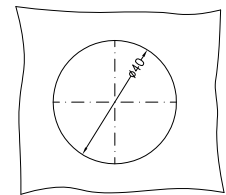
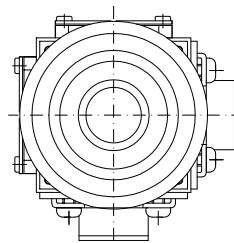
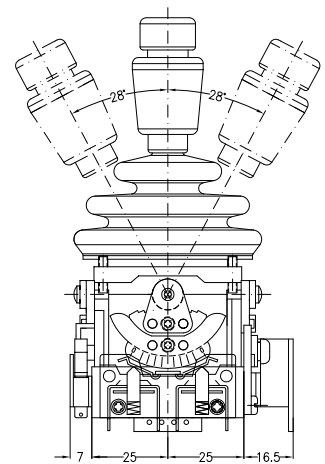
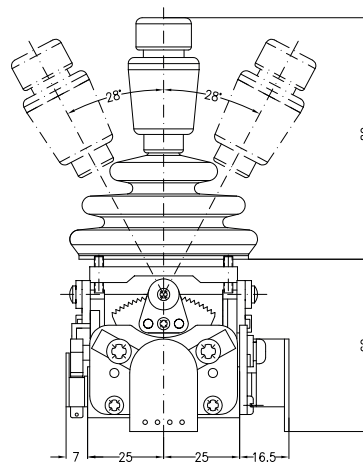
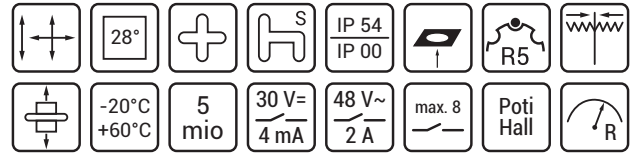


MON

Small, durable and reliable.



The M0 joystick is designed for digital applications with up to 5-0-5 step output and / or analogue applications with stepless output potentiometers. Micro-switches or analogue sensors are installed with modular double contacts on the drive block made of durable PA6 GF30 plastic. Of course, resistance to ozone, UV radiation, oil, and maritime climate is mandatory. Despite a very low installation depth, both a single drive and dual drive with spring-return can be provided. With installation of micro-switches, the joystick developed for low voltages

can also be used for operating voltages of up to 230 VAC. For added stability, the high handle shaft was produced from metal and thus installation of a pushbutton in the handle is also enabled. With a potentiometer mounted, the lever deflection is 28°. The installation of a cross gate or special gates allows special switching functions. With its low weight and small dimensions, the joystick is intended for installation in portable panels and as a control switch for auxiliary functions.



PQxx



Bxx



CABxx



ESSxx

	Type	Technology	Power/ Length	Connection type	Ohmic values/ Data see	ST0	ST0N	ST1	ST4	MON	VCS0	VNS0	NNS0	NNS0- PI	VNS2	CS1	CS1G	NS3	NS3G	HS0 HS2	HS2G	JMS3	FST
Potentiometer/Accessories	PQxx	wire-wound	1,5 W	Fasten plug *) solder connection	TI-POTI-1	X	X	X			X	X	X		X								
	PFxx	wire-wound	6 W	screw connection	TI-POTI-2						X	X	X		X								
	PFÖxx	wire-wound	6 W	screw connection	TI-POTI-2						X	X	X		X								
	DP60xx	wire-wound	50 W	screw connection	TI-POTI-2	X					X	X	X		X								
	RxK	cermet	2 W	solder connection	TI-POTI-3																		X
	PW0045xx	wire-wound	1,5 W	solder connection	TI-POTI-2																		X
	Bxx	conductive plastic	0,5 W	solder connection	TI-POTI-5				X	X	X	X	X	X	X				X	X			X
	BxxK	conductive plastic	0,5 W	screw connection	TI-POTI-5				X	X	X	X	X		X								X
	BLRxx	conductive plastic	0,5 W	micro-match-plug	TI-POTI-6				X	X	X	X	X	X	X				X	X			X
	BD1010 ¹⁾	conductive plastic	0,5 W	Plug	TI-ST4-1/2				X														
	SS13463-G	Extension cable for BD1010	0,5 m	Socket/open	TI-ST4-1/2				X														
	Gxx	conductive plastic	0,5 W	solder connection	TI-POTI-5	X	X	X									X	X					
	GxxK	conductive plastic	0,5 W	screw connection	TI-POTI-5	X	X	X															
	GLRxx	conductive plastic	0,5 W	micro-match-plug	TI-POTI-6	X	X	X									X	X					
	M55	conductive plastic	0,5 W	solder connection	TI-POTI-5	X	X	X									X	X					
M55K	conductive plastic	0,5 W	screw connection	TI-POTI-5	X	X	X																
Exd potentiometer	Exd-PL310-5 m	conductive, Exd	0,5 W	connecting cable 5 m	TI-POTI-4	X	X	X				X	X										
	Exd-PL310-10 m	conductive, Exd	0,5 W	connecting cable 10 m	TI-POTI-4	X	X	X				X	X										
	Exd-PW45-5 m	wire-wound, Exd	1 W	connecting cable 5 m		X						X	X										
	Exd-PW45-10-m	wire-wound, Exd	1 W	connecting cable 10 m		X						X	X										
Potentiometer with amplifier	Type	Output	Supply voltage	Connection type/ installation	Data see																		
	CAG(S)20020	20...0...20 mA	24 VDC	screw connection	TI-PV-1	X	X	X															
	CAG(S)20420	20...4...20 mA	24 VDC	screw connection	TI-PV-1	X	X	X															
	CAG(S)41220	4...12...20 mA	24 VDC	screw connection	TI-PV-1	X	X	X															
	CAB(S)20020	20...0...20 mA	24 VDC	screw connection	TI-PV-1				X	X	X	X	X		X				X				X
	CAB(S)20420	20...4...20 mA	24 VDC	screw connection	TI-PV-1				X	X	X	X	X		X				X				X
Amplifier for potentiometer	ESS109	Valve amplifiers, PWM	10...28 VDC	installation in joystick	TI-PV-3								X				X		X				
	ESS098	2x (6...12...18 VDC)	20...30 VDC	installation in joystick	TI-PV-4								X				X		X				
	ESS149-20-4-20	2x (20...4...20 mA)	12...30 VDC	installation in joystick	TI-PV-5-A								X				X		X			X	
	ESS149-4-12-20	2x (4...12...20 mA)	12...30 VDC	installation in joystick	TI-PV-5-A								X				X		X			X	
HALL- sensors	A1xx	0,5...2,5...4,5 VDC ↑↑	5 VDC	integrated in joystick	TI-HS2, TI-NS3														X	x	x		
	A2xx	0,5...2,5...4,5 VDC ↑↓	5 VDC	integrated in joystick	TI-HS2, TI-NS3														X	x	x		

Note:

- Use BLRxx or GLRxx potentiometers for bus interfaces, amplifiers ESSxx

x = see corresponding joystick
 xx = Placeholder for different types.
 CAG..., CAB... = with short-circuit in the middle
 CAGS... CABS... = without short-circuit in the middle

1) For BD1010 Connection/extension cable SS13463-G available

Combination possibilities: encoder - joystick



OERxx



OGFxx



DGO

	Type	Output	Supply	Connection type/ installation	Data see	ST0	ST0N	ST1	ST4	M0N	VCS0	VNS0	NNS0	NNS0- PI	VNS2	CS1	CS1G	NS3	NS3G	HS2	HS2G	JMS3	FST
Optoelectronic encoder	OERxx	8-Bit Code/current	24 VDC	D-Sub-plug	TI-Encoder-1+2		X					X	X		X								
	OERHxx	8-Bit Code/current	24 VDC	D-Sub-plug	TI-Encoder-1+2		X					X	X		X								
	OGRPP20xx	-20...0...+20 mA	24 VDC	D-Sub-plug	TI-Encoder-3		X					X	X		X								
	OGF6B,OGF6G	6-Bit Code	24 VDC	D-Sub-plug	TI-Encoder-4						X												
	OGF020,OGF420	20...0(4)...20 mA	24 VDC	D-Sub-plug	TI-Encoder-5						X												
	OGFP20	-20...0...+20 mA	24 VDC	D-Sub-plug	TI-Encoder-6						X												
	OGP-DP	ProfiBus-DP	24 VDC		screw connection	TI-Encoder-7						X	X		X								
OEP-DP	ProfiBus-DP	24 VDC		screw connection	TI-Encoder-8						X	X		X									
Encoder inductive	DGO 115/50	50...0...50 VAC	115 VAC	screw connection	TI-DG0							X	X		X								
	DGO 230/50	50...0...50 VAC	230 VAC	screw connection	TI-DG0							X	X		X								
	DGG0		115 VAC	screw connection	TI-DDG0							X	X		X								
	DGG0+ESS030	-10...0...+10 V	115 VAC	screw connection	TI-DDG0							X	X		X								

Encoder options:

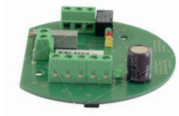


Description	Version/Use	Type	Order number	see	OER-Code	OER-current	OERH-Code	OERH-current	OGRPP-current	OGF-Code	OGF-current	OGP, OEP
Extension cable	Length 2 m, 12-pole, 1x 15-pole D-Sub-socket, 1x free cable end	SS13463-A-2,2	36978	TI-Encoder-2, 4	✓					✓		
Extension cable	Length 2 m, 12-pole, halogen-free, 1x 15-pole D-Sub-socket, 1x free cable end	SS13463-AH-2,2		TI-Encoder-2			✓					
Extension cable	Length 2 m, 5-pole, 1x 15-pole D-Sub-socket, 1x free cable end	SS13463-B-2,2	27841	TI-Encoder-2, 3, 5, 6		✓			✓		✓	
Extension cable	other length											
Servo clamps	Mounting material for encoders OGP-DP, OEP-DP, 3 clamps	spare part package	54158									✓
Terminating resistor	15-pole-D-Sub adapter with resistor 523 Ohm	ESS091-523	43542			✓			✓		✓	

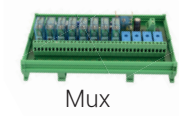
Combination possibilities sensor/multiplexer - handles:



ESS080A



ESS111



Mux

	Type	Description	Supply	Connection type/ installation	Data see	G1	G2	G13	G32B	G41	G46	G56	G58	UGA	UGN
Capacitive sensors	ESS080K	Electronic sender unit, round for G41-handle		solder connection	E-Electronic-3				✓	✓	✓				
	ESS080K-1	Electronic sender unit, square for G1-handle		solder connection	E-Electronic-3	✓	✓	✓							
	ESS080K-UGxx	Electronic sender unit, for universal handles		solder connection	E-Electronic-3							✓	✓	✓	✓
	ESS080A	Evaluation unit	24 VDC +-20%	separate module ¹⁾	E-Electronic-3	●	●	●	●	●	●	●	●	●	●
	ESS111	Evaluation unit	19,2...28,5 VDC	installation in joystick ²⁾	E-Electronic-4	○	○	○	○	○	○	○	○	○	○
Multiplex-system	ESS097-8	Mux-System with 8 relays	19,2...28,8 VDC	screw connection	E-Electronic-5							✓	✓	✓	✓
	ESS097-12	Mux-System with 12 relays	19,2...28,8 VDC	screw connection	E-Electronic-5							✓	✓	✓	✓

Note:


- Use BLRxx or GLRxx potentiometers for bus interfaces
- With ESS127 (ProfiNet Profi Safe protocol), 1 potentiometer + 1 Hall sensor are required per axis.

1) Standard combination with sender unit.

- The capacitive sensor system requires sender and evaluation unit.

2) Optional combination possibly with joysticks: NS3G, HS2G, CS1G or VNS0, NNS0 with round electrical housing.

Combinations possibilities bus systems - joystick:

Bus system	Type code	Installation	Operating voltage	Technical data see	ST0	ST0N	ST1	ST4	M0N	VCS0	VNS0	NNS0	NNS0-PI	VNS2	CS1	CS1G	NS3	NS3G	HS0	HS2	HS2G	JMS3	FST
CANopen	ESS147I-CANopen	installation in joystick	10...36 VDC	TI-HS2																	X		
CANopen	ESS157I-CANopen	installation in joystick	10...36 VDC	TI-CAN-3		X							X		X		X					X	
CANopen	ESS165	Separate module	8...32 VDC	TI-CAN-4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
CAN2.0B	ESS100A	installation in joystick	9,5...32 VDC	TI-CAN-1		X							X		X		X					X	
SAE-J1939-71	ESS147I-J1939	installation in joystick	10...36 VDC	TI-HS2																	X		
SAE-J1939-71	ESS157I-J1939	installation in joystick	10...36 VDC	TI-CAN-3		X							X		X		X					X	
 Profibus-DP	ESS094A	installation in joystick	10...36 VDC	TI-Profibus-1		X							X		X		X				X	X	
Profibus-DP	ESS094B	installation in joystick	10...36 VDC														X						
Profinet I/O	ESS132	installation in joystick	12...35 VDC	TI-Profinet									X				X						
Profinet I/O	ESS150-A	installation in joystick	16...32 VDC	TI-BUS		X							X		X		X				X		
Profinet I/O with Profi-Safe-Protocol	ESS127	installation in joystick	12...35 VDC														X						
Modbus TCP/IP	ESS150-B	installation in joystick	16...32 VDC	TI-BUS									X		X		X				X		
Ethernet IP	ESS150-E	installation in joystick	16...32 VDC	TI-BUS									X		X		x				X		
USB	ESS160	Separate module	4,5...5,5 VDC	TI-USB	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Other combinations on request.

Bus system options:

Description	Version/Use	Type	Order number	Application:																			
				CANopen	CAN2.0B	SAE-J1939-71	Profibus	Profinet I/O	Profinet I/O	Modbus TCP/IP	Ethernet IP	USB											
Y-cable	Duplication of CANBus connections from 1x to 2x 9-pin D-Sub plugs		58290	ESS147I, ESS157I	ESS100A	ESS147I, ESS157I	ESS094A, ESS094B	ESS132, ESS127	ESS150-A	ESS150-B	ESS150-E	ESS160											
Additional module	for galvanic isolation of 8 external inputs and 4 external outputs	ESS130	29353				✓																
Connection cable	for power supply: Length 2 m, 5-pole, 1x 15-pole D-Sub socket, 1x free cable end	SS13463-E-5	44214				✓			✓													
Connection cable	for power supply: Length 2 m, 15-pole, 1x 15-pole D-Sub socket, 1x free cable end	SS13463-E-15	35957				✓			✓													
Connection plug	for bus connection: 9-pole D-Sub plug, metal housing, switchable terminating resistor, 90° cable outlet, diagnostic LEDs, quick connection (insulation displacement technique).		32274				✓																
Connection cable	for power supply: Length 2 m, 4-wire, A-coded, 1x 4-pole angled socket M12, 1x free cable end		38466							✓													
Connection cable	for bus connection: Length 2 m, 4-wire, D-coded, 1x 4-pole angled plug M12, 1x free cable end		38668							✓													
Connection cable	for I/O signals: Length 2 m, 8-wire, 1x 8-pole angled plug M12, 1x free cable end		38469							✓													
Connection plug	for bus connection: RJ45 connector, 4-pole, straight cable outlet, CAT5, IDC quick connector (AWG22-22)		52254														✓	✓	✓				
Connection cable	Set for input signals: Length 2 m, 1x cable 20 wires with 20-pole plug, 1x free end, 1x cable 12 wires with 12-pole plug, 1x open cable end	Kb-48	56806																			✓	
Connection cable	other length																						

Notes:

- Use BLRxx or GLRxx potentiometers for bus interfaces.
- With ESS127 (ProfiNet with Profi-Safe-Protocol), 1 potentiometer + 1 Hall sensor are required per axis.

- When installing amplifiers, bus interfaces in the joystick, take into calculation the extra charge for protective housing electronics (VNS0, NNS0) or select the corresponding joystick version (CS1G, NS3G, HS2G).

Handles Overview

Possible combinations, handle-joystick.

		ST0	ST1	ST4	M0	VCS0	VNS0	NNS0	VNS2	CS1	NS3	HS0	HS2	JMS3
G1		○	○			○	○	○	○	○	○		○	
G2		○	○			○	○	○	○	○	○		○	
G4T-WT		○	○	○		○	○			○		○		
G9				○		○	○	○		○	○		○	
G13		○	○			○	○	○	○	○	○		○	
G13-Z		○	○			○	○	○	○	○	○			
G19-Z						○	○			○				
G20						○	○	○	○	○	○	○	○	
G21		○	○	○		○	○	○	○	○	○	○	○	
G21-ZV						○	○	○	○	○				
G22			○	○		○	○	○	○	○	●	○	●	
G22-V			○	○		○	○	○	○	○	○		○	
G22-ZV						○	○	○	○	○				
G25				○		○	○	○		○	○		○	
G27		●	○											
G27-V		○	○											
G40		○	○	○		○	○	○	○	○	○	○	○	
G41		○	●			●	●			●				
G41D Re stÉ Äg / G41DR Si lbstrüg kg e						○	○							
G41H						○	○							
G41HD						○	○							
G41HDFZ						○	○							
G41HDV						○	○							

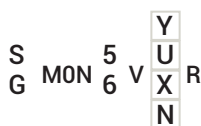
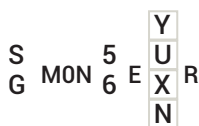
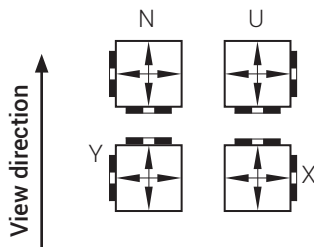
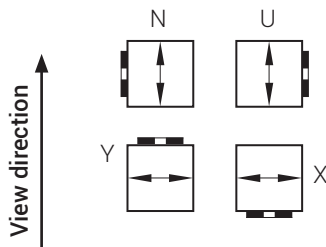
● Standard handle ○ additional charge

Notes: Handles cannot be combined with all joystick lever lengths.


		ST0	ST1	ST4	M0	VCS0	VNS0	NNS0	VNS2	CS1	NS3	HS0	HS2	JMS3
G41HDV Z						○	○							
G41HDZ						○	○							
G41T						○	○							
G41TJ						○	○							
G41Z			○			○	○			○				
G44														○
G45				●										
G45-Z				○										
G46-HDV									○					
G47-Z		○												
G50		○	○	○		○	○	○	○	○	○	○	○	
G51		○	○			○	○	○	○	○	○	○	○	
G52														●
G56		○				○	○	○	○	○	○		○	
G57												●		
G58		○				○	○	○	○	○	○		○	
G70				○		○	○			○				
KG40		○	○			○	○			○				○
KG50		○	○			○	○	○	○	○	○		○	○
KG56-I KKZ						○	○	○	○					
KG56-I KZ						○	○	○	○					
M054						●								
YGA		○				○	○	○	○	○	○		○	
YGN		○				○	○	○	○	○	○		○	

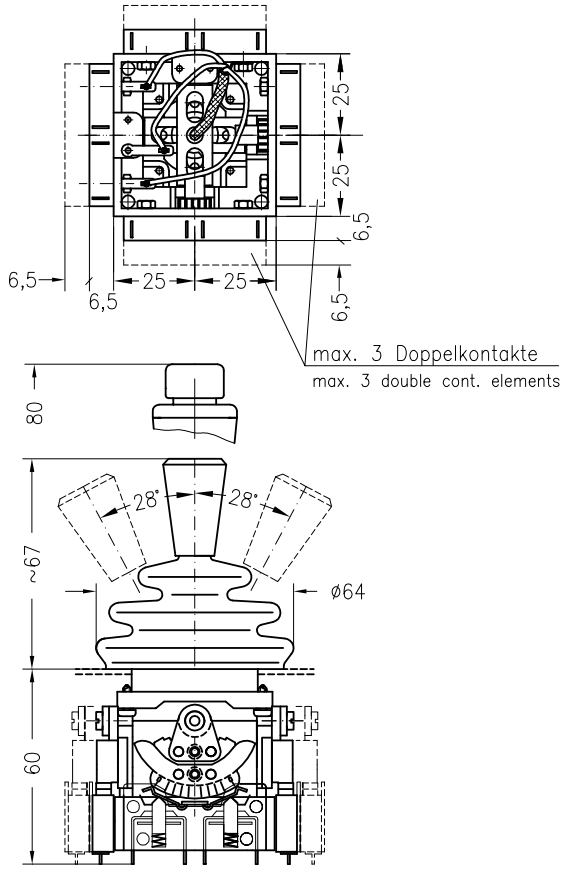
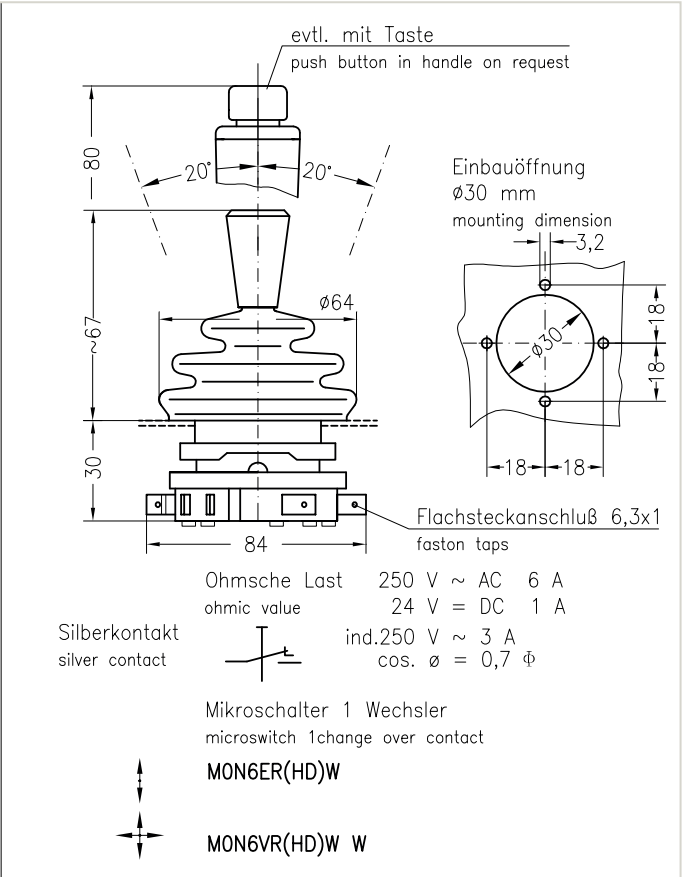
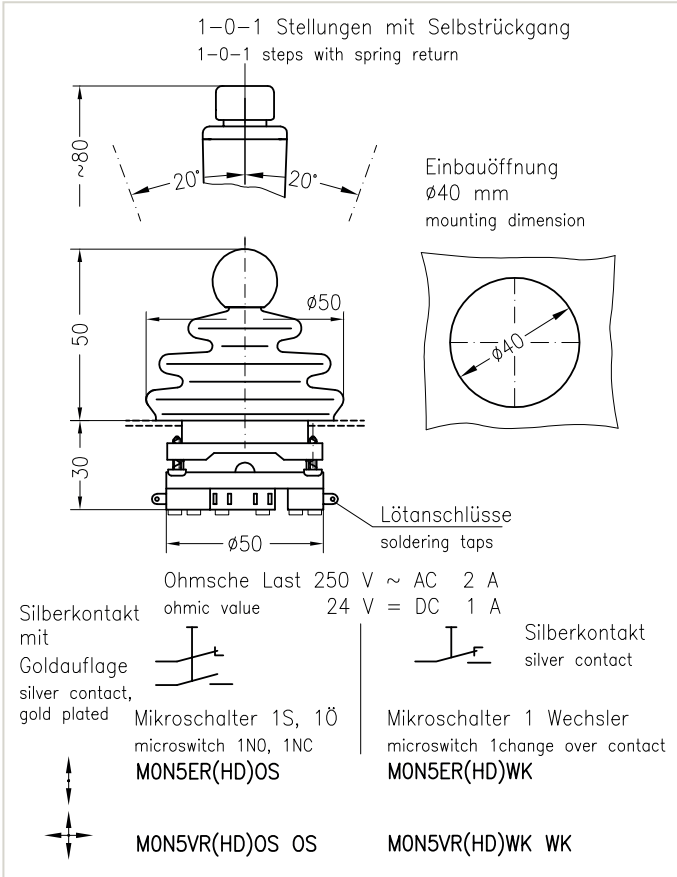
Drive E
Arrangement N, U, Y, X

Drive V
Arrangement N, U, Y, X



Note: In case of missing declaration of arrangement, version U will be produced.

Legend:  Mounting direction Potentiometer



max. 5-0-5 Stellungen
mit oder ohne Selbstrückgang
5-0-5 steps

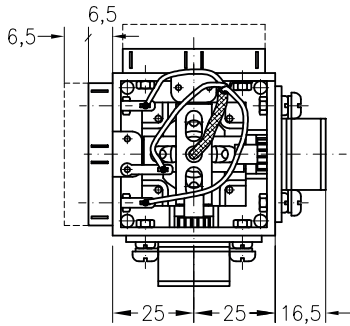
zwangsbetätigte Tastkontakte mit
Goldauflage oder Silberauflage
force actuated goldcontacts or
silvercontacts

Typ
GMON6E...
SMON6E...

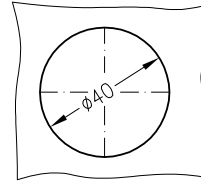
GMON6V...
SMON6V...

Gewicht ~ 0,1 kg
weight ~ 0,1 kg



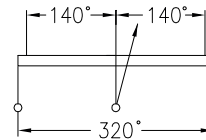


Einbauöffnung
 $\phi 40$ mm
 mounting dimension



evtl. mit Impedanzwandler 4–20 mA
 potentiometer – conductiv plastic

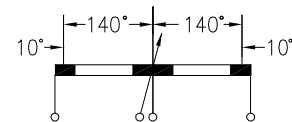
Potentiometer ohne Mittelanzapfung
 potentiometer without centre tap



Leitplastik
 conductivplastic
 1 kOhm Typ : B1
 5 kOhm : B5
 10 kOhm : B10

Achtung Schleiferbelastung max. 1 mA
 warning: wiper current max. 1 mA

Potentiometer mit Mittelanzapfung und Kurzschlußstrecken
 potentiometer with centre tap and short circuit path

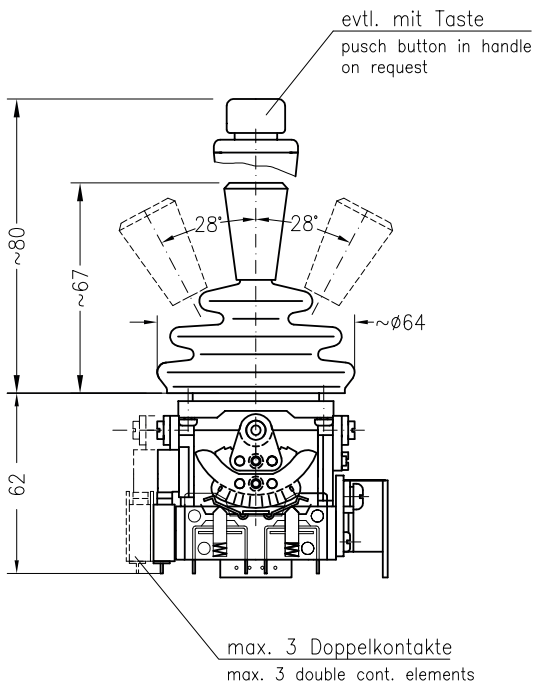


Leitplastik
 conductiv plastic
 5–0–5 kOhm Typ: B55
 10–0–10 kOhm Typ: B1010

Achtung: Schleiferbelastung max. 1 mA
 warning: wiper current max. 1 mA

Drahtgewickelte Potentiometer – 2 Watt
 potentiometer wire wound – 2 Watt
 PD 200 1–0–1 kOhm
 5–0–5 kOhm
 10–0–10 kOhm

Andere Potentiometer und Ohmwerte,
 bzw. Spannungs- oder Stromausgang
 auf Anfrage
 other potentiometer or ohmic value
 on request



Typ: SMON6ER--B
 GMON6ER--B

Gewicht: 0,16 kg
 weight: 0,16 kg

Schaltung
 circuit

Potentiometertyp
 potentiometertype



SMON6VR--B--B--
 GMON6VR--B--B--

Gewicht: 0,2 kg
 weight: 0,2 kg