

Tap Position Interface

Type REG-F 'D2'

Function

The tap position interface REG-F 'D2' isolates the BCD-code output of a tap changer transformer from the voltage control system REGSys.

An external DC voltage U+ supplies the moving side of the tap changer rows and is referenced to input 'E GND'. BCD inputs of REG-F 'D2' are the pins EBCD1 ..EBCD 20. Voltage outputs of REG-F 'D2' should be wired to BCD inputs of REGsys and 6 relay contacts (NO contacts) makes the BCD-code available for further use.

With feature 'E12 voltage U+ can supplied from REG-F 'D2'. Relay and BCD-outputs are supplied from build in power supply.

- ⊕ 6 BCD inputs for up to 1 ... 39 or -19 ... -0 ... 19 steps
- ⊕ up to 100m distance between REG-F and REG-D
- ⊕ contacts with AC 250V 2A, DC 220V 150W
- ⊕ large axiliary voltage range of the power supply

Technical specifications

Regulations and standards

IEC1010, IEC801-1 to 6; VDE0110, VDE0160
 Interference immunity EN50082-2
 Emitted interference EN50081-2, EN55011

Mechanical data

Design 19" plug-in modules (8T, 3H)
 Circuit board 100 x 160mm
 Front panel Aluminium, RAL 7035 grey
 Configuration according to DIN 41494 Part 5
 Plug-in connector 2 units, 'F1': DIN 41612 MH 24+7pole
 'F2': DIN 41612 F 48-pole
 19" mounting 'F1' at Positions 'n' and 'F2' plus 5T
 Degree of protection IP00
 Weight Plug-in modules ≤ 0.3 kg

Input

voltage U+ on EBCD1..20, inp.restist. Re; reference E GND
 outputs OFF < 3V AC / < 5V DC
 outputs ON (feature E12) DC 12 ..100V; Re ~ 40kΩ
 ON (feature E3) DC 50 ..250V; Re ~100kΩ
 AC voltage on inputs < 2 V, 50 Hz

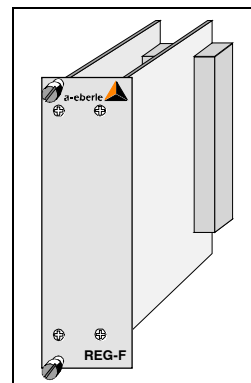
Output

BCD 1 ... BCD 20/Vz, to the BCD input (50 V) of the REG-D
 Voltage at 10kOhm ON (1) ≥ 10V DC refer. BCD GND
 OFF (0) < 5V DC

Voltage output U+ 15V DC ±10%, reference BCD GND
 feature E12: < 0,3 kΩ output resistance

Relays with one working contact each for outputting the BCD codes1..20/Vz-; Contact closed / open (1) / (0)
 Electrical isolation of the relays from each other and from all other circuits

Contact load AC 250V 2A DC 220V 150W
 Number of switching operations < 10⁵



Codetable

input:				#	output:			
BCD-Code				Dec	BCD-Code			
20 10					20 10			
8	4	2	1		8	4	2	1
0	0	0	0	0	0	0	0	0
0	0	0	U+	1	0	0	0	1
0	0	U+	0	2	0	0	1	0
0	0	U+	U+	3	0	0	1	1
0	U+	0	0	4	0	1	0	0
0	U+	0	U+	5	0	1	0	1
0	U+	U+	0	6	0	1	1	0
0	U+	U+	U+	7	0	1	1	1
U+	0	0	0	8	1	0	0	0
U+	0	0	U+	9	1	0	0	1
0 ≡ E GND					0 ≡ BCD GND			

Safety

Safety class / Overvoltage category I / II
 Degree of pollution 2
 Test voltage: 2.3kV AC
 Supply voltage to auxiliary voltage,
 to relay contacts,
 Auxiliary voltage to relay contacts

Current supply

Galv. separated Feature H1 AC 85..240V /DC100..264V
 Feature H2 AC 20.. 60 V / DC 18..72 V
 Power consumption < 6 VA / 6W H1;1A/T H2; 2A/T
 Voltage U+ output from REG-F 'D2' supplies contact rows
 DC 15 V -feature 'E12 only

Temperature Operation 0 ... +65°C
 Storage, transport -25 ... +85°C

Contact assignment

socket connector 'F1' 24+7p.	z	b	d
2	Rel.BCD 1		Rel.BCD 1
4	Rel.BCD 2		Rel.BCD 2
8	Rel.BCD 4		Rel.BCD 4
10	Rel.BCD 8		Rel.BCD 8
14	Rel.BCD10		Rel.BCD10
16	Rel.BCD20 or sign(-)		Rel.BCD20 or sign(-)
28	AC/DC L / + power supply		
30	AC/DC N / - power supply		
32	PE		

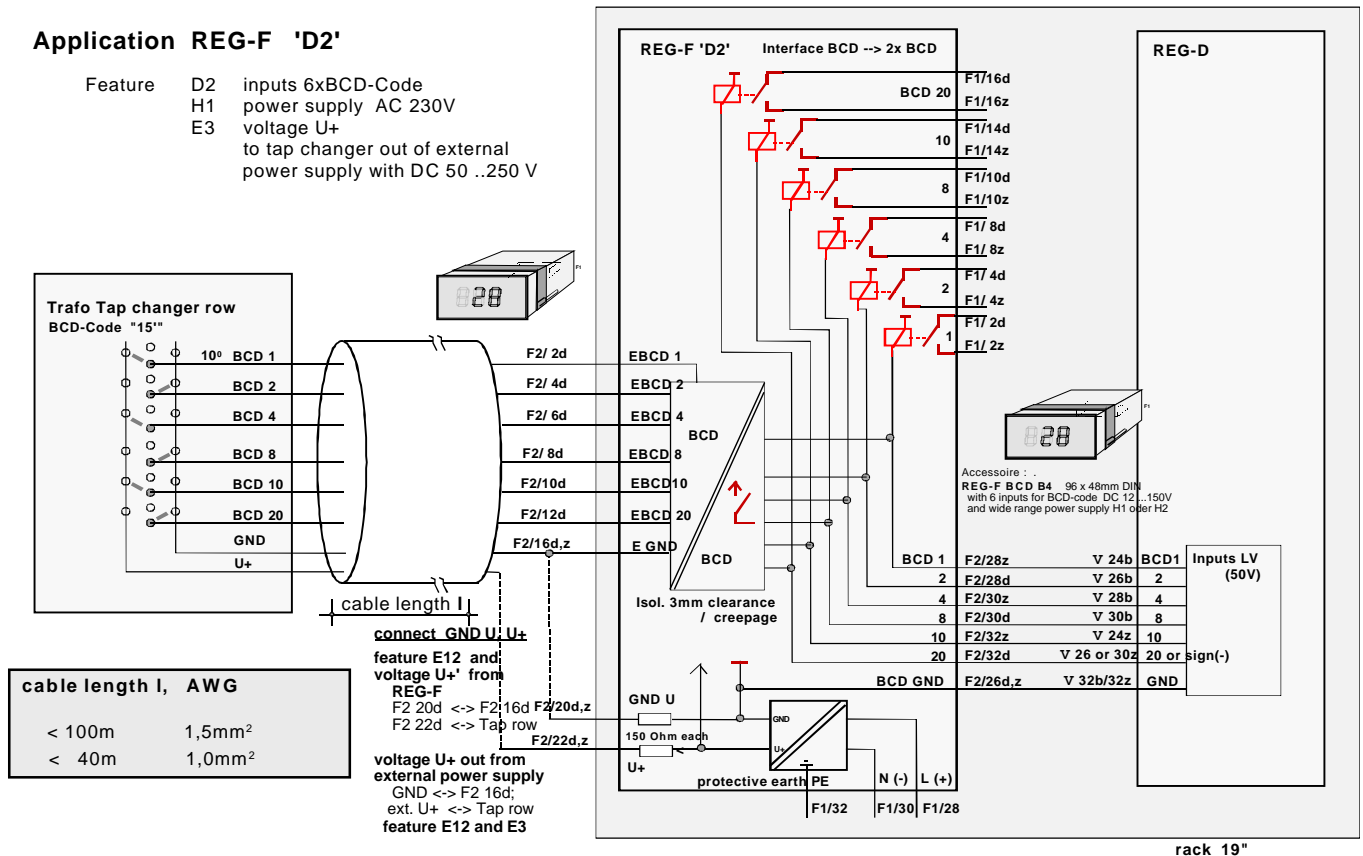
socket connector 'F2' 48pole	z	b	d
2			EBCD 1
4			EBCD 2
6			EBCD 4
8			EBCD 8
10			EBCD 10
12			EBCD 20/sgn(-)
16	E GND		E GND
18			
20	GND U (f.E12)		GND U (f.E12)
22	U+ (feat.E12)		U+ (feat.E12)
24			
26	BCD GND		BCD GND
28	BCD 1		BCD 2
30	BCD 4		BCD 8
32	BCD 10		BCD 20/sgn(-)

feature	ID		
REG-F 'D2' position indicator interface 8T 3H plug-in modules	REG-F D2		
Supply voltage galvanically isolated AC 85..240 V /DC 100 ..264V ./. AC 20... 60 V /DC 18 .. 72 V .	H1 H2		
Voltage U+ from REG-F 'D2' output U+, GND U DC 15 V or external voltage U+ at EBCD 1 ..20 DC 12 ..100V external voltage U+ at EBCD 1 ..20 DC 50 ..250V	E12 E3		

Also available is the REG-F 'D2' position indicator interface in 8T 3H plug-in modules or in a panel case with BCD-display.

Application REG-F 'D2'

- Feature D2 inputs 6xBCD-Code
 H1 power supply AC 230V
 E3 voltage U+ to tap changer out of external power supply with DC 50 ..250 V



When there is a large distance between the REG-F 'D2' and the tap changer contact row, the maximum cable length depends more of the interference influences of parallel energy cables than on the measure transduce resistance - see example. A superposed AC voltage of up to 2 V (feat. 'E12) or 10V (feat. 'E3) is permissible at the REG-F 'D2' input. Since each application has different earth and voltage conditions, the only general statement that can be made is that longer lines are possible if the parallel cables are shielded and have a larger separation between each other. (Transient suppression by opto couplers at inputs)

example cable length 1 wire with 24AWG (0,5mm², copper wires with 0,8mm diameter, shielded)

$$R_L = \text{distance to } R_s + \text{switch resist.} = 12 + 5 \Omega$$

$$l = R \times A / \rho = 12 \times 0,5 / 0,02 = 300 \text{ m}$$

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