

3.1

IEC Contactors and Starters

XT IEC Power Control

3

IEC Non-Metallic Enclosure—Contactors and Starters



Non-Metallic Enclosure—Contactors and Starters

Product Description

XT non-metallic 4X starters are the latest addition to our broad line of pre-engineered solutions that make it easy to get an enclosed starter fast! These sturdy, uncomplicated starters are economical, but built to last. Components are all housed in a dust-tight, rain-tight, oil-tight, water-tight and corrosion resistant polycarbonate insulated enclosure. In most cases, **XT** non-metallic 4X starters are available from stock for next day delivery.

Reliable Protection

Each starter features an Eaton **XT** IEC thermal overload relay. Fourteen overload sizes are available to complete the starter, providing adjustable

settings for 0.1 to 32 full load amps. Because of its direct mount design, the **XT** relay and resulting starter command a very small footprint.

Clever, Convenient Design to 25 hp

Six different base models (single- and three-phase) are available, ranging from fractional to 25 hp units (at 575 V). This allows you to closely match the starter to your application.

Each starter is equipped with a telescopic base-mount for the pilot device contact blocks. This eliminates all wiring between the cover and starter base, making commissioning and troubleshooting a snap.

Additional Reference

Cover Control	V10-T3-3
Dimensions	Tab 14
Accessories and Modifications	Tab 15
Renewal Parts	Tab 16
Technical Data and Specifications	Tab 17

Contents

Description	Page
Non-Metallic Enclosure—Contactors and Starters	
Catalog Number Selection	V10-T3-3
Cover Control Options	V10-T3-3
Product Selection	V10-T3-4
Metallic Enclosure—Contactors and Starters	V10-T3-8
Combination Motor Controllers	V10-T3-43

Features and Benefits

- Single- and three-phase enclosed starters to 25 hp (at 575 V)
- Rugged IP65 polycarbonate enclosure equivalent to NEMA 1, 12, 13, 3R and 4X environmental protection
- All starters feature the modern **XT** contactor family from Eaton in your choice of control voltage from 24 Vac to 600 Vac
- Class 10 motor protection is provided by adjustable bimetal overload relays
- Standard starters feature START/STOP double pushbuttons and a RESET selected from our rugged M22 pilot device line
- Other control options include OFF–ON or HAND–0–AUTO selector switches, with or without pilot light
- All starters use electrical operators to energize and de-energize the starter, providing longer component lifespan and the option for two-wire control
- 5 hp starters are only six inches high; 25 hp starters are less than 10 inches high

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- UL Listed/CSA/IEC

Product Configuration Overview

Starter sizes (mm)

- To 5 hp (at 575 V): 160 x 100 x 145 (L x W x D)
- To 20 hp (at 575 V): 200 x 120 x 160 (L x W x D)
- To 25 hp (at 575 V): 240 x 160 x 160 (L x W x D)

Phases

- Available in single- and three-phase

Contactors

- From miniature to 32 amps

Voltages

- 50 Hz: 110 V, 23 V, 415 V
- 60 Hz: 24 V, 120 V, 208 V, 240 V, 480 V, 600 V

Pilot devices

- START/STOP double-pushbutton
- ON–OFF selector switch
- HAND–0–AUTO selector switch

Illumination options

- Red light 85–264 Vac
- Red light 12–30 Vac/Vdc
- Without illumination

IEC Metallic Enclosure—Contactors and Starters



3

Contents

<i>Description</i>	<i>Page</i>
Non-Metallic Enclosure—Contactors and Starters . . .	V10-T3-2
Metallic Enclosure—Contactors and Starters	
Catalog Number Selection	V10-T3-9
Product Selection	
Non-Combination Starters	V10-T3-14
Combination Starters	V10-T3-23
Wiring Diagrams	V10-T3-35
Combination Motor Controllers	V10-T3-43

Metallic Enclosure—Contactors and Starters

Product Description

Eaton's **XT** line includes IEC contactors, starters and combination motor controllers (CMCs). Designed to meet international standards, the enclosed control **XT** line (ECX), carries UL and cUL certifications.

Features and Benefits

- AC control from 12 V to 600 V 50/60 Hz
- DC control from 24 V to 220 V
- Available with screw or spring cage terminals
- Reversing or non-reversing contactors and starters
- AC-3 contactor ratings to 1000 A and AC-1 contactor ratings to 2000 A
- Non-reversing starters to 650 A
- Panel or DIN rail mounting to 65 A
- IP20 finger and back-of-hand proof
- Large ambient temperature range, -25 °C to +50 °C [-13 °F to +122 °F]

- AC and DC controlled contactors in the same compact frame
- Low power consumption DC coils
- Built-in NO or NC auxiliary contacts to 32 A
- Plug-in accessories for reduced installation time
- Types 1 (IP23), 4 (IP66), 4X (IP66), 12 (IP65) and 3R (IP32)
- Circuit breakers, fused, non-fused and non-combination designs available
- Opaque (standard) or clear covers available on non-metallic Halyester enclosure option

Standards and Certifications

Note: See **Tab 17** for additional information on standards and certifications that apply to all enclosed control products.

- Fusible—with Class J fuses
 - UL Listed
 - cUL Listed ①
- Circuit Breaker HMCP/E
 - UL Listed
 - cUL Listed ①

Short-Circuit Ratings

- Fused, non-fused
 - 10K AIC at 600 V
- HMCP
 - 0–10 hp 15K AIC at 600 V
 - 15–125 hp 25K AIC at 600 V
- Non-combination
 - 0–1 hp 1K AIC at 600 V
 - 1.5–50 hp 5K AIC at 600 V
 - 50–200 hp 10K AIC at 600 V

Note

① cUL Listing indicates appropriate CSA standard investigation.

Additional Reference

Dimensions	Tab 14
Accessories and Modifications	Tab 15
Renewal Parts	Tab 16
Technical Data and Specifications	Tab 17

Catalog Number Selection

XT IEC Line Metallic Enclosed Control

EC X 25 E 5 A A A -

Design
X = XT IEC

Modification Codes
See Tab 15

Class	Page
09= Non-combination non-reversing starter	V10-T3-14
10= Non-combination reversing starter	V10-T3-17
11= Non-combination non-reversing starter with CPT	V10-T3-20
19= Combination non-reversing starter—fusable/non-fusable disconnect	V10-T3-23
20= Combination reversing starter—fusable/non-fusable disconnect	V10-T3-26
25= Combination non-reversing starter—circuit breaker	V10-T3-29
26= Combination reversing starter—circuit breaker	V10-T3-32

Overload Range
See table below

Disconnect Fuse Clip Ratings	
A = None	
C = 30 A J	
E = 60 A J	
G = 100 A J	
Circuit Breaker Ratings	
A = None	F = 50 A
B = 3 A	W = 70 A
C = 7 A	G = 100 A
D = 15 A	H = 150 A
E = 30 A	J = 250 A

Size	
Combination (Class 16–74)	Non-Combination (Class 09–11) Ampere Rating (UL 600 V)
IEC Size B–Q	B = 7 A J = 40 A C = 9 A K = 50 A D = 12 A L = 65 A E = 15 A M = 80 A F = 18 A N = 95 A G = 25 A P = 115 A H = 32 A Q = 150 A

Enclosure Type/IP Ratings ①
1 = Type 1—General purpose/IP23
3 = Type 4—Painted steel/IP66
4 = Type 4X—Watertight (304-Grade stainless steel)/IP66
5 = Type 4X—Watertight (non-metallic)/IP66
8 = Type 12—Dust-tight/IP65

Cover Control
Type 1 non-comb. (NEW BOX 1 only) starters see Page V10-T3-11
Type 1 non-comb. starters see Page V10-T3-12
All other starters see Page V10-T3-14

Coil Voltage
A = 120 V H = 277 V
B = 240 V L = 380 V / 50 Hz
C = 480 V Q = 24 Vdc
D = 600 V T = 24 Vac
E = 208 V

XTOB Overload Relays for Enclosed XT

FLA Ratings	Size B–E 7–15 A	Size F–H 18–32 A	Size J–L 40–65 A	Size M–N 80–95 A	Size P–Q 115–150 A
0.1–0.16	A	A	—	—	—
0.16–0.24	B	B	—	—	—
0.24–0.4	C	C	—	—	—
0.4–0.6	D	D	—	—	—
0.6–1	E	E	—	—	—
1–1.6	F	F	—	—	—
1.6–2.4	G	G	—	—	—
2.4–4	H	H	—	—	—
4–6	I	I	—	—	—
6–10	J	J	J	—	—
9–12	K	—	—	—	—
12–16	L ②	L	L	—	—

FLA Ratings	Size B–E 7–15 A	Size F–H 18–32 A	Size J–L 40–65 A	Size M–N 80–95 A	Size P–Q 115–150 A
16–24	—	M	M	—	—
24–32	—	N	—	—	—
24–40	—	—	P	—	—
25–35	—	—	—	S	S
35–50	—	—	—	T	T
40–57	—	—	Q	—	—
50–65	—	—	R	—	—
50–70	—	—	—	U	U
70–100	—	—	—	V	V
95–125	—	—	—	—	W
120–150	—	—	—	—	X

Notes

- ① See Tab 1 for enclosure type/IP rating cross-reference.
- ② Size B–E is 10–16 A.

C440 Solid-State Overload Modifications

Reliability and Improved Uptime

- C440 provides the users with peace of mind knowing that their assets are protected with the highest level of motor protection and communication capability in its class
- Extends the life of plant assets with selectable motor protection features such as trip class, phase unbalance and ground fault
- Protects against unnecessary downtime by discovering changes in your system (line/load) with remote monitoring capabilities
- Status LED provides added assurance that valuable assets are protected by indicating the overload operational status

Flexibility

- Improves return on investment by reducing inventory carrying costs with wide FLA adjustment (5:1) and selectable trip class
- Design incorporates built-in ground fault protection thus eliminating the need for separate CTs and modules
- Flexible communication with optional I/O enables easy integration into plant management systems for remote monitoring and control

Monitoring Capabilities

- Individual phase currents RMS
- Average three-phase current RMS
- Thermal memory
- Fault indication (overload, phase loss, phase unbalance, ground fault)

Safety

- IP20 rated terminal blocks
- Available in Eaton's industry leading FlashGard MCCs
- Tested to the highest industry standards such as UL, CSA, CE and IEC
- RoHS compliant

For solid-state overload enclosed control, add R63 or R64 modification code after the base Catalog Number. (Example, ECX09G1AAA-**R63/B**).

Modification	IEC Size	NEMA Size	Full Load Current Adjustment Range (A)	Three-Phase without Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30	Three-Phase with Ground Fault Auto/Manual Reset Overload Selectable Class 10/20/30
Solid-state electronic overload relay ^①	B and C	00	0.33–1.65 ^②	R63/A	R64/A
			1–5	R63/B	R64/B
			4–20	R63/C	R64/C
	C and D	0 and 1	0.33–1.65 ^②	R63/A	R64/A
			1–5	R63/B	R64/B
			4–20	R63/C	R64/C
			9–45	R63/D	R64/D
	D	2	9–45	R63/D	R64/D
	D, F and G	3	20–100	R63/E	R64/E
	G	4	28–140	R63/F	R64/F
	N/A	5	60–300	R63/G	R64/G
	N/A	6	120–600	R63/H	R64/H

Notes

- ^① Features:
- Self-powered
 - Phase loss protection
 - Current adjustment knob
 - ±1% repeat accuracy
 - 1NO and 1NC isolated contacts
- ^② Not UL Listed.