

Series C Internal Accessories



Contents

<i>Description</i>	<i>Page</i>
Product Overview	V4-T2-220
Standards and Certifications	V4-T2-221
Quick Reference	V4-T2-222
G-Frame (15–100 Amperes)	V4-T2-225
F-Frame (10–225 Amperes)	V4-T2-239
J-Frame (70–250 Amperes)	V4-T2-257
K-Frame (70–400 Amperes)	V4-T2-265
L-Frame (125–600 Amperes)	V4-T2-289
M-Frame (300–800 Amperes)	V4-T2-315
N-Frame (400–1200 Amperes)	V4-T2-326
R-Frame (800–2500 Amperes)	V4-T2-341
Motor Circuit Protectors (MCP)	V4-T2-360
Motor Protection Circuit Breakers (MPCB)	V4-T2-371
Type ELC Current Limiter Attachment (Size 0–4)	V4-T2-373
Current Limiting Circuit Breaker Module	V4-T2-374
Internal Accessories	
Product Selection	V4-T2-379
Technical Data and Specifications	V4-T2-398
External Accessories	V4-T2-410

Internal Accessories

Product Overview

Alarm Switch

For remote indication of automatic trip operation. Does not function with manual switching; however, it will operate when either a shunt trip or undervoltage release is operated. A “make” contact closes and a “break” contact opens when the alarm/lockout switch operates. The switch automatically resets when the circuit breaker is reset.

Auxiliary Switch

The auxiliary switch provides circuit breaker contact status information by monitoring the position of the molded cross bar that contains the moving contact arms. The auxiliary switch is used for remote indication and interlock system verification, and consists of one or two SPDT switches housed in a plug-in module. Each SPDT switch has one “a” and one “b” contact. When the circuit breaker contacts are open, the “a” contact is open and the “b” contact is closed.

Auxiliary Switch and Alarm Switch Combination

Each catalog number listed in tables on **Pages V4-T2-382** and **V4-T2-383** includes one auxiliary switch and one alarm switch. In an auxiliary switch ASL switch combination, the auxiliary switch is always mounted on the side of the plug-in module next to the center pole of the circuit breaker.

Shunt Trip

The shunt trip provides remote controlled tripping of the circuit breaker. The shunt trip consists of an intermittent rated solenoid with a tripping plunger and a cutoff switch assembled to a plug-in module. When required for ground fault protection applications, certain AC rated shunt trips, as noted in the electrical rating table, are suitable for operation at 55 percent of rated voltage.

Select shunt trip catalog number for the voltage within the indicated voltage range. Shunt trip coils are designed to be applied at specific AC or DC voltages within the voltage range shown. Electrical ratings are also shown on applicable circuit breaker accessory nameplates.

Low Energy Shunt Trip

Low energy shunt trip devices are designed to operate from low energy output signals from dedicated current sensors typically applied in ground fault protection schemes. However, with a proper control voltage source, they may be applied in place of conventional trip devices for special applications. Flux paths surrounding permanent magnets used in the shunt trip assembly hold a charged spring poised in readiness to operate the circuit breaker trip mechanism.

When a 100 microfarad capacitor charged to 28 Vdc is discharged through the shunt trip coil, the resultant flux opposes the permanent magnet flux field, which releases the stored energy in the spring to trip the circuit breaker. As the circuit breaker resets, the shunt trip reset arm is actuated by the circuit breaker handle, resetting the shunt trip. The plug-in module is mounted in retaining slots in the top of the trip unit. Coil is intermittent-rated only. Cutoff provisions required in control circuit.

Undervoltage Release Mechanism

The undervoltage release mechanism monitors a voltage (typically a line voltage) and trips the circuit breaker when the voltage falls to between 70 and 35 percent of the solenoid coil rating.

The undervoltage release mechanism consists of a continuous rated solenoid with a plunger and tripping lever mounted in a plug-in module. The tab on the tripping lever resets the undervoltage release mechanism when normal voltage has been restored and the circuit breaker handle is moved to the reset (or OFF) position. With less than pickup voltage applied to the undervoltage release mechanism, the circuit breaker contacts will not touch when a closing operation is attempted.

Note: Undervoltage release mechanism accessories are not designed for, and should not be used as, circuit interlocks.

Accessory Terminal Block (R-Frame)

(For fixed-mounted configuration.)

Internal accessory wiring leads are normally supplied with pigtail leads (18 AWG) that exit from the right side of the circuit breaker. Where specified, fixed-mounted accessory terminal blocks are available. A maximum of one 24-point terminal block can be installed on the right side of the circuit breaker for the internal accessories.

For convenience in determining the appropriate number of terminal block points required, refer to **Page V4-T2-378**.

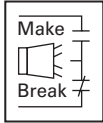
PowerNet and Zone Interlock Kits (OPTIM 550 only) K-, L- and N-Frames

Eaton's PowerNet Communications Kit can be ordered to add PowerNet communications to an existing OPTIM 550 breaker in the field. An 18-inch (457.2 mm) wiring pigtail is routed to the rear of the breaker: two wires for PowerNet and two wires for 24 Vdc (45 mA load). It is recommended that the power supply be an "isolated high quality" unit.

Product Selection

Alarm Switch

Alarm Switch



G-Frame Alarm Switch (RH Only) ①

Electrical Ratings			Contact Arrangement	Factory Suffix	Catalog Number ②③④
Volts	Frequency	Amperes			
Alarm Switch					
240	50/60 Hz	6	1 Make/1 Break	B3	1288C75G03
Alarm Switch Auxiliary Switches Combination					
240	50/60 Hz	6	1 Make/1 Break and 1A/1B	B13	1288C76G09

F-Frame Alarm Switch ①

Number of Contacts (Make and Break)	Mounting Location (Pole)	Factory Mounted Connection Type and Location			Factory Installation Kit ⑤		
		18-Inch (457.2 mm) Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side Suffix Number	Rear ⑥ Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Catalog Number	Catalog Number
1	Left ⑦	B01	B02	B03	B04	A1L1LPK	A1L1LTK
	Right	B05	B06	B07	B08	A1L1RPK	A1L1RTK
2	Left ⑦	B09	B10	—	B11	A2L1LPK	A2L1LTK
	Right	B12	B13	—	B14	A2L1RPK	A2L1RTK
1	Single-pole	B15 ⑧	—	—	—	—	—

F-Frame HMCP Alarm Switch ①

Number of Contacts (Make and Break)	Mounting Location (Pole)	Factory Mounted Connection Type and Location			Factory Installation Kit ⑤		
		18-Inch (457.2 mm) Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side Suffix Number	Rear ⑥ Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Catalog Number	Catalog Number
1	Left ⑦	B01	B02	B03	B04	MA1L1LPK	MA1L1LTK
	Right	B05	B06	B07	B08	MA1L1RPK	MA1L1RTK
2	Left ⑦	B09	B10	—	B11	MA2L1LPK	MA2L1LTK
	Right	B12	B13	—	B14	MA2L1RPK	MA2L1RTK

J-Frame and HMCP (J) Alarm Switch

Number of Contacts (Make and Break)	Mounting Location (Pole)	Factory Mounted Connection Type and Location			Field Mounted Field Installation Kits ⑨		
		18-Inch (457.2 mm) Pigtail Leads			Terminal Block	Pigtail Leads	Terminal Block
		Same Side Suffix Number	Rear ⑦ Suffix Number	Opposite Side Suffix Number	Same Side Suffix Number	Catalog Number	Catalog Number
1	Left ⑧	B01	B02	B03	B04	A1L2LPK	A1L2LTK
	Right	B05	B06	B07	B08	A1L2RPK	A1L2RTK ⑨

Notes

- ① F-Frame circuit breakers are factory sealed. Underwriters Laboratories requires that internal accessories be installed at the factory. Internal accessories are UL listed for factory installation under E7819. Where local codes and standards permit and UL listing is not required, internal accessories can be field installed; however, this is not recommended for FDE breakers. Accessory installation should be done before the circuit breaker is mounted and connected.
- ② Includes 24-inch (609.6 mm) external pigtail leads, 18 AWG (16–0.010).
- ③ A maximum of two internal accessories may be mounted in a three-pole circuit breaker.
- ④ Suitable for mounting in right pole only of two- or three-pole breaker.
- ⑤ Not listed with Underwriters Laboratories; for field installation.
- ⑥ Standard pigtail lead exit location.
- ⑦ Standard mounting location.
- ⑧ Factory installation only. Leads exit load end of circuit breaker.
- ⑨ Listed with Underwriters Laboratories; for field installation on interchangeable trip unit breakers under E64983.
- ⑩ Standard mounting location—leads exit rear of breaker.

Shunt Trip ①

Breaker Type	Voltage Rating	Mounting Location	Catalog Number	Factory Modification Code
E ² F/E ² FM	48–127 Vac or 48–60 Vdc	Left pole	SNT1LP08K ②	S06
	208–230 Vac or 110–127 Vdc	Left pole	SNT1LP12K ②	S10
E ² J/E ² JM	110–240 Vac or 110–125 Vdc	Left pole	SNT2P11K ③	S10
E ² K/E ² KM/E ² KW	110–240 Vac or 110–125 Vdc	Left pole	SNT3P11K ③	S10
E2LME/E2LMZ	24 Vac/Vdc	Left pole	SNT024CPK	S6
	48–60 Vac/Vdc	Left pole	SNT4860CPK	S7
	110–240 Vac/Vdc	Left pole	SNT120CPK	S2
E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW	48–60 Vac	Left pole	SNT4LP05K ②	S06
	48–60 Vdc	Left pole	SNT4LP23K ②	S86
	110–240 Vac	Left pole	SNT4LP11K ②	S10
	110–125 Vdc	Left pole	SNT4LP26K ②	S42
E ² N/E ² NM	110–240 Vac	Left pole	SNT5LP11K ②	S10
	110–125 Vdc	Left pole	SNT5LP26K ②	S42
E ² R/E ² RM	110–240 Vac	Right pole	SNT6P11K ④	S29
	110–125 Vdc	Right pole	SNT6P26K ④	S45

Auxiliary Switch

Breaker Type	Number of Sets of Contacts (1A and 1B)	Mounting Location	Catalog Number	Factory Modification Code
E ² F/E ² FM	1	Right	A1X1PK	A06
	2	Right	A2X1RPK	A13
E ² J/E ² JM	1	Right	A1X2PK	A06
	2	Right	A2X2PK	A13
E ² K/E ² KM/E ² KW	1	Right	A1X3PK	A06
	2	Right	A2X3PK	A13
E ² LME/E ² LMZ	1	Right	AUX1A1BPK	A1
	2	Right	AUX2A2BPK	A2
E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW	1	Right	A1X4PK	A06
	2	Right	A2X4PK	A13
E ² N/E ² NM	1	Right	A1X5PK	A06
	2	Right	A2X5PK	A13
E ² R/E ² RM	2	Right	A2X6RPK	A12
	4	Right	A4X6RPK	A19

Alarm (Signal/Lockout Switch)

Breaker Type	Number of Sets of Contacts (Make and Break)	Mounting Location	Catalog Number	Factory Modification Code
E ² F/E ² FM	1	Right	A1L1LPK/A1L1RPK	B06
	2	Right	A2L1LPK/A2L1RPK	B13
E ² J/E ² JM	1	Right	A1L2LPK/A1L2RPK	B06
E ² K/E ² KM/E ² KW	1	Right	A1L3LPK/A1L3RPK	B06
	2	Right	A2L3LPK/A2L3RPK	B13
E ² LME/E ² LMZ	1	Right	ALM1M1BJPK	B1
	2	Right	ALM2M2BJPK	B3
E ² L/E ² LM/E ² LW/E ² M/ E ² MM/E ² MW	1	Right	A1L4LPK/A1L4RPK	B06
	2	Right	A2L4LPK/A2L4RPK	B13
E ² N/E ² NM	1	Right	A1L5LPK/A1L5RPK	B06
	2	Right	A2L5LPK/A2L5RPK	B13
E ² R/E ² RM	1	Right	A1L6RPK	B05
	2	Right	A2L6RPK	B12

Notes

- ① Contact Eaton for internal accessory voltage ratings not listed.
- ② LH (RH also available).
- ③ LH or RH.
- ④ RH only.