Standard contact-arrangement for master switch

Typ	Form
MS11	A01
MS12	A02
MS13	A03
MS14	A04
MS21	A05
MS22	A06
MS212	A07
MS222	A08
MS23	A09
MS213	A10

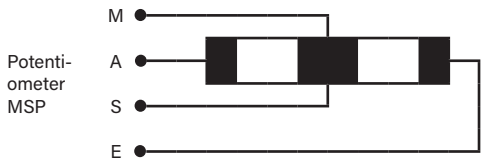
Typ	Form
MS24	A11
MS214	A12
MS224	A13
MS25	A14
MS26	A15
MS0	A98

Zero contact NC

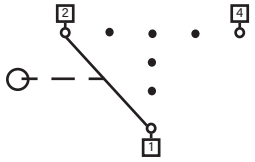
A...0

Zero contact NO

A...1



Micro change over contact for control handle with dead man`s button signal button push button



contact 5 05 = direction1/4/5/8
contact 3 03 = direction 2/3/6/7

Deflection directions designated DIN 15025

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1

Utilization categories for control switches to IEC/EN 60947-5-1

Type of current	Utilization category	Typical examples of application	Normal conditions of use					
		I= current made, Ic= current broken Ie= rated operational current, U= voltage before make Ue= rated operational voltage Ur= recovery voltage T 0,95= time in ms, to reach 95% of the steady-state current. P= UE · Ie= steady-state power consumption in watts	Make I/Ie	 U/Ue	 cos	Breake Ic/Ie	 Ur/Ue	 cos
alternating current	AC12	Control of resistive loads and solid state loads with isolation by opto couplers control of a.c. electromagnetic loads (> 72VA)	1	1	0,9	1	1	0,9
	AC15		10	1	0,3	1	1	0,3
			I/Ie	U/Ue	t 0,95	Ic/Ie	Ur/Ue	t 0,95
Direct current	DC 12	Control of resistive loads and solid state loads with isolation by opto couplers Control of d.c. electromagnets	1	1	1 ms	1	1	1 ms
	DC 13		1	1	6 · P	1	1	6 · P

The value 6·P results from an empirical relationship with is found to represent most d.c. magnetic loads to an upper limit of P = 50 W viz 6·P = 300 ms. Loads having power consumption greater than 50 W are assumed to consist of smaller loads in parallel. Therefore 300 ms is to be an upper limit, irrespective of the power consumption value.

Attach our switching device		**V6 N6 S6 N61 N62**	**VV6 DD64**	**V11**	**V5 S2-S23**	**VV5 SS2-SS21**
Rated isolation voltage Ui in Volt		250	250	250	250	250
Rated operational voltage Ue in Volt		250	250	250	250	250
Rated operational current Ie in Ampere	AC 12	6 or 16	6 or 16	6 or 16	10	10
	AC 15	2 4	2 4	2 4	2	2
	DC 12 24 V	6 8	6 8	6 8	4	4
	48 V	2 4	2 4	2 4	2	2
	110 V	0,5 1	0,5 1	0,5 1	0,2	0,2
	220 V	0,1 0,5	0,1 0,5	0,1 0,5	0,1	0,1
Contacts gold-coated	24 V	5 mA	5 mA	5 mA	5 mA	5 mA
	DC 13 24 V	1	1	1	3	3
	48 V	0,5	0,5	0,5	1,5	1,5
	110 V	0,2	0,2	0,2	0,1	0,1
	220 V	0,05	0,05	0,05	0,05	0,05
Short-circuit-protection in Ampere Fuse 9L Circuit-breaker G-characteristic		6 16 6 16	6 6 6 16	6 16 6 16	10 10	10 10
Terminal screws Plug-in connector CAGE CLAMP® connection is a registered trademarkt of WAGO Kontakttechnik GmbH Germany		M 3,5 2,5 mm²	M 3,5 2,5 mm²	M 3,5 2,5 mm²	M 3,5 6,3 x 0,8	M3,5 6,3 x 0,8
Conductor sizes in mm² finely stranded with end steeves		1,5	1,5	1,5	1,5	1,5
Mechanical life in million (operation cycles) max. switching frequency c/h 1000		10	20	10	6	10
Mechanical shock resistance IEC 68-2-27		Shock-amplitude > 15 Shock duration 20 ms				
Clearances and creepage distances IEC 947-1; 2.5.46.51		Overvoltage category III pollution grade 3				

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Attach our switching device		**V8 V85 D8**	**VV8 VV85 D3 S3**	**V10 V25 S1**	**V14 S14**	**V3**	Dead man`s button signal button push button
Rated isolation voltage Ui in Volt		110	110	110	250	500	250
Rated operational voltage Ue in Volt		110	110	110	250	350	250
Rated operational voltage Ie in Ampere AC 12		2	2	2	6	16	6
AC 15		0,5	0,5	0,5	2	4	2
DC 12	24 V	2	2	2	6	8	4
	48 V	1	1	1	2	4	2
	110 V	0,1	0,1	0,1	0,5	1	0,2
	220 V				0,1	0,5	0,1
Contacts gold-coated	24 V	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA
DC 13	24 V	1,5	1,5	1,5	1	1	3
	48 V	0,5	0,5	0,5	0,5	0,5	1,5
	110 V	0,05	0,05	0,05	0,2	0,2	0,1
	220 V				0,05	0,05	0,05
Short-circuit-protection in Ampere Fuse 9L Circuit-breaker G-characteristic		4 4	4 4	4 4	6 6	16 16	6 6
Terminal screws Plug-in connector CAGE CLAMP® connection is a registered trademarkt of WAGO Kontakttechnik GmbH Germany		Solder terminal			M4 1,5 mm²	M 3,5 6,3 x 0,8	6,3 x 0,8
Conductor sizes in mm² finely stranded with end steeves		0,5	0,5	0,5	1	1,5	1,5
Mechanical life in million (operation cycles) max. switching frequency c/h 1000		8	12	8	6	6	10
Mechanical shock resistance IEC 68-2-27		Shock-amplitude > 15 Shock duration 20 ms					
Clearances and creepage distances IEC 947-1; 2.5.46.51		Overvoltage category III pollution grade 3					

Degree of protection to IEC/EN 60529	1. numerial protection of contact and foreign bodies	2. numerial protection of water
IP00	No protection	No protection
IP54	Dust-protected	protected against splashing water
IP65	dust-tight	protected against water jets
IP66	dust-tight	protected against powerful water jets
IP67	dust-tight	protected against the effects of temporary immersion in water

Technical details may vary based on configuration or application! Technical data subject to change without notice!

Potentiometer
with attach to our switching device

GESSMANN

2

with centre tap life

for mounting on	Typ	Capacity (W)	Imax wiper (mA)	Typ	Expansion	2 x 0,5 kOhm	2 x 1 kOhm	2 x 2 kOhm	2 x 5 kOhm	2 x 10 kOhm	Hall 0,5...2,5...4,5 V / 4,5...2,5...0,5 V	Part No.	Addition for Part No.	Comment
						1	2	3	4	5				
V6 / VV6 D64 / DD64 V5 / VV5 V3 S2 / SS2 S6 N6 P7 P8	T1420	1,5	10	P44	☐	x	x	x	x	x		524004400	☐	
	T132	2,5	10	P05	☐	x	x	x	x	x		524000500	☐	
	T132 Öl	2,5	10	P06	☐	x	x		x	x		524000600	☐	
	T178	1,5	10	P07	☐		x	x	x			524000700	☐	characteristic progressive
	T238	1	10	P08	☐	x	x	x	x	x*1		524000800	☐	*1 R= 2 x 6,5 kOhm
	T133	60	85	P10	☐	x						524001000	☐	
	T396	0,5	1	P13	☐	x	x	x	x	x		524001300	☐	
	T1350 Ex	0,5	1	P14	☐	x	x	x	x	x		524001400	☐	
	T1360			P43							x	5240043009		
V8 / VV8 D8 P10 P11 P12	T239	1	10	P17	☐			x	x			524001700	☐	
	T301	0,5	1	P18	☐		x	x	x	x		524001800	☐	
	T426	0,5	1	P19	☐				x	x		524001900	☐	with direction lines
	T432	0,5	1	P20	☐				x			524002000	☐	
	T246	0,5	1	P21	☐	x	x		x	x		524002100	☐	
	T362	0,5	1	P22	☐		x	x	x			524002200	☐	
	T1003			P42							x	5240042009		
	T1360			P43							x	5240043009		
V10 S1 Palm handle	T321	1	10	P24	☐		x					524002400	☐	
	T320	0,5	1	P25	☐		x		x			524002500	☐	
	T1187	0,5	1	P27	☐				x			524002700	☐	with direction lines
	T375	0,5	1	P37	☐		x		x			524003700	☐	
	T997			P41							x	5240041009		
V11	T316	1	10	P31	☐				x*2			524003100	☐	*2 R= 2 x 4 kOhm
	T365	0,5	1	P32	☐				x	x		524003200	☐	
D3 S3	T318	0,5	1	P48	☐				x			524004800	☐	

without centre tap life

for mounting on	Typ	Capacity (W)	Imax wiper (mA)	Typ	Expansion	0,5 kOhm	1 kOhm	2 kOhm	5 kOhm	10 Ohm	Part No.	Addition for Part No.	Commend
						1	2	3	4	5			
V6 / VV6 D64 / DD64 V5 / VV5 V3 S2 / SS2 S6 N6 P7 / P8	T1491	1,5	10	P46	☐	x	x	x	x	x	524004600	☐	
	T131	2,5	10	P03	☐	x	x	x	x	x	524000300	☐	
	T131 Oil	2,5	10	P04	☐		x		x	x	524000400	☐	
	T134	60	85	P11	☐				x		524001100	☐	
	T374	0,5	1	P12	☐	x	x	x	x	x	524001200	☐	
V8 / VV8 /D8 P10/P11/P12	T244	0,5	1	P23	☐			x	x	x	524002300	☐	
	T397	0,5	1	P47	☐		x	x	x		524004700	☐	
V10 / S1 Palm grip	T337	0,5	1	P26	☐		x	x	x	x	524002600	☐	
GE1/GE2	PW70	5	30	P45	☐	x	x		x		524004500	☐	

Technical details may vary based on configuration or application! Technical data subject to change without notice!

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Hall-Potentiometer

HG2

The Hall-Potentiometer HG2 is distinguished by its precision and longevity.

Technical data

Mechanical life	10 million operating cycles
Operation temperature	-40°C to +85°C
Degree of protection	IP67
Functional safety	PLd compatible (EN ISO 13849, complies SIL2 to DIN EN IEC 61508)

Example

HG2A	-60	-6	-E14811	-X

Basic unit

HG2A	Hall-Potentiometer HG2 Model A
HG2B	Hall-Potentiometer HG2 Model B

Operating distance

0-360° possible

Example 60° => 60

Dead zone around the center position

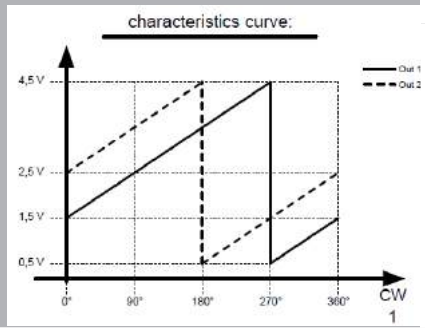
0	No dead zone

Example +/-3° => 6

Interface

Voltage output HG2

E1481	1	0,5...2,5...4,5 V dual inverse Ub= 5 V DC
	2	0,5...2,5...4,5 V dual positive gradient clockwise (cw) Ub= 5 V DC
	3	0,5...2,5...4,5 V dual positive gradient counter clockwise (ccw) Ub= 5 V DC
E1491	1	0,5...2,5...4,5 V positive gradient clockwise (cw) with zero position signal Ub= 5 V DC
	2	0,5...2,5...4,5 V positive gradient counter clockwise (ccw) with zero position signal Ub= 5 V DC
	3	0,5...2,5...4,5 V positive gradient clockwise (cw) with direction signals Ub= 5 V DC
	4	0,5...2,5...4,5 V positive gradient counter clockwise (ccw) with direction signals Ub= 5 V DC
E1531	1	0,5...2,5...4,5 V redundant triangular characteristic 90° offset Ub= 5 V DC



More interfaces (z.B. SPI BUS) on request!

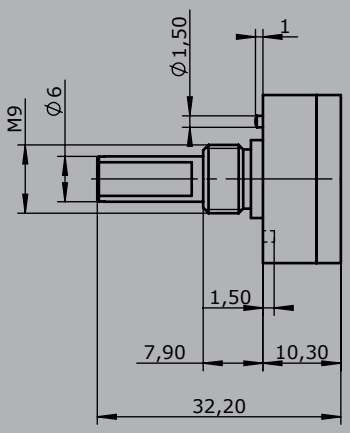
Special model

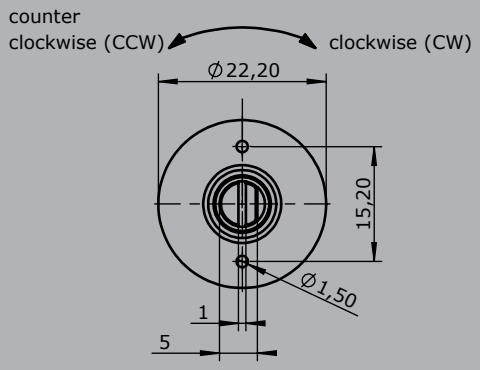
X	Special / customer specified

Technical details may vary based on configuration or application! Technical data subject to change without notice!

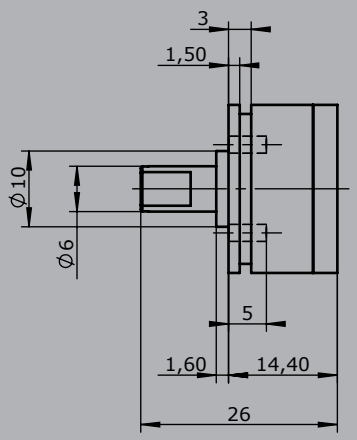
2

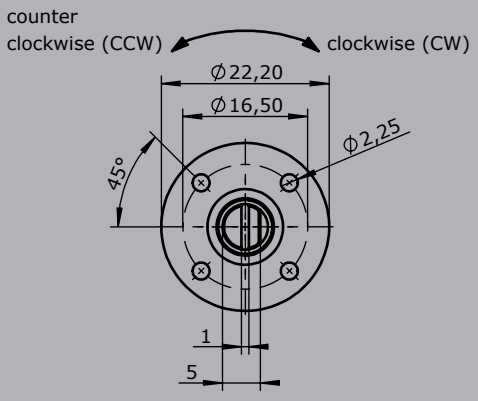
HG2A





HG2B





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Opto-electronic encoder
Output digital OEC 2
with attach to our switching device

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Opto-electronical encoder OEC 2 with digital output gray-/binär-cdode					
Power supply	18-30 V DC				
Rotation angle	Max. +/-150° (by 9 Bit 300°)				
Digital output	8 Bit Gray-Code T359	Output characteristic linear	OEC 2-1-1	C01	410 g
	8 Bit Binary-Code T359	Output characteristic linear	OEC 2-2-1	C02	410 g
	6 Bit Gray-Code T359	Output characteristic linear	OEC 2-3-1	C031	410 g
	6 Bit Gray-Code T359	Output characteristic quadratic	OEC 2-3-2	C032	410 g
	6 Bit Binary-Code T359	Output characteristic linear	OEC 2-4-1	C041	410 g
	6 Bit Binary-Code T359	Output characteristic quadratic	OEC 2-4-2	C042	410 g
	9 Bit Gray-Code T384	Output characteristic linear one side clockwise	OEC 2-5-4	C054	410 g
	9 Bit Gray-Code T384	Output characteristic linear one side anticlockwise	OEC 2-5-5	C055	410 g
	9 Bit Binary-Code T384	Output characteristic linear one side clockwise	OEC 2-6-4	C064	410 g
	9 Bit Binary-Code T384	Output characteristic linear one side anticlockwise	OEC 2-6-5	C065	410 g

2

6 Bit-type T359

PIN connection		Colour-code
1	Not connected	-
2	D4	brown
3	D3	green
4	D2	yellow
5	D1	grey
6	Not connected	-
7	Not connected	-
8	Housing 0 V	black
9	Input 18-30 V DC	red
10	Not connected	-
11	Not connected	-
12	Direction-signal left	violet
13	Direction-signal grey	grey-pink
14	D6	red-blue
15	D5	white-green
-	Cable screen	brown-green

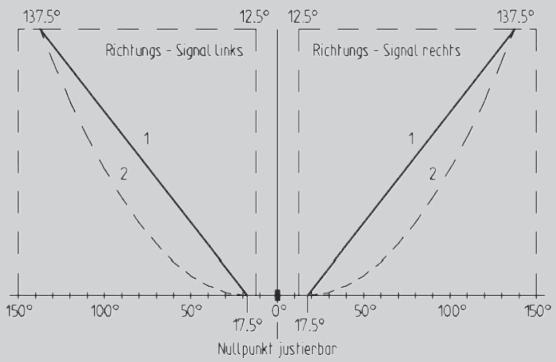
8-Bit-type T359

PIN connection		Colour-code
1	Not connected	-
2	D6	brown
3	D5	green
4	D4	yellow
5	D3	grey
6	D2	pink
7	D1	blue
8	Housing 0 V	black
9	Input 18-30 V DC	red
10	Not connected	-
11	Not connected	-
12	Direction-signal left	violett
13	Direction-signal right	grey-pink
14	D8	red-blue
15	D7	white-green
-	Cable screen	brown-green

9 Bit-type T384

PIN connection		Colour-code
1	Not connected	-
2	D6	brown
3	D5	green
4	D4	yellow
5	D3	grey
6	D2	pink
7	D1	blue
8	Housing 0 V	black
9	Input 18-30 V DC	red
10	Not connected	-
11	Not connected	-
12	Direction-signal left	violett
13	D9	grey-pink
14	D8	red-blue
15	D7	white-green
-	Cable screen	brown-green

6 Bit-type T359 **8 Bit-type T359**



9 Bit-type T384

Technical details may vary based on configuration or application! Technical data subject to change without notice!

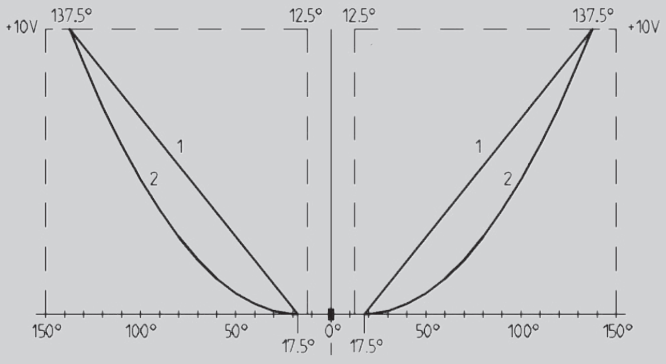
Opto-electronic encoder digital OEC 2 with attach to our switching device

Opto-electronical encoder OEC 2 with voltage output					
Power supply	18 - 30 V DC				
Scanning	6 Bit Gray-Code				
Rotation angle	Max. +/-150°				
Voltage output	10...0...10 V T366	Output characteristic linear	OEC 2-3-1-1	C111	410 g
	10...0...10 V T366	Output characteristic quadratic	OEC 2-3-2-1	C112	410 g
	-10...0...+10 V T367	Output characteristic linear	OEC 2-3-1-2	C151	410 g
	-10...0...+10 V T367	Output characteristic quadratic	OEC 2-3-2-2	C152	410 g

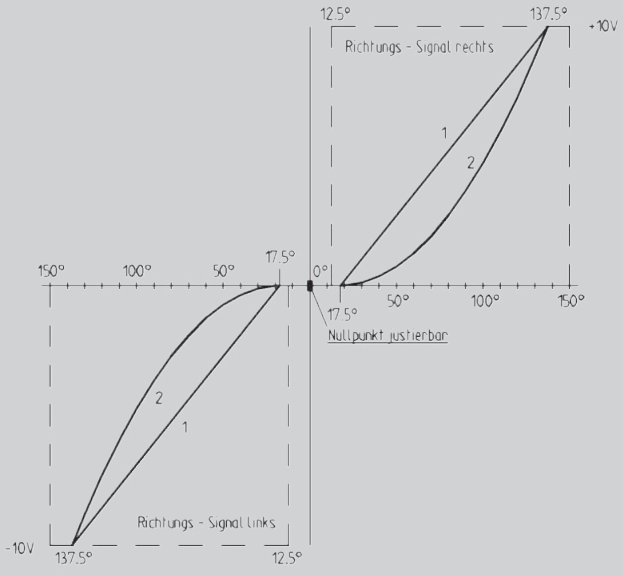
Voltage output

PIN connection		Colour-code
1	Not connected	-
2	Not connected	-
3	Not connected	-
4	Not connected	-
5	Not connected	-
6	Not connected	-
7	Not connected	-
8	Housing 0V	blue
9	Input 18-30V DC	brown
10	Not connected	-
11	Voltage output	green
12	Direction signal left	yellow
13	Direction signal right	grey
14	Not connected	-
15	Not connected	-
-	Cable screen	white

6 Bit-type T366



6 Bit-type T367



Technical details may vary based on configuration or application! Technical data subject to change without notice!

V2020/1 09.03.2020

Opto-electronic encoder
Output digital OEC 2
with attach to our switching device

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Opto-electronical encoder OEC 2 with current output					
Power supply	18 - 30 V DC				
Scanning	6 Bit Gray-Code				
Rotation angle	Max. +/-150°				
Output current	20...4...20 mA T368	Output characteristic linear	OEC 2-3-1-5	C191	410 g
	20...4...20 mA T368	Output characteristic quadratic	OEC 2-3-2-5	C192	410 g
	20...0...20 mA T368	Output characteristic linear	OEC 2-3-1-8	C201	410 g
	20...0...20 mA T368	Output characteristic quadratic	OEC 2-3-2-8	C202	410 g
	-20...0...+20 mA T369	Output characteristic linear	OEC 2-3-1-6	C231	410 g
	-20...0...+20 mA T369	Output characteristic quadratic	OEC 2-3-2-6	C232	410 g

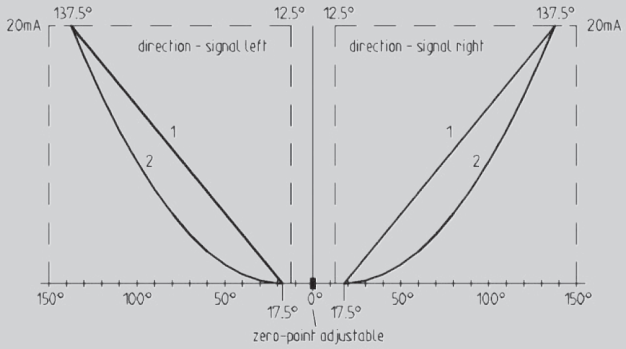
6 Bit-Type T368

PIN connection		Colour-code
1	Not connected	-
2	Not connected	-
3	Not connected	-
4	Not connected	-
5	Not connected	-
6	Not connected	-
7	Not connected	-
8	Housing 0 V	blue
9	Input 18-30 V DC	brown
10	Not connected	-
11	Current output	green
12	Direction signal left	yellow
13	Direction signal right	grey
14	Not connected	-
15	Not connected	-
-	Cable screen	white

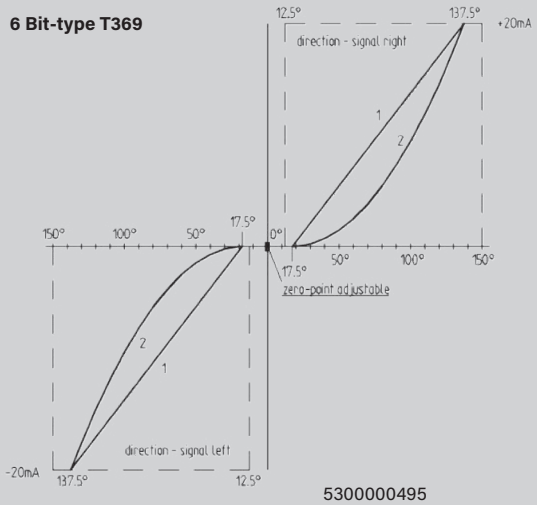
6 Bit-Type T369

PIN connection		Colour-code
1	Not connected	-
2	Not connected	-
3	Not connected	-
4	Not connected	-
5	Not connected	-
6	Not connected	-
7	Not connected	-
8	Housing 0V	blue
9	Input 18-30 V DC	brown
10	Not connected	-
11	Current output	green
12	Direction signal left	yellow
13	Direction signal right	grey
14	Not connected	-
15	Not connected	-
-	Cable screen	white

6 Bit-type T368



6 Bit-type T369



Attachment

Plug with cable 14 x 0,25 mm², 2000 mm long, cable head open (for OEC 2 with digital outputs)	5300000495
Plug with cable 7 x 0,34 mm², 2000 mm long, cable head open (for OEC 2 with analog outputs)	5300000496

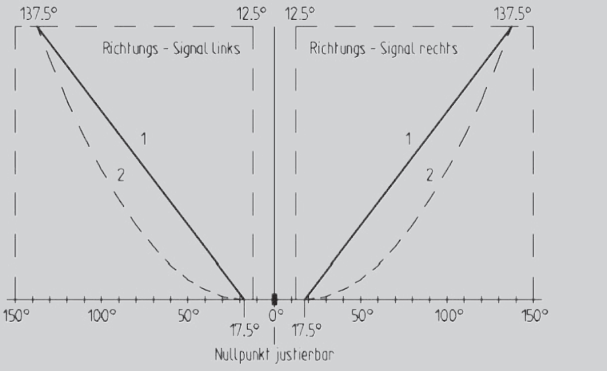
The OEC 2 is able for mounting on V6,VV6/D64,DD64/V11/S2,SS2/S6/N6. For mounting a potentiometer mounting option (P) of the respective controller is required!

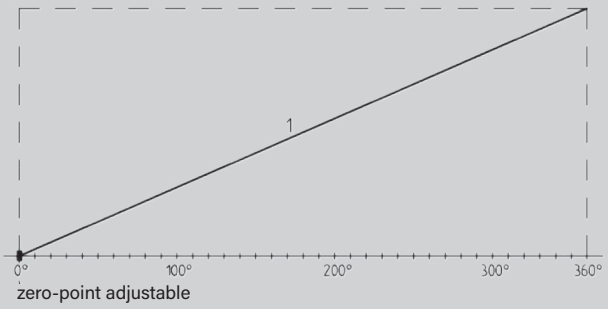
Technical details may vary based on configuration or application! Technical data subject to change without notice!

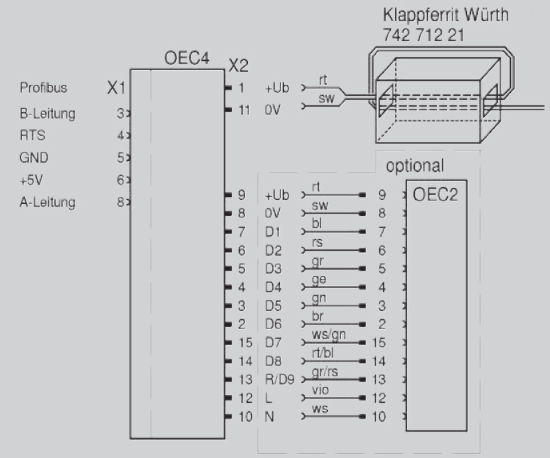
Opto-electronic encoder
OEC 4
with interface Profibus DP

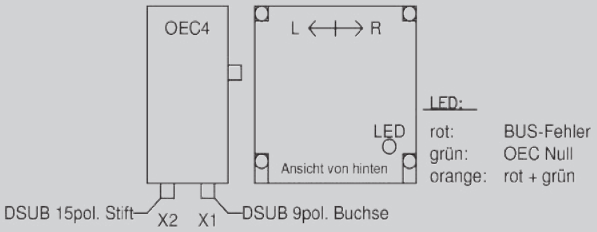
GESSMANN

Opto-elecetronic encoder				
Power supply	18 - 30 V DC			
Scanning	6, 8 or 9 Bit Gray-Code			
Rotation angle	Max. +/-150°			
Interface	Profibus, DP, address 0-99 adjustable above selector switch			
Voltage output	8 Bit Gray-Code T496 linear	OEC 4-1-1-2	C27	820 g
	8 Bit Binary-Code T496 linear	OEC 4-2-1-2	C28	820 g
	6 Bit Gray-Code T496 linear	OEC 4-3-1-2	C291	820 g
	6 Bit Gray-Code T496 quadratic	OEC 4-3-2-2	C292	820 g
	6 Bit Binary-Code T496 linear	OEC 4-4-1-2	C301	820 g
	6 Bit Binary-Code T496 quadratic	OEC 4-4-2-2	C302	820 g
	9 Bit Gray-Code T497 linear one sided right turn	OEC 4-5-4-2	C314	820 g
	9 Bit Gray-Code T497 linear one sided left turn	OEC 4-5-5-2	C315	820 g
	9 Bit Binary-Code T497 linear one sided right turn	OEC 4-6-4-2	C324	820 g
	9 Bit Binary-Code T497 linear one sided left turn	OEC 4-6-5-2	C325	820 g









Attachment

Plug (Profibus) straight

Plug (Profibus) 90° angled

Plug with cable 2 x 0,25 mm², 2000 mm long, cable head open (cable for current supply OEC 4 single application)

Connecting cable OEC 4/ OEC 2 (14 x 0,25 mm²) with 2 plug connectors incl. cable for current supply (2 x 0,25 mm² 2000 mm long, cable head open)

The OEC 4 is able for mounting on V6,VV6/D64,DD64/V11/S2,SS2/S6/N6. For mounting a potentiometer mounting option (P) of the respective controller is required! For a controller with one axis is required 1 piece of OEC 4, for a controller with 2 axis are required 1 piece of OEC 4 and 1 piece of OEC 2.

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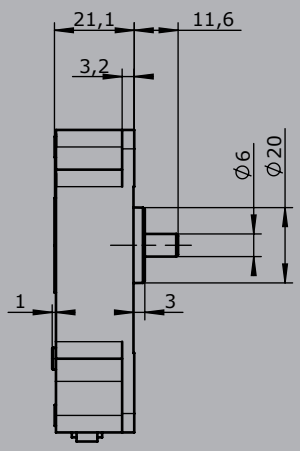
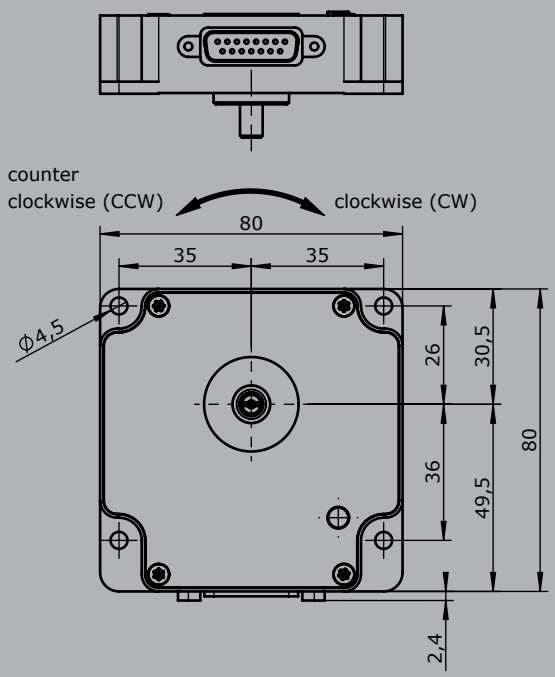
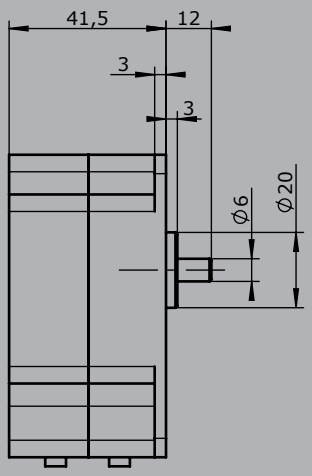
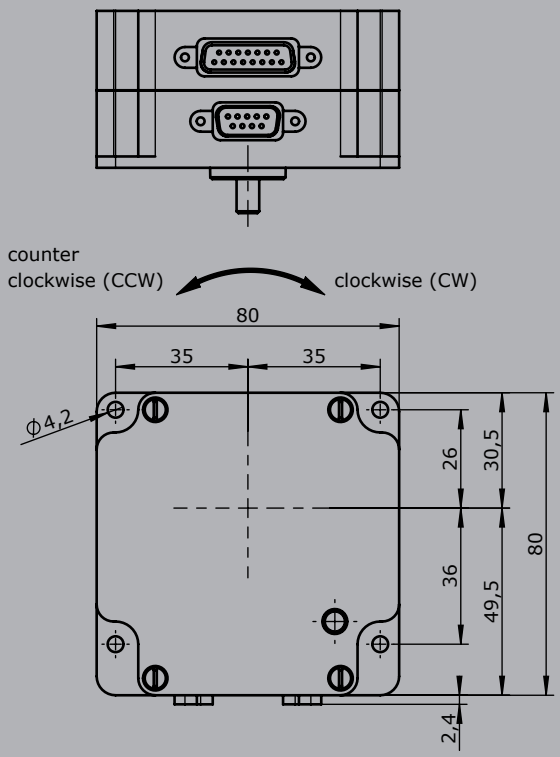
OEC 2





OEC 4





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