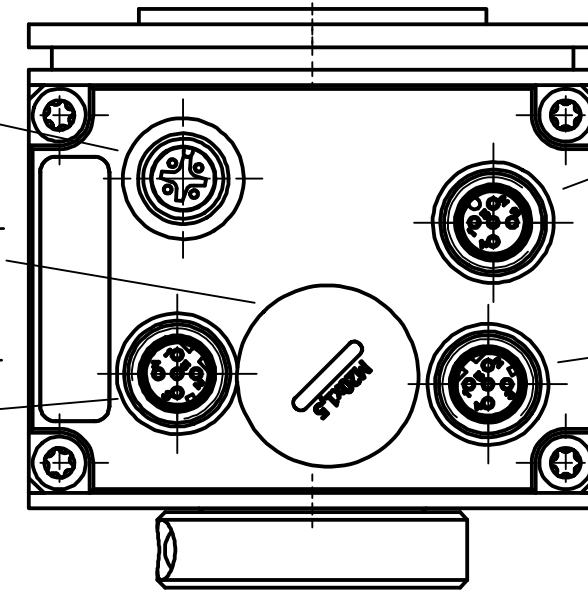
Einbaustecker 4pol. a-codiert  
panel connector 4pin. a-coded

Blindstopfen M20x1.5, transparent  
dummy plug M20x1.5, transparent

Einbaubuchse 4pol. d-codiert  
panel jack 4pin. d-coded

Einbaubuchse 5pol. a-codiert  
panel jack 5pin. a-coded

Einbaubuchse 4pol. d-codiert  
panel jack 4pin. d-coded

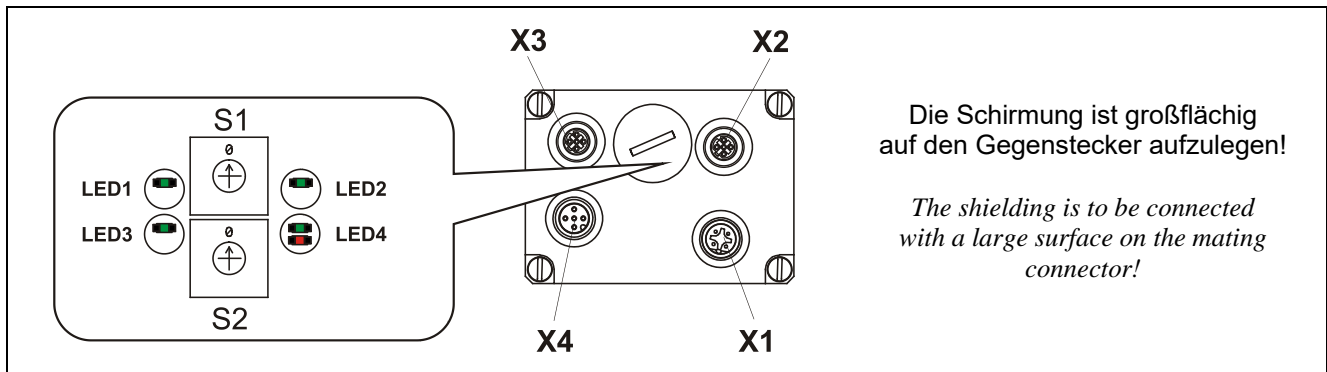


Artikel-Nr. und Steckerbelegung: siehe Datenblatt  
Article-No. and pin connections: see data sheet

<p>TR-Electronic GmbH Eglisshalde 6 D-78647 Trossingen phone +49 7425 228.0 www.tr-electronic.de</p>	<p>Maßstab 1:1 DIN A3 Projekt-Nr.:</p>	
	<p>Zeichnungs-Nr. nur für diese Ausführung gültig Drawing-No. only for this type valid</p>	
	<p>CDH-75-M, Ø12H7 Nut</p>	
	<p>Zeichnungs-NR./Drawing-No.: 04-CDH75M-M0016</p>	
<p>2 Maß 32° in 30° 02.11.16 Nemezc</p>	<p>Datum Name</p>	<p>Blatt 1</p>
<p>1 Text Passfeder 1.02.16 Flaig</p>	<p>Erstellt 19.03.2015 FLAIG</p>	<p>1 BU</p>
<p>Zustf. Änderungen Datum Name</p>	<p>Bearb. 02.11.2016 NEMECZ</p>	
	<p>Gepr. 02.11.2016 FLAIG</p>	
	<p>Norm</p>	
	<p>www.tr-electronic.de DXF+Info: info@tr-electronic.de</p>	

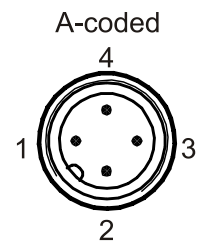
## Steckerbelegung / Pin assignment

### CD\_-75, CDV-115 EtherCAT / FSoE

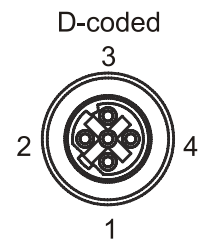


#### Steckseite / Mating Face

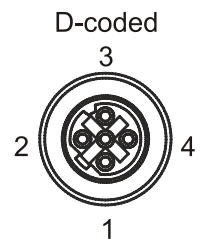
X1	Stift / Male Connector (M12 x 1, 4 pol.)	
1	+24 V DC	Supply Voltage
2	N.C.	
3	0 V, GND	
4	N.C.	



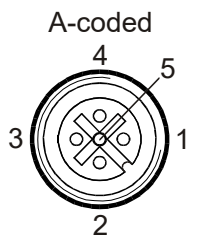
X2	Buchse / Female Connector (M12 x 1, 4 pol.)	
1	TxD+, Transmission Data +	PORT-OUT
2	RxD+, Receive Data +	
3	TxD-, Transmission Data -	
4	RxD-, Receive Data -	



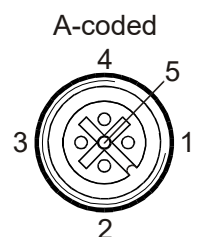
X3	Buchse / Female Connector (M12 x 1, 4 pol.)	
1	TxD+, Transmission Data +	PORT-IN
2	RxD+, Receive Data +	
3	TxD-, Transmission Data -	
4	RxD-, Receive Data -	



X4	Buchse / Female Connector (M12 x 1, 5 pol.)	
1	B +, 5 V differential / 11...27 V DC	INCREMENTAL Pegel siehe Typenschild / Level see name plate
2	B -, 5 V differential / 11...27 V DC	
3	A +, 5 V differential / 11...27 V DC	
4	A -, 5 V differential / 11...27 V DC	
5	0 V, GND	



X4'	Buchse / Female Connector (M12 x 1, 5 pol.)	
1	SIN +, 1 Vss	Alternative SINUS/COSINE, differential
2	SIN -, 1 Vss	
3	COS +, 1 Vss	
4	COS -, 1 Vss	
5	0 V, GND	



Betriebsanleitung beachten! - Observe User Manual!



Änderungen vorbehalten / Subject to change

## Steckerbelegung / Pin assignment

### FSoE-Address

<p>Über die Hex-Adress-Schalter S1 und S2 in der Anschlusshaube wird die Safety-Adresse eingestellt:</p> <p>S1 = 16<sup>0</sup>, S2 = 16<sup>1</sup>. Gültige Adressen = 1...255 (1...0xFF).</p>	<p><i>By means of the hex address switches S1 and S2 in the connection hood the safety-address is adjusted:</i></p> <p><i>S1 = 16<sup>0</sup>, S2 = 16<sup>1</sup>. Valid addresses = 1...255 (1...0xFF).</i></p>
--	---

### Link / Data Activity PORT-IN, LED1 + PORT-OUT, LED2

	grün	green
OFF	keine Ethernet Verbindung	<i>No Ethernet connection</i>
ON	Ethernet Verbindung hergestellt	<i>Ethernet connection established</i>
Flickering	Datenübertragung TxD/RxD	<i>Data transfer TxD/RxD</i>

### RUN, LED3

	grün	green
OFF	Gerät ist im <i>INIT</i> Zustand	<i>Device is in INIT state</i>
Single flash	Gerät ist im <i>PRE-OPERATIONAL</i> Zustand	<i>Device is in PRE-OPERATIONAL state</i>
Double flash	Gerät ist im <i>SAFE-OPERATIONAL</i> Zustand	<i>Device is in SAFE-OPERATIONAL state</i>
ON	Gerät ist im <i>OPERATIONAL</i> Zustand	<i>Device is in OPERATIONAL state</i>

### Safety State, LED4

	grün	green
OFF	Initialisierung, Gerät aus	<i>Initialization, device off</i>
Single flash	INIT-State, Hochlauf	<i>INIT-State, start-up</i>
Double flash	Data State – Ausgabe von Safe-Daten	<i>Data State - output of safe data</i>
ON	Data State – Ausgabe von Prozessdaten	<i>Data State - output of process data</i>

rot / red	grün / green		
Single flash	OFF	Fehlerquittierung durch den Anwender erforderlich	<i>Error acknowledgment by the user required</i>
ON	OFF	System- oder Sicherheitsfehler	<i>System or safety error</i>



Betriebsanleitung beachten! - Observe User Manual!



Änderungen vorbehalten / Subject to change