

# Instruction Bulletin

## MSA141 Analog Output Module Installation Sheet

Retain for future use.

### Function



MSA141 Analog Output Module

The MSA141 module converts one of the Sepam™ measurements into an analog signal. Measurement selection is determined by parameter setting:

- 0-10 mA, 4-20 mA, or 0-20 mA analog signal according to parameter setting

To scale the analog signal, set minimum and maximum values of the converted measurement.

**Example**—the setting used to set phase current (**Ia**) as a 0-10 mA analog output with a dynamic range of 0-300 A is:

minimum value = 0

maximum value = 300 ( $3000 \cdot 0.1A = 300.0 A$ )

Any one of the CCA770 (2 ft or 0.6 m), CCA772 (6.6 ft or 2 m) or CCA774 cables (13.1 ft or 4 m) connects a single module for each Sepam base unit.

### Characteristics

| MSA141 Module                                |                                  |           |           |           |
|--|----------------------------------|-----------|-----------|-----------|
| Weight                                       | 0.441 lb (0.2 kg)                |           |           |           |
| Assembly                                     | On symmetrical DIN rail          |           |           |           |
| Operating Temperature                        | -13°F to +158°F (-25°C to +70°C) |           |           |           |
| Environmental Characteristics                | Same as Sepam base units         |           |           |           |
| Analog Output                                |                                  |           |           |           |
| Current                                      | 4-20 mA, 0-20 mA, 0-10 mA        |           |           |           |
| Scaling (no data input checking)             | Minimum value                    |           |           |           |
|  | Maximum value                    |           |           |           |
| Load Impedance                               | < 600 Ω (wiring included)        |           |           |           |
| Accuracy                                     | 0.5 %                            |           |           |           |
| Measurements Available                       | Unit                             | Series 20 | Series 40 | Series 80 |
| Phase and Residual Currents                  | 0.1 A                            | ■         | ■         | ■         |
| Phase-to-neutral and phase-to-phase voltages | 1 V                              | ■         | ■         | ■         |
| Frequency                                    | 0.01 Hz                          | ■         | ■         | ■         |
| Thermal Capacity Used                        | 1 %                              | ■         | ■         | ■         |
| Temperatures                                 | 1°F (1°C)                        | ■         | ■         | ■         |
| Active Power                                 | 0.1 kW                           |           | ■         | ■         |
| Reactive Power                               | 0.1 kVAR                         |           | ■         | ■         |
| Apparent Power                               | 0.1 kVA                          |           | ■         | ■         |
| Power Factor                                 | 0.01                             |           |           | ■         |
| Remote Setting via Communication Link        |                                  | ■         | ■         | ■         |

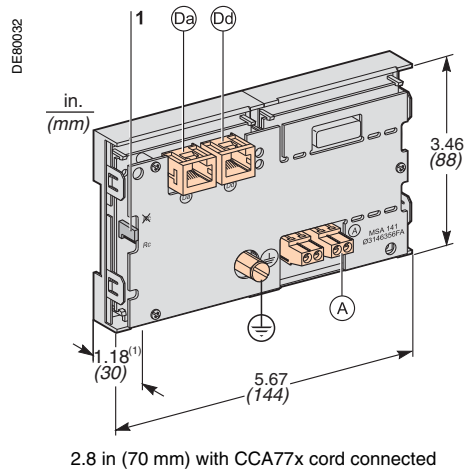
## Description and Dimensions

- (A) Terminal block for analog output
- (Da) RJ45 connector to connect the module to the base unit with a CCA77x cord
- (Dd) RJ45 connector to link up the next remote module with a CCA77x cord (according to application)
- (⊥) Grounding terminal

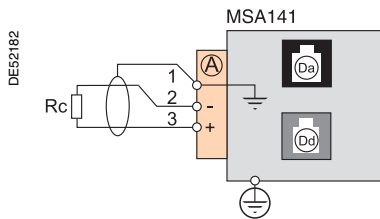
- The jumper for impedance matching with load resistor ( $R_c$ ), to be set to:

$R_c$ , if the module is not the last interlinked module (default position); or,

$R_c$ , if the module is the last interlinked module.



## Connection



Perform the following steps to connect MSA141:

- For a ground terminal connection, use a tinned copper braid with a cross-section  $\geq 6 \text{ mm}^2$  (AWG 10) or a cable with a cross section  $\geq 2.5 \text{ mm}^2$  (AWG 12) and length  $\leq 7.9 \text{ in}$  (200 mm), equipped with a 0.16 in (4 mm) ring lug.
- Check the tightness. The maximum tightening torque is 19.5 in-lb (2.2 Nm).
- To connect an analog output to a screw-type connector, use either one wire with a cross-section 0.2 to 2.5  $\text{mm}^2$  (AWG 24-12), or two wires with a cross-section 0.2 to 1  $\text{mm}^2$  (AWG 24-16).

Use shielded cables whenever possible. Use a tinned copper braid to connect the shielding at the MSA141 end.

## CAUTION

### ESD SENSITIVE COMPONENTS

- Before touching the Memory Cartridge you must ground yourself and discharge any static charge
- Ground yourself every time before touching the memory cartridge

**Failure to follow this instruction can result in equipment damage.**