Catalog Number Explanation

E300 Electronic Overload Relay modules have their own catalog number.

Sensing Module

193 - ESM - VIG - 30A - C23
592

Bulletin Number

193 IEC Overload Relay
592 NEMA Overload Relay

Module Type

ESM Sensing Module

Sensing Module Type

VIG Current, Ground Fault Current, Voltage, and Power
IG Current and Ground Fault Current
I Current

Sensing Current Range

30A 0.5…30 A
60A 6…60 A
100A 10…100 A
200A 20…200 A

Sensing Module Mounting Style

C23 Mounts to 100-C09…-C23 Contactor
C55 Mounts to 100-C30…-C55 Contactor
C97 Mounts to 100-C60…-C97 Contactor
D180 Mounts to 100-D115…-D180 Contactor
S2 Mounts to Bulletin 500 NEMA Size 0…2 Contactor
S3 Mounts to Bulletin 500 NEMA Size 3 Contactor
S4 Mounts to Bulletin 500 NEMA Size 4 Contactor
T DIN Rail / Panel Mount with Power Terminals
E3T Replacement DIN Rail / Panel Mount with Power Terminals for an E3 Plus Panel Mount Adapter
P DIN Rail / Panel Mount with Pass-thru Power Conductors
CT DIN Rail / Panel Mount with Pass-thru Power Conductors (used with External CTs)

Control Module

193 - EIO - 43 - 120

Bulletin Number

193 IEC Overload Relay

Module Type

EIO I/O Only Control Module
EIOGP I/O and Protection Control Module (External Ground Fault Sensing and PTC)

I/O Count

63 6 Inputs / 3 Relay Outputs
43 4 Inputs / 3 Relay Outputs
42 4 Inputs / 2 Relay Outputs
22 2 Inputs / 2 Relay Outputs

Control Voltage

24D 24V DC
120 110…120V AC, 50/60 Hz
240 220…240V AC, 50/60 H

Communication Module

193 - ECM - ETR

Bulletin Number

193 IEC Overload Relay

Module Type

ECM Communication Module

Communication Type

ETR EtherNet/IP with Dual Ethernet Ports
DNT DeviceNet
PCM Parameter Configuration Module

ATTENTION: The earth ground terminal of the E300 relay shall be connected to a solid earth ground via a low-impedance connection.

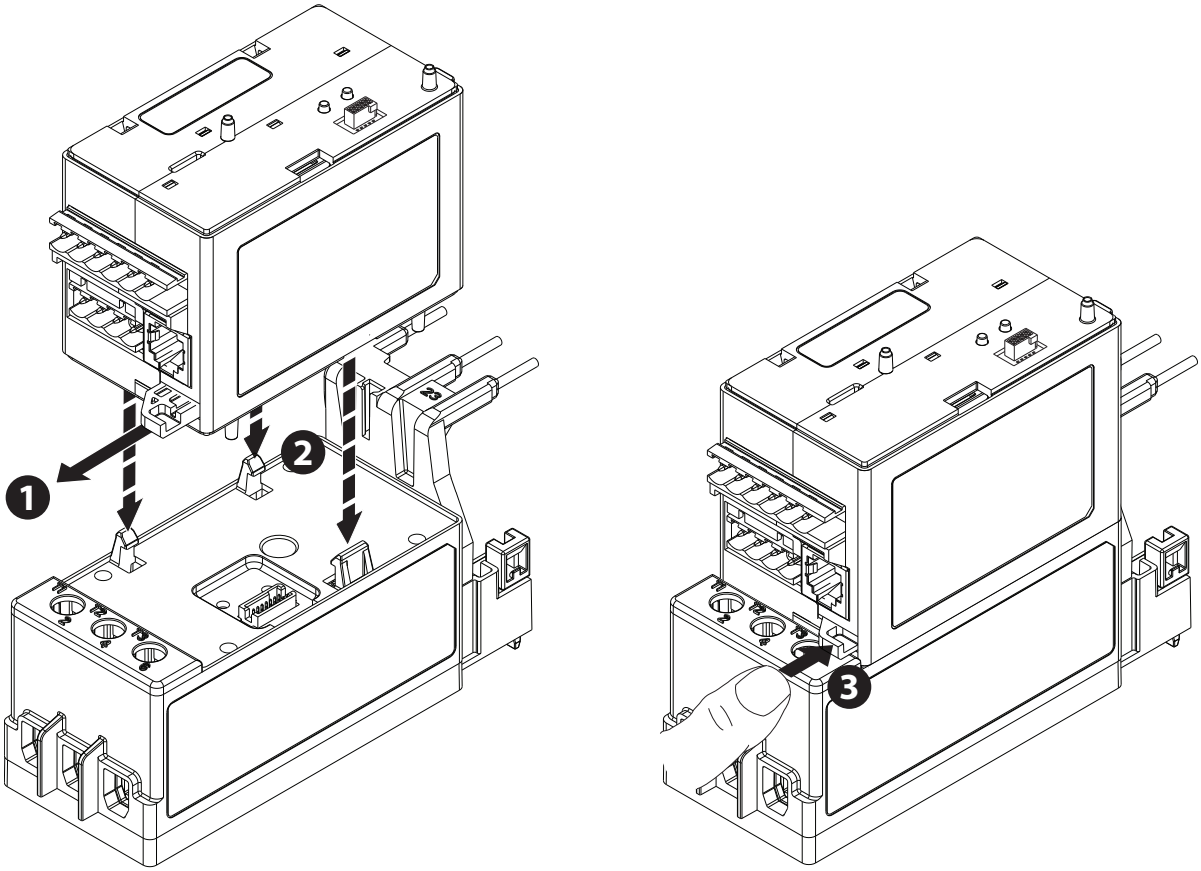
Base Relay Assembly

The following section illustrates the E300 relay base relay assembly instructions.

Control Module to Sensing Module Assembly

You can connect any E300 relay Control Module to any E300 relay Sensing Module. The following illustrations show the steps that are required to make this connection.

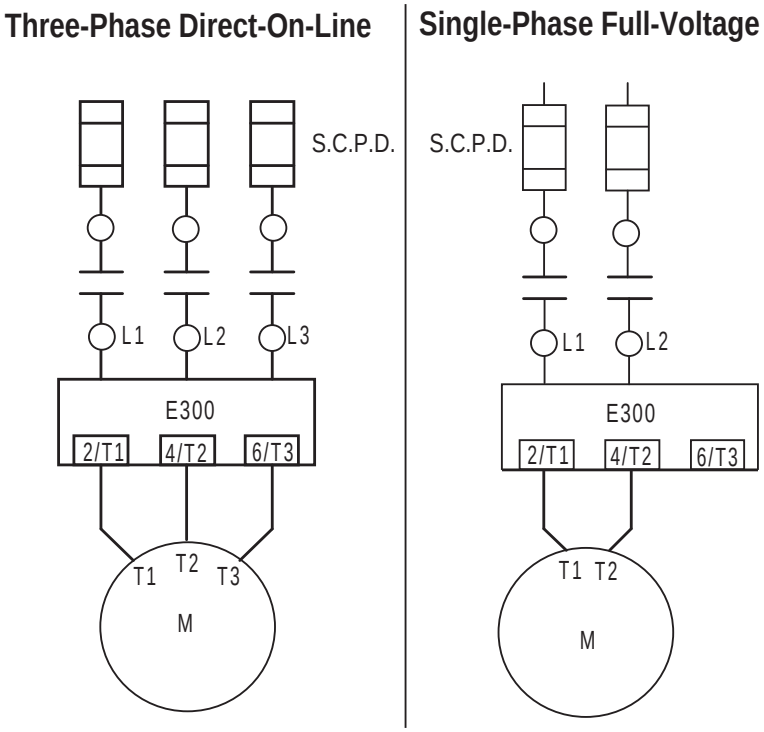
Figure 6 - Control Module to Sensing Module Assembly



Three-Phase Direct On-Line (DOL) and Single-Phase Full-voltage

The following wiring diagram illustrates the E300 relay typical motor connections in a three-phase DOL and single-phase full-voltage applications.

Figure 48 - E300 DOL and Single-Phase Full-voltage Connections



External Line Current Transformer Application

Current Transformer Ratio

The following E300 relay sensing module catalog numbers can be used with step down current transformers:

- 193-ESM-IG-30A-E3T
- 193-ESM-IG-30A-T
- 193-ESM-IG-30A-P
- 193-ESM-I-30A-E3T
- 193-ESM-I-30A-T
- 193-ESM-I-30A-P
- 193-ESM-VIG-30A-CT

CT Primary (Parameter 263) and CT Secondary (Parameter 264) allows you to identify the turns ratio of the step down current transformers in use. Based on these two configuration parameters, the E300 relay automatically adjusts the measured current. Use the primary current for your FLA settings.

Specifications

Electrical Specifications

Table 572 - Motor/Load Ratings

Terminals	1/L1, 3/L2, 5/L3, 2/T1, 4/T2, 6/T3
Rated Insulation Voltage (U_i)	690V AC
Rated Operating Voltage (U_e) IEC: UL:	 690V AC 600V AC
Rated Impulse Voltage (U_{imp})	6 kV
Rated Operating Current (I_e)	See Catalog Number Explanation
Rated Frequency	45...65 Hz
Short Circuit Ratings	See Short-Circuit Ratings on page 56
Number of Poles	3
Application	Single-phase or Three-phase

Table 573 - Power Supply Ratings

Rated Supply Voltage (U_s)	24V DC	120V AC	240V AC
Operating Range	11…30V DC	85…132V AC	159…265V AC
Maximum Inrush Current	3 A for 30 ms	10 A for 1 ms	8 A for 3 ms
Maximum Power Consumption E300: E300 with expansion:	 6 W 8 W		
Maximum Power Interruption Time V_{min}: V_{max}:	 5 ms 5 ms	 10 ms 10 ms	 10 ms 10 ms

Table 574 - Output Relay Ratings (Control Module and Expansion Digital Module)

Terminals Relay 0: Relay 1: Relay 2:	 R03/R04 R13/R14 R23/R24
Type of Contacts	Form A SPST - NO
Rated Thermal Current (I_{the})	5 A
Rated Insulation Voltage (U_i)	300V AC
Rated Operating Voltage (U_e)	250V AC
Rated Operating Current (I_e)	3 A (@120V AC), 1.5 A (@240V AC)
	0.25 A (@110V DC), 0.1 A (@220V DC)
Minimum Operating Current	10 mA @ 5V DC
Rating Designation	B300
Utilization Category	AC-15
Resistive Load Rating (p.f. = 1.0)	5 A, 250V AC 5 A, 30V DC

Table 579 - Expansion Power Supply Modules

Expansion Power Supply Modules	193-EXP-PS-AC
Rated Operational Voltage (U_e):	100…250V AC
Rated Insulation Voltage (U_i):	2640Vrms for 1s
Rated Impulse Withstand Voltage (U_{imp}):	4 kV
Conditional Short Circuit Current:	N/A
Protection Against Short Circuits:	N/A
Utilization Category:	N/A
Pollution Degree:	3

Environmental Specifications

Table 580 - Environmental Specifications

Ambient Temperature Storage Operating (Open) (Enclosed)	 –40…+85 °C (–40…+185 °F) –20…+55 °C (–4…+131 °F)❷❸ –20…+40 °C (–4…+104 °F)❸❹
Humidity Operating Damp Heat – Steady State (per IEC 68-2-3) Damp Heat – Cyclic (per IEC 68-2-30)	 5…95% Non-condensing 92% r.h., 40 °C (104 °F), 56 days 93% r.h., 25 °C/40 °C (77 °F/104 °F), 21 Cycles
Cooling Method	Natural Convection
Vibration (per IEC 68-2-6)	2.5G operating, 5 G non-operating
Shock (per IEC 68-2-27)	30 G
Maximum Altitude	2000 m ❶
Pollution Environment	Pollution Degree 3
Terminal Marking	EN 50012
Degree of Protection	IP20

❶ Current ratings must be derated at altitudes greater than 2000 m
❷ Temperature rating based on 120V AC control module with 1 A going through relays 0, 1, and 2.
❸ Temperature rating based on 24V DC control module with four digital inputs active and 0.2 A going through relays 0, 1, and 2.
❹ Temperature rating based on 120V AC or 240V AC control module with 5A going through relays 0, 1, and 2.

NOTE: The E300 relay expansion power supplies (Cat. Nos. 193-EXP-PS-AC and 193-EXP-PS-DC) surrounding air temperature must not exceed 55 °C (131 °F).

Table 581 - Temperature Derating

	Control Module Voltage	Relay 0 Current	Relay 1 Current	Relay 2 Current	Number of Digital Inputs Active	Operating Temperature Range
Open Application	120/240V AC	1.0 A	1.0 A	1.0 A	4	-20…+55 °C (-4…+131 °F)
		5.0 A	1.0 A	1.0 A	4	-20…+50 °C (-4…+122 °F)
	24V DC	0.2 A	0.2 A	0.2 A	4	-20…+55 °C (-4…+131 °F)
		0.2 A	0.2 A	0.2 A	6	-20…+50 °C (-4…+122 °F)
		5.0 A	1.0 A	1.0 A	6	-20…+30 °C (-4…+86 °F)
Enclosed Application	120/240V AC	5.0 A	5.0 A	5.0 A	4	-20…+40 °C (-4…+104 °F)
	24V DC	0.2 A	0.2 A	0.2 A	4	-20…+40 °C (-4…+104 °F)
		5.0 A	1.0 A	1.0 A	6	-20…+30 °C (-4…+86 °F)

Electromagnetic Compatibility Specifications

Table 582 - Electromagnetic Compatibility Specifications

Electrostatic Discharge Immunity Test Level: Performance Criteria:	 8kV Air Discharge 6kV Contact Discharge 1 ❶❷
RF Immunity Test Level: Performance Criteria:	 10V/m 1 ❶❷
Electrical Fast Transient/Burst Immunity Test Level: Performance Criteria:	 4kV (Power) 2kV (Control and Comm) 1 ❶❷
Surge Immunity Test Level: Performance Criteria:	 2kV (L-E) 1kV (L-L) 1 ❶❷
Radiated Emissions	Class A
Conducted Emissions	Class A

❶Performance Criteria 1 requires the DUT to experience no degradation or loss of performance.
❷Environment 2.