OpenNet Controller

FC3A-CP2K
FC3A-CP2S

OpenNet Controller
(with memory card connector)

Flash memory card ready

- Digital I/O
  - 8, 16, and 32 point cards
  - 224 inputs and outputs, 480 with expansion power supply
- Analog I/O
  - up to 42 analog inputs or 14 analog outputs
  - 0-5V, 0-10V, ±5V, ±10V, 4-20mA
- Built-In Communications Ports
  - 2 RS232 (programming port, ASCII, printer and modem ready)
  - 1 RS485 (programming port and data link)
- Built-in High-Speed Counter
  - 1 channel, 10kHz, 16-bit resolution
- Memory
  - 16K words (8K steps) user program capacity
  - Flash miniature memory card slot (FC3A-CP2KM/SM only)
- Realtime Calendar/Clock
- Password Protection
- PID Algorithm

•Networking

ONC capable of communicating with INTERBUS networks

•Programming Software; WindLDR®

- Programs all IDEC PLCs
- Windows-based (compatible with Windows 95, 98, 2000, NT 4.0, ME or XP)

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CE

•Programming Instructions

- Transmit/Receive
- Built-in X/Y Conversion
- Sub-Routine Call/Return for Modular Programming
- Square Root
- 16- and 32-bit Math, Add, Sub, Mult, Div
- Data Conversion to/from Dec, Hex, BCD, ASCII
- Block Move
- Summation
- Averaging
- Day of Week Program Scheduling

•Built-in Hayes "AT" command set for modem dialup/ pager applications

Hardware Features

CPUs	FC3A-CP2K	High-speed counter sink output, no memory card connector
	FC3A-CP2KM	High-speed counter sink output with memory card connector
	FC3A-CP2S	High-speed counter source output, no memory card connector
	FC3A-CP2SM	High-speed counter source output with memory card connector
Electrical Specifications	Rated Voltage	24V DC (19-30V DC, including ripple)
	Maximum Input Current	1.5A at 24V DC
	Reverse Polarity Protection	Prevents damage if incorrectly wired.
	Operating Temperature	0 to +55°C
	Storage Temperature	-25 to +70°C
	Relative Humidity	30 to 95% (non-condensing)
	Vibration Resistance	10 to 57 Hz, amplitude 0.075mm 57 to 150 Hz 9.8 m/sec^2 10 sweep cycles/axis (IEC 1131)
	Shock Resistance	147 m/sec^2, 11 ms 3 shocks each in 3 axes (IEC 1131)
	Dielectric Strength	Between power terminal and FG: 500V AC, 1 min Between I/O terminal and FG: 1500V AC, 1 min
	Ground	Grounding resistance 100Ω (maximum)
	Mounting Style	35mm DIN rail

The eighth slot must be expansion power supply module. (Above photo is only an example of the range of available modules.)

		Standard ONC CPU
General ONC Specifications	Available Instructions	37 basic, 65 advanced (PID, square root, subroutine calls, etc.)
	User Program Capacity	16K words flash memory
	Memory (Miniature Card)	2MB
	Average Scan Time	1 ms or greater
	Input	224 points (I0-I277)
	Output	224 points (Q0-Q277)
	Total I/O Points	Using expansion power supply: 480 I/O points
	Internal Relay	2048 (M0-M2557)
	Special Internal Relay	192 (M8000-M8237)
	Shift Register	256 (R0-R255)
	Timer	256 (T0-T255; 1-sec, 100-msec, 10-msec, 1-msec)
	Counter	256 (C0-C255; adding, dual pulse reversible, up/down selection reversible)
	Data Register	8000 (D0-D7999)
	Link Register	256 master (L1000 - L1317), 168 slave (L100 - L127, L200 - L227, ..., L700 - L727)
	Remote I/O	512 points
	Real-Time Calendar/Clock Runtime	Yes
	Program Protection	Yes (password protected)
	External Run/Stop Control	Yes
	Power Failure Protection	Yes
	Self-Diagnostics	Yes
	Auto Start Function	Yes

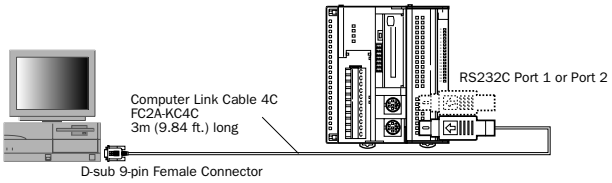
Part Numbers: OpenNet Controller

Item		Description	Part Number
CPU Modules		High-speed counter, sink output type, No memory card available	FC3A-CP2K
		High-speed counter, sink output type, With memory card connector	FC3A-CP2KM
		High-speed counter, source output type, No memory card available	FC3A-CP2S
		High-speed counter, source output type, With memory card connector	FC3A-CP2SM
Input Modules	**DC Input**	16 points 24V DC input, sink/source compatible, terminal block	FC3A-N16B1
		16 points 24V DC input, sink/source compatible, nylon connector (10P*2)	FC3A-N16B3
		32 points 24V DC input, sink/source compatible, nylon connector (10P*2)	FC3A-N32B4
		32 points 24V DC input, sink/source compatible, FUJITSU connector	FC3A-N32B5
	AC Input	8 points 100V AC input, terminal block	FC3A-N08A11
	Analog Input	6 channels, 4-20mA,selectable by DIP sw, terminal block	FC3A-AD1261
Output Modules	**Analog Output**	2 channels, 4-20mA, selectable by DIP sw, terminal block	FC3A-DA1221
	Relay Output	16 points relay output, terminal block	FC3A-R161
		16 points relay output, nylon connector (5P*4)	FC3A-R162
	Transistor Output	16 points transistor output sink, terminal block	FC3A-T16K1
		16 points transistor output sink, nylon connector	FC3A-T16K3
		16 points transistor output protect source, terminal block	FC3A-T16P1
		32 points transistor output sink, nylon connector	FC3A-T32K4
		32 points transistor output sink, FUJITSU connector	FC3A-T32K5
Expansion Module		Expansion power supply	FC3A-EA1
Network Interface Modules		Remote I/O Master Module	FC3A-SX5SMI
		IDEC-Modbus Converter Package (see Communication & Networking section page M-13 for details)	IDEC-MBUS-CONVPCK
Accessories		Memory Card (2MB)	FC9Z-MC02
		Housing (4 pcs/bag) for FC3A-R162	VHR-5N
		Housing (2 pcs/bag) for FC3A-T16K3, -N16B3	VHR-10N
		Housing (2 pcs/bag) for FC3A-T32K4, -N32B4	H18-SHF-AA
		Pins (40 pcs/bag) for FC3A-T32K4, -N32B4	SHF-001T-0.8BS
		Pins (20 pcs/bag) for FC3A-R162/T16K3, -N16B3	SVH-21T-P1.1
		Cable with Fujitsu connector (for FC3A-T32K5/N32B5)	FC3A-KUSA1
		Breakout Module (for FC3A-T32K5, -N32B5)	BX1D-T40A or BX1D-S40A
Software		Windows-based programming software for IDEC PLCs (for more information, see page J-44)	WINDLDR
		Software application to link OPC/DDE compliant windows applications to IDEC PLCs (for more information see Communication Section page M-3)	WINDSRV
Programming Cable		Cable to connect ONC to PC	FC2A-KC4C
Manuals		ONC User Manual	EM345-0
		ONC DeviceNet Manual	EM335-0
		ONC LONWORKS Manual	EM336-0

OpenNet Controller, Networking & Applications

PC Communication

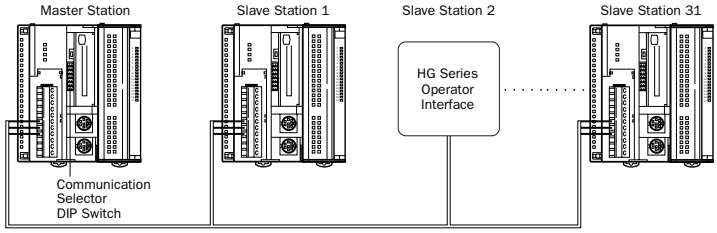
The ONC is programmed by our intuitive WindLDR™ software
-use RS232 or RS485 ports
-upload, download and monitor programs



For RS485 programming, use FC2A-KC6C cable.

Data Link - Superiority in Networking

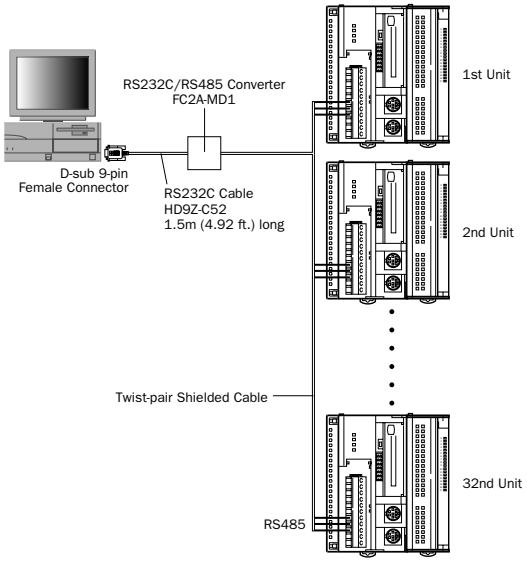
Connect up to 32 ONC, Micro3, FA Series PLCs or the HG Series operator interface on the data link network.



Computer Link - Power & Versatility

Connect 32 ONCs on a 1:N computer link system.

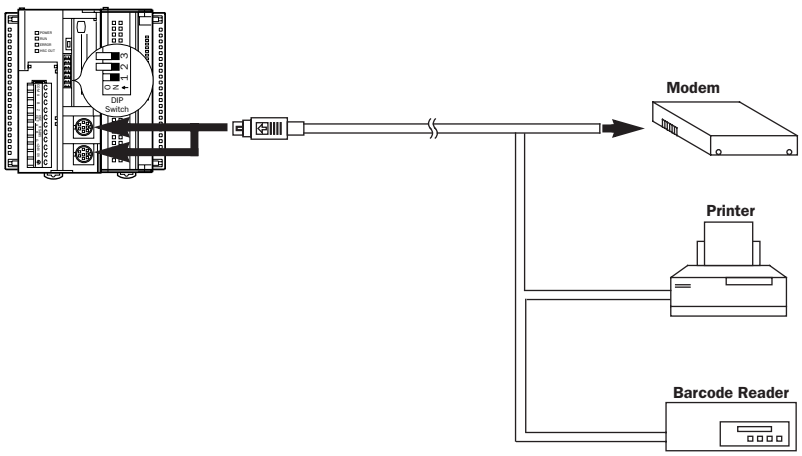
Upload, download, monitor, and update data.



Communication Flexibility

Easy connections to any R232C equipment through the user defined RS232C port 1 or 2.

Built-in Hayes "AT" command set for direct modem dialup and pager applications.



Analog Input and Output Modules

Analog Input Module
FC3A-AD1261

Analog Output Module
FC3A-DA1221

Key features include:

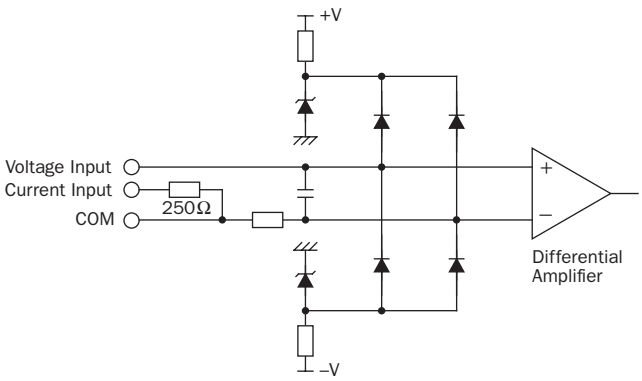
- One card handles 5 different signal types, [±5V, ±10V, 0-5V, 0-10V, or 4-20mA], switch selectable
- Input module has 6 inputs per card, 7 cards per CPU, 42 analog input points maximum
- Output module has 2 outputs per card, 7 cards per CPU, 14 analog output points maximum
- 12-bit resolution, 0-4000 counts, count range divides evenly
- Fast input scan, 3ms + 1 scan time
- I/O error ±0.6% full scale @25°C
- Convenient input termination

Specifications

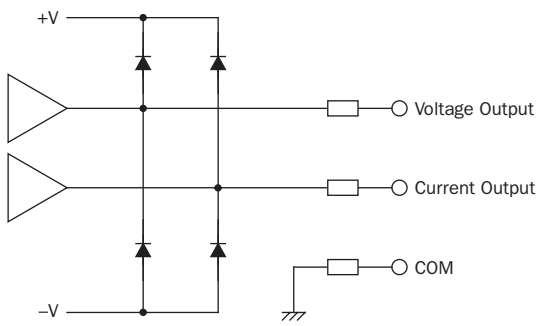
Analog Type	Input	Output
Point Per Card	6 Points	2 Points
Part Number	FC3A-AD1261	FC3A-DA1221
Connector Type	Phoenix Contact	Phoenix Contact
Input Signal	0-10V DC, ±10V DC, 0-5V DC, ±5V DC, 4-20mA	0-10V DC, ±10V DC, 0-5V DC, ±5V DC, 4-20mA
Resolution	12 bits	12 bits
Range	0-4000 counts	0-4000 counts
Input Error	±0.6% of full scale @ 25°C	NA
Output Error	NA	±0.6% of full scale @ 25°C
Conversion Time	3ms per point	NA
Settling Time	NA	3ms
Input Impedance	Voltage: 1 MΩ minimum Current: 250Ω	NA
Output Load Impedance	NA	Voltage=2 kΩ minimum (Current=250Ω, 300Ω max.)
Internal Current Draw	120mA@24V DC	120mA@24V DC

Type of Protection

Analog Input Module



Analog Output Module



J

Programmable Logic Controllers

16-Point DC Input Modules

DC Input Module
FC3A-N16B1

DC Input Module
FC3A-N16B3

Key features include:

- One card handles sink (NPN) or source (PNP) type input signals
- 16 points per card, 7 cards local, 8 cards expansion, 15 cards max. per CPU
- 19-30V DC input voltage range
- Software selectable input filtering, 0-32 msec
- High-speed catch inputs, first 8 points user definable, pulse detection within 20-120µsec range
- Termination connector
  -FC3A-N16B1 - removable Phoenix Contact type
  -FC3A-N16B3 - removable Nylon type

16-Point DC

Input Type	DC Sink/Source	
Part Number	FC3A-N16B1	FC3A-N16B3
Connector Type	Phoenix Contact	Nylon
Input Voltage Range	19-30V DC	19-30V DC
Rated Input Voltage	24V DC	24V DC
Current Per Point	7mA	7mA
Internal Current - all inputs ON	40mA	40mA
Input Impedance	3.4kΩ	3.4kΩ
On/Off Voltage	15/5V DC	15/5V DC
On/Off Time	20/120µs	20/120µs

J

Programmable Logic Controllers

32-Point DC Input Modules

DC Input Module
FC3A-N32B4

DC Input Module
FC3A-N32B5

Key features include:

- One card handles sink (NPN) or source (PNP) type input signals
- 32 points per card, 7 cards local, 8 cards expansion, 15 cards max. per CPU
- 20-28V DC input voltage range
- Software selectable input filtering, 0-32 msec
- High-speed catch inputs, first 8 points user definable, pulse detection within 20-120µsec range
- Termination connector
  -FC3A-N32B4 - removable Nylon type
  -FC3A-N32B5 - removable Fujitsu type

32-Point DC

Input Type	DC Sink/Source	
Part Number	FC3A-N32B4	FC3A-N32B5
Connector Type	Nylon	Fujitsu
Input Voltage Range	20-28V DC	20-28V DC
Rated Input Voltage	24V DC	24V DC
Current Per Point	5mA	5mA
Internal Current -all inputs ON	50mA	50mA
Input Impedance	4.7kΩ	4.7kΩ
On/Off Voltage	15/5V DC	15/5V DC
On/Off Time	20/120µs	20/120µs

8-Point AC Input Module

AC Input Module
FC3A-N08A11

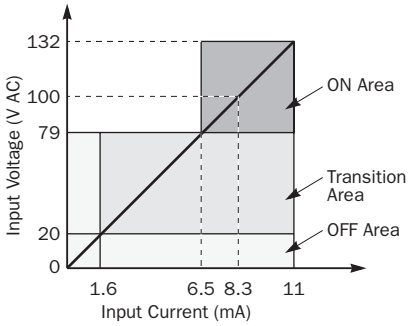
Key features include:

- 8 points per card, 7 cards local, 8 cards expansion, 15 cards max. per CPU
- 100-120V AC rated input voltage
- 85-132V AC input voltage range
- On/off detection set at 20ms
- Convenient termination connector, removable Phoenix Contact type

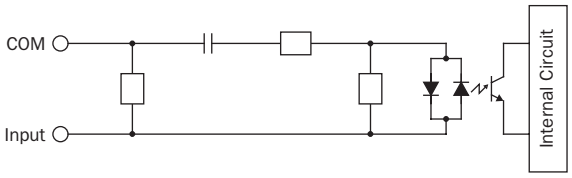
8-Point AC	Input Type	AC
	Part Number	FC3A-N08A11
	Connector Type	Phoenix Contact
	Input Voltage Range	85-132V AC
	Rated Input Voltage	100-120V AC
	Current Per Point	8mA
	Internal Current - all inputs ON	30mA
	Input Impedance	12kΩ (60Hz)
	On/Off Voltage	79/20V AC
	On/Off Time	20ms

Input Operating Range

The input operating range of the Type 1 (EN61131) input module is shown below:



Input Internal Circuit



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Programmable Logic Controllers

16-Point Relay Output Modules

Relay Output Module
FC3A-R161

Relay Output Module
FC3A-R162

Key features include:

- 16 points per card, 4 points per common, 15 cards max. per CPU
- Outputs rated 240V AC/2A or 24V DC/2A
- Turn On/Off delay 6-10ms
- 20,000,000 operations per relay minimum
- Termination connector
  -FC3A-R161 - removable Phoenix Contact type
  -FC3A-R162 - removable Nylon type

16-Point Relay	Output Type	Relay Output	
	Part Number	FC3A-R161	FC3A-R162
	Connector Type	Phoenix Contact	Nylon
	Rated Output Voltage	240V AC/24V DC	240V AC/24V DC
	Rated Current Per Point	2A	2A
	Internal Current - all inputs ON	170mA	170mA
	On/Off Time	6/10ms	6/10ms

J

Programmable Logic Controllers

16-Point DC Sink Output Modules

DC Sink Output Module
FC3A-T16K1

DC Sink Output Module
FC3A-T16K3

Key features include:

- 16 transistor sink outputs per card, 15 cards max. per CPU
- Outputs rated 19-30V DC/0.5A
- Turn On/Off delay 500µsec max.
- Opto-isolated outputs
- Termination connector
  -FC3A-T16K1 - removable Phoenix Contact type
  -FC3A-T16K3 - removable Nylon type

16-Point DC	Output Type	DC Sink	
	Part Number	FC3A-T16K1	FC3A-T16K3
	Connector Type	Phoenix Contact	Nylon
	Rated Output Voltage	19-30V DC	19-30V DC
	Rated Current Per Point	500mA@ 24V DC	500mA@ 24V DC
	Internal Current - all inputs ON	60mA	60mA
	On/Off Time	500/500µs	500/500µs

16-Point DC Protect Source Output Module

Protect Source Output Module
FC3A-T16P1

Key features include:

- 16 transistor protect source outputs per card, 15 cards max. per CPU
- Outputs rated 19-30V DC/0.5A
- Turn On/Off delay 500µsec max.
- Opto-isolated outputs
- Termination connector, removable Phoenix Contact type

16-Point DC	Output Type	DC Source
	Part Number	FC3A-T16P1
	Connector Type	Phoenix Contact
	Rated Output Voltage	19-30V DC
	Rated Current Per Point	500mA @ 24V DC
	Internal Current - all inputs ON	70mA
	On/Off Time	500µs/500µs

32-Point DC Sink Output Modules

DC Sink Output Module
FC3A-T32K4

DC Sink Output Module
FC3A-T32K5

Key features include:

- 32 transistor sink outputs per card, 15 cards max. per CPU
- Outputs rated 20.4-27.6V DC/0.1A
- Turn On/Off delay 500µsec max.
- Opto-isolated outputs
- Termination connector
  -FC3A-T32K4 - removable Nylon type
  -FC3A-T32K5 - removable Fujitsu type

32-Point DC	Output Type	DC Sink	
	Part Number	FC3A-T32K4	FC3A-T32K5
	Connector Type	Nylon	Fujitsu
	Rated Output Voltage	20.4-27.6V DC	20.4-27.6V DC
	Rated Current Per Point	100mA@24V DC	100mA@24V DC
	Internal Current - all inputs ON	90mA	90mA
	On/Off Time	500/500µs	500/500µs

Expansion Power Supply Module

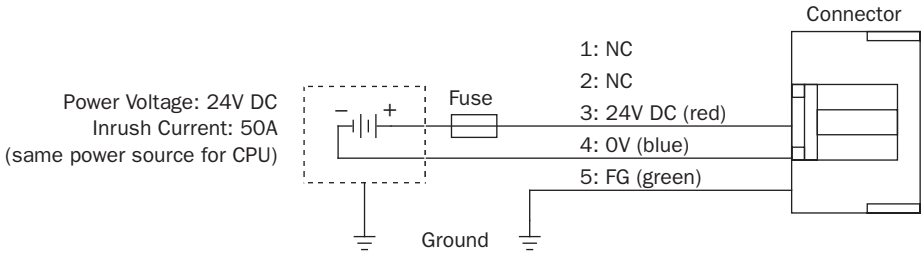
Expansion Power Supply Module
FC3A-EA1

Key features include:

- Expands the ONC from 224 up to 480 I/O points
- Increases I/O and functional modules by 8
- Comes with a cable connector and contacts
- Simple, easy and convenient mounting
- Install in the 8 slot only

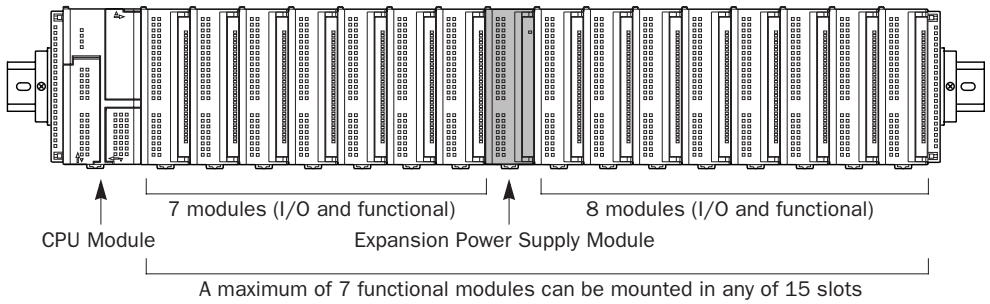
Specifications		
Expansion Power Supply	**Part Number**	FC3A-EA1
	Connector Type	Nylon - 5 pin
	Input Voltage Range	19 - 30V DC (including ripple)
	Rated Input Voltage	24V DC
	Internal Current	30mA
	Momentary Power Interruption	10 msec (24V DC), Level PS-2 (EN61131)

Power Supply Wiring



FC3A-EA1 Expansion Power Supply Module Mounting Position

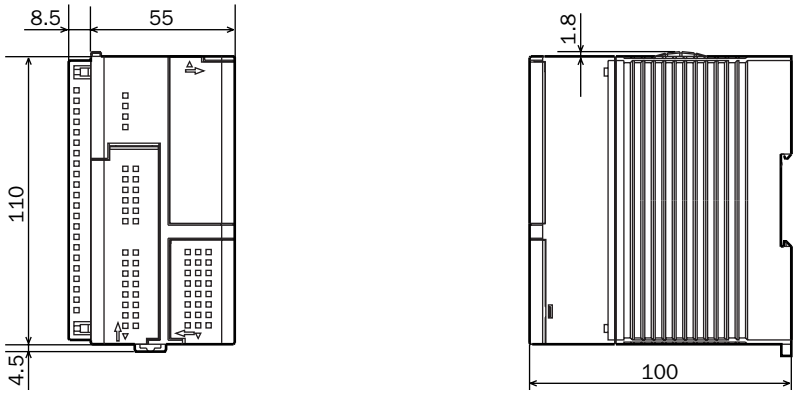
Mount the expansion power supply module in the eighth slot.



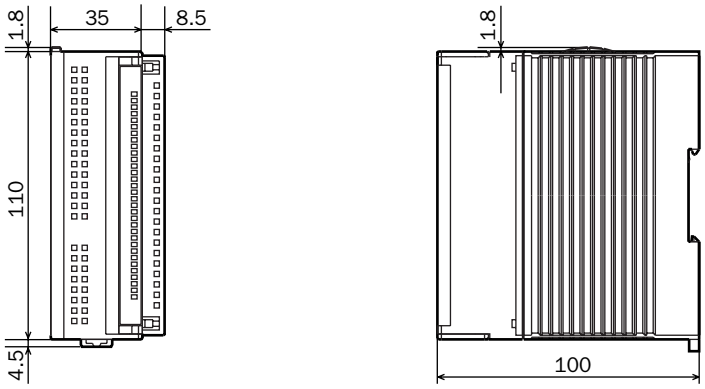
Mount the expansion power supply module only in the eighth slot, otherwise correct allocation of I/O and link register numbers may not occur.

ONC Dimensions

CPU Module



Digital I/O, Analog I/O, Expansion Power Supply, Remote I/O Master, and LonWorks interface modules



Example: the following figure illustrates a system setup consisting of a remote I/O master module, a CPU module, and three I/O modules.