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

FX1S-10MR-001

1. Description

FX1S-10MR-001

3. Product Information

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FX1S-10MR-001

Manufacturer : Mitsubishi Electric

FX1S-10MR-001

FX 1 S series FX 1 S - 10 MR

Arithmetic control method : Stored program iterative calculation method with interrupt instruction

Input / output control method : Batch processing method (when END instruction is executed), I / O refresh command, with pulse catch function

Programming language : Relay symbol method + step ladder method (SFC expressible)

Program memory Maximum memory capacity : 2000 step comment, up to 2000 steps including file register

Internal memory capacity / format : 2000 step EEPROM (memory backup not required)

Memory cassette (memory board) : FX1N-EEPROM-8L (8000 step EEPROM: FX1S can only use 2000 steps)

Write function during RUN : Yes (program changeable during sequencer RUN)

Protection function : With password protection function (by keyword function)

Real time clock Clock function : Built-in 1980 to 2079 (with leap year correction) 2-digit / 4-digit year AD changeable, monthly difference ± 45 seconds (25 ° C) ※ Note on clock function The current time of the built- It is backed up with. The large capacity condenser (built-in) is fully charged at the energization time of 30 minutes and holds the present value for 10 days.

Types of instructions Basic instruction : . Sequence instruction: 27 pieces . Step ladder command: 2 pieces

Application instruction : Application instruction: 85 species

Arithmetic processing speed Basic instruction : 0.55 to 0.7 μs / instructions

Application instruction : 3.7 to several 100 μs / instructions

Number of input / output points Number of input points : 16 points or less (according to input specifications) can not be added

Number of output points : 14 points or less (due to output specification) Can not be added

Total score : 30 points or less (according to input / output specification) can not be added

device I / O relay Input relay : X000 to X017 16 points (octal number) can not be expanded (FX1S - 10M□ corresponds to the range from X000 to X005)

Output relay : Y000 - Y015 14 points (octal number) can not be expanded (FX1S - 10M□ corresponds to Y000 - Y003 range)

Auxiliary relay For general use : M 0 to M 383 384 points

For keeping : M384 to M511 128 points ※ Note on keeping area Keep area and nonkeeping area are fixed. (Parameter can not be changed.) In order to reliably keep to EEPROM, it is necessary for the sequencer to be energized for at least 5 consecutive minutes.

Special purpose : M8000 to M8255 256 points

State Initial state : S0 to S9 10 points

For keeping : All points of power failure hold (S10 to S127) * Note on keeping area Keep area and non-keep area are fixed. (Parameter can not be changed.) In order to reliably keep to EEPROM, it is necessary for the sequencer to be energized for at least 5 consecutive minutes.

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Timer (on-delay) 100 ms : T 0 to T 62 63 points (0.1 to 3,276.7 seconds)

10 ms : When M8028 is turned ON, T32 to T62 (31 points) can be changed to 10ms timer (0.01 to 327.67 seconds)

1 ms : T63 1 point (0.001 to 32.767 seconds)

Other : Two internal analog volume can be used as analog timer VR 1: D 8030, VR 2: D 8031 ??2 points (0 to 255)

counter 16 bit up : C 0 to C 15 16 points (0 to 32,767 counts)

16 bit up (keep) : C16 to C31 16 points (0 to 32,767 counts) (EEPROM keeping) * Note on keeping area Keep area and nonkeeping area are fixed. (Parameter can not be changed.) In order to reliably keep to EEPROM, it is necessary for the sequencer to be energized for at least 5 consecutive minutes.

High speed counter : [32-bit high-speed up / down (EEPROM keep)] C235 to C255 1 phase: 60 kHz, 10 kHz 2 phases: 30 kHz, 5 kHz There are restrictions on the number of points and input frequencies that can be used depending on the conditions used. ※ Note on Keep Area Keep area and non-keep area are fixed. (Parameter can not be changed.) In order to reliably keep to EEPROM, it is necessary for the sequencer to be energized for at least 5 consecutive minutes.

Data register (32 bits in pair use) For 16-bit general purpose : D0 to D127 128 points

For 16 bit keeping : D 128 - D 255 128 points (EEPROM keep) * Note on keep area Keep area and non-keep area are fixed. (Parameter can not be changed.) In order to reliably keep to EEPROM, it is necessary for the sequencer to be energized for at least 5 consecutive minutes.

File register (keep) : D 1000 - D 2499 1500 points (File register can be set in 500 points units) (EEPROM keep)

16 bit special use : D 8000 to D 8255 256 points

For 16 bit index : V 0 to V 7, Z 0 to Z 7 16 points

Pointer JUMP, for CALL branch : P0 to P63 64 points (for CJ instruction, CALL instruction, P63 for END jump)

Input interrupt : I00□ ~ I50□ 6 points

nesting : [For master control] N 0 to N 7 8 points (for MC command)

constant Decimal number (K) : 16 bits: -32,768 to + 32,767 32 bits: -2, 147, 483, 648 to +2, 147, 483, 647

Hexadecimal (H) : 16 bits: 0 to FFFF 32 bits: 0 to FFFFFFFF

Rated voltage : AC 100 to 240 V

Voltage tolerance range : AC 85 - 264 V

Rated frequency : 50/60 Hz

Allowable momentary power outage time : Operation continues with an instantaneous blackout of 10 ms or less.

Power supply fuse : 250V 1A

Inrush current : Maximum 15 A 5 ms max. / AC 100 V, max 25 A up to 5 ms / AC 200 V

power consumption : Includes 19 W input current (7 mA per point, or 5 mA).

24 VDC service power supply : 400 mA

Input specification :

Number of input points : 6 points

Input connection shape : Terminal block (M3 screw)

Input format : sink

Input signal voltage : DC 24 V ± 10%

Input impedance X000 to X007 : 3.3 kΩ

X010 or later : -

Input signal current X000 to X007 : 7 mA / 24 VDC

X010 or later : -

Input ON sensitivity current X000 to X007 : 4.5 mA or more

X010 or later : -

Input OFF sensitivity current : 1.5 mA or less

Input response time : Approximately 10ms X000 to X017 (up to the basic unit built-in number) has a built-in digital filter and can be changed from 0 to 15 ms in 1 ms unit by D8020. When 0 is specified, X000, X001 is 10 μs, and X002 to X017 are 50 μs. (FX1S - 10M□ corresponds to the range from X000 to X005)

Input signal format : No-voltage contact input NPN open collector transistor

Input circuit insulation : Photocoupler insulation

Input operation display : LED ON when input is ON

Number of output points : 4 points

Output connection shape : Terminal block (M3 screw)

Output type / format : Relay output

External power supply : AC 250 V DC 30 V or less

Maximum load Resistive load : 2A or less / per output 8 A or less / per COM terminal

Inductive load : 80VA

Minimum load : DC 5 V 2 mA (reference value)

Open-circuit leakage current : -

ON voltage : -

Response time OFF → ON : About 10 ms

ON → OFF : About 10 ms

Circuit insulation : Mechanical insulation

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Output operation indication : LED lit when relay coil is energized

Built-in high speed counter function

1 phase 1 count input : [C235, C236] Up to 2 points: Up to 60 kHz High speed comparison When using SET / RESET: 30 kHz [C237 to C245] Up to 4 points: Up to 10 kHz High speed comparison When using SET / RESET: 10 kHz Processed by high- The sum of the frequencies to be summed (2-phase counter adds twice the input frequency), the maximum is 60 kHz. High Speed ??Comparison When using SET / RESET, 30 kHz is the maximum for the sum of the frequencies processed by the sequencer with the high-speed counter and pulse density instruction (2-phase counter adds twice the input frequency).

1 phase 2 count input : [C246] Maximum 1 point: Up to 60 kHz High speed comparison When using SET / RESET: 30 kHz [C247 to C250] Up to 2 points: Up to 10 kHz High speed comparison When using SET / RESET: 10 kHz Frequency processed by the sequencer with high- (2-phase counter adds twice the input frequency), the maximum is 60 kHz. High Speed ??Comparison When using SET / RESET, 30 kHz is the maximum for the sum of the frequencies processed by the sequencer with the high-speed counter and pulse density instruction (2-phase counter adds twice the input frequency).

2 phase 2 count input : [C251] Maximum 1 point: Up to 30 kHz High speed comparison When using SET / RESET: 15 kHz [C252 to C255] Up to 2 points: Up to 5 kHz High speed comparison When using SET / RESET: 5 kHz Frequency processed by the sequencer with high- (2-phase counter adds twice the input frequency), the maximum is 60 kHz. High Speed ??Comparison When using SET / RESET, 30 kHz is the maximum for the sum of the frequencies processed by the sequencer with the high-speed counter and pulse density instruction (2-phase counter adds twice the input frequency).

Ambient temperature : 0 to 55 ° C. ... Operating, -20 to 70 ° C....when saved

Relative humidity : 35 to 85% RH (noncondensing)...at operation

Anti-vibration When DIN rail is installed Frequency: 10 to 57 Hz : One amplitude: 0.035 mm X, Y, Z 10 times in each direction (80 minutes in total) The criteria are based on IEC 61131-2

Frequency: 57 to 150 Hz : Acceleration: 4.9 m / s 2 Ten times in each of X, Y, Z directions (80 minutes in total in total) The criterion is based on IEC 61131-2

Direct installation Frequency: 10 to 57 Hz : One amplitude: 0.075 mm X, Y, Z 10 times in each direction (80 minutes in total) The criteria are based on IEC 61131-2

Frequency: 57 to 150 Hz : Acceleration: 9.8 m / s 2 X, Y, Z 10 times in each direction (80 minutes in total) The criteria are based on IEC 61131-2

Impact resistance : 147 m / s 2 , working time 11 ms, criterion for judgment three times in X, Y, Z directions by sine half-wave pulse is according to IEC 61131-2

Noise immunity : Noise voltage with 1,000 Vp-p, noise width 1 μs, rising 1 ns, with noise si

tor with period of 30 to 100 Hz

Withstand voltage : When performing the withstand voltage test, make the voltage between each terminal and the ground terminal of the basic unit as follows. Between the power supply terminal (AC power supply) and the earth terminal: AC 1.5 kV 1 minute DC 24 V service power supply and between the input terminal (24 VDC) and the earth terminal: 500 VAC for 1 min Between the output terminal (relay) and the earth terminal: AC 1.5 kV 1 min

Insulation resistance : When conducting the insulation resistance test, perform the following voltage between each terminal and the ground terminal of the basic unit. Between the power supply terminal (AC power supply) and the earth terminal: 500 VDC DC insulation resistance meter 5 MΩ or more DC 24 V service power supply and between the input terminal

(24 VDC) and the earth terminal: 500 V DC 500 MΩ or more with the insulation resistance meter Output terminal (relay) Between: 500 MV DC Insulation resistance meter 5 MΩ or more

ground : Class D grounding (grounding resistance: 100 Ω or less)Grounding should be dedicated ground or common ground.

Use atmosphere : There is no corrosive property, flammable gas, conductive dust (dust) is not serious

Use altitude : It Can Not Be Used Under An Environment Pressurized To 2,000 M Or Less Under Atmospheric Pressure. It May Break Down.

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