

2.5.3. Analog Input High Level, 16 Channel (900A16-0103)

The High Level Analog Input module supports up to 16 user-configurable inputs on a per point basis for Voltage or current. Point-to-point isolation and back-plane isolation are provided. Modules perform analog to digital conversion in synchronization with CPU control execution, eliminating data interchange latency. All analog input modules are processed in parallel, eliminating scan time increases as modules are added.

A green blinking status LED on the module indicates when the module is being scanned. A red status LED when module or channel diagnostics exist.

High Level Analog Input Specifications

Item	Specification
Inputs per module	16 (isolated)
Input types	V, mA
Signal Source	See High Level Analog Input Reference Accuracy for range types.
Input Impedance	>1 megohm for volts and 250 ohms for mA inputs
Galvanic Input Isolation	400 VDC point to point, solid state switching; 1K VDC to logic.
Noise Rejection	Series Mode >31dB Common Mode >90dB at 120VAC
Over-range limit	+/- 10% for linear ranges (volts).
Accuracy	Factory configured accuracy = ± 0.1 % of range. Reference conditions Temperature = $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ ($77^{\circ}\text{F} \pm 5^{\circ}\text{F}$) Humidity = 45 % to 55 % RH non-condensing Line voltage = Nominal ± 1 % Source resistance = 0 ohm Series mode and common mode = 0 V Frequency = Nominal ± 1 %
Temp. Effect on Accuracy	$\pm 0.01\%$ of full scale per degree Celsius maximum
A/D Converter	One per module
A/D Resolution	± 15 Bits
Update rate	100ms (Analog to Digital Converter per module)
Long term Stability	0.1% per year
Calibration	Data is stored in non-volatile memory Redundant Factory Calibration
Diagnostics	Monitoring of Factory Calibration, 24 VDC supply, and configuration.
Channel Configuration Data	Stored in non-volatile memory.

Pulse Output Specifications	
Channels Used	Any one of the channels can be used for Pulse Output. However, the use of a particular channel for outputting pulses will render the particular input channel unusable for either of pulse or frequency input.
Digital Output Type	Open Collector, 5 to 24V, 30 mA max.
Frequency Range	25 Hz – 10KHz
Duty Cycle	Always 50%
Pulse Output Duration	Selectable CONTINUOUS or NUMBERED PULSES.

2.5.14. IOM scan time

I/O module	IOM scan time (in local I/O rack or remote I/O)
900U01-0100 - Universal Input/Output Module	10ms
900A01-0202 - Universal Analog Input -RTD, TC, V, 8 Channel	500ms
900A16-0103 - Analog Input High Level, 16 Channel	100ms
900B01-0301 - Analog Output, 0 to 20 mA, 4 Channel	500ms
900B08-0202 - Analog Outputs 0 to 20mA, 8 Channel	500ms
900G03-0202 - Digital Input, 120/240 VAC, 16 Channel	10ms
900G32-0301 - Digital Input, 24 VDC, 32 Channel	10ms
900G01-0202 - Digital Input, contact type, 16 Channel	10ms
900G04-0101 - Digital Input, 120/240 VAC-125VDC, (16 channel Isolated)	10ms
900H03-0202 - Digital Output, 120/240 VAC 8 Channel	10ms
900H32-0302 - Digital Output, 24 VDC 32 Channel	10ms
900H01-0202 - Digital Output - Relay, 8 Channel	10ms
900K01-0201 - Pulse/Freq Input, 4 Channel	10ms

2.6. MasterLogic Input/Output Modules

MasterLogic supports various input/output modules. This document provides technical information to configure MasterLogic I/O Modules.

MasterLogic I/O modules are available in two platforms, ML50 and ML200. The following I/O modules are included in this document.

- Support DHCP, ML I/O adapter will get IP address from PLC downlink through DHCP server
- Diagnostics of module on ControlEdge Builder
- Hot Swap support for all ML200 allowing replacement of modules on process.
- Support for Dual Power Supply with ML200-IOracks (2MLR-E08P and 2MLR-E12P).

ML50 Input/output Modules

- MLE-DC32A: Digital Input, 24 VDC, 32 Channel
- MLE-TN32A: Digital Open Collector Output, 32 Channel
- MLE-DR16A: Digital Input, 24 VDC, 8 Channel & Digital Output, Relay 24 VDC, 8 Channel
- MLF-AD08A: Analog Input, Current/Voltage, 8 Channel
- MLF-AD04C: Analog Input, Current/Voltage, Hi-Resolution, 4 Channel
- MLF-DC04C: Analog Output, Current, Hi-Resolution, 4 Channel
- MLF-AH04A: Analog Input, Current/Voltage, 2 Channel & Analog Output, Current/Voltage, 2 Channel

Below table list the relationship between all I/O modules and their related terminal block or RTP.

I/O Module	Terminal Block (Euro)	Terminal Block (Barrier)	RTP	RTP required per module	RTP Cable
900U01-0100	900TEK-0200	900TBK-0200	900RTS-0001	1	900RTC-H2xx 900RTC-L2xx
900A01-0202	900TEK-0200	900TBK-0200	900RTA-L001	1	900RTC-L2xx
900A16-0103	900TCK-0200	N/A	900RTS-0001	2	900RTC-34xx
900B01-0301	900TEK-0200	900TBK-0200	900RTS-0001	1	900RTC-L2xx
900B08-0202	900TCK-0200	N/A	900RTS-0001	1	900RTC-BAxx
900G03-0202	900TER-0200	900TBR-0200	900RTS-0001	1	900RTC-H2xx
900G32-0301	900TCK-0200	N/A	900RTS-0001	2	900RTC-34xx
900G01-0202	900TEK-0200	900TBK-0200	900RTS-0001	1	900RTC-L2xx
900G04-0101	900TCK-0200	N/A	N/A	N/A	N/A
900H03-0202	900TER-0200	900TBR-0200	900RTS-0001	1	900RTC-H2xx
900H32-0302	900TCK-0200	N/A	900RTS-0001	2	900RTC-34xx
900H01-0202	900TER-0200	900TBR-0200	900RTR-H001	1	900RTC-H2xx
900K01-0201	900TEK-0200	900TBK-0200	N/A	N/A	N/A

2.10. Power Supply

2.10.1. 120/240VAC Power Supply (900P01-0501)

Item	Specification
Voltage	90 to 264 V AC, 47 to 63 Hz
Current	1.4 A Max continuous
Inrush Current	40 Amps peak-to-peak for 120 ms at 240 V AC
Input rating	130 VA
Output rating	58W
Fuse	Internal non-replaceable fuse.
Power Supply Hold up time	20milliseconds @ 115V AC, 60HZ maximum Load
Wiring	Screw type terminals, 0.3 mm ² to 3.3 mm ² (#12-22AWG)
Test jacks	5 V DC, 24 V DC
Ambient Temperature	T4, 0°C to 60°C

2.10.2. 24VDC Power supply (900P24-0501)

Item	Specification
Voltage	21 to 29V DC
Current	5A Max. continuous
Inrush Current	30A for 3ms @ 29V DC
Input rating	72.5W
Output rating	51W
Fuse	Internal non-replaceable fuse.
Power Supply Hold up time	20 milliseconds @ 24V DC, maximum Load
Wiring	Screw type terminals, 0.3 mm ² to 3.3 mm ² (#12-22AWG)
Ambient Temperature	T4, 0°C to 51°C

3. Hardware Power Consumption, Heat Dissipation and Weight

3.1. ControlEdge900 I/O Modules

3.1.1. Power Consumption and Heat Dissipation

Item	Module number	Max. Current @5V	Max. Current @24V	Heat Dissipation (W)
Control Processor Module	900CP1-0200	750 mA	0 mA	3.75W
Expansion Processor Module	900SP1-0200	520 mA	0 mA	2.6W
Control Processor Module, Ext. Temp (-40 to 70°C)	900CP1-0300	750 mA	0 mA	3.75W
Expansion Processor Module, Ext. Temp (-40 to 70°C)	900SP1-0300	520 mA	0 mA	2.6W
Serial communications module, 2 x RS232, 2 x RS485, Ext. Temp (-40 to 70°C)	900ES1-0100	400 mA	0 mA	2 W
UIO Module, Ext. Temp (-40 to 70°C)	900U01-0100	380 mA	0 mA	8.5W
Universal AI -RTD, TC, V, 8 Ch	900A01-0202	40 mA	25 mA	0.8W
Analog Input High level,16 Ch	900A16-0103	75 mA	50 mA	2.2W
Analog Output, 0 to 20mA ,4 Ch	900B01-0301	40 mA	200 mA	6.8W
Analog Outputs 0 to 20mA,8 Ch	900B08-0202	225 mA	350 mA	9.4W
Digital Input 120/240 VAC, 16 Ch	900G03-0202	130 mA	0 mA	0.65W
Digital Input 24VDC, 32Ch, Ext. Temp (-40 to 70°C)	900G32-0301	215 mA	0 mA	1.1W
Digital Input, Contact Type, 16 Ch	900G01-0202	130 mA	40 mA	1.76W
Digital Input, 120/240 VAC-125VDC, 16 Ch	900G04-0101	130mA	130 mA	8.3W
Digital Output - 120/240 VAC, 8 Ch	900H03-0202	218 mA	0 mA	1.09W
Digital Output - 24VDC, 32 Ch, Ext. Temp (-40 to 70°C)	900H32-0302	235 mA	0 mA	1.175W
Digital Output, Relay, 8 Ch	900H01-0202	110 mA	100 mA	3W
Pulse/Freq, 4 Ch	900K01-0201	110 mA	250 mA	6.6W
120/240 V AC, 58W Power Supply	900P01-0501	N/A	N/A	25W
120/240 V AC, 41W Power Supply Ext. Temp (-40 to 70°C)	900P01-0701	N/A	N/A	25W
24V DC, 51W Power Supply	900P24-0501	N/A	N/A	51W
Redundant Power Status Module, Ext. Temp (-40 to 70°C)	900PSM-0200	22 mA	0 mA	0.11W
MOXA EDS-308 Ethernet Switch (8 Copper ports)	50008930-001	0 mA	350 mA	8.4W
MOXA EDS-316-MM-SC Ethernet Switch (14 Copper + 2 Multi-Mode ports)	50008930-002	0 mA	380 mA	9.12W
MOXA EDS-316-SS-SC Ethernet Switch (14 Copper + 2 Single-Mode ports)	50008930-003	0 mA	380 mA	9.12W
MOXA EDS-308-SS-SC Ethernet Switch (6 Copper + 2 Single-Mode ports)	50008930-004	0 mA	350 mA	8.4W
MOXA Fiber Optic Convertor IMC-101-M-SC, Multi-mode	50135395-001	0 mA	160 mA	3.84W
MOXA Fiber Optic Convertor IMC-101-S-SC), Single mode	50135395-002	0 mA	160 mA	3.84W

3.1.2. Dimensions and Weight

Item	Module Number	Dimension	Weight
1 I/O Slot Rack ^{1,2,3}	900R01-0300	137mm H x 150 mm W x 151.7mm D 5.4" H x 5.9" W x 6.0" D	900g
4 I/O slot Rack ^{1,2,3}	900R04-0300	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 ^{1,2,3}	900R08-0300	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 ^{1,2,3}	900R08R-0300	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 ^{1,2,3}	900R12-0300	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 ^{1,2,3}	900R12R-0300	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 ^{1,2,3}	900RR0-0300	137mm H x 261.6mm W x 151.7mm D 5.4" H x 10.3" W x 6.0" D	1751g
CPM, ControlEdge 900	900CP1-0300	137mm H x 38.1mm W 5.4" H x 1.5" W	320g
EPM, ControlEdge 900	900SP1-0300	137mm H x 38.1mm W 5.4" H x 1.5" W	320g
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
Universal IO Module	900U01-0100	137mm H x 38.1mm W 5.4" H x 1.5" W	190g
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	900G32-0301	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	900H32-0302	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, 58W	900P01-0501	137mm H x 72.6mm W 5.4" H x 2.86" W	820g

Item	Specification	
RoHS	Directive 2011/65/EU	
RoHS China	The Administrative Measures for the Restriction of the Use of Hazardous Substances in Electrical and Electronic Products	
ODVA	ODVA composite Conformance Test (CT)	CT 14
Note: 1. For All standard's issue date and revision refer corresponding Certificates. 2. All certifications are not applicable for MOXA devices. 3. ISA99 Security L2 is applicable for ControlEdge PLC R160		

Approval Rating for standard Temperature (0 to 60° C)

Hazardous Location Approvals	Approval Rating																
CSA	Class I, Division 2, Groups A, B, C & D T*																
ATEX	II 3 G Ex ec nC IIC T* Gc (for 900H01) II 3 G Ex ec IIC T* Gc (for other modules)																
Temperature class (T*)	Module Number																
T3	900G03, 900G04																
T4	900H03, 900P01, 900P24, 900SP1-0200, 900CP1-0200, 900B01, 900B08.																
T5	900H32-01XX, 900G32-01XX, 900G01, 900H01, 900A16, 900K01																
T6	900A01																
Note: <table> <tr> <td colspan="2">Classification of maximum surface temperatures for Group II electrical equipment are:</td></tr> <tr> <td>Temperature class</td><td>Maximum surface temperature °C</td></tr> <tr> <td>T1</td><td>450</td></tr> <tr> <td>T2</td><td>300</td></tr> <tr> <td>T3</td><td>200</td></tr> <tr> <td>T4</td><td>135</td></tr> <tr> <td>T5</td><td>100</td></tr> <tr> <td>T6</td><td>85</td></tr> </table>		Classification of maximum surface temperatures for Group II electrical equipment are:		Temperature class	Maximum surface temperature °C	T1	450	T2	300	T3	200	T4	135	T5	100	T6	85
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Temperature class	Maximum surface temperature °C																
T1	450																
T2	300																
T3	200																
T4	135																
T5	100																
T6	85																

7. Module Number List

7.1. ControlEdge 900 I/O Modules

Item	Model	Description
Racks		
1	900RR0-0300	Redundant CPM Rack (Assembly), Ext. Temp (-40 to 70°C)
2	900R01-0300	1 I/O Slot Rack – Non-Redundant Power (Assembly), Ext. Temp (-40 to 70°C)
3	900R04-0300	4 I/O Slot Rack – Non-Redundant Power (Assembly), Ext. Temp (-40 to 70°C)
4	900R08-0300	8 I/O Slot Rack – Non-Redundant Power (Assembly), Ext. Temp (-40 to 70°C)
5	900R12-0300	12 I/O Slot Rack – Non-Redundant Power (Assembly), Ext. Temp (-40 to 70°C)
6	900R08R-0300	8 I/O Slot Rack – Redundant Power (Assembly), Ext. Temp (-40 to 70°C)
7	900R12R-0300	12 I/O Slot Rack – Redundant Power (Assembly), Ext. Temp (-40 to 70°C)
Control Processor Module		
8	900CP1-0200	Control Processor Module v1
9	900CP1-0300	Control Processor Module, Ext. Temp (-40 to 70°C)
10	900CP2-0100	Control Processor Module v2
Expansion Processor Module		
10	900SP1-0200	Expansion Processor Module
11	900SP1-0300	Expansion Processor Module, Ext. Temp (-40 to 70°C)
12	900ES1-0100	4 port serial communications module, 2 x RS232, 2 x RS485, Ext. Temp (-40 to 70°C)
IO Module		
13	900U01-0100	Universal IO Module, Ext. Temp (-40 to 70°C)
14	900A01-0202	Universal AI, RTD, TC, V, 8 Ch
15	900A16-0103	Analog Input high level (16 channel)
16	900B01-0301	Analog Output, 0 to 20mA, (4 channel)
17	900B08-0202	Analog Outputs 0 to 20mA (8 channel, 5 modules/rack)
18	900G03-0202	Digital Input 120/240 VAC, 16 Ch
19	900G32-0301	Digital Input 24VDC, 32Ch, Ext. Temp (-40 to 70°C)
20	900G01-0202	Digital Input, Contact type, (16 channel)
21	900G04-0101	Digital Input, 120/240 VAC-125VDC, (16 channel Isolated)
22	900H03-0202	Digital Output, 120/240 VAC, 8 Ch
23	900H32-0302	Digital Output, 24VDC, 32 Ch, Ext. Temp (-40 to 70°C)
24	900H01-0202	Digital Output, Relays (8 channel)
25	900K01-0201	Pulse/Freq (4 channel)
Power Supply		
26	900P01-0501	120/240 V AC, 58 W Power Supply
27	900P24-0501	24 V DC, 51W Power Supply
28	900P01-0701	AC-DC-NON SIL 41W Power supply, Ext. Temp (-40 to 70°C)
29	900PSM-0200	Redundant Power Status Module, Ext. Temp (-40 to 70°C)
Terminal Blocks		
30	900TEK-0200	TB Housing, Black 20 Position Euro style
31	900TER-0200	TB Housing, Red 20 Position Euro style
32	900TCK-0200	TB Housing, Black 36 Position Euro style
33	900TBR-0200	High Voltage Terminal Block (Barrier Style)