

Analog Output Module (900B16-xxxx)

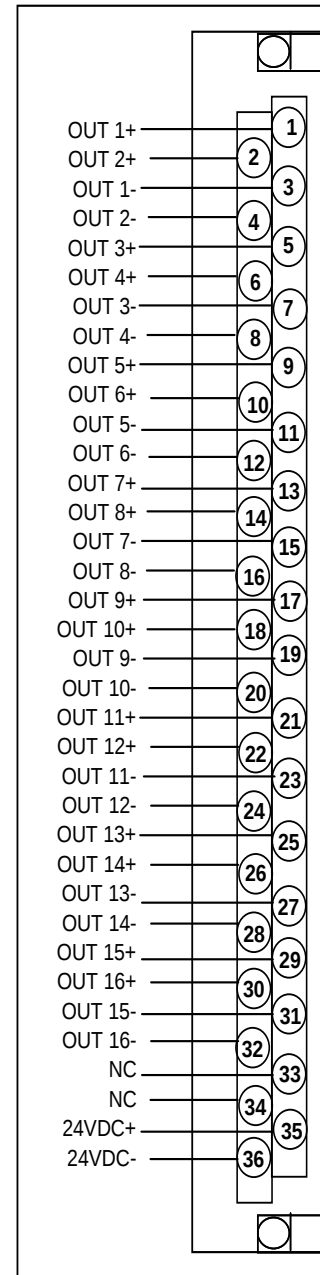
The Analog Output module provides 16, 0 to 21.0 mA outputs that may be scaled by the user to any span within this range on a per output basis. Outputs are isolated in groups of 4 with no isolation between outputs in a group. All points are isolated from controller logic.

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 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 Ω > 0.1 W ^A
Closed Contact	5 k Ω > 0.25 W ^B
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 Ω > R > 4 K Ω (where R = total loop resistance)	
Note B: At 24 VDC, equates to 26.7 K Ω > R > 10 K Ω	

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

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

Detail Specifications – Digital Output

Parameter	Specification
Output Channels	16 Maximum per module (with line monitoring) ²
Output Type	Solid state source, short circuit protected
Load Current	0mA Minimum to 0.5 A Maximum per channel 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) 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 11-100 mA +/- 5 mA 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)