

Freedom Full Voltage HVAC Starters



7

Product Description

Eaton's ECH line of combination starters was developed specifically for customers in the HVAC industry. The ECH product combines the requirements of motor overload and short-circuit protection into one package. These starters were designed to be compact and to offer the basic features prevalent in the HVAC marketplace. The line includes the Freedom line of FVNR NEMA starters with either (C306) interchangeable heaters or solid-state overload relays, a CPT, HOA and red pilot light.

Features

- Compact design
- Type 1 enclosure
- CPT available
- Bimetal or solid-state overload options
- 30 mm pilot devices
- HOA
- Red RUN pilot
- Disconnect switch or HMCPE
- NEMA Sizes 0–2

Interchangeable Heater Features

C306 overload relays are designed for use with CE or CN non-reversing and reversing contactors. Four sizes are available for overload protection up to 144A.

- Selectable manual or automatic reset operation
- Interchangeable heater packs adjustable $\pm 24\%$ to match motor FLA and calibrated for use with 1.0 and 1.15 service factor motors. Heater packs for 32A overload relay will mount in 75A overload relay—useful in derating applications such as jogging
- Class 10 or 20 heater packs
- Load lugs built into relay base

Contents

Description

Freedom Full Voltage HVAC Starters

Standards and Certifications	V10-T7-3
Additional Reference	V10-T7-3
Catalog Number Selection	V10-T7-3
Cover Control	V10-T7-3
Product Selection	V10-T7-4
Modification Codes	V10-T7-8
Wiring Diagram	V10-T7-9
Dimensions	V10-T7-10

Page

Motor Control

- Two B600 alarm (NO) and fault (NC) contacts
- Test/Trip button

Motor Protection

- Thermal overload
- Phase loss
- Selectable (ON/OFF) phase unbalance
- Selectable (ON/OFF) ground fault (if selected GF SSOL relay)

User Interface

- Large FLA selection dial
- Trip status indicator
- Operating mode LED
- DIP switch selectable trip class, phase unbalance and ground fault
- Selectable Auto/Manual reset

Feature Options

- Remote reset
- 120 Vac
- 24 Vac
- 24 Vdc
- Tamper-proof cover
- Communications modules

Solid-State Overload Features

- Reliable, accurate, electronic motor protection
- Easy to select, install and maintain
- Flexible, intelligent design

Size/Range

- Broad FLA range (0.33–100A)
- Selectable trip class (10A, 10, 20, 30)
- Direct mounting to NEMA contactors
- Most compact electronic overload in its class

Standards and Certifications

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

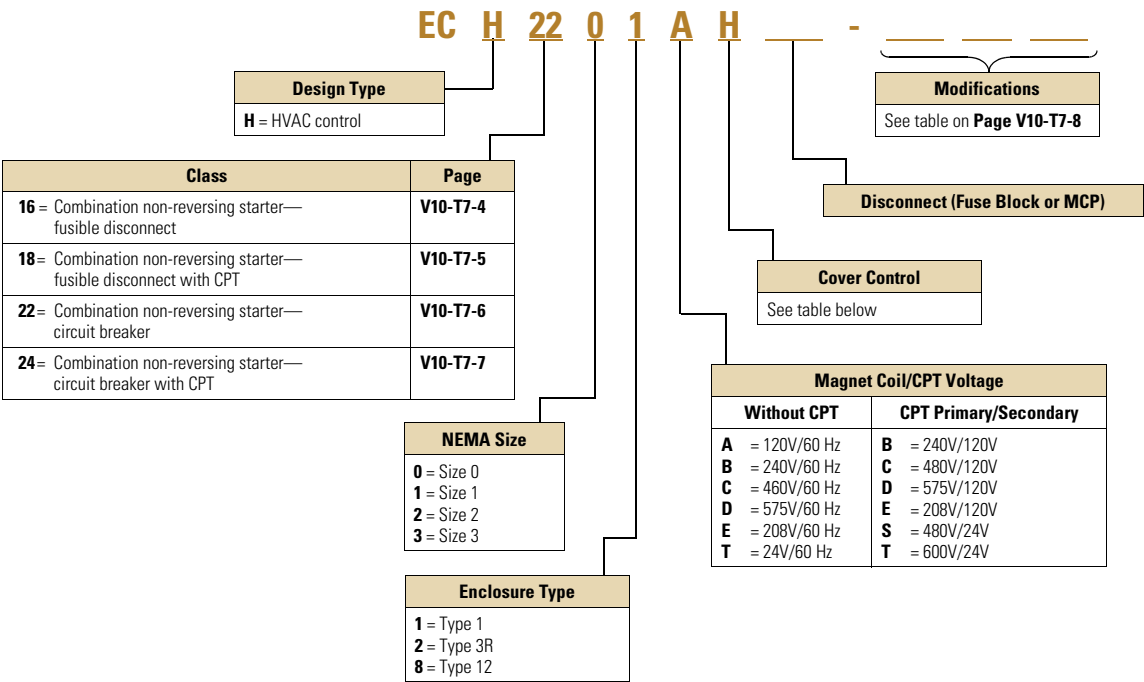
- UL Listed
- cUL Listed (indicates appropriate CSA Standard investigation)
- ABS Type Approved
- OSHPD Certified (OSP-0015-10)

Additional Reference

Modification Codes	V10-T7-8
Wiring Diagram	V10-T7-9
Dimensions	V10-T7-10

Catalog Number Selection

Freedom HVAC Starters



Cover Control

Pilot Device Factory Installation

Description	Position 9 Alpha
None	A
HAND/OFF/AUTO	H
HAND/OFF/AUTO with red RUN pilot	J

Product Selection

Class ECH16—Combination Non-Reversing Starter—Fusible Disconnect

NEMA Size	Motor Voltage	Maximum hp	Coil Voltage	Type 1 General Purpose Catalog Number ①	Type 3R Rainproof Catalog Number ①	Type 12 Dust-Tight Industrial Catalog Number ①	Type 1 with HOA Catalog Number ①	Type 1 with HOA and Red RUN Pilot Catalog Number ①	Component Starter (Open) Catalog Number ②
0	—	—	120	ECH1601AA_	ECH1602AA_	ECH1608AA_	ECH1601AH_	ECH1601AJ_	AN16BN0AC
	—	—	24	ECH1601TA_	ECH1602TA_	ECH1608TA_	ECH1601TH_	ECH1601TJ_	AN16BN0TC
	200	3	208	ECH1601EA_	ECH1602EA_	ECH1608EA_	ECH1601EH_	ECH1601EJ_	AN16BN0EC
	240		240	ECH1601BA_	ECH1602BA_	ECH1608BA_	ECH1601BH_	ECH1601BJ_	AN16BN0BC
	460	5	460	ECH1601CA_	ECH1602CA_	ECH1608CA_	ECH1601CH_	ECH1601CJ_	AN16BN0CC
	575		575	ECH1601DA_	ECH1602DA_	ECH1608DA_	ECH1601DH_	ECH1601DJ_	AN16BN0DC
1	—	—	120	ECH1611AA_	ECH1612AA_	ECH1618AA_	ECH1611AH_	ECH1611AJ_	AN16DN0AB
	—	—	24	ECH1611TA_	ECH1612TA_	ECH1618TA_	ECH1611TH_	ECH1611TJ_	AN16DN0TB
	200	7-1/2	208	ECH1611EA_	ECH1612EA_	ECH1618EA_	ECH1611EH_	ECH1611EJ_	AN16DN0EB
	240		240	ECH1611BA_	ECH1612BA_	ECH1618BA_	ECH1611BH_	ECH1611BJ_	AN16DN0BB
	460	10	460	ECH1611CA_	ECH1612CA_	ECH1618CA_	ECH1611CH_	ECH1611CJ_	AN16DN0CB
	575		575	ECH1611DA_	ECH1612DA_	ECH1618DA_	ECH1611DH_	ECH1611DJ_	AN16DN0DB
2	—	—	120	ECH1621AA_	ECH1622AA_	ECH1628AA_	ECH1621AH_	ECH1621AJ_	AN16GN0AB
	—	—	24	ECH1621TA_	ECH1622TA_	ECH1628TA_	ECH1621TH_	ECH1621TJ_	AN16GN0TB
	200	10	208	ECH1621EA_	ECH1622EA_	ECH1628EA_	ECH1621EH_	ECH1621EJ_	AN16GN0EB
	240	15	240	ECH1621BA_	ECH1622BA_	ECH1628BA_	ECH1621BH_	ECH1621BJ_	AN16GN0BB
	460	25	460	ECH1621CA_	ECH1622CA_	ECH1628CA_	ECH1621CH_	ECH1621CJ_	AN16GN0CB
	575		575	ECH1621DA_	ECH1622DA_	ECH1628DA_	ECH1621DH_	ECH1621DJ_	AN16GN0DB
3	—	—	120	ECH1631AA_	ECH1632AA_	ECH1638AA_	ECH1631AH_	ECH1631AJ_	AN16KN0A
	—	—	24	ECH1631TA_	ECH1632TA_	ECH1638TA_	ECH1631TH_	ECH1631TJ_	AN16KN0T
	200	25	208	ECH1631EA_	ECH1632EA_	ECH1638EA_	ECH1631EH_	ECH1631EJ_	AN16KN0E
	240	30	240	ECH1631BA_	ECH1632BA_	ECH1638BA_	ECH1631BH_	ECH1631BJ_	AN16KN0B
	460	50	460	ECH1631CA_	ECH1632CA_	ECH1638CA_	ECH1631CH_	ECH1631CJ_	AN16KN0C
	575		575	ECH1631DA_	ECH1632DA_	ECH1638DA_	ECH1631DH_	ECH1631DJ_	AN16KN0D

Notes

- ① A “—” denotes catalog numbers are incomplete without the fuse block code.
To complete the catalog number, select the appropriate code from the following table:

Rating	Fuse Block Code
No block	A
30A/600V “J”	C
60A/600V “J”	E (Size 2 only)
100A/600V “J”	G

- ② If the solid-state overload option is selected, refer to Publication Number TD03408001E, Relay for MCCs and Enclosed Control Technical Data, for component selection.

Modification Codes

HVAC Modification Codes

Modification	Description	Catalog Number Suffix
Auxiliary contacts	1NO—wired	A27
	1NC—wired	A28
	1NO 1NC—wired	A29
Solid-state overload (standard)	Size 0 and 1: 0.33–1.65 ^①	R63/A
	Size 0 and 1: 1–5	R63/B
	Size 0 and 1: 4–20	R63/C
	Size 2: 9–45	R63/D
	Size 3: 20–100	R63/E
Solid-state overload (with ground fault)	Size 0 and 1: 0.33–1.65 ^①	R64/A
	Size 0 and 1: 1–5	R64/B
	Size 0 and 1: 4–20	R64/C
	Size 2: 9–45	R64/D
	Size 3: 20–100	R64/E
Heaters	0.254–0.411A	H5/D1
	0.375–0.607A	H5/D2
	0.560–0.907A	H5/D3
	0.814–1.32A	H5/D4
	1.20–1.96A	H5/D5
	1.79–2.90A	H5/D6
	2.15–3.49A	H5/D7
	3.23–5.23A	H5/D8
	4.55–7.40A	H5/D9
	6.75–11.0A	H5/D10
	9.14–14.0A	H5/D11
	14.0–22.8A	H5/D12
	18.7–30.7A	H5/D13
	23.5–38.5A	H5/D14
	29.0–44.1A	H5/D15
	39.6–57.4A	H5/D16
	53.9–74.9A	H5/D17
	18.0–24.5A	H5/D18
	24.6–33.4A	H5/D19
	33.5–45.6A	H5/D20
	45.7–62.1A	H5/D21
	62.2–84.6A	H5/D22
Labels and timers	Carton label	L10
	Pneumatic timer (0.1–30 seconds maximum)	T1
	Pneumatic timer (10–180 seconds maximum)	T2
	Solid-state ON delay timer (1–30 seconds)	T4
	Solid-state ON delay timer (30–300 seconds)	T5

Note

^① Not UL Listed.

Wiring Diagram

HVAC Combination Starter with CPT, HOA and Indicating Light

