

The FP-M compact board level PLC replaces

■ Excellent performance in a small footprint

The FP-M footprint is only 80mm (3.15") by 184mm (7.24"). The control board is less than 1" high and even with the optional mounting plate and cover it is still under 2". It incorporates many standard features including a high-speed counter, pulse catch input, password setting, potentiometer inputs, and input time filtering.

Key features built into the FP-M:

- Pulse output*
- High-speed counter
- Pulse-catch input
- Serial (RS232C port) communication
- Calendar/clock**
- Password
- Potentiometer
- EPROM/EEPROM
- Input time filtering
- DIN rail mounting
- MMI capability

* Transistor output
 ** C type (C20RC/C20TC/C32TC)

FP-M control boards



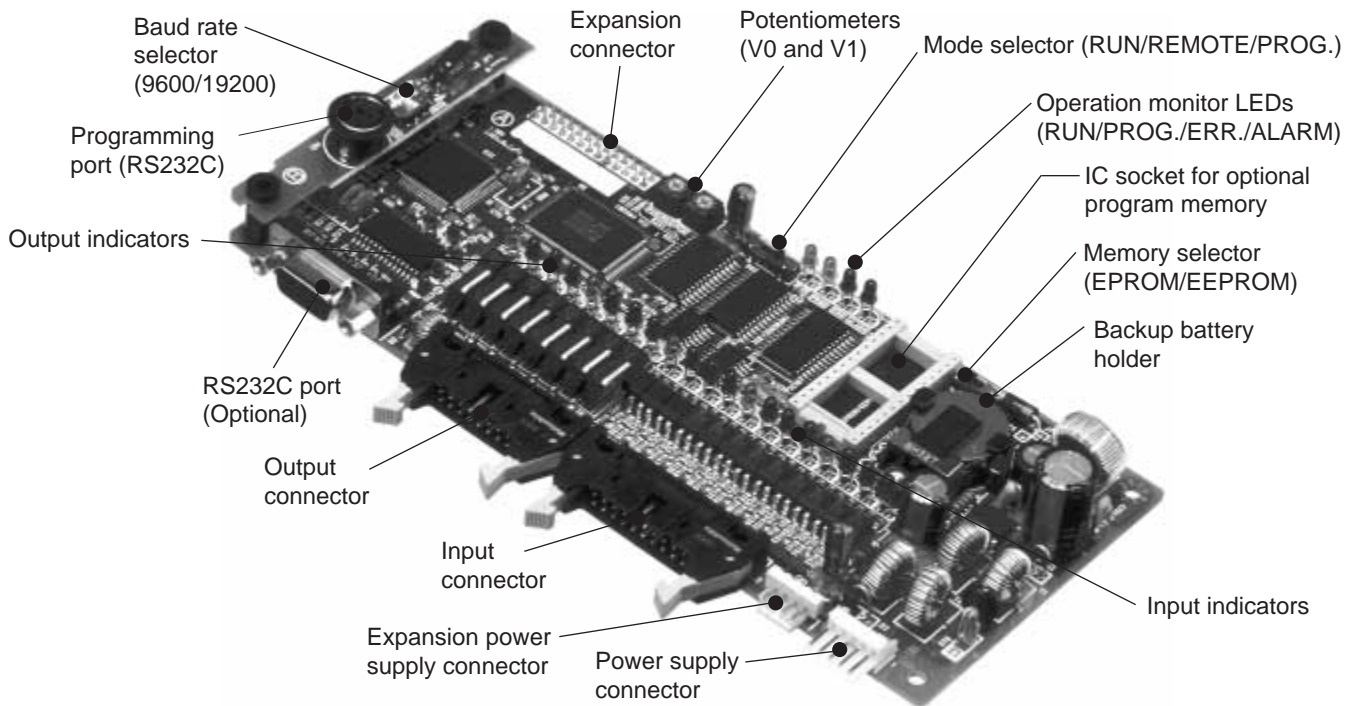
C20R (AFC12212)
 C20RC (AFC22212C)
 Input: 12
 Relay output: 8

C20T (AFC12242) NPN *1
 (AFC12252) PNP *1
 C20TC (AFC22242C) NPN
 (AFC22252C) PNP *1
 Input: 12
 Transistor output: 8

C32T (AFC1930) NPN*
 (AFC12352) PNP *1
 C32TC (AFC22342C) NPN
 (AFC22352C) PNP *1
 Input: 16
 Transistor output: 16
 * 2 high-speed counters

"C" suffix indicates 2nd RS232C port.
 *1 Available but not stocked.

• C20TC type



■ Large program memory

FP-M control units have a program capacity 2,720 or 5,000 steps. They come with a battery-backed RAM. In addition, optional EEPROM or EPROM program back-up is available.



EPROM
 (AFP5202)

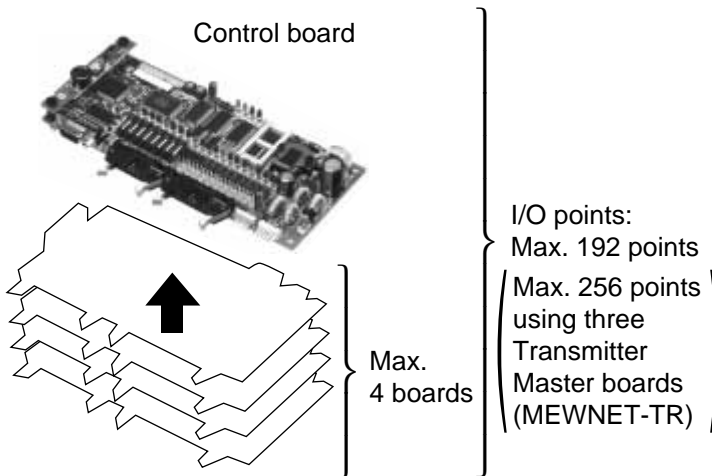


EEPROM
 (AFP5207)


an entire panel of relays, timers, and counters:

Smart System Expandability

Up to four expansion boards can be stacked under the control board without changing the footprint. Fully expanded, a complete system is only a little more than 5" high (about 130mm). In addition to I/O expansion, the FP-M offers special modules such as analog I/O and networking to meet the needs of various applications.




FP-M expansion boards




Expansion I/O (AFC13012) Sink/Source input (AFB6306) Source input
Input: 12
Relay output: 8




Expansion I/O (AFB6342) NPN (AFB6342P) PNP
Input: 24
Transistor output: 16



Expansion Input (AFB6392) Source input
Input: 36



Expansion Output (AFB6340) NPN transistor output: 32




Analog I/O (AFB6480)
Input: 4 CH
Output: 1 CH



A/D Converter (AFB6400)
Analog input: 4 CH



D/A Converter (AFB6410)
Analog output: 2 CH



High-speed Counter (AFB6420)
2 phases, 2 CH, 20 kcps



Transmitter Master (AFC1752) (MEWNET-TR)



I/O Link (AFC1732) (MEWNET-F)



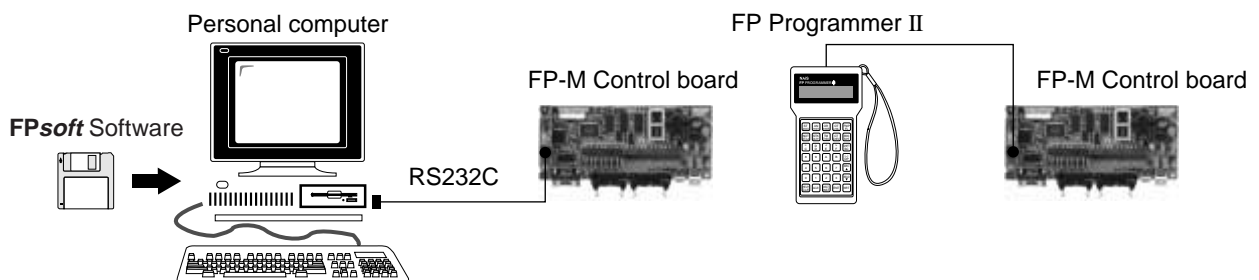
C-NET Adapter S2 Type (AFP15402)



C-NET Adapter (AFP8532) 24 V DC (AFP8536) 100-240 V AC

Program on your personal computer

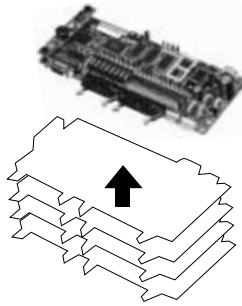
FPsoft for Windows provides full support from program development to debugging and program management. You can use the same software and programming language for all of the FP series. (The hand held FP Programmer II can also be used.)



Expansion and Structure

Expansion of FP-Ms

- A total of 4 boards (Expansion boards, Intelligent boards, and Link boards) can be stacked under the control board.
- Total number of I/O points:
 - C20R series: Max. 100 points*
 - C20T series: Max. 180 points
 - C32T series: Max. 192 points
- * Expansion board used is the relay type only.



Total number of I/O points

C20R series	C20T series	C32T series
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Max. 100 points	Max. 180 points	Max. 192 points
Control board ----- 20 points	20 points	32 points

Control board ----- 20 points

Max. 4 boards (Expansion boards, Intelligent boards, and Link boards) } ----- 80 points

160 points	160 points
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Restrictions for Expansion

Be sure to check that the boards are added according to the following restrictions:

1) Expansion boards

Expansion I/O board (AFC13012)

- Number of expandable boards: 4 boards
- Total number of I/O points:
 - C20R and C20T series: Max. 100 points
 - C32T series: Max. 112 points

Expansion I/O board (AFB6342 [NPN type]/ AFB6342P [PNP type])

- Number of expandable boards: 4 boards
- Total number of I/O points:
 - C20R and C20T series: Max. 180 points
 - C32T series: Max. 192 points

Expansion input board (AFB6392)/Expansion output board (AFB6340)

- Number of expandable board: 2 boards

- Total number of I/O points (using AFB6392):

- C20R and C20T series: Max. 92 points
- C32T series: Max. 104 points

2) Intelligent boards

Analog I/O board (AFB6480), A/D converter board (AFB6400), and D/A converter board (AFB6410)

- Number of expandable boards: 4 boards

High-speed counter board (AFB6420)

- Number of expandable boards: 1 board

3) Link boards

FP-M I/O link board (AFC1732)

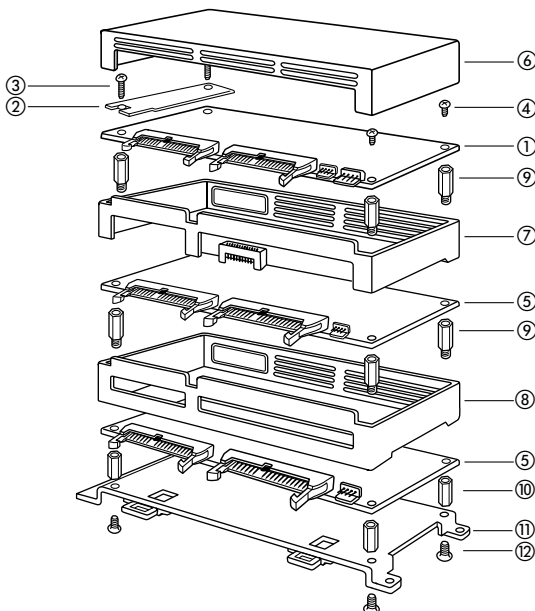
- Number of expandable boards: 1 board

FP-M transmitter master board (AFC1752)

- Number of expandable boards: 3 boards (Max. 256 I/O points)

Structure (case type)



Example: 1 control board and 2 expansion boards



Needed parts (case type) control board

- Control board
- Connector board (attached to control board)
- Screws for connector board (attached to control board, 20 mm (.787 inch))
- Screws for control board (attached to control board, 8 mm (.315 inch))
- Expansion board
- Case for control board (C20R: AFC 18011, C20T: AFC 18012, C32T: AFC 18013)
- Case for expansion board (AFC 1802)
- Skirt case (AFC 1803)
- Spacers (attached case for expansion board and skirt case, □ shape, 18 mm (.709 inch))
- Spacers (attached case for control board, □ shape, 8 mm (.315 inch))
- Mounting plate (AFB 6804)
- Screws for mounting plate (attached mounting plate)

Spacers:

Appearance	Length	Description	Part number
	18 mm .709 inch	4 spacers attached to a case for expansion board and skirt case	AFB8803
	8 mm .315 inch	4 spacers attached to a case for control board	AFB88032

Notes:

- The above parts are needed in order to assemble the case type boards.
- Use the spacers attached to case. (Spacers with board are used for board type only.)

Combination

■ Combination of Boards

• Combination of I/O points (C20R/C20RC, Relay output type)

Total number of board	Requested I/O point			Number of board	
	Total	Input	Output	Control board C20R series (I: 12, O: 8)	Expansion board E20R (I: 12, O: 8)
1	20	12	8	1	
2	40	24	16	1	1
3	60	36	24	1	2
4	80	48	32	1	3
5	100	60	40	1	4

• Combination of I/O points (C20T/C20TC, C32T/C32TC, Transistor output type)

Total number of board	I/O point			Number of board					
	Total	Input	Output	Control board		Expansion board			
				C20T series (I: 12, O: 8)	C32T series (I: 16, O: 16)	M1T-E (I: 24, O: 16)	M1T-EI (I: 36)	M1T-EO (O: 32)	
1	20	12	8	1					
	32	16	16		1				
2	52	12	40	1				1	
	56	48	8	1			1		
	60	36	24	1		1			
	64	16	48		1			1	
	68	52	16		1		1		
3	72	40	32		1	1			
	84	12	72	1				2	
	88	48	40	1			1	1	
	92	36	56	1		1		1	
	96	84	8	8	1			2	
		72	24	24	1		1	1	
	100	16	80	80		1			2
		60	40	40	1		2		
		52	48	48		1		1	1
		104	40	64		1	1		1
88		16	16		1		2		
4	108	76	32		1	1	1		
	112	64	48		1	2			
	120	48	72	72	1			1	2
		84	40	40	1			2	1
	132	60	72	72	1		2		1
		52	80	80		1		1	2
	136	96	40	40	1		2	1	
		88	48	48		1		2	1
	140	84	56	1		3			
	144	64	80		1	2		1	
148	100	48		1	2		1		
152	88	64		1	3				
5	156	84	72	1			2	2	
	168	96	72	1		2	1	1	
		88	80	80		1		2	2
	180	108	72	72	1		4		
		100	80	80		1	2	1	1
192	112	80		1	4				

Notes:

- You can combine both relay output type and transistor output type control boards and expansion boards.
- Intelligent boards can also be combined with the control board.

Advanced Control Functions

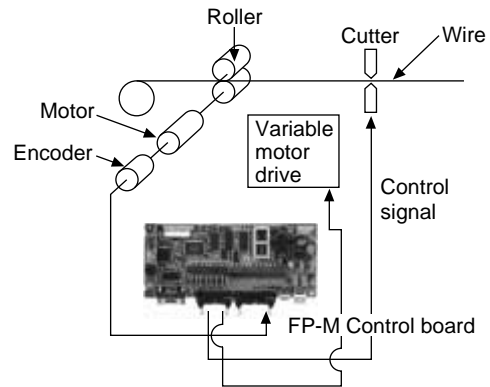
The FP-M offers expandability, advanced functions and integrated communication capability minimizing the need for expensive add-on components.

High-speed counter function

High-speed counter function supports four modes: Two-phase input, UP, DOWN, and UP/DOWN.

Max. counting speed	1-phase: 10 kHz 2-phase: 10 kHz
Counting range	-8,388,608 to 8,388,607

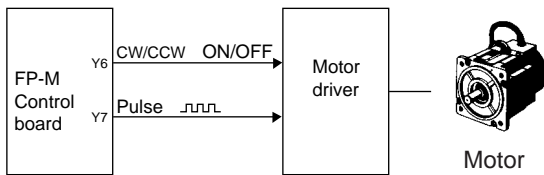
FP-M reads the input independent of the scan time.



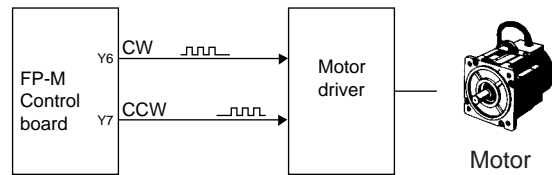
Pulse output function (transistor output type)

This function allows the output of a direct pulse (45 Hz to 4.9 kHz) from the FP-M. In combination with a motor driver, motor control can be performed eliminating the need for a special positioning controller. Since the FP-M has two pulse outputs, it also support motor drivers with one input for forward drive and the other input for reverse drive. (To prevent incorrect forward/reverse drive, an external interlock circuit outside of the FP-M is recommended.)

Wiring example for a driver with one pulse input and one direction input



Wiring example for a driver with two pulse inputs

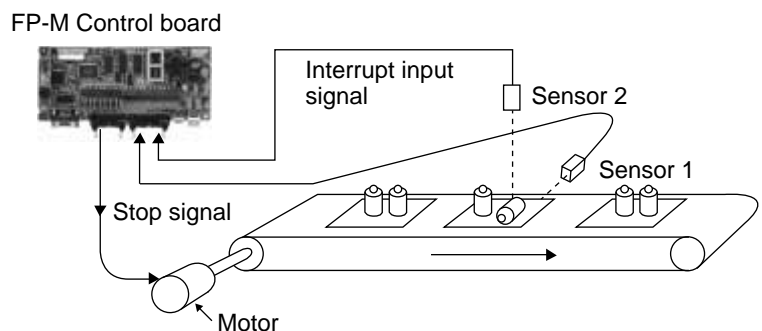


Interrupt input function

This function executes an interrupt program immediately when an external input (minimum pulse width of 0.2 ms) occurs. It also enables high-speed processing based on a fixed time which is not effected by scan time. This "heart-beat" interrupt is useful when performing control which would be disrupted by variations in processing time due to such factors as timing synchronization.

Timing control on a board inspection line

Immediately executes interrupt function when an edge detection signal comes in by interrupt input from Sensor 1. Sensor 2 inspects the part, and if an abnormality is detected, the conveyor stops and the abnormality is reported.

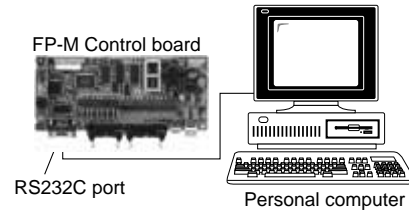


Network

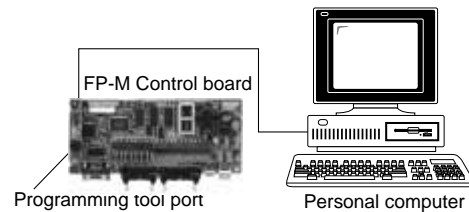
■ Computer link function

- This function allows the reading and writing of FP-M contact information and data register content from a host computer. It can be used for such applications as data collection and monitoring of operating conditions.

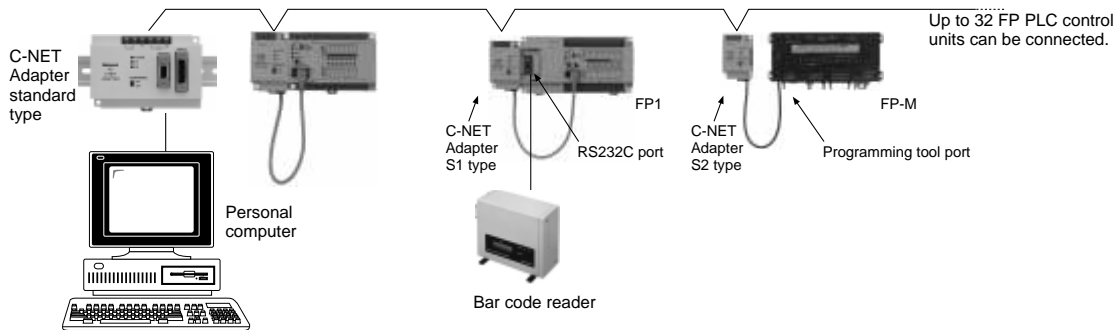
- **Using RS232C port (C20RC, C20TC, and C32TC types)**
The optional RS232C port can be used for direct connection to a computer, for easy computer link communications.



- **Using programming port (all series)**
The programming port can also be used for computer link communications. When using a control board equipped with an RS232C port (C20RC, C20TC, and C32TC), another device can be connected while a computer is connected to the programming port.

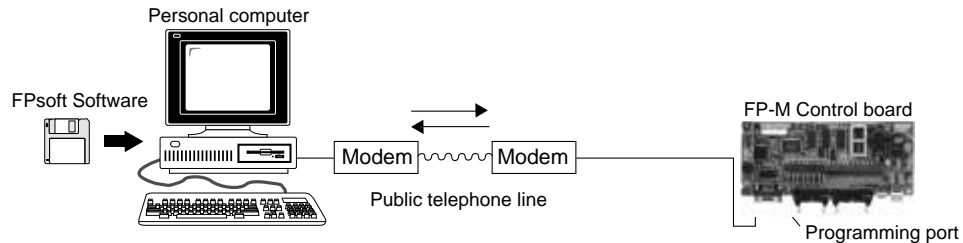


Using a C-NET adapter, up to 32 FP-M Control boards can be connected to one computer. If a bar code reader is connected to the RS232C port, for example, this system can be used for collection of various production control information.



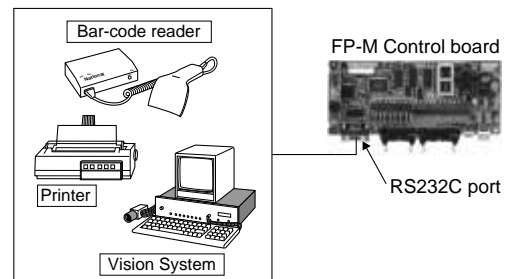
■ Modem communication

Using a modem, the FP-M can perform long-distance communications with a personal computer. Using C-NET adapters, you can control up to 32 programmable controllers from a personal computer.



■ General communication using RS232C port (C20RC, C20TC, and C32TC types)

This function allows data input and output when connected to a device having an RS232C port. Data from a bar code reader, data output to a printer, and bilateral data exchange with a vision system are all possible.

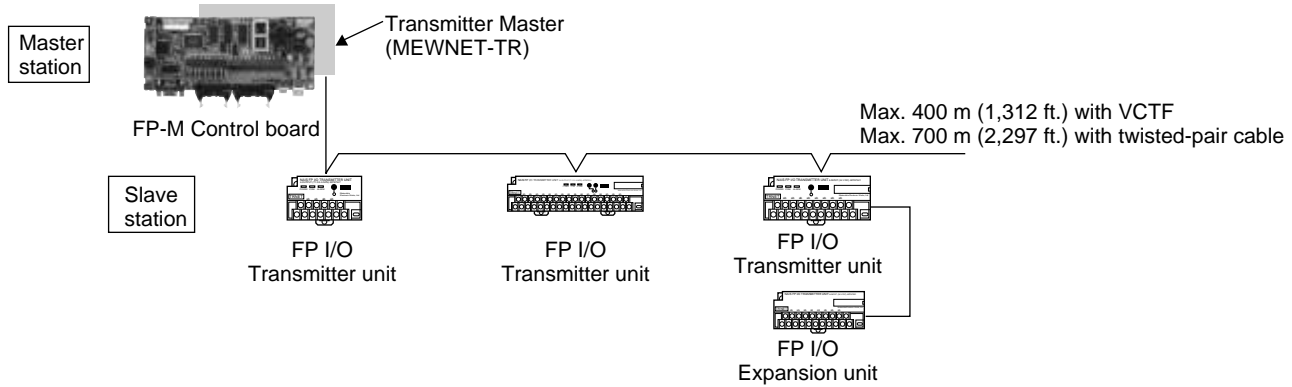


Network

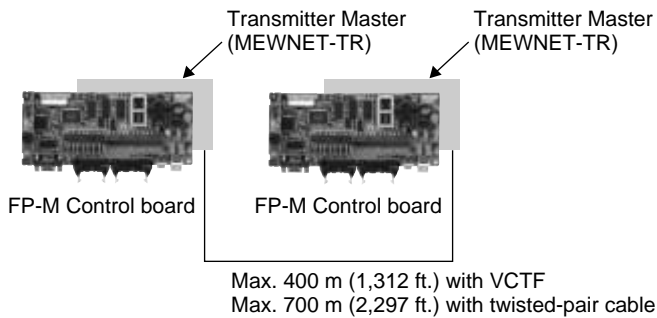
MEWNET-TR (Remote I/O) system

- Discrete I/O information can be exchanged between a master and slave stations at a remote site.
- A maximum of 32 inputs and 32 outputs can be controlled per master board.
- This system supports a total communication distance of 700 m (2,297 ft.) per port using twisted-pair cable.
- Master to master communication is also possible.

Master - Slave communication

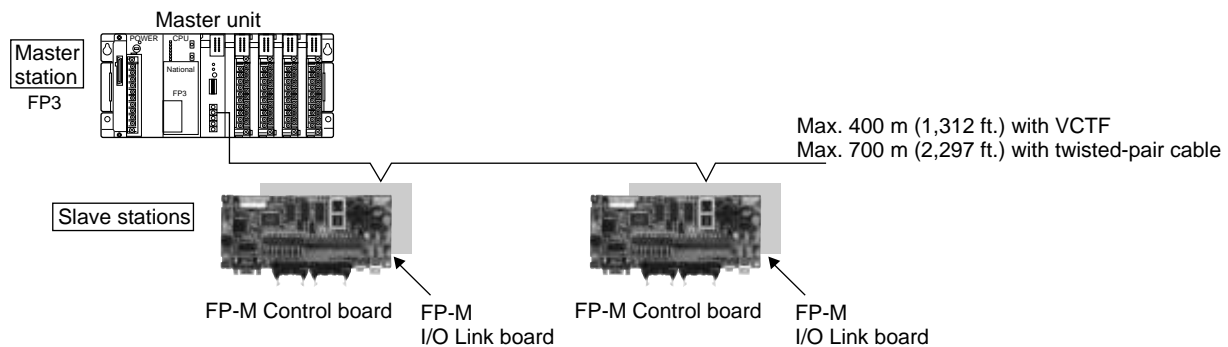


Master - Master communication



MEWNET-F (Remote I/O) system

- Using a FP-M I/O link board, this function allows the exchange of I/O information with the master unit of an FP series programmable controller through a 2 conductor cable.



Specifications

Control Board and Expansion Board

1) General

Item	Description
Ambient temperature	0 °C to 55 °C (32 °F to 131 °F)
Ambient humidity	30 % to 85 % RH (non-condensing)
Storage temperature	-20 °C to 70 °C (-4 °F to 158 °F)
Storage humidity	30 % to 85 % RH (non-condensing)
Breakdown voltage (*1)	Between DC terminal and frame ground terminal: 500 V rms for 1 min. (Transistor output type) Between output terminal and frame ground terminal: 1,500 V rms for 1 min. (Relay output type)
Insulation resistance (*1)	Min. 100 M Ω (measured with a 500 V DC megger) Between DC terminal and frame ground terminal
Vibration resistance	10 Hz to 55 Hz, 1 cycle/min: double amplitude of 0.75 mm (0.03 inch), 10 min on 3 axes
Shock resistance	Shock of 98 m/s ² or more, 4 times on 3 axes
Noise immunity	1,000 Vp-p with pulse widths 50 ns and 1 μ s (based on in-house measurements)
Operating condition	Free from corrosive gases and excessive dust
Rated operating voltage	24 V DC
Operating voltage range	Control power supply: 21.6 to 26.4 V DC Input power supply: 20.4 to 26.4 V DC (C20T, C32T series) 22.8 to 26.4 V DC (C20R series)
Current consumption	Control power supply: 0.2 A or less Input power supply: Approx. 5 mA per input point Input power supply: Approx. 3 mA per output point (except load current)

2) Performance

Item	Description	
Programming method	Relay symbol	
Control method	Cyclic operation	
Program memory	Built in RAM (lithium battery backup) EEPROM (master memory)/EPROM (memory)	
Program capacity	2.7 k type: 2,720 steps 5 k type: 5,000 steps	
Operation speed	1.6 μ s/step: basic instruction	
Kinds of instruction	Basic	81
	High-level	111
External input (X)	208 points (*2)	
External output (Y)	208 points (*2)	

Notes:

- (*1): No capacitor connected between DC terminal and frame ground when the breakdown voltage and insulation resistance test is performed.
- (*2): The actual number of points that can be used is determined by physical configuration of the control board and the expansion board.

Specifications

Control Board and Expansion Board

2) Performance

Item		Description	
Internal relay (R)		1,008 points	
Special internal relay (R)		64 points	
Timer/counter (T/C)		144 points	
Auxiliary timer		Unlimited number of points (0.01 s to 327.67 s)	
Data register (DT)		2.7 k type: 1,660 words 5 k type: 6,144 words	
Special data register (DT)		112 words (For control board: 70 words, for analog and high-speed counter boards: 42 words)	
Index register (IX, IY)		2 words	
MCR points		32 points	
Number of labels (JMP, LOOP)		64 points	
Differential points (DF or DF/)		Unlimited number of points	
Number of step ladders		128 stages	
Number of subroutines		16 subroutines	
Number of interrupt programs		9 programs	
Special functions	High-speed counter (1 channel)	Input: Count input (X0, X1)/reset input (X2); AFC1930 also (X3, X4) / (X5) Counting input mode: up mode, down mode, up/down mode, 2-phase mode Counting range: -8,388,608 to 8,388,607 Max. counting speed: up/down mode 10 kHz, 2-phase mode 10 kHz Min. input pulse width: 1 phase 50 μ s • 2 phases 50 μ s	
	AFC1930 only (2 channels)		
	Manual dial-set register		2 potentiometers
	Pulse catch input		Total 8 points (X0 to X7)
	Interrupt input		
	Periodical interrupt	10 ms to 30 s (10 ms interval)	
	RS232C port (See note.)	Communication rate: 300/600/1,200/2,400/4,800/9,600/19,200 bps Communication distance per port: 15m(49.213 ft.) Connector: D-SUB 9 pins connector	
	Clock/calendar (See note.)	Clock/calendar function available	
	I/O link	64 I/O points (32 inputs and 32 outputs) or 32 I/O points (16 inputs and 16 outputs)	
	Pulse output (See note.)	2 points (Y6 and Y7) Pulse output frequency range (CPU version 2.7 and earlier version): (360 to 5,000 Hz/180 to 5,000 Hz/90 to 5,000 Hz/45 to 5,000 Hz)	
	Constant scan	2.5 ms \times set value (160 ms or less)	
	Adjustable input time filtering		1 to 128 ms
Self-diagnosis function		Watchdog timer, battery detection, program check, etc.	
Memory backup at 25°C(77°F)		Approx. 27,000 h (C types, C20RC/C20TC/C32TC) Approx. 53,000 h (except C types, C20R/C20T/C32T)	

Notes:

- The RS232C port and clock/calendar functions are available for the C types (C20RC/C20TC/C32TC).
- The pulse output function is available for the transistor output type.
- The two pulse outputs, Y6 and Y7, are not available at the same time.

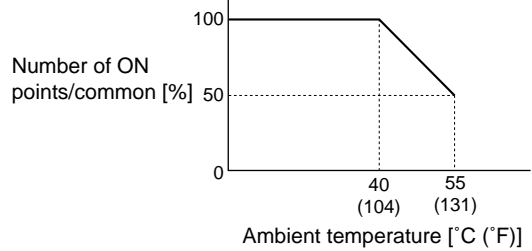
Input and Output Specifications

Input Specification

Item	Description
Rated input voltage	24 V DC
Operating voltage range	20.4 V to 26.4 V DC
ON voltage/current	19.2 V or less/3 mA or less (3.6 mA or less, C32T control board)
OFF voltage/current	2.4 V or more/1 mA or more
Input impedance	Control board: Approx. 4.8 kΩ Expansion board: Approx. 4.4 kΩ
Response time ON ↔ OFF	2 ms or less (at normal input) (See note.) 50 μs or less (in setting high-speed counter) 200 μs or less (in setting interrupt input) 500 μs or less (in setting pulse catch)
Operating mode indicator	LED
Insulation method	Optical coupler

Notes:

- Input response time can be changed using the input time filtering function to 1, 2, 4, 8, 16, 32, 64, or 128 ms in base units for the first 8 inputs. For expansion boards, the input response time is fixed at 2 ms (or less).
- The number of ON points that can be operated simultaneously must be decreased under high ambient temperature. (between 40 °C (104 °F) and 55 °C (131 °F))



Output Specification

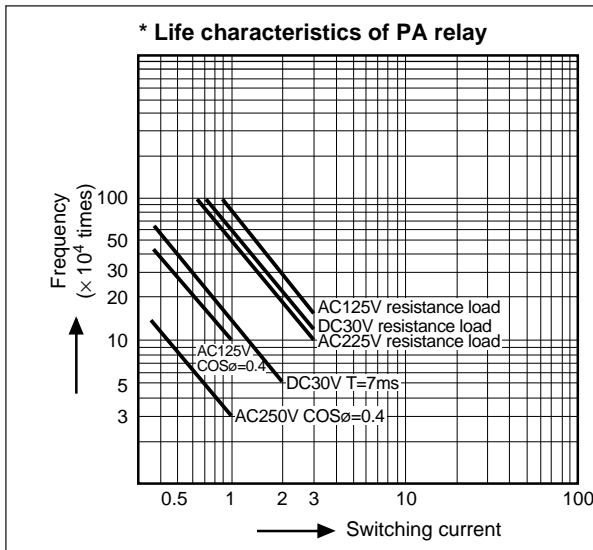
Relay output type

Item	Description
Rated operating voltage	24 V DC
Operating voltage range	22.8 V to 26.4 V DC
Output type	Normally open (1 Form A) 2 points/common
Rated control capacity*	2 A 250 V AC, 2 A 30 V DC (resistive)
Response time OFF → ON	8 ms or less
ON → OFF	10 ms or less
Mechanical life time	2 × 10 ⁷ operations or more
Electrical life time	10 ⁵ operations or more
Surge absorber	None
Operating mode indicator	LED

Transistor output type

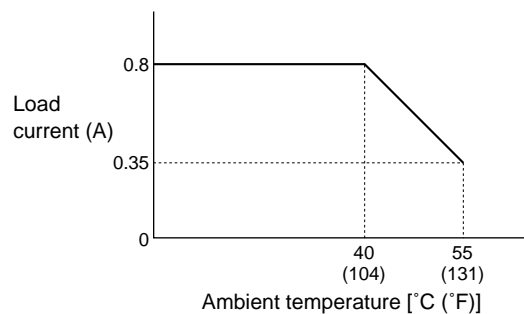
Item	Description
Insulation method	Optical coupler
Output type	Transistor PNP or NPN open collector
Rated load voltage	24 V DC
Operating load voltage range	20.4 V to 26.4 V DC
Max. load current	0.8 A/point (at 24 V DC) (See note.)
OFF state leakage current	100 μA or less
ON state voltage drop	1.5 V or less
Response time OFF → ON	1 ms or less
ON → OFF	(100 μs or less, Y6 and Y7)
Surge absorber	Zener diode
Operating mode indicator	LED

Notes:



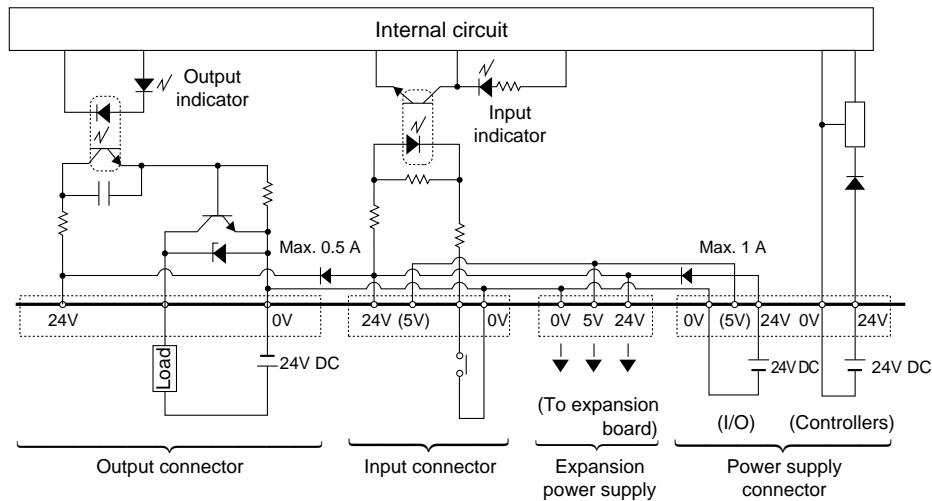
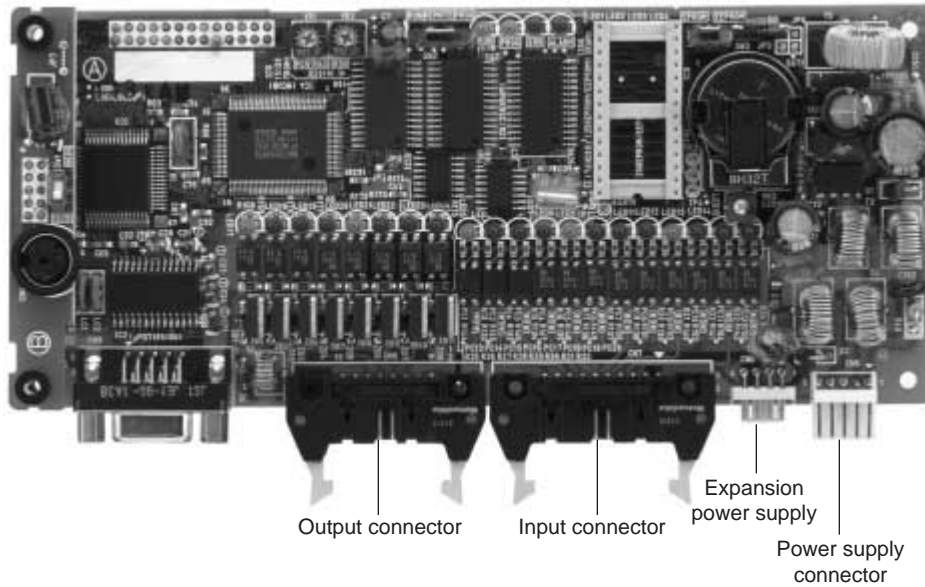
- The current for one commons should be no more than the following:
8 points/common circuit: 3 A/common
16 points/common circuit: 5 A/common

- The maximum load current should be kept within the following ranges under high ambient temperature conditions.



Wiring

C20T, C32T, M1T-E, M1T-E1, M1T-E0

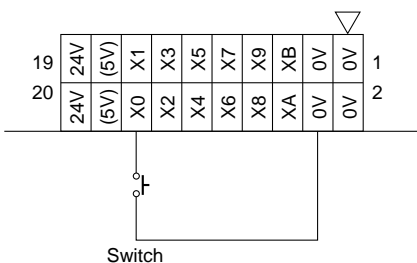


Built-in Power Supply

Contact Input

Since power for driving the input circuit is supplied internally, input devices can be connected without an external power supply.

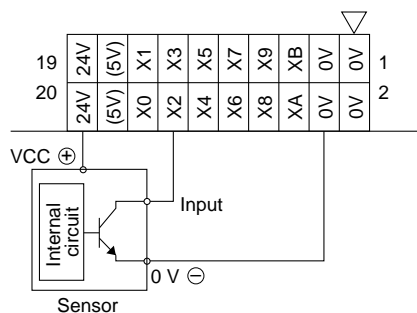
Example:
C20T control board input



Photoelectric Sensor Input

Since the power for driving input field devices is included, an additional power supply is not required.

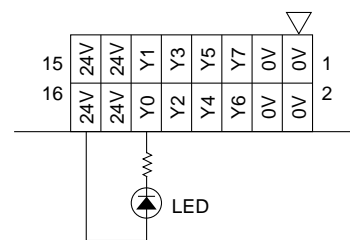
Example:
C20T control board input



LEDs and Other Light Loads

Since the power for driving output field devices is included, no additional power supply for driving low level output devices, such as LEDs, is required.

Example:
C20T control board output (NPN type)



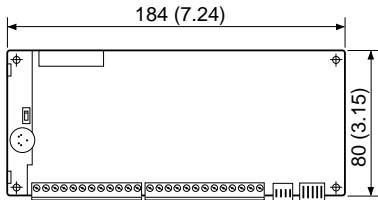
Dimensions

1. Board Type

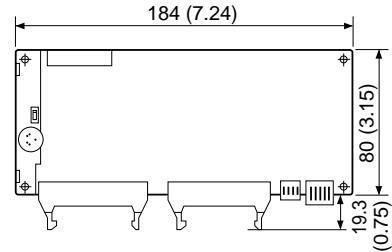
Control Boards

mm(inch)

■ C20R and C20RC

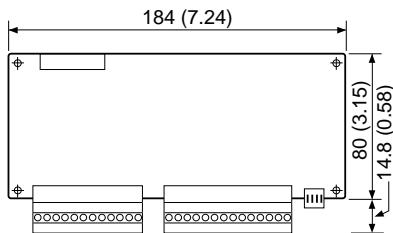


■ C20T, C20TC, C32T, and C32TC

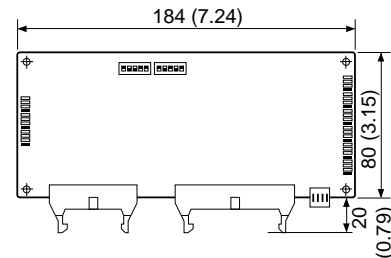


Expansion, Intelligent, and Link Boards

■ M1T-E20R



■ M1T-E, M1T-EI, M1T-EO, High-speed counter boards

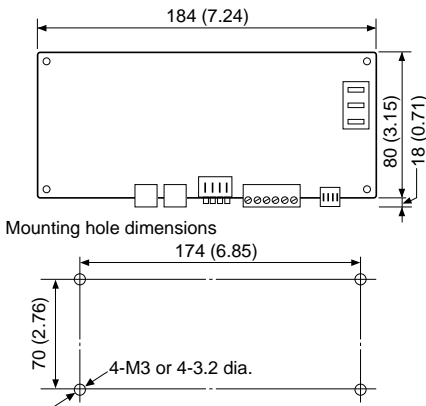


Note:

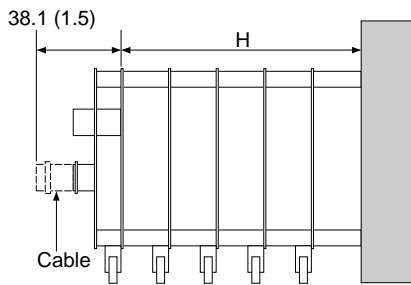
- Each board has a different number of I/O connectors and terminals.

■ MEWNET-TR Master, Analog I/O, A/D converter, D/A converter, and FP-M I/O link boards

FP-M I/O link board



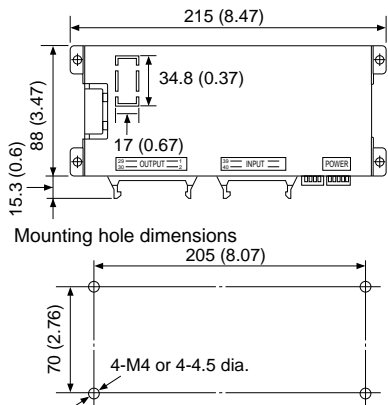
Expansion dimensions



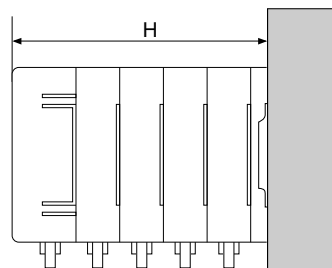
Board	H
1 control board	43.6 (1.72)
1 control board and 1 expansion board	65.2 (2.57)
1 control board and 2 expansion boards	86.8 (3.42)
1 control board and 3 expansion boards	108.4 (4.27)
1 control board and 4 expansion boards	130.0 (5.12)

2. Case Type

Control, Expansion, Intelligent, and Link Boards



Expansion dimensions



Board	H
1 control board	44.2 (1.74)
1 control board and 1 expansion board	63.8 (2.51)
1 control board and 2 expansion boards	85.4 (3.36)
1 control board and 3 expansion boards	107.0 (4.21)
1 control board and 4 expansion boards	128.6 (5.06)

Product Types and Part Numbers

Type	Memory (Program capacity)	Description				Part number
		I/O point	Operating voltage	Input	Output	
C20R	RAM (2.7 k steps)	20 Input: 12 Output: 8	24 V DC	24 V DC Sink/Source	Relay, 2 A	AFC12212
C20RC	RAM (5 k steps)	20 Input: 12 Output: 8	24 V DC	24 V DC Sink/Source	Relay, 2 A	AFC22212C
C20T	RAM (2.7 k steps)	20 Input: 12 Output: 8	24 V DC	24 V DC Source	Transistor, 0.8 A NPN type	AFC12242
				24 V DC Sink	Transistor, 0.8 A PNP type	AFC12252
C20TC	RAM (5 k steps)	20 Input: 12 Output: 8	24 V DC	24 V DC Source	Transistor, 0.8 A NPN type	AFC22242C
				24 V DC Sink	Transistor, 0.8 A PNP type	AFC22252C
C32T	RAM (2.7 k steps)	32 Input: 16 Output: 16	24 V DC	24 V DC Source	Transistor, 0.8 A NPN type	AFC12342
				24 V DC Sink	Transistor, 0.8 A PNP type	AFC12352
C32TC	RAM (5 k steps)	32 Input: 16 Output: 16	24 V DC	24 V DC Source	Transistor, 0.8 A NPN type	AFC22342C
				24 V DC Sink	Transistor, 0.8 A PNP type	AFC22352C

Notes:

- Each board includes power cable (APL9511), jumper cable (AFB8505), spacers (AFB88021), and screws.
- 12 V DC power supply type is also available.

Programming Tools

Type	Description	Part number	
FPsoft Windows Programming Software	Program editing software used with personal computer.	FPSOFT-FD	
FP-M personal computer cable (for FPsoft)	3 m (9.8 ft.)	Cable needed for connection between the programming port (RS232C) and RS232C port on the PC (Dsub 9-pin)	AFC1520M-US9
FP programmer II	Hand held programmer for FP series programmable controllers.	AFP1114	
FP-M peripheral cable (for FP programmer II)	3 m (9.8 ft.)	Cable needed for connection between the programming port (RS232C) and FP programmer II or ATM Terminal	AFC1523-US
Memory (EPROM)	This memory is used to store the program. It is written with a commercially available ROM writer.	AFP5202 (2 pcs)	
Memory (EEPROM)	Programs can be copied to this memory by attaching it to an FP-M.	AFP5207 (1 pcs)	

Expansion I/O Board

Type	Description				Part number
	I/O point	Operating voltage	Input COM. type	Output type	
Expansion I/O Board E20R Relay output	20 Input: 12 Output: 8	24 V DC	24 V DC Sink/Source	Relay, 2 A	AFC13012
Expansion I/O Board M1T-E Transistor output	40 Input: 24 Output: 16	24 V DC	24 V DC Source	Transistor 0.8 A NPN type	AFB6342
Expansion I/O Board M1T-E Transistor output	40 Input: 24 Output: 16	24 V DC	24 V DC Sink	Transistor 0.8 A PNP type	AFB6342P
Expansion Input Board M1T-EI	Input: 36	24 V DC	24 V DC Source	—	AFB6392
Expansion Output Board M1T-EO Transistor output	Output: 32	24 V DC	—	Transistor 0.8 A NPN type	AFB6340

- Notes:**
- Spacers (□ shape: AFB8802) come with each board.
 - Power voltage 12 V DC type is also available.

Intelligent Board

Type	Description		Operating voltage	Part number
Analog I/O Board M1T-A	Input: 4 channels Output: 1 channel Isolated	Analog input range: 0 to 5 V, 0 to 10 V 0 to 20 mA Resolution: 1/256 (8 bits)	24 V DC	AFB6480
A/D Converter Board M1T-AD	Input: 4 channels Isolated	Analog input range: 0 to 5 V, 0 to 10 V 0 to 20 mA Resolution: 1/1,000 (10 bits)	24 V DC	AFB6400
D/A Converter Board M1T-DA	Output: 2 channels Isolated	Analog output range: 0 to 5 V, 0 to 10 V 0 to 20 mA Resolution 1/1,000 (10 bits)	24 V DC	AFB6410
High-speed Counter Board M1T-HSC	Input: 2 channels 1 phase: 20 k Hz 2 phases: 5 k Hz		—	AFB6420

- Note:** • Spacers (□ shape: AFB8802) come with each board.

Link Board

Type	Description	Operating voltage	Part number
FP-M Transmitter Master Board (MEWNET-TR)	FP-M transmitter master board for MEWNET-TR (Remoto I/O) system. Also used for FP-M to FP-M (1 to 1) or FP-M to FP3 communication. I/O link points: 64 points (Input: 32) (Output: 32)	24 V DC	AFC1752
FP-M I/O Link Board (MEWNET-F)	The FP-M I/O link board is the interface board for exchanging I/O information between an FP3 master and FP-M slave stations. Information is exchanged using a 2-conductor cable.	24 V DC	AFC1732
C-NET Adapter (connect to computer)	RS485 ↔ RS422/RS232C (PC serial port) signal converter. Used for communication between a personal computer and remote PLC's via C-NET Adapters connected to each PLC. (See below) Communication medium (RS485 port): 2-conductor cable or twisted pair cable.	24 V DC	AFP8532
		100 V to 240 V AC	AFP8536
C-NET Adapter S2 Type (connect to PLC)	RS485 ↔ RS232C (programming port or 2nd RS232C port) for FP-M. Used for communication between the C-NET Adapter connected to a PC (see above) and an FP-M control unit.	—	AFP15402

Terminal blocks and ribbon cables for I/O connection.

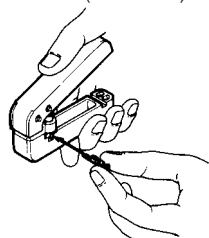
FP-M Board		Pin	Connector terminal, CT-2	Flat cable for FP-M connector to CT-2 connector	
			Screw terminal, DIN rail mount	1 m (3.3 ft.)	3 m (9.8 ft.)
			Part number	Part number	Part number
Control Board C20T/C20TC	Output	16P	CT2-C-20	AYT51163	AYT51166
	Input	20P	CT2-C-20	AYT51203	AYT51206
Control Board C32T/C32TC	Output	34P	CT2-C-34	AYT51343	AYT51346
	Input	30P	CT2-C-30	AYT51303	AYT51306
Expansion I/O Board M1T-E	Output	34P	CT2-C-34	AYT51343	AYT51346
	Input	40P	CT2-C-40	AYT51403	AYT51406
Expansion Input Board M1T-EI	Connector B	20P	CT2-C-20	AYT51203	AYT51206
	Connector A	40P	CT2-C-40	AYT51403	AYT51406
Expansion Output Board M1T-EO		34P × 2	CT2-C-34	AYT51343	AYT51346

FP-M Board		Pin	Relay terminal, RT-1 Screw Terminal, DIN rail mount	Flat cables for relay terminals	
				1 m (3.3 ft.)	3 m (9.8 ft.)
				Part number	Part number
Control Board C20T/C20TC	Output (8)	16P	RT1-OD08-24V-S	AY15723	AY15726
	Input (12)	20P	RT1-IA16-100V-S	AY15713	AY15716
Control Board C32T/C32TC	Output (16)	34P	RT1-OD16-24V-S	AY25523	AY25526
	Input (16)	30P	RT1-IA16-100V-S	AY25313	AY25316
Expansion I/O Board M1T-E	Output (16)	34P	RT1-OD16-24V-S	AY25523	AY25526
	Input (24) (16+8)	40P	(1) RT1-IA16-100V-S (1) RT1-IA08-100V-S	AY25513 40P to (2) 20P	AY25516 40P to (2) 20P
Expansion Input Board MIT-EI	Connector B (12)	20P	RT1-IA16-100V-S	AY15713	AY15716
	Connector A (24)	40P	(1) RT1-IA16-100V-S (1) RT1-IA08-100V-S	AY25513 40P to (2) 20P	AY25516 40P to (2) 20P
Expansion Output Board M1T-EO		34P × 2	RT1-OD16-24V-S	AY25523	AY25526
Relays for RT1 Terminals		Voltage	Part Number		
Input	AC	100-240Vac	AQCD3-IM100/240VAC		
Output	Relay, 1 NO contact (24Vdc coil)	5A, 30Vdc, 5A 250Vac	PC1A-24V		
	Transistor	24Vdc	AQC1AD1-24V		
	Triac (24Vdc coil)	75-125Vac	AQC1A1-ZT24V		
	Triac (24Vdc coil)	75-250Vac	AQC1A2-ZT24V		

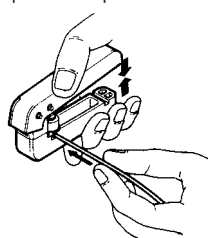
Wire-press socket for making MIL type I/O connections, when using individual cables.

FP-M Board		Pin	Housing	Cover	Contact & Tool	
			Part number	Part number		
Control Board C20T/C20TC	Output	16P	AXW1164A	AXW61601A	AXW7221 (5 contacts)	
	Input	20P	AXW1204A	AXW62001A		
Control Board C32T/C32TC	Output	34P	AXW1344A	AXW63401A		AXY52000 Pressure Tool
	Input	30P	AXW1304A	AXW63001A		
Expansion I/O Board M1T-E	Output	34P	AXW1344A	AXW63401A		
	Input	40P	AXW1404A	AXW64001A		
Expansion Input Board M1T-EI	Connector B	20P	AXW1204A	AXW62001A		
	Connector A	40P	AXW1404A	AXW64001A		
Expansion Output Board M1T-EO		34P × 2	AXW1344A	AXW63401A		

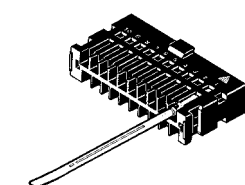
(1) Break off the contact from the carrier and set it into the pressure tool (AXY52000).



(2) Push the wire with its covering still on all the way until it hits. Lightly squeeze the pressure tool.

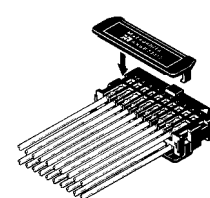


(3) After pressure welding, insert the wire into the housing (AXW1xxxxA).



(Illustration shows 20 pin connector.)

(4) After inserting all the wires, install the cover (AXW6xxxxA).





Flat cable with connector on one end for MIL type I/O connection.

FP-M Board		Pin	Cable with connector		Connector
			1 m (3.3 ft.)	3 m (9.8 ft.)	
			Part number	Part number	Part number
Control Board C20T/C20TC	Output	16P	APL9531	APL9533	AXM116415
	Input	20P	APL9541	APL9543	AXM120415
Control Board C32T/C32TC	Output	34P	AFB8531	AFB8533	AXM134415
	Input	30P	AFB8521	AFB8523	AXM130415
Expansion I/O Board M1T-E	Output	34P	AFB8531	AFB8533	AXM134415
	Input	40P	AFB8541	AFB8543	AXM140415
Expansion Input Board M1T-EI	Connector B	20P	APL9541	APL9543	AXM120415
	Connector A	40P	AFB8541	AFB8543	AXM140415
Expansion Output Board M1T-EO		34P × 2	AFB8531	AFB8533	AXM134415

Accessories

Type	Description	Part number	
Case for control board	Install the case on the top of the control board Spacers supplied (AFB88032, 4 pcs)	C20R	AFC18011
		C20T	AFC18012
		C32T	AFC18013
Case for expansion board	Install the case between stacked boards Spacers supplied (AFB8803, 4 pcs)	AFC1802	
Skirt case	Installed the case on the bottom of the board Spacers supplied (AFB8803, 4 pcs)	AFC1803	
I/O number seal for expansion I/O board	To indicate I/O location of expansion board	E20R	AFC18062
		M1T-E	AFC18061
		M1T-EI	AFC18063
		M1T-EO	AFC18064
Mounting plate	Metal plate for DIN rail mounting	AFB6804	

Maintenance parts

Type	Description	Part number	
Spare battery for FP-M	BR2032/CR2032 or equivalent, Comes with control board	AFB8801	
Power supply cable	Comes with control board	APL9511	
Jumper cable	Comes with control board	AFB8505	
Spacers	Case type	<input type="checkbox"/> Shape, 8 mm (.32 inch)	AFB88032
		<input type="checkbox"/> Shape, 18 mm (.71 inch)	AFB8803
	Board type	<input type="checkbox"/> Shape, 20 mm (.79 inch)	AFB88021
		<input type="checkbox"/> Shape, 20 mm (.79 inch)	AFB8802