

#### XTOB, XTOT Overload Relays



### Thermal Overload Relays

#### Product Description

The **XT** line of IEC motor thermal overload relays provides an efficient motor protection solution, available up to 630A. XTOB units can be directly mounted to the contactor or mounted separately.

#### Features and Benefits

- Direct connect up to 250A
- Stand alone and CT type up to 630A
- Large thermal overcurrent range
- Test button
- Manual/automatic selectable reset
- NO-NC auxiliary as standard
- Class 10A (to 250A)
- Class 30 (CT type)

### Contents

#### Description

	<i>Page</i>
Relays and Timers .....	<b>V5-T1-3</b>
Miniature Controls .....	<b>V5-T1-18</b>
Contactors and Starters .....	<b>V5-T1-35</b>
Thermal Overload Relays	
Catalog Number Selection .....	<b>V5-T1-129</b>
Product Selection .....	<b>V5-T1-130</b>
Accessories .....	<b>V5-T1-133</b>
Technical Data and Specifications .....	<b>V5-T1-136</b>
Dimensions .....	<b>V5-T1-138</b>
C440/ <b>XT</b> Electronic Overload Relay .....	<b>V5-T1-141</b>
Manual Motor Protectors .....	<b>V5-T1-157</b>
Combination Motor Controllers .....	<b>V5-T1-193</b>
<b>XT</b> Electronic Manual Motor Protector .....	<b>V5-T1-216</b>
EMS—Electronic Motor Starter .....	<b>V5-T1-229</b>
Reference Data .....	<b>V5-T1-231</b>

#### Standards and Certifications

- IEC EN 60947
- CE approved
- UL
- CSA
- ATEX
- RoHS



#### Notes

Short-circuit protection: Observe the maximum permissible fuse of the contactor with direct device mounting. See MN03402001E for more information on overload relays for Frames B–G. Trip Class: 10A  
 Suitable for protection of EEx e-motors. EC prototype test certificate available upon request. See manuals MN03402001E and MN03407001E, **Page V5-T1-133**.

#### Instructional Leaflets

- Pub51221 XTOB, D Frame overload relays (inside of packaging)
- Pub51222 XTOB, B–C Frame overload relays (inside of packaging)

## Technical Data and Specifications

### XTOB Overload Relay—General

Description	XTOB...BC1, XTOB...CC1	XTOB...DC1	XTOB...GC1, XTOB...GC1S	XTOB...HC1, XTOB...LC1
Standards	IEC/EN 60947, VDE 0660, UL, CSA	IEC/EN 60947, VDE 0660, UL, CSA	IEC/EN 60947, VDE 0660, UL, CSA	IEC/EN 60947, VDE 0660, UL, CSA
Climate proofing	①	①	①	①
Ambient temperature ②	–25°C to 55°C [–13°F to 131°F]	–25°C to 55°C [–13°F to 131°F]	–25°C to 55°C [–13°F to 131°F]	–25°C to 50°C [–13°F to 122°F]
Temperature compensation	Continuous	Continuous	Continuous	Continuous
Mechanical shock resistance (IEC/EN 60068-2-27) half-sinusoidal shock 10 ms	10g	10g	10g	10g
Degree of protection	IP20	IP20	IP20	P00
Protection against direct contact when actuated from front (IEC 536)	Finger and back-of-hand proof	Finger and back-of-hand proof	Finger and back-of-hand proof	Finger and back-of-hand proof
Insulation voltage (U <sub>i</sub> ) Vac	690	690	690	1000
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3
Impulse withstand voltage (U <sub>imp</sub> ) Vac	6000	6000	6000	8000
Operational voltage (U <sub>o</sub> ) Vac	690	690	690	1000
Safe isolation to VDE 0106 Part 101 and part 101/A1				
between auxiliary contacts and main contacts (Vac)	440	440	440	500
between main contacts (Vac)	440	440	440	500
Overload release setting range	0.1–32A	6–75A	25–150A	50–300A
Short-circuit protection maximum fuse	See overload relay tables starting on <b>Page V5-T1-144</b> .			
Temperature compensation residual error >40°C	<0.25	<0.25	<0.25	<0.25
Current heat loss (three conductors)				
Lower value of setting range, W	2.5	3	16	16
Upper value of setting range	6	7.5	28	28
Terminal capacity				
Solid, mm <sup>2</sup>	2 x (1–6)	2 x (1–16)	2 x (4–16)	—
Flexible with ferrule, mm <sup>2</sup>	2 x (1–4) 2 x (1–6) ③	1 x 25 2 x (1–10) ④	1 x (4–70) 2 x (4–50)	—
Flexible with cable lug, mm <sup>2</sup>	—	—	—	50–240
Stranded with cable lug, mm <sup>2</sup>	—	—	—	50–240
Solid or stranded, AWG	14 - 8	14 - 2	3 / 0	250 kcmil
Flat conductor (number of segments x width x thickness, mm <sup>2</sup> )	—	—	—	6 x 16 x 0.8
Busbar—width (mm)	—	—	—	25
Terminal screw	M4	M6	M10	M10 x 35
Tightening torque				
Nm	1.8	3.5	10	18
Lb-in	16	31	88.5	159.31
Tools				
Pozidriv screwdriver	Size 2	Size 2	—	—
Standard screwdriver	1 x 6	1 x 6	—	—
Hexagon socket head spanner (SW)	—	—	5 mm	16 mm

#### Notes

- ① Damp heat, constant, to IEC 60068-2-78; damp heat, cyclic, to IEC 60068-2-30.
- ② Ambient temperature operating range to IEC/EN 60947, PTB: –5°C to 50°C.
- ③ 6 mm<sup>2</sup> flexible with ferrules to DIN 46228.
- ④ Main contact terminal capacity, solid and stranded conductors with ferrules: When using two conductors use identical cross-section.

**XTOB Overload Relay—Auxiliary and Control Circuit Connections**

Description	XTOB...BC1, XTOB...CC1	XTOB...DC1	XTOB...GC1, XTOB...GC1S	XTOB...HC1, XTOB...LC1
Impulse withstand voltage ( $U_{imp}$ ) Vac	6000	6000	6000	4000
Overvoltage category/pollution degree	III/3	III/3	III/3	III/3
Terminal capacity				
Solid, mm <sup>2</sup>	2 x (0.75–4)	2 x (0.75–4)	2 x (0.75–4)	2 x (0.75–4)
Flexible with ferrule, mm <sup>2</sup>	2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–2.5)	2 x (0.75–2.5)
Solid or stranded (AWG)	2 x (18–12)	2 x (18–12)	2 x (18–12)	2 x (18–12)
Terminal screw	M3.5	M3.5	M3.5	M3.5
Tightening torque				
Nm	0.8–1.2	0.8–1.2	0.8–1.2	0.8–1.2
Lb-in	7–10.6	7–10.6	7–10.6	7–10.6
Tools				
Pozidriv screwdriver	Size 2	Size 2	Size 2	Size 2
Standard screwdriver	1 x 6	1 x 6	1 x 6	1 x 6
Rated insulated voltage ( $U_i$ ) Vac	500	500	500	500
Rated operational voltage	500	500	500	500
Safe isolation to VDE 0106 Part 101 and part 101/A1 between auxiliary contacts	240	240	240	240
Conventional thermal current, $I_{th}$	6	6	6	6
Rated operational current—AC-15				
Make contact				
120V	1.5	1.5	1.5	1.5
240V	1.5	1.5	1.5	1.5
415V	0.5	0.5	0.5	0.5
500V	0.5	0.5	0.5	0.5
Break contact				
120V	1.5	1.5	1.5	1.5
240V	1.5	1.5	1.5	1.5
415V	0.9	0.9	0.9	0.9
500V	0.8	0.8	0.8	0.8
Rated operational current—DC-13 L/R ≤15 ms <sup>①</sup>				
24V	0.9	0.9	0.9	0.9
60V	0.75	0.75	0.75	0.75
110V	0.4	0.4	0.4	0.4
220V	0.2	0.2	0.2	0.2
Short-circuit rating without welding maximum fuse, A gG/gI	6	6	6	6

**Note**

① Rated operational current: Making and breaking conditions to DC-13, L/R constant as stated.

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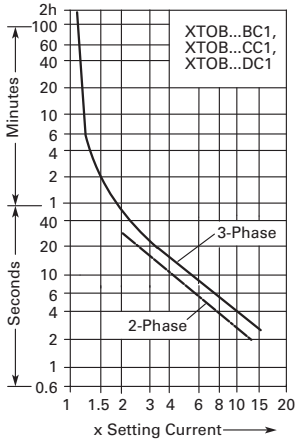
#### Tripping Characteristics

These tripping characteristics are the mean values of the spread at 20°C ambient temperature in a cold state.

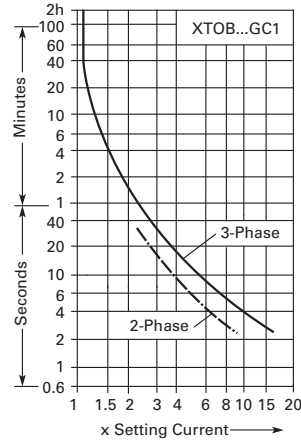
Tripping time depends on response current. With devices at operating temperature, the tripping time of the overload relay reduces to approximately

25% of the read off value. Specific characteristics for each individual setting range can be found in MN03402001E.

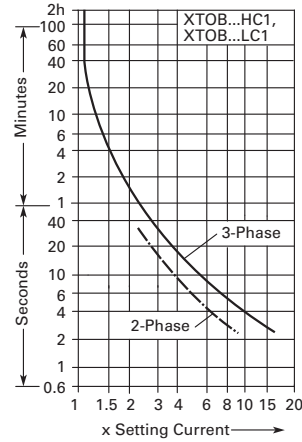
#### XTOB...BC1, XTOB...CC1, XTOB...DC1



#### XTOB...GC1



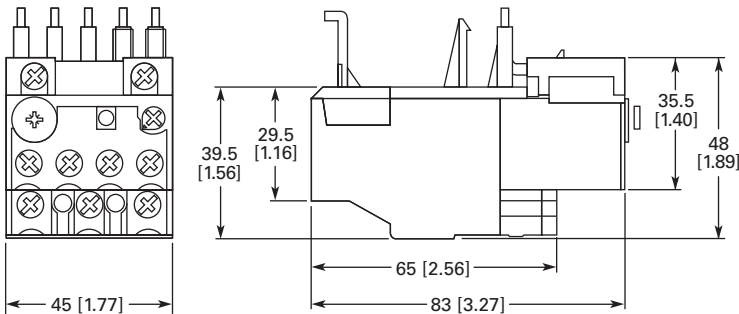
#### XTOB...HC1, XTOB...LC1



#### Dimensions

Approximate Dimensions in mm [in]

#### Frames B-C, XTOB...BC1 and XTOB...CC1 Overload Relays



#### Frame D, XTOB...DC1 Overload Relay

