Mitsubishi □□ □□□ □□□ Series Service Manual

FX1N-24MT-001

1. Description

FX1N-24MT-001

3. Product Information

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FX1N-24MT-001| Mitsubishi Electric | Fx1n Series Programmable Controllers

Manufacturer: Mitsubishi Electric

FX1N-24MT-001

The arithmetic and control system : Stored program repeat operation method, there interrupt instruction

Input and output control method : Batch processing method (END when the instruction is executed), input and output refresh command, Pulse catch function

Programming language : Relay symbol system + step ladder system (SFC representation Allowed)

Program memory : The maximum memory capacity : 8000 step

comment, up to 8000 steps, including the file register

Built-in memory capacity and format : 8000 step EEPROM (memory backup required)

Memory cassette (memory board) : FX1N-EEPROM-8L (8000 step EEPROM)

RUN during the write function : Yes (can change programs during the sequencer RUN)

Protective function : There is password protection function (by keyword function)

Real-time clock : Clock function : Built

from 1980 to 2079 years (with leap year correction) The year 2-digit / 4-digit switch, monthly deviation ± 45 seconds (25 °C)

* Notes on the clock function

the current time a large-capacity capacitor of the clock that is built-in (built-in) in has been backed up.

Large-capacity capacitor (built-in) becomes a full charge in the current time of 30 minutes, and holds the current value of 10 days.

In addition, it can also be held in the battery when you use the optional battery.

Type of instruction : Basic instruction : Sequence Instruction: 27

-step ladder instructions: two

Application Instructions : Application Instructions: 89 species

Arithmetic processing speed : Basic instruction : 0.55 ~ 0.7 s / instruction

Application Instructions : 3.7 to the number of 100 s / instruction

Input and output points : Number of inputs : 128 points or less (at the time of expansion combination)

However, the following 128 points in the input and output total

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However, the following 128 points in the input and output total

Remote I / O points (CC-Link) : The actual I / O, including below 128 points

Total score : 128 points or less (at the time of expansion in combination)

device : Input and output relay : Input relay : X000 ~ X177 128 points* (octal number) extension when used with

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Output relay : Y000 ~ Y177 128 points (octal number) extension when used with

Auxiliary relay : For general use : M0 ~ M383 384 points

For Keep (EEPROM keep) : M384 ~ M511 128 points

* Notes on the keep area

keep area and non-keep-area is fixed. (Change is not allowed in the parameter)

in order to reliably keep the EEPROM is required energizing time of the sequencer is more than five consecutive minutes.

For Keep (capacitor keep) : M512 ~ M1535 1024 points

* Notes on the keep area

keep area and non-keep-area is fixed. (Parameter change is not allowed)

large-capacity capacitor (built-in) becomes a full charge in the current time of 30 minutes, and holds the current value of 10 days.

When the voltage of the large-capacity capacitor is reduced there is that the state of the capacitor keep the device can not be properly maintained. Or when used for the first time after purchasing the FX1N Series PLC, when you want to use after the state that does not put a long time power supply, please initialize the capacitor keep the device.

Also, before you resume operation, please do the setting of the device and the current time necessary for the operation.

For special : M8000 ~ M8255 256 points

State : Initial state (EEPROM keep) : S0 ~ S9 10 points

* Notes on the keep area

keep area and non-keep-area is fixed. (Change is not allowed in the parameter)

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For Keep (EEPROM keep) : S10 ~ S127 118 points

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For Keep (capacitor keep) : S128 ~ S999 872 points

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Also, before you resume operation, please do the setting of the device and the current time necessary for the operation.

Timer (on-delay) : 100ms : T0 ~ T199 200 points (0.1 to 3,276.7 seconds)

10ms : T200 ~ T245 46-point (0.01 to 327.67 seconds)

1ms integration type (capacitor keep) : T246 ~ T249 4 points (0.001 to 32.767 seconds)

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When the voltage of the large-capacity capacitor is reduced there is that the state of the capacitor keep the device can not be properly maintained. Or when used for the first time after purchasing the FX1N Series PLC, when you want to use after the state that does not put a long time power supply, please initialize the capacitor keep the device.

Also, before you resume operation, please do the setting of the device and the current time necessary for the operation.

100ms integration type (capacitor keep) : T250 ~ T255 6 points (0.1 to 3,276.7 seconds)

* Notes on the keep area

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large-capacity capacitor (built-in) becomes a full charge in the current time of 30 minutes, and holds the current value of 10 days.

When the voltage of the large-capacity capacitor is reduced there is that the state of the capacitor keep the device can not be properly maintained. Or when used for the first time after purchasing the FX1N Series PLC, when you want to use after the state that does not put a long time power supply, please initialize the capacitor keep the device.

Also, before you resume operation, please do the setting of the device and the current time necessary for the operation.

Other : You can use the built-in analog volume two points as an analog timer

VR1: D8030, VR2: D8031 2 points (0 to 255)

counter : 16-bit up : C0 ~ C15 16 points (0 to 32,767 counts)

16-bit up (EEPROM keep) : C16 ~ C31 16 points (0 to 32,767 counts)

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keep area and non-keep-area is fixed. (Change is not allowed in the parameter)

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16-bit up (capacitor keep) : C32 ~ C199 168 points (0 to 32,767 counts)

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32-bit up / down : C200 ~ C219 20 points (-2,147,483,648 ~ + 2,147,483,647 count)

32-bit up / down (capacitor keep) : C220 ~ C234 15 points (-2,147,483,648 ~ + 2,147,483,647 count)

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When the voltage of the large-capacity capacitor is reduced there is that the state of the capacitor keep the device can not be properly maintained. Or when used for the first time after purchasing the FX1N Series PLC, when you want to use after the state that does not put a long time power supply, please initialize the capacitor keep the device.

Also, before you resume operation, please do the setting of the device and the current time necessary for the operation.

High-speed counter : [32-bit high-speed up / down (EEPROM keep)]

C235 ~ C255

1 phase: 60KHz, 10KHz

2 phase: 30kHz, 5kHz

There is a limit to the number and input frequency that can be used by the conditions used.

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Data register (32-bit in the pair used) : 16-bit general purpose : D0 ~ D127 128 points

16 bit for Keep (EEPROM keep) : D128 ~ D255 128 points

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in order to reliably keep the EEPROM is required energizing time of the sequencer is more than five consecutive minutes.

16 bit for Keep (capacitor keep) : D256 ~ D7999 7744 points

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large-capacity capacitor (built-in) becomes a full charge in the current time of 30 minutes, and holds the current value of 10 days.

When the voltage of the large-capacity capacitor is reduced there is that the state of the capacitor keep the device can not be properly maintained. Or when used for the first time after purchasing the FX1N Series PLC, when you want to use after the state that does not put a long time power supply, please initialize the capacitor keep the device.

Also, before you resume operation, please do the setting of the device and the current time necessary for the operation.

File register (keep) : D1000 ~ D7999 maximum 7000 points (the program area in the 500-point units from the D1000 by the parameter as a file register (set to EEPROM) Allowed)

16 bit for special : D8000 ~ D8255 256 points

For 16-bit index : V0 ~ V7, Z0 ~ Z7 16 points

Pointer : JUMP, for CALL branch : P0 ~ P127 128 points (CJ instruction, for the CALL instruction, for the END jump P63)

Input interrupt : I00 ~ I50 6 points

nesting : [Master control]

N0 ~ N7 8 points (for MC instruction)

constant : Decimal number (K) : 16-bit: -32,768 + 32,767

32-bit: -2,147,483,648 ~ + 2,147,483,647

Hexadecimal (H) : 16-bit: 0 ~ FFFF

32 bit: 0 ~ FFFFFFFF

Power Specifications :

Rated voltage : DC12 ~ 24V

Allowable voltage range : DC10.2 ~ 28.8V

Rated frequency : -

Allowable momentary power failure time : It will continue to operate for the momentary power failure of less than 5ms.

Power Fuse : 125V 3.15A

Inrush current : Maximum 25A 1ms or less / DC24V, maximum 22A 0.3ms or less / DC12V

Power consumption : 15W

includes input current worth of (7mA or 5mA per point).

DC24V service power : -

Input Specifications :

Number of inputs : 14 points (16) in the () is the number of occupied, the difference between the effective number is empty number.

Input connection shape : Removable terminal block (M3 screws)

Input format : sink

Input signal voltage : DC24V ± 10%

Input impedance : X000 ~ X007 : 3.3k

X010 or later : 4.3k

Input signal current : X000 ~ X007 : 7mA / DC24V

X010 or later : 5mA / DC24V

Input ON sensitivity current : X000 ~ X007 More than 4.5mA

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X010 or later : More than 3.5mA

Input OFF sensitivity current : 1.5mA or less

Input response time : About 10Ms

X000 ~ X007 has a built-in digital filter, can be changed in 1ms unit to 0 ~ 15ms by the D8020.

If 0 is specified, X000, X001 is 10 s, X002 ~ X007 will be 50 s.

Input signal format : No-voltage contact input

NPN open collector transistor

Input circuit insulation : Photocoupler

Input Operation Display : Input ON when the LED lights up

Output Specifications :

Number of outputs : 10 points (16)

in () is the number of occupied, the difference between the effective number is empty number.

Output connection shape : Terminal block (M3 screws)

Output type / format : Transistor / sink output

External power supply : DC5 ~ 30V

Peak load : Resistance load : 0.5A or less / output per point

0.8A or less / COM terminal per one

Inductive load : 12W / DC24V

Minimum load : -

Open circuit leakage current : 0.1mA / DC30V

ON voltage : 1.5V

Response time : OFF ON : Y000, Y001: 5 s following

Y002 later: 0.2ms or less

ON OFF : Y000, Y001: 5 s following

Y002 later: 0.2ms or less

Circuit insulation : Photocoupler

Output operation display : Photocoupler drive when LED lighting

Built-in high-speed counter function :

1 phase 1 count input : [C235, C236]

up to two points: the best 60kHz

high speed compared to SET / RESET when using: 30KHz

[C237 ~ C245]

up to 4 points: up to 10kHz

high speed compared to SET / RESET when using: 10kHz

sequencer is processed by the high-speed counter and pulse density instruction the sum of the frequency (the two-phase counter summing up the 2 times the input frequency) is a 60kHz maximum.

During the high-speed comparison SET / RESET use, the sum of the frequency at which the sequencer is treated with high-speed counter and pulse density instruction (the two-phase counter summing up the 2 times the input frequency) is the maximum 30kHz is.

1-phase 2-count input : [C246]

up to one point: the best 60kHz

high speed compared to SET / RESET when using: 30KHz

[C247 ~ C250]

up to two points: the best 10kHz

high speed compared to SET / RESET when using: 10kHz

frequency at which the sequencer is treated with high-speed counter and pulse density instruction (the two-phase counter summing up the 2 times the input frequency) of the total is 60kHz maximum.

During the high-speed comparison SET / RESET use, the sum of the frequency at which the sequencer is treated with high-speed counter and pulse density instruction (the two-phase counter summing up the 2 times the input frequency) is the maximum 30kHz is.

2-phase 2-count input : [C251]

up to one point: the best 30kHz

high speed compared to SET / RESET when using: 15KHz

[C252 ~ C255]

up to two points: the best 5kHz

high speed compared to SET / RESET when using: 5kHz

high-speed counter and pulse density instruction frequency on which the sequencer process in (the two-phase counter summing up the 2 times the input frequency) of the total is 60kHz maximum.

During the high-speed comparison SET / RESET use, the sum of the frequency at which the sequencer is treated with high-speed counter and pulse density instruction (the two-phase counter summing up the 2 times the input frequency) is the maximum 30kHz is.

Built-in pulse output and positioning function :

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Number of controlled axes : Independent 2-axis

Maximum frequency : 100kHz

Programming language : Sequence program

Corresponding basic unit : Transistor output type basic unit

Pulse output instruction : Pulse output (PLSY)

, acceleration and pulse output with speed (PLSR)

pulse output format: pulse train (the direction is controlled by the sequence)

Positioning instruction : · ABS current value read ([D] ABS)

· homing [ZRN] (without DOG search function)

near point DOG: to slow down in the ON, the near point DOG: stops at OFF. (Homing operation of counting the zero-point signal and different from)

, variable-speed pulse output [PLSV]

, relative positioning [DRVI]

- absolute positioning [DRVA]

pulse output format: pulse train + direction

Ambient temperature : 0 ~ 55 °C ····· operation, -20 ~ 70 °C ····· during storage

Relative humidity : 35 ~ 85% RH (non-condensing) ..... operation

Vibration resistance : When the DIN rail mounting : Frequency: 10 ~ 57Hz : Half amplitude: 0.035mm X, Y, Z each direction 10 times (for a total of each 80 minutes)

criteria, according to IEC61131-2

Frequency: 57 ~ 150Hz : Acceleration: 4.9m / s2 X, Y, Z each direction 10 times (for a total of each 80 minutes)

criteria, according to IEC61131-2

Direct mounting at the time : Frequency: 10 ~ 57Hz : Half amplitude: 0.075mm X, Y, Z each direction 10 times (for a total of each 80 minutes)

criteria, according to IEC61131-2

Frequency: 57 ~ 150Hz : Acceleration: 9.8m / s2 X, Y, Z each direction 10 times (for a total of each 80 minutes)

criteria, according to IEC61131-2

Impact : 147m / s2, duration of action 11ms, X at half-sine pulse, Y, Z 3 times each direction

criterion, according to IEC61131-2

Anti-noise : Noise voltage 1,000Vp-p, noise width 1 s, due to rising 1ns, cycle 30 ~ 100Hz of noise simulator

Withstand voltage : When performing a withstand voltage test, please go between the ground terminal of each terminal and the basic unit at a voltage of below.

Power supply terminal (DC power supply) and between the ground terminal: AC500V 1 minute

output terminal (transistor) and between the ground terminal: AC500V 1 minute

Insulation resistance : When performing the insulation resistance test, please go between the ground terminal of each terminal and the basic unit at a voltage of below.

Power supply terminal (DC power supply) and between the ground terminal: DC500V insulation resistance tester at least 5M

between the ground and the output terminal (transistor) terminal: DC500V 5M more in insulation resistance tester

ground : Class D grounding (ground resistance: 100 or less) <common ground is not allowed with the high-voltage system>

ground, please dedicated ground or shared ground.

Use atmosphere : Corrosive, there is no flammable gas, conductive dust (dust) that is not terribly

Advanced use : 2,000m or less

can not be used under the pressurized environment to more than atmospheric pressure. There is a possibility of failure.

Shipping Weight : 1.45 Kg

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