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OMRON

PRODUCT OVERVIEW

DeviceNet I/O Network

Masters and Remote Slaves



DeviceNet is an open, next generation Factory Automation network which can connect a wide variety of components from simple on/off devices to complex products such as Variable Frequency Drives and Vision Sensors.

Omron offers the broadest variety of products compatible with DeviceNet available from a single vendor to solve application requirements encountered for machine control in today's factory.

DeviceNet specifications are managed by ODVA (Open DeviceNet Vendors Association) which guarantees that the specifications remain open and tests products for compliance of the specifications. Omron, as a founding member of ODVA fully supports the benefits to customers of open, multi-vendor technology.

DeviceNet Features:

- Up to 63 slaves; 500 Meters max trunk distance
- Up to 4,800 points on one network
- Up to 16 masters per PLC
- 125K, 250K, & 500Kbaud communications speeds
- Automatic scan list generation
- FINS Messaging supported
- Polled, cyclic, bit strobe and change of state communications methods
- "Plug and Play" I/O functionality
- Communications and device power supplied on a single, 5 conductor cable
- SEMI device network standard

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DeviceNet Network Configuration



PLC Masters
- CS1
- C200H
- CVM1

Maximum Devices
63 Slaves per Network

Physical Media
Communications and Power
- 5 conductor cable: 2 twisted pair and a shield
- Thick or Thin cable

Terminating Resistor
- 75Ω resistor at each end of network

Network Power
- 24vDC power to devices
- Thick trunk rated to 8 amps
- Thin wire rated at 3 amps

Device Connections
T-Taps
Tap Boxes
Zero-drop

Cumulative Drop-line Budget
156m @ 125Kbaud
78m @ 250Kbaud
39m @ 500Kbaud
(Maximum of 6m each)

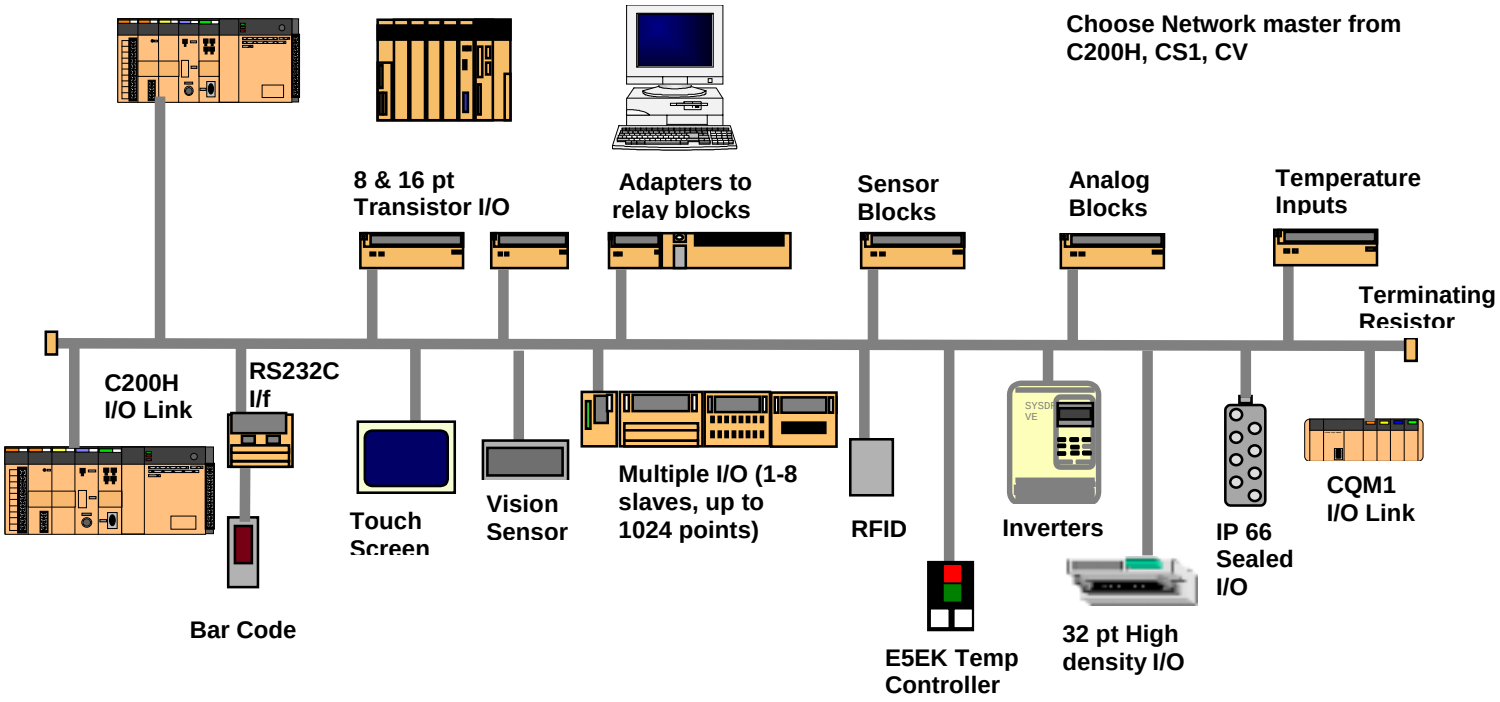
Drop-line wiring
- Single drop
- Daisy-chaining off drop
- Branching off drop

Trunk line Distance and Baud rate
100m Max. with Thin cable
500m @ 125Kbaud (thick)
250m @ 250Kbaud (thick)
100m @ 500Kbaud (thick)
(Third party repeaters can extend to 4km)

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Application



Omron DeviceNet Products:

- PLC Masters

- I/O “Links” for CS1/C200H and CQM1
- Analog I/O Blocks
- Discrete I/O Blocks
- Temperature Input Blocks
- Power Supplies
- Temperature Controllers
- Configuration Software
- Multiple I/O
  - Mix I/O, up to 1024pts – single node
- I/O sealed IP66 Blocks
- RFID Controller
- Inverters
- F150 Vision Sensor
- Remote Adapters –Ribbon Cable connections to relay or valve blocks
- Cables and wiring accessories

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ORDERING INFORMATION Masters and Slaves

Masters

Description	Maximum I/O Points	Part Number
CS1/C200Hα DeviceNet Master	4,800	C200HW-DRM21-V1
CVM1 DeviceNet Master	6,400	CVM1-DRM21-V1

Input Terminals

Input Type	# of Inputs	NPN or PNP	Power Supply	Mult-point Common terminal	Part Number
Transistor	8	NPN	Multiple	No	DRT1-ID08 DC24
		PNP			DRT1-ID08-1
	16	NPN			DRT1-ID16 DC24
		PNP			DRT1-ID16-1
	16	NPN		Yes	DRT1-ID16T
		PNP			DRT1-ID16T-1

Output Terminals

Output Type	# of Outputs	NPN or PNP	Power Supply	Mult-point Common terminal	Part Number
Transistor	8	NPN	Multiple	No	DRT1-OD08 DC24
		PNP			DRT1-OD08-1
	16	NPN			DRT1-OD16 DC24
		PNP			DRT1-OD16-1
	16	NPN		Yes	DRT1-OD16T
		PNP			DRT1-OD16T-1

Mixed I/O Terminals

I/O Type	# of I/O		NPN or PNP	Power Supply	Mult-point Common terminal	Part Number
	Inputs	Outputs				
Transistor	8	8	NPN	Multiple	Yes	DRT1-MD16T
			PNP			DRT1-MD16T-1

IP66 Sealed Blocks

I/O Type	# of I/O		NPN or PNP	Power Supply	Mult-point Common terminal	Part Number
	Inputs	Outputs				
Transistor	8		NPN	Multiple	No	DRT1-ID08C
		8	NPN			DRT1-OD08C
	8	8	NPN			DRT1-MD16C
	8	8	PNP			DRT1-MD16C-1
	16		NPN			DRT1-HD16C
	16		PNP			DRT1-HD16C-1
		16	NPN			DRT1-WD16C
		16	PNP			DRT1-WD16C-1

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Analog I/O Terminals

Description	# of I/O		Input Type	Output Type	Power Supply	Part Number
	Inputs	Outputs				
Analog I/O	4	-	0 to 5V 1 to 5V -10 to 10V 0 to 20mA 4 to 20mA		Network	DRT1-AD04 DRT1-AD04H (16 bit resolution)
	-	2		0 to 5V 1 to 5V 0 to 10V -10 to 10V 4 to 20mA		DRT1-DA02
Temperature Inputs	4		Platinum RTD			DRT1-TS04P
	4		Thermocouple			DRT1-TS04T

ORDERING INFORMATION Multiple I/O

Unit		# Inputs	# Outputs	I/O Connection Type	Part Number (see note)
Communications Module		None, Comm adapter only		None	DRT1-COM
Basic I/O	Transistor Inputs	16		M3 Terminal Block	GT1-ID16(-1)
		16		Molex connector; GCN1-MX25B	GT1-ID16MX(-1)
		16		Fujitsu ribbon style	GT1-ID16ML(-1)
		16		D-Sub 25 Pin Connectors	GT1-ID16DS(-1)
		32		High density Fujitsu	GT1-ID32ML(-1)
	Transistor Outputs		16	M3 Terminal Block	GT1-OD16(-1)
			16	Molex connector; GCN1-MX25B	GT1-OD16MX(-1)
			16	Fujitsu ribbon style	GT1-OD16ML(-1)
			16	D-Sub 25 Pin Connectors	GT1-OD16DS(-1)
			32	High Density Fujitsu	GT1-OD32ML(-1)
	Relay Outputs		8	M3 Terminal Block	GT1-ROP08
			16	M3 Terminal Block	GT1-ROS16
Special I/O	Analog Inputs	4		M3 Terminal Block	GT1-AD04
		8		Molex Connector, GCN1=MX25B	GT1-AD08MX
	Analog Outputs		4	M3 Terminal Block	GT1-DA04
			4	Molex Connector, GCN1=MX25B	GT1-DA04MX
	Counter Unit	1		M3 Terminal Block	GT1-CT01
	Temperature Inputs	4 RTD		M3 Terminal Block	GTTS04P
		4 T/C		M3 Terminal Block	GT1-TS04T

Note: (-1) indicates that PNP version is available by adding –1 to the end of the part number.

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ORDERING INFORMATION Specialized I/O Terminals

High Density Compact I/O Terminals

Input Type	# of I/O		Package Style	Connector Type	NPN or PNP	Power Supply	Part Number
	Inputs	Outputs					
Transistor	32	-	Vertical	MIL	NPN	Multiple	DRT1-ID32ML
					PNP		DRT1-ID32ML-1
	16	16		MIL	NPN		DRT1-MD32ML
					PNP		DRT1-MD32ML-1
	-	32		MIL	NPN		DRT1-OD32ML
					PNP		DRT1-OD32ML-1

I/O Link Units

CPU	Description	Part Number
C200Hα/CS1	Allows C200H/CS1 to be used as a terminal on DeviceNet network (512 inputs / 512 outputs)	C200HW-DRT21
CQM1/CQM1H	Allows CQM1/1H to be used as a terminal on DeviceNet network (16 inputs / 16 outputs)	CQM1-DRT21

Adapters

Item	Description	Part Number
Input Adapter	Ribbon connector adapter for 16 NPN inputs	DRT1-ID16X DC24
Input Adapter	Ribbon connector adapter for 16 PNP inputs	DRT1-ID16X-1
Out put Adapter	Ribbon connector adapter for 16 NPN outputs	DRT1-OD16X DC24
Out put Adapter	Ribbon connector adapter for 16 PNP outputs	DRT1-OD16X –1

Specialty Products

Item	Description	Part Number
Serial Interface	Two port RS232 to DeviceNet communications interface	DRT1-232C2
Temperature Controller	Single Loop Temperature Controller	E5EK-AA2-DRT
RFID	Intelligent Flag to adapt RFID to DeviceNet	V600-HAM42-DRT
Vision Sensor	Pitch/edge measurement sensor	F150-C10E-2-DRT

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ORDERING INFORMATION Accessories

Peripheral devices

Item	Description	Part Number
Single Branch Tap	Single branch tap box with three Phoenix connectors	DCN1-1C
Three Branch Tap	Three branch tap box with five Phoenix connectors	DCN1-3C
Terminating Resistor	Terminal Block style Terminating resistor	DRS1-T
T-Tap	Shielded T-branch Tap with Micro change connectors	DCN2-1
Cables	Thin cable with Micro change connectors both ends, .5 to 10m lengths	DCA1-5CN W1
Cables	Thin cable with female Micro change connector one end, .5 to 10m lengths	DCA1-5CN F1
Cables	Thin cable with male Micro change connector one end, .5 to 10m lengths	DCA1-5CN H1
Terminating Resistor	Shielded Micro change Terminating Resistor, Plug	DR2S-1
Terminating Resistor	Shielded Micro change Terminating Resistor, Socket	DR2S-2

Configuration Tools

ISA Configurator	ISA board configuration tool with software	3G8F5-DRM21
PCMCIA Configurator	PCMCIA Board Configurator for Laptops with software	3G8E2-DRM21

Software

Item	Description	Part Number
Programming Software	CX Programmer for all Omron Programmable Controllers	WS02-CXPC1-EL01-V1.2

Literature

Description	Part Number
Omron DeviceNet Products Catalog	P10FAX1
DeviceNet Master Operation Manual	W267-E1-4
DeviceNet Slave Operation Manual	W347-E1-1
Multiple I/O DeviceNet Operation Manual	W348-E3-1
Configurator Operation Manual	W328-E1-1

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