

MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Reference package for procurement and maintenance review

CONTROLEDGE HC900

## 900B16-0202

16-CHANNEL ANALOG OUTPUT MODULE

Used with the applicable ControlEdge HC900 I/O modules configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Honeywell official product documentation

### Analog Output Module (900B16-xxxx)

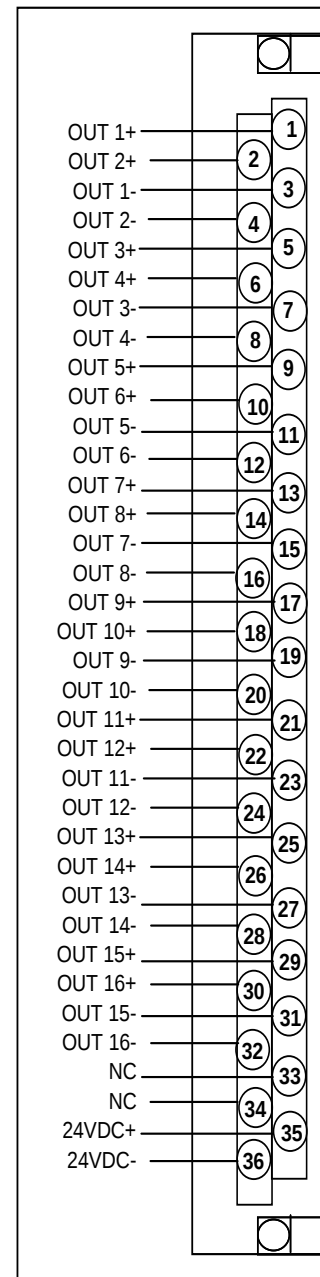
The Analog Output module provides 16, 0 to 21.0 mA outputs that may be scaled by the user to any span within this range on a per output basis. Outputs are isolated in groups of 4 with no isolation between outputs in a group. All points are isolated from controller logic.

A green blinking status LED on the module indicates when the module is being scanned. A red status LED when module or channel diagnostic exist. A user specified failsafe value is supported to allow predictable operation in the event communication between the module and the controller is interrupted.

Outputs are updated synchronous with control execution.

A user-specified rate of change limit may be applied to each output when needed. Requires Euro style 36-terminal terminal block.

|                               |                                                                                                                                                     |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Outputs per module            | 16, isolated in 4 groups of 4 outputs (1-4, 5-8, 9-12, 13-16)                                                                                       |
| Current                       | 0 to 21.0 mA, range selectable                                                                                                                      |
| Load resistance               | 750 ohms max                                                                                                                                        |
| Galvanic Isolation            | 500VDC group to group. Groups 1-4, 5-8, 9-12, 13-16.                                                                                                |
| Galvanic Isolation from logic | 500 VDC                                                                                                                                             |
| Accuracy                      | 0.1% full scale at reference conditions                                                                                                             |
| Modules per rack              | 2 max when powered from internal 24V backplane power.                                                                                               |
| Minimum current sensing       | > 0.5mA per output                                                                                                                                  |
| Calibration Data              | Data is stored in non-volatile memory. Redundant Factory Calibration, with automatic rejection of Bad version. Individual Channel Field Calibration |
| Diagnostics                   | Monitoring of Factory Calibration, Field Calibration, and Configuration.                                                                            |
| Output Verification           | Feedback to controller to indicate output current is flowing.                                                                                       |
| D/A Resolution                | 13+ bits (1 part in 13332)                                                                                                                          |
| Power Supply Loading          | 5V ; 350 mA max<br>24V ; 700 mA max                                                                                                                 |
| Terminal Block                | 36 Position – Euro style, (Model 900TCK-0001)                                                                                                       |



A DIP switch on the module selects the use of 24V from rack PS (internal) power or external loop power via a separate 24V DC power source. The as-shipped (default) switch setting is external power.

External Power Source requirements:

|         |                   |
|---------|-------------------|
| Voltage | 18 to 36 Vdc      |
| Current | 700 mA per module |

**Detail Specifications – Digital Input with Open Wire Detection (OWD)**

| Parameter                                                                                          | Specification                      |
|----------------------------------------------------------------------------------------------------|------------------------------------|
| Open Voltage                                                                                       | 24V                                |
| Short Circuit Current                                                                              | 7 mA                               |
| Open Contact                                                                                       | 15 k $\Omega$ > 0.1 W <sup>A</sup> |
| Closed Contact                                                                                     | 5 k $\Omega$ > 0.25 W <sup>B</sup> |
| Short circuit detection                                                                            | I > 6 mA +/- 5 %                   |
| Closed contact detection                                                                           | 2.8 mA < I < 6 mA +/- 5 %          |
| Open contact detection                                                                             | 0.9 mA <= I <= 2.8 mA +/- 5 %      |
| Lead Breakage Detection                                                                            | I < 0.9 mA +/- 5 %                 |
| Input filter                                                                                       | First-order low-pass 1 kHz         |
| Note A: At 24 VDC, equates to 8.57 K $\Omega$ > R > 4 K $\Omega$ (where R = total loop resistance) |                                    |
| Note B: At 24 VDC, equates to 26.7 K $\Omega$ > R > 10 K $\Omega$                                  |                                    |

**Detail Specifications – Digital Input without Open Wire Detection (OWD)**

| Parameter                                                                           | Specification              |
|-------------------------------------------------------------------------------------|----------------------------|
| Open Voltage                                                                        | 24 VDC                     |
| Closed contact detection                                                            | I > 2.81 mA <sup>C</sup>   |
| Open contact detection                                                              | I < 1.8 mA <sup>D</sup>    |
| Input filter                                                                        | First-order low-pass 1 kHz |
| Note C: At 24 VDC, equates to R < 8.57 K $\Omega$ (where R = total loop resistance) |                            |
| Note D: At 24 VDC, equates to 26.7 K $\Omega$ > R > 10 K $\Omega$                   |                            |

**Detail Specifications – Digital Output**

| Parameter                         | Specification                                                               |
|-----------------------------------|-----------------------------------------------------------------------------|
| Output Channels                   | 16 Maximum per module (with line monitoring) <sup>2</sup>                   |
| Output Type                       | Solid state source, short circuit protected                                 |
| Load Current                      | 0mA Minimum to 0.5 A Maximum per channel<br>4 A Maximum per module          |
| On-State Voltage                  | 24 V (typ), load current @ 0.5 A                                            |
| Off-State Voltage                 | 0 VDC (max) Open Load                                                       |
| Off-State Leak Current            | < 0.1 mA                                                                    |
| Minimum ON State Current Required | 1mA (Non-Redundant)<br>20mA (for Redundant DO)                              |
| Maximum Load Inductance           | < 10 H                                                                      |
| Maximum Load Capacitance          | < 1 uF                                                                      |
| Lamp Load                         | < 3 Watt (Verify Inrush Current requirement of Lamp Load)                   |
| Inrush Current                    | 1 A for 10 uS                                                               |
| DO read back current Accuracy     | DO Current : 0-10 mA +/- 1 mA<br>11-100 mA +/- 5 mA<br>101-500 mA +/- 20 mA |
| Short Circuit Protection          | Internal Electronic (750 mA)                                                |

**Note:**

- 900U02 modules may not be installed such that the 900U02 is between two 900B16 modules. 900B16 may only be installed in one adjacent slot.
- Field power to be supplied by a local power supply providing tertiary protection from zone B severity levels. Generally characterized by short wiring, isolation, surge suppressors etc.
- For Marine applications ABS Type approved power supplies are required for field supply voltage.
- Field supply voltage should be maintained higher than 22.5 V for AO higher AO loads (> 750 Ohms)