Technical Information

Honeywell

ControlEdge HC900 IO Modules Specifications

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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 Galavanically isolated Input/Output to chassis (p.29)
- 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.8).
- 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.12). 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.14).
- 8-point analog output, galvanically isolated in 2 groups of 4 points. Galvanically isolated point to chassis. Supports from 0 to 20mA each (p.15).
- 16-point analog output, galvanically isolated in 4 groups of 4 points. Galvanically isolated point to chassis. Supports from 0 to 20mA each (p.16).
- 16-point digital input modules: Contact closure type, DC Voltage, AC Voltage and AC/DC voltage types (p.17). 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.2117).
- 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.20).
- 32-point digital output: DC voltage (sourcing type). Galvanically isolated point to chassis. Galvanically isolated in 2 groups of 16 points (p.25).
- 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.22).
- 4 channel Pulse/Frequency/Quadrature I/O module. Galvanically isolated point to chassis (p.26).

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.33)
- Scanner 2 Module, dual port (p.34)
- Universal AC Power Supply, 60W (p.6)
- Power Supply 24VDC, 60W (p.6)
- Redundant Switch Module (p.35)
- Power Status Module (p.35)

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 36.

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 29.

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
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

Module Type	Temperature Classification
Controller (C30, C50, C70, C75)	T4
Safety Module Controller (C30S, C50S, C70S and C75S)	T4
Power Supply (P01, P24)	T4
Power Status (PSM))	T6
Scanner (1 or 2 Port)	T4
Safety Scanner (1 or 2 Port)	T4
Redundant Switch (RSM)	T6
Analog Input (Universal 8 channel)	T6
Analog Input (High Level 16 channel)	T6
Analog Output (4 Channel)	T4
Analog Output (8 channel)	T4
Analog Output (16 channel)	T3C
Digital Input, Contact type (16 Channel)	T5
Digital Input, 24 Vdc (16 channel)	T4
Digital Input, 120/240 Vac (16 channel)	T3C@ Ta = 60 deg. C T4 @ Ta = 40 deg. C

Digital Input, 120/240 Vac (16 channel 125 Vdc)	T3C@ Ta = 60 deg. C T4 @ Ta = 40 deg. C
Digital Input Vdc (32 channel)	T3C@ Ta = 60 deg. C T4 @ Ta = 40 deg. C
Digital Output, Relay type (8 channel)	T5
Digital Output, 24 Vdc, (16 channel)	T4
Digital Output, 120/240 Vac (8 channel)	T4
Digital Output Vdc (32 channel)	T6
Pulse/Frequency/Quadrature (4 channel)	T5
Universal IO Module (16 channel)	T4

Dimensions and Weight

Item	Module Number	Dimension	Weight
4 I/O slot Rack[1,2]	900R04-0200	137mm H* x 266.7mm W x 151.7mm D 5.4" H* x 10.5" W x 6.0" D	2104g
8 I/O slot Rack[1,2]	900R08-0200	137mm H* x 419.1mm W x 151.7mm D 5.4" H* x 16.5" W x 6.0" D	3126g
8 I/O slot Rack with redundant power support[1,2]	900R08R-0200	137mm H* x 530.9mm W x 151.7mm D 5.4" H* x 20.9" W x 6.0" D	4422g
12 I/O slot Rack[1,2]	900R12-0200	137mm H* x 571.5mm W x 151.7mm D 5.4" H* x 22.5" W x 6.0" D	4072g
12 I/O slot Rack with redundant power support[1,2]	900R12R-0200	137mm H* x 683.3mm W x 151.7mm D 5.4" H* x 26.9" W x 6.0" D	5252g
Redundant CPM Rack[1,2]	900RR0-0101	137mm H* x 261.6mm W x 151.7mm D 5.4" H* x 10.3" W x 6.0" D	1751g
CPU, ControlEdge 900	900C30-0460/ 900C30S-0460	137mm H x 38.1mm W 5.4" H* x 1.5" W	350g
	900C50-0460/ 900C50S-0460	137mm H x 38.1mm W 5.4" H* x 1.5" W	360g
	900C70-0460/ 900C75-0460/ 900C70S-0460/ 900C75S-0460	137mm H x 38.1mm W 5.4" H* x 1.5" W	400g
Scanner, ControlEdge 900	900S50-0460/ 900S50S-0460	137mm H x 38.1mm W 5.4" H* x 1.5" W	360g
	900S75-0460/ 900S75S-0460	137mm H x 38.1mm W 5.4" H* x 1.5" W	400g
4 port serial communications module, 2 x RS232, 2 x RS485	900ES1-0100	137mm H x 35.6mm W 5.4" H* x 1.4" W	350g
SIL UIO	900U02-0100	134mm H x 33.1mm W 5.3" H* x 1.3" W	260g
Universal AI -RTD, TC, V, 8 Ch	900A01-0202	137mm H x 35.6mm W 5.4" H* x 1.4" W	210g
Analog Input hi level, 16 Ch	900A16-0103	137mm H x 35.6mm W 5.4" H* x 1.4" W	397g
Analog Output, 0 to 20mA, 4 Ch	900B01-0301	137mm H x 35.6mm W 5.4" H* x 1.4" W	408g
Analog Outputs 0 to 20mA, 8 Ch	900B08-0202	137mm H x 35.6mm W 5.4" H* x 1.4" W	400g

Digital Input 120/240 VAC, 16 Ch	900G03-0202	137mm H x 35.6mm W 5.4” H* x 1.4” W	210g
Digital Input 24VDC, 32 Ch	900G32-0101	137mm H x 35.6mm W 5.4” H* x 1.4” W	175g
Digital Input, Contact type, 16 Ch	900G01-0202	137mm H x 35.6mm W 5.4” H* x 1.4” W	354g
Digital Input, 120/240 VAC-125VDC, 16 Ch	900G04-0101	137mm H x 35.6mm W 5.4” H* x 1.4” W	400g
Digital Output - 120/240 VAC, 8 Ch	900H03-0202	137mm H x 35.6mm W 5.4” H* x 1.4” W	230g
Digital Output – 24VDC, 32 Ch	900H32-0102	137mm H x 35.6mm W 5.4” H* x 1.4” W	180g
Digital Output, Relays, 8 Ch	900H01-0202	137mm H x 35.6mm W 5.4” H* x 1.4” W	425g
Pulse/Freq, (4chan)	900K01-0201	137mm H x 35.6mm W 5.4” H* x 1.4" W	360g
Power Supply 120/240VAC, 60W	900P01-0301	137mm H x 72.6mm W 5.4” H* x 2.86” W	820g
Power Supply 24VDC, 60W	900P24-0301	137mm H x 72.6mm W 5.4” H* x 2.86” W	792g
SIL - Power Supply 120/240VAC, 60W	900P01-0401	137mm H x 72.6mm W 5.4” H* x 2.86” W	650g
SIL - Power Supply 24VDC, 60W	900P24-0401	137mm H x 72.6mm W 5.4” H* x 2.86” W	650g
Power Status Module, Redundant	900PSM-0200	137mm H x 35.6mm W 5.4” H* x 1.4” W	448g
MOXA Network Switch (8 ports)	50008930-001	135mm H x 53.6mm W x 105mm D 5.31” H* x 2.11” W x 4.13” D	790g
MOXA: Network switch, 16 Port Multi-mode	50008930-002	135mm H x 80.1mm W x 105mm D 5.31” H* x 3.15” W x 4.13” D	1140g
MOXA: IMC-101-M-SC Fiber Optic convertor	50135395-001	135mm H x 53.6mm W x 105mm D 5.31” H* x 2.11” W x 4.13” D	630g
MOXA Network Switch (8 ports), Single mode	50008930-004	135mm H x 53.6mm W x 105mm D 5.31” H* x 2.11” W x 4.13” D	790g
MOXA: Network switch, 16 Port Single mode	50008930-003	135mm H x 80.1mm W x 105mm D 5.31” H* x 3.15” W x 4.13” D	1140g
MOXA: IMC-101-S-SC Fiber Optic convertor, Single mode	50135395-002	135mm H x 53.6mm W x 105mm D 5.31” H* x 2.11” W x 4.13” D	630g
Ethernet Switching Hub, 16 ports, Multi-Mode, G3	50008930-008	135mm H x 53.6mm W x 105mm D 5.31” H* x 2.11” W x 4.13” D	1140g
Ethernet to Multi-Mode Fiber Converter, G3	50135395-003	135mm H x 53.6mm W x 105mm D 5.31” H* x 2.11” W x 4.13” D	630g

Note:

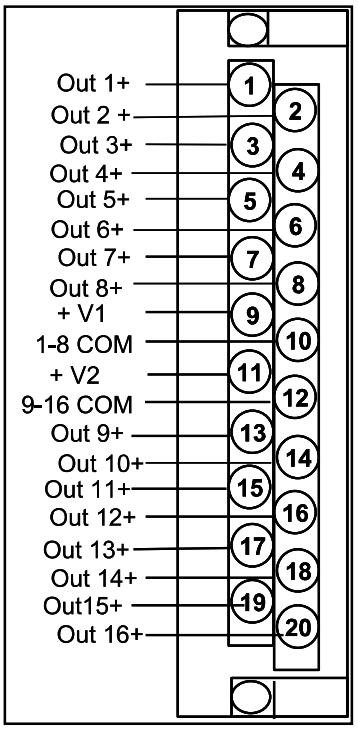
1. Surface mounting with 4 screws in back of rack. Installation Category II, Pollution Degree 2, IEC 60664, UL840 Installation coordination.
2. Rear mounting plate extends height to 6.9” (175.3mm).

Digital Output Module – DC Type (900H02-xxxx)

The DC Digital Output module provides 16 outputs separated in to 2 groups of 8 channels each that are powered externally. Each group has a pair of screw terminals for +V and COM connections. The outputs are low side switching (current sinking) type. Overload protection is built into each output; when tripped the power must be recycled to reset the module.

There is a green LED state indicator for each channel on the module to indicate when a digital output is ON.

A green blinking status LED on the module indicates when the module is being scanned. An amber blinking status LED indicates when channels are forced and a red status LED when module diagnostics exist..



Outputs per module	16 (current sinking, low side)
Galvanic Isolation	2 groups of 8 outputs
Operating Voltage	6.5 to 32 VDC (5.0 to 6.5 V @ <0.5A per channel)
Output Type	Intelligent power switch (IPS)
Peak Voltage	34 VDC
AC Frequency	N/A
ON Voltage Drop	0.3VDC @ I A load
Overload Protection	Electronic high current and high temperature limiting, resets after cycling field power
Maximum Load Current	1 A per point, 8A max. per module, resistive load 0.5 A per point incandescent lamp load (5 mH max)
Maximum Leakage Current	0.15mA @ 32 VDC
Maximum Inrush Current	4 A for 10 ms
Minimum Load	0.0 mA
OFF to ON response time*	6 ms
ON to OFF response time*	6 ms
Fuses	Electronic limiting
Power Supply Loading	5V; 340mA 24V; 0mA

*excluding controllers scan time and excluding transmission time from module to backplane