



EMS Energy Management Starter

3Ø, 200~600VAC, 1-200HP
HOA Keypad with LCD Display
BACnet & Power Monitoring Capabilities

NEMA Rated  



The Most Intelligent Starter Yet. Power Metering, BACnet Communications and an Intuitive Interface.

HOA Keypad with LCD Display

- Plain English operation – easy to set up and simple to operate
- LEDs indicate Hand/Off/Auto modes, run and fault conditions

BACnet with Power Metering for Energy Savings (option)

- Ideal for LEED projects (Measurement & Verification credit), tenant sub-metering cost allocation, load shedding and performance contracting
- 1% ANSI grade metering with complete data stream – built right into the starter
- Over 30 points provide status of all starter operations for state of the art integration and reduced wiring
- Expand network flexibility with additional input/output terminals
- Combines the advantages of comprehensive integration and superior motor protection

Power Metering (option)

- 1% ANSI grade metering with pulse/analog output for accurate measurements
- kW and kWh data available on LCD display


Proof of Flow Verification

- True power measure detects belt loss and alerts automation system
- Prevents free wheeling motor damage and eliminates costly current sensors

Voltage & Dry Contact Inputs for Auto Run Command

- Wire directly from the automation system to the starter, no interposing relays necessary
- Save on installation costs and increase reliability.

Smart Ownership



“BACnet metering helped our building achieve LEED Certification and meet our sustainability objectives.”

**FOR FANS
PUMPS &
AIR HANDLERS**

Fireman's Override

- Initiates smoke purge sequence during emergency situations for safety and code compliance

Damper Control

- Interlocks damper with starter ensuring proper sequence of operation
- Prevents damage to duct work, saves energy from heat loss
- Saves on automation panel points, reduces wiring, saves on installation costs

Wide Range Class 1-60 Electronic Overload

- Prevents ordering confusion and eliminates call backs due to mis-sized heaters.
- Advanced protective features including anti-cycling, manual/auto reset, phase sequence, phase loss, stall and locked rotor protection

Flexible Control Transformer (CPT)

- Multi-tap CPT input accepts all common motor voltages
- Integrated secondary protection – no fuses required

Combination Versions Include Disconnect

- Motor circuit protection disconnect provides branch and short circuit protection
- High interrupting ratings for maximum electrical system compatibility
- No fuses required – save time and money
- Lockable handle for safety



Built in proof of flow and automation inputs eliminate external components

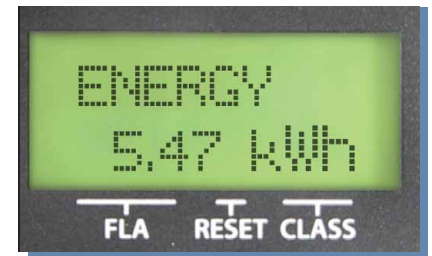


Our lockable disconnect provides superior, resettable protection without fuses

Options

BACnet Communications with Power Metering

- Native RS-485 76800 BPS for high performance
- Comprehensive point list including HOA status, overload faults, and all metering attributes (kW, kWh, kVar, V, A, etc. aggregate and per phase).
- Additional programmable digital input. Additional analog input, selectable between 0-10V, 4-20 mA, or 10K thermistor
- Includes power metering display with programmable parameters
- Tested to BTL standards



Power metering variables monitored are displayed. Ideal for energy management, cost allocation, and submetering.

Power Metering

- 1% ANSI Accuracy with integrated current transformers
- Pulse kWh output, N.O. Contact, max on resistance 8 ohms, max 45V
- 4- 20 mA kW output
- Includes kW, kWh display



Our integrated CTs provide superior motor protection and metering accuracy

Ground Fault Protection

- Protects motors from damage due to ground current conditions
- UL 1053 Certified

Over/Under Voltage

- Protects motors from damage
- Adjustable minimum and maximum voltage thresholds

120V Damper Control

- Option in lieu of 24VAC standard

Time Delay

- Programmable On/Off delay

Specifications

Starter Type

Energy Management Starter

Standard or Combination

UL Type 1 or UL Type 4/12 Enclosure

User Interface

Hand-Off-Auto keypad with LEDs Watertight membrane

LED pilot lights Hand, Off, Auto, Run, Fault

LCD parameter display 16 character, dual line, backlight

Standard Control Operations

Inputs

Voltage Auto Run Apply 10 - 130VAC/DC to energize

Dry Auto Run N.O. dry contact closure

Fireman's Override Apply 10 - 130VAC/DC to energize

Damper position switch N.O. dry contact closure

Permissive Auto N.O. dry contact closure

Shutdown N.C. dry contact input

Outputs

Proof of flow status relay (adjustable) N.O., 0.3A@125VAC; 1A@24VAC

Fault relay N.O., 0.3A@125VAC; 1A@24VAC

Damper motor control 24VAC, 1A max (120VAC optional)

Operational

Power fail mode Restart last mode, no delay (default)

Restart with delay

Restart Off - LED flashes last mode

On/Off Time Delay Programmable, selectable from 0.1 to 99 seconds

Protective Functions

Overload Type Electronic; I²t Thermal Trip Curve

Current Setting Range 0.5 - 95A

Trip Class Class 5 - 60

Reset Manual or Automatic

Phase Unbalance Trip within 1 second at programmed unbalance percentage (75% default)

Phase Loss Trip within 1 second (50% default)

Stall/Locked Rotor* Trip within 0.5 seconds @ 300% FLA

Cycle Fault* Trip if cycle rate exceeds 1200 starts per hour

Under Power Trip* Trip within 10 seconds @ 50% measured horsepower

Phase Sequence* Trip within 0.1 seconds upon reverse phase detection

Warm Start Provision Delays motor restart if calculated motor temperature exceeds thermal curve

Ground Fault UL1053 Certified (Optional)

Over/Under Voltage Selectable trip within 0.1-99 seconds (Optional)

Mechanical

Enclosure Types UL Type 1 or UL Type 4/12

Dimensions See Pages 28 & 29

Environmental

Ambient Operating Temp -5° to 140° F (-20° to 60° C)

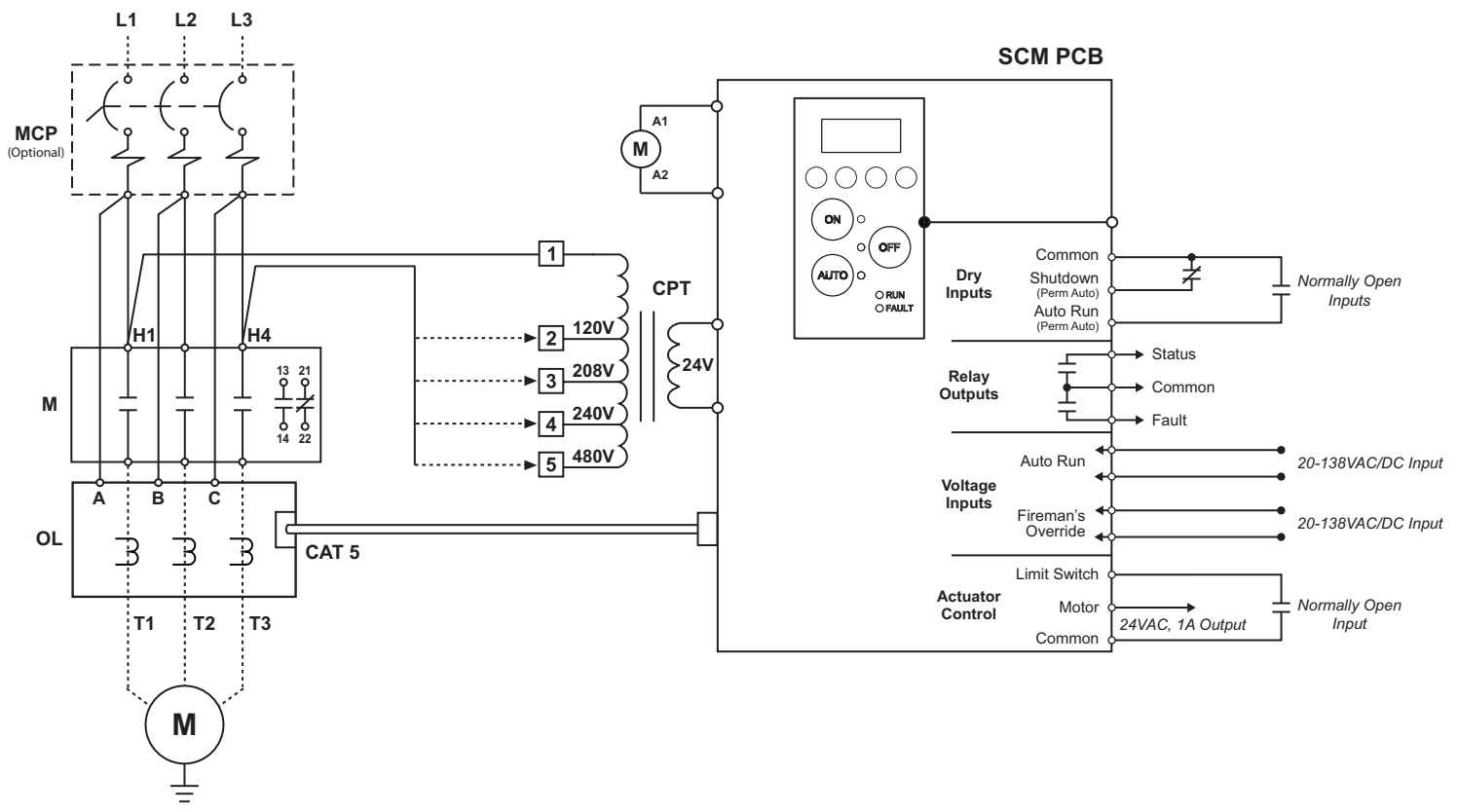
Ambient Storage Temp -5° to 185° F (-20° to 85° C)

Relative Humidity 5% to 95% non-condensing

* Programmable On or Off. See owner's manual for customer selectable settings.

Optional Control Operations	
Power Metering Option (Pulse/Analog kW/kWh)	
Accuracy	1% ANSI Accuracy with integrated current transformers
Pulse Output	N.O. Contact, max on resistance 8 ohms, max 45V
Analog Output	4-20 mA kW output
LCD display	kW, kWh
BACnet Communications with Power Metering	
Accuracy	1% ANSI Accuracy with integrated current transformers
Metering Value Objects	Max Current, Average Voltage, Phase A Current, Phase B Current, Phase C Current, Phase A-B Voltage, Phase B-C Voltage, Phase C-A Voltage, Power Factor, kVA, kVar, kW, kWh
Binary Value Objects	Auto start command, proof of flow, voltage auto status, fireman's override status, dry auto status, network auto status, shutdown input status, overload fault, damper contactor fault, unexpected proof of flow fault, cycling fault, power fault, comms fault, recycle enable, voltage auto enable, dry contact enable
Multi-State Objects	Emergency power off priority, keypad detached, operational mode, EOL mode, power up mode
Analog Value Objects	Device instance, comms time out, run time count, overload reset count, power failure count,
Interface	3 Wire Removable Connector
Data Transmission Method	RS-485 MS/TP, Half-duplex
BACnet MS/TP	ANSI/ASHRAE Standards
Baud Rate	9600, 19200, 38400, 76800
MAC Address	0-127

EMS Wiring Diagram





UL Type 1 Ordering and Sizing Information



- UL Type 1 for indoor use
- Lockable cover prevents unauthorized access/tampering
- Standard conduit knock-outs top and bottom for easy installation
- Combination version features motor circuit protector to provide branch and short circuit protection.

Options	
EMS-BN-COM	BACnet Communications with Power Metering
EMS-PWR	Power Metering with Pulse/Analog Output
EMS-OVUV	Over/Under Voltage Protection
EMS-GFLT	Ground Fault Protection
EMS-TMR	Programmable On/Off Delay Timer
EMS-120	120V Damper Actuator Control

UL Type 1 Indoor Enclosure

Standard Magnetic H-O-A Starters - Electronic Overload

HP				SCIC KAIC @460V	NEMA Size				
Three Phase					00	0	1	2	3
200V	230V	460V	575V*	EMS Part Number					
2	3	5	7.5	5	EMS1-9/J-9				
5	7.5	10	15	5	EMS1-18/J-18				
7.5	10	20	25	5	EMS1-32/J-32				
20	25	40	50	5	EMS1-50/J-50				
30	40	60	75	10	EMS1-85/J-85				

UL Type 1 Indoor Enclosure

Combination Magnetic H-O-A Starters - Electronic Overload

HP				SCIC KAIC @460V	NEMA Size				
Three Phase					00	0	1	2	3
200V	230V	460V	575V*	EMS Part Number					
-	-	3/4	3/4	65	EMS1-9/J-G1.6-9	EMS1-18/J-G1.6-18			
1/2	1/2	1	1.5	65	EMS1-9/J-G2.5-9	EMS1-18/J-G2.5-18			
3/4	3/4	2	3	65	EMS1-9/J-G4-9	EMS1-18/J-G4-18			
1	1.5	3	5	65	EMS1-9/J-G6-9	EMS1-18/J-G6-18			
2	2	5	5	65	EMS1-9/J-G8-9	EMS1-18/J-G8-18			
2	3	5	7.5	65	EMS1-9/J-G10-9	EMS1-18/J-G10-18			
3	3	7.5	10	65	EMS1-18/J-G13-18				
3	5	10	15	30	EMS1-18/J-G17-18	EMS1-32/J-G17-32			
5	7.5	15	20	30	EMS1-32/J-G22-32				
7.5	7.5	15	20	30	EMS1-32/J-G26-32	EMS1-50/J-G26-50			
7.5	10	20	25	30	EMS1-32/J-G32-32	EMS1-50/J-G32-50			
10	10	30	30	50	EMS1-50/J-G40-80				EMS1-85/J-G40-85
15	15	30	40	50	EMS1-50/J-G50-80				EMS1-85/J-G50-85
20	20	40	60	50	EMS1-85/J-G63-85				
20	25	50	60	50	EMS1-85/J-G75-85				



UL Type 4/12 Ordering and Sizing Information



- UL Type 4/12 for outdoor use
- Fully sealed: welded and gasketed for long life
- Rugged 16 gauge steel construction
- Combination version features motor circuit protector to provide branch and short circuit protection.

Options	
EMS-BN-COM	BACnet Communications with Power Metering
EMS-PWR	Power Metering with Pulse/Analog Output
EMS-OVUV	Over/Under Voltage Protection
EMS-GFLT	Ground Fault Protection
EMS-TMR	Programmable On/Off Delay Timer
EMS-120	120V Damper Actuator Control

UL Type 4/12 Outdoor Enclosure Standard Magnetic H-O-A Starters -Electronic Overload

HP				SCIC KAIC @460V	NEMA Size				
Three Phase					00	0	1	2	3
200V	230V	460V	575V*	EMS Part Number					
2	3	5	7.5	5	EMS12-9/J-9				
5	7.5	10	15	5	EMS12-18/J-18				
7.5	10	20	25	5	EMS12-32/J-32				
20	25	40	50	5	EMS12-50/J-50				
30	40	60	75	10	EMS12-85/J-85				

UL Type 4/12 Outdoor Enclosure Combination Magnetic H-O-A Starters - Electronic Overload

HP				SCIC KAIC @460V	NEMA Size				
Three Phase					00	0	1	2	3
200V	230V	460V	575V*	EMS Part Number					
-	-	3/4	3/4	65	EMS12-9/J-G1.6-9	EMS12-18/J-G1.6-18			
1/2	1/2	1	1.5	65	EMS12-9/J-G2.5-9	EMS12-18/J-G2.5-18			
3/4	3/4	2	3	65	EMS12-9/J-G4-9	EMS12-18/J-G4-18			
1	1.5	3	5	65	EMS12-9/J-G6-9	EMS12-18/J-G6-18			
2	2	5	5	65	EMS12-18/J-G8-18				
2	3	5	7.5	65	EMS12-18/J-G10-18				
3	3	7.5	10	65	EMS12-18/J-G13-18				
3	5	10	15	30	EMS12-18/J-G17-18	EMS12-32/J-G17-32			
5	7.5	15	20	30	EMS12-32/J-G22-32				
7.5	7.5	15	20	30	EMS12-32/J-G26-32	EMS12-50/J-G26-50			
7.5	10	20	25	30	EMS12-32/J-G32-32	EMS12-50/J-G32-50			
10	10	30	30	50	EMS12-50/J-G40-50 EMS12-85/J-G40-85				
15	15	30	40	50	EMS12-50/J-G50-50 EMS12-85/J-G50-85				
20	20	40	60	50	EMS12-85/J-G63-85				
20	25	50	60	50	EMS12-85/J-G75-85				

* For 600V part numbers please consult factory.

++ For starters over NEMA Size 3 consult factory.