

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

HONEYWELL

900B16-0001

SIXTEEN CHANNEL ANALOG OUTPUT

Used with the applicable ControlEdge HC900 900B16 configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: ControlEdge HC900 900B16 applicable documentation; full suffix and installed execution require matching

ControlEdge HC900 IO Modules Specifications

51-52-03-41, January 2023



Overview

The Honeywell ControlEdge HC900 Controller is an advanced loop and logic controller offering a modular design sized to satisfy the control and data acquisition needs of a wide range of process equipment.

I/O Modules

The following I/O modules are available to create a custom control solution.

- 16 Channel Universal IO Module Galvanically isolated Input/Output to chassis (p.31)
- 8-point universal analog input modules: Galvanic isolation point to chassis inputs may be mixed on a module and may include multiple thermocouple types, RTDs, ohms, voltage or mill voltage types – all easily assigned using the Process Control Designer configuration tool. High point-to-point galvanic isolation simplifies installation and saves the expense of external isolation hardware (p.9).
- 16-point high level analog input module: each point is configurable for V or mA. Galvanically isolated point to chassis. Galvanically isolated point to point (p.13). 250-ohm shunt resistors can be added per channel.
- 4-point galvanically isolated analog output module. Galvanically isolated point to chassis supports from 0 to 20mA each (p.15).
- 8-point analog output, galvanically isolated in 2 groups of 4 points. Galvanically isolated point to chassis. Supports from 0 to 20mA each (p.16).
- 16-point analog output, galvanically isolated in 4 groups of 4 points. Galvanically isolated point to chassis. Supports from 0 to 20mA each (p.17).
- 16-point digital input modules: Contact closure type, DC Voltage, AC Voltage and AC/DC voltage types (p.18). Galvanically isolated in groups of 8 channel to chassis
- 32-point digital input module: DC voltage. Galvanically isolated point to chassis. Galvanically isolated in 2 groups of 16 points (p.2218).
- 8-point AC or 16-point DC digital output modules (sinking type). Galvanically isolated point to chassis. Galvanically isolated in 2 groups of 8 points (p.21).

- 32-point digital output: DC voltage (sourcing type). Galvanically isolated point to chassis. Galvanically isolated in 2 groups of 16 points (p.27).
- 8-point relay output module: four form C type and four form A type relays. Galvanically isolated point to chassis. Galvanically isolated relay to relay (p.23).
- 4 channel Pulse/Frequency/Quadrature I/O module. Galvanically isolated point to chassis (p.28).

Insert and Removal of I/O under Power

For ease of maintenance, the ControlEdge HC900 controller supports removing and inserting I/O modules from the module rack without removing power from the controller. Each module is sensed for validity by the controller and auto-configured on insertion.

Other Modules

In addition to I/O, the following modules are available.

- Scanner 1 module, single port (p.35)
- Scanner 2 Module, dual port (p.36)
- Universal AC Power Supply, 60W (p.7)
- Power Supply 24VDC, 60W (p.7)
- Redundant Switch Module (p.37)
- Power Status Module (p.37)

Failsafe

All ControlEdge 900 Platform I/O modules support a user specified failsafe value (analog) or state (digital) that the module outputs or inputs will assume if communication between the controller and the module is interrupted. Output modules are also disabled if the controller fails to start. Module diagnostics are not initiated if the control strategy does not call for the inputs or outputs on the modules to execute.

Failsafe is restricted to de-energize in safety applications.

Remote Terminal Panels

Optional DIN rail mounted Remote Terminal Panels (RTPs) are available for use with pre-wired cables to reduce installation time and labor expense. Four types of RTPs are available: analog inputs, relay outputs, redundant I/O and other I/O modules. Three cable lengths are also available to match hardware to installation variations. Analog inputs RTPs include transmitter shunt resistors and transmitter power terminals with individual circuit fuses. The Relay Output RTP includes a fuse and power disconnect switch for each output. All the three types of RTP panels also switch power to allow module removal and installation under controller power. See page 38.

Terminal Blocks

20-screw Barrier style and Euro style terminal blocks are available for use with all ControlEdge HC900 I/O Modules. Red terminal blocks are used for high voltage connections for added safety while black terminal blocks are used for low voltage connections. A 36-terminal Euro style block is available with the 16 AI, the 8 and 16 AO as well as the 32 DC DI and 32 DC DO module types. See page 31.

Specifications for modules

I/O Module Attributes	
Remove & Insert under power	Standard. Modules are automatically sensed and configured on insertion. Field power shall be disconnected before removing field terminal blocks.
LED Channel State indicators	Via light pipes at front of module, one state LED for each digital I/O point – green indicates ON, logic side
LED Module Status indicator	Via light pipe, one per module, tri-color to represent module status, Green = OK, Red = Fault (# of flashes indicates fault), Amber = Override (Force)
I/O Labels	Color-coded, on module door, removable, with write-on area to label I/O
Processor	Micro-controller per module for parallel processing
Terminal Boards	20 screw: Barrier or Euro style, tin-plated or gold-plated (for DC connections) 36 screw: Euro style gold plated (Required with certain higher capacity modules)
Keying	Hardware keying matches each module to its terminal block with its field wiring.
Environmental and Vibration Specifications	
Mounting Standard 35mm wide DIN Rail	Provides connection of field wiring to controller I/O within an enclosure only.
Dimensions	4.38" (111.1 mm) x 3.70" (94.0mm) x 2.60" (66.0mm) (L x W x H)
Vibration Amplitude Acceleration Vibration	5Hz to 15.77Hz, 2.03mm (0.08") amplitude (peak to peak) 15.77 to 250Hz, 1.0-g Sweeping, at rate of .33 octave/min.
Tray material Tray and end caps Flammability	Polyvinyl Chloride (PVC) UL94-V0
Environmental Temperature Relative Humidity Harsh Environment ** ROHS** ** Except PSU module	Operating: 0 deg. C (32F) to 60 deg. C (140F) Storage: -40 deg. C (140F) to 70 deg. C (158F) Operating: 10% to 90% Non-condensing Storage: 5% to 95% Non-condensing All the modules including CPU, Scanner, RTP, Backplane, RSM/PSM, and Backplanes have conformal coating that is suitable for operation in G3 level of harsh environment. Power Supply Units (PSU) do not have conformal coating. Entire system is compliant to RoHS 2 directive, except PSU.

Certifications CE	EN61326-1:2013, EN61326-3-1:2008, EN55011:2009/A1,2010, EN61010-1:2010								
UL	Certificate: E201698 UL Listed- Process Control Equipment, Electrical UL 61010-1 2nd Edition								
ATEX	Certificate: HON 08.0201 II 3 G Ex nA IIC T* Gc EN 60079-0: 2011; EN 60079-15: 2010 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents: EN IEC 60079-0:2018 EN 60079-7:2015+A1:2018 EN IEC 60079-15:2019								
UKCA	Compliance with the Essential Health and Safety Requirements has been assured by compliance with: EN IEC 60079-0:2018 EN 60079-7:2015+A1:2018 EN IEC 60079-15:2019								
IECEx	The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards: IEC 60079-0:2017 Edition:7.0 IEC 60079-15:2017 Edition:5.0 IEC 60079-7:2017 Edition:5.1								
CSA	Certificate: 1367757 Class I, Division 2, Groups A, B, C D; T* CAN/ CSA C22.2 No. 0-M91; CAN/ CSA C22.2 No. 94-M94; CAN/ CSA C22.2 No 1010.1-92; CAN/ CSA C22.2 No 1010.1B-97; CSA C22.2 No. 213-M1987								
FM	Certificate: 3011798 Class 1, Div. 2 Groups A, B, C, D; T* FM 3600: 2010; FM 3611: 2004; FM 3810: 2005 * Module Temperature: Classifications T3 to T6								
Cables High voltage Low voltage	Lengths: 1.0, 2.5, 5.0 meters. Cable power is limited to 24 Amps per module at 60C (140 degrees F) and 32 Amps at 54C (129 degrees F). Lengths: 1.0, 2.5, 5.0 meters.								
I/O module Compliance									
CE Conformity	This product is in conformity with the protection requirements of the following European Council Directives: 2006/ 95/ EC , the Low Voltage Directive (evaluated to EN61010-1:2010) 2004/108/EC , the EMC Directive (evaluated to EN61326-1:2013). Conformity of this product with any other European Council Directive(s) shall not be assumed.								
General Purpose Safety	Compliant with EN61010-1, UL61010-1 2nd Edition, CSA C22.2 No. 1010-1								
Hazardous (Classified) Location Safety	FM Class 1, Div. 2, Groups A, B, C, D Class 1, Zone 2, IIC								
<table border="1"> <thead> <tr> <th>Module Type</th><th>Temperature Classification</th></tr> </thead> <tbody> <tr> <td>Controller (C30, C50, C70, C75)</td><td>T4</td></tr> <tr> <td>Safety Module Controller (C30S, C50S, C70S and C75S)</td><td>T4</td></tr> <tr> <td>Power Supply (P01, P24)</td><td>T4</td></tr> </tbody> </table>		Module Type	Temperature Classification	Controller (C30, C50, C70, C75)	T4	Safety Module Controller (C30S, C50S, C70S and C75S)	T4	Power Supply (P01, P24)	T4
Module Type	Temperature Classification								
Controller (C30, C50, C70, C75)	T4								
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Power Supply (P01, P24)	T4								

Analog Output Module (900B16-xxxx)

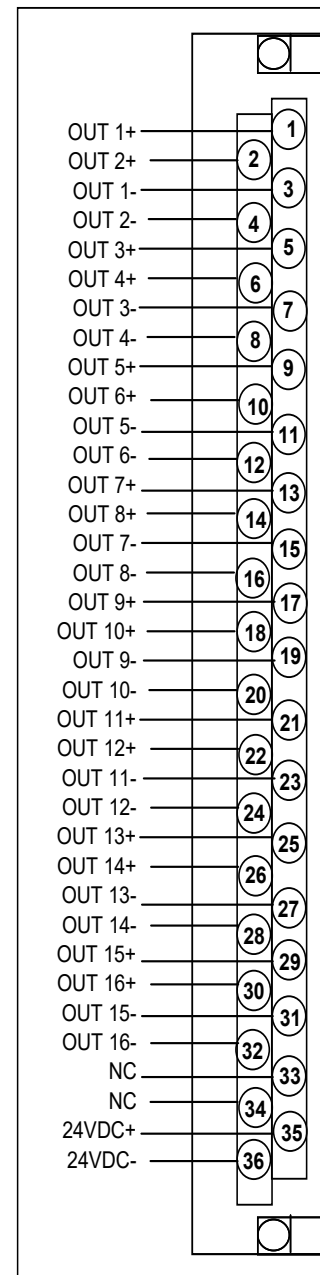
The Analog Output module provides 16, 0 to 21.0 mA outputs that may be scaled by the user to any span within this range on a per output basis. Outputs are isolated in groups of 4 with no isolation between outputs in a group. All points are isolated from controller logic.

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