

TECHNICAL BULLETIN

[Issue No.] HIME-T-P-0191A

[Title] Production discontinuation of the PLC MELSEC-F series high-speed counter block FX2N-1HC and FX2NC-1HC

[Date of Issue] March 2018

[Relevant Models] MELSEC-F FX2N-1HC, FX2NC-1HC

Thank you for your continued support of programmable controller MELSEC-F series.

At this time we would like to announce that the production of the high-speed counter block FX2N-1HC and FX2NC-1HC for the PLC MELSEC-F series will be discontinued in the upcoming future.

1. Models for which production will be discontinued

FX2N-1HC..... High-speed counter block for MELSEC-F series

FX2NC-1HC ... High-speed counter block for MELSEC-F series

2. Time of transition to build-to-order system, time of production discontinuation

- Transition to build-to-order system: January 1, 2020
- Order acceptance deadline: February 29, 2020
- Production discontinuation: March 31, 2020

We will stop accepting orders at the end of February 2020, and discontinue production when the production for accepted orders is finished.

We kindly ask that you plan early for replacement to the recommended replacement models described below.

3. Reason for production discontinuation

The main parts, the CPU (microprocessor), and the dedicated IC, cannot be obtained.

4. Repair acceptance period

Repair acceptance period: March 31, 2027 (For 7 years after production is discontinued)

However, please note that we cannot accept requests for repair if replacement parts are no longer available even within the repair acceptance period.

5. Substitute model

FX3U-2HC

6. Attached data

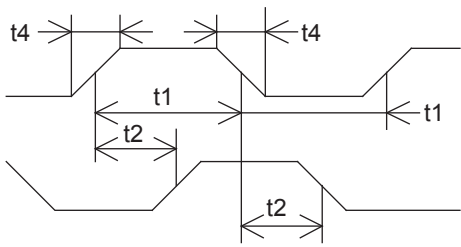
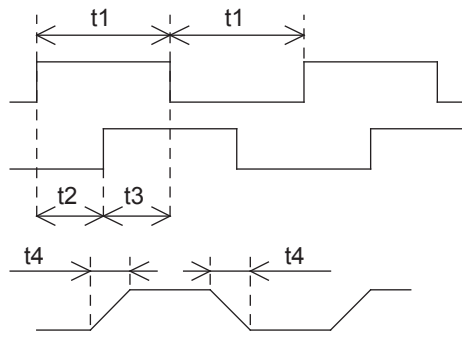
Discontinued models and alternate product reference data

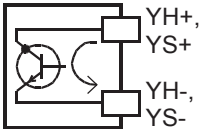
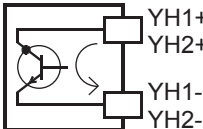
Reference data 1: Specifications of the FX2N-1HC, FX2NC-1HC, and FX3U-2HC

Discontinuation production: FX2N-1HC, FX2NC-1HC

Substitute Model: FX3U-2HC

1. Performance Specifications

Item		FX2N-1HC, FX2NC-1HC			FX3U-2HC		
Input signal	Signal level (Selected by terminal connection)	Phase A, Phase B	[A24+], [B24+]	24 V DC \pm 10%, 7 mA or less	Phase A, Phase B, PRESET	[A24+], [B24+], [P24+]	24 V DC \pm 10%, 8 mA or less
			[A12+], [B12+]	12 V DC \pm 10%, 7 mA or less		[A12+], [B12+], [P12+]	12 V DC \pm 10%, 8 mA or less
			[A5+], [B5+]	3.0 V to 5.5 V DC, 12.5 mA or less		[A5+], [B5+], [P5+]	3.0 V to 5.5 V DC, 12.5 mA or less
		PRESET, DISABLE	[XP24], [XD24]	10.8 V to 26.4 V DC, 15 mA or less	DISABLE	[XD24]	10.8 V to 26.4 V DC, 15 mA or less
			[XP5], [XD5]	5 V DC \pm 10%, 8 mA or less		[XD5]	5 V DC \pm 10%, 8 mA or less
MAX. frequency	1-phase input	1 input	50 kHz	1-phase input	1 input	200 kHz	
		2 input			2 input		
	2-phase input	1 edge count	25 kHz	2-phase input	1 edge count	100 kHz	
		2 edge count			2 edge count		
		4 edge count			4 edge count		50 kHz
Pulse shape	 <p>t1 (ON/OFF pulse): 6 μs or more (at 50 kHz) t2 (Phase difference between A and B): 3.5 μs or more (at 50 kHz) t4 (Rise/fall time): 3 μs or less PRESET (Z phase) input: 100 μs or more DISABLE (count prohibit) input: 100 μs or more</p>			 <p>t1 (ON/OFF pulse): 1.5 μs or more (at 200 kHz) t2 (Phase difference between A and B): 0.75 μs or more (at 200 kHz) t3 (Overlap time): 0.7 μs or more (at 200 kHz) t4 (Rise/fall time): 0.75 μs or less PRESET (Z phase) input signal width: ON width 1.5 μs or more OFF width 30 μs or more DISABLE (count prohibit) input signal width: ON width 100 μs or more OFF width 100 μs or more</p>			

Item		FX2N-1HC, FX2NC-1HC	FX3U-2HC
Counting specification	Format	Automatic UP/DOWN However, when on 1-phase 1-input mode, UP/DOWN is determined below. • Hardware UP/DOWN: Up/down count is decided by OFF/ON of the A-phase input terminal. • Software UP/DOWN: Up/down count is decided by the current value (K0/K1) of BFM #1.	Automatic UP/DOWN However, when on 1-phase 1-input mode, UP/DOWN is determined below. • Hardware UP/DOWN: Up/down count is decided by OFF/ON of the A-phase input terminal. • Software UP/DOWN: Up/down count is decided by the current value (K0/K1) of BFM #1, #41.
	Range	When 32-bit is specified: -2,147,483,648 to +2,147,483,647 When 16-bit is specified: 0 to 65,535 (upper limit is set up by BFM #3, #2.)	When 32-bit is specified: -2,147,483,648 to +2,147,483,647 When 16-bit is specified: 0 to 65,535 (upper limit is set up by BFM #3, #2, #43, #42.)
	Comparison Type	Each output is set when the present value of the counter matches with the compare value, and is switched OFF by a reset command. YH: Direct output processed by hardware. YS: Software processed output with worst delay time of 300 μs. Therefore, when the input frequency is 50 kHz, there is a worst case delay of 15 input pulses.	When the present value and the comparison set value of the counter are equal, the comparison output is set (ON) within 30 μs and is cleared (OFF) within 100 μs by the reset command.
Output signal	Types of outputs	 <p>YH+, YS+ YH-, YS-</p> <p>YH+ : transistor output for YH output YH- : transistor output for YH output YS+ : transistor output for YS output YS- : transistor output for YS output</p>	 <p>YH1+, YH2+ YH1-, YH2-</p> <p>YH1+ : transistor output for YH1 output YH1- : transistor output for YH1 output YH2+ : transistor output for YH2 output YH2- : transistor output for YH2 output</p>
	Output capacity	5 V to 24 V DC, 0.5 A	5 V to 24 V DC, 0.5 A
I/O occupation		8 points (can be either inputs or outputs)	8 points (can be either inputs or outputs)

Item	FX2N-1HC	FX2NC-1HC	FX3U-2HC
Power Supply	5 V DC 90 mA (supplied from inside of the PLC)	5 V DC 90 mA (supplied from inside of the PLC)	5 V DC 245 mA (supplied from inside of the PLC)
Applicable PLC	FX2N, FX2NC PLC ^{*1} FX3U, FX3UC PLC ^{*2}	FX2NC PLC FX3UC PLC	FX3U, FX3UC PLC Ver.2.20 and later ^{*2} FX5U, FX5UC PLC ^{*3}
Number of connectable equipment	FX2N, FX2NC: Up to 8 FX3U, FX3UC: Up to 8 ^{*4}	FX2NC: Up to 4 FX3UC: Up to 8 ^{*4}	FX3U: Up to 8 FX3UC: Up to 4 FX5U, FX5UC: Up to 2

*1. To connect to the FX2NC PLC, FX2NC-CNV-IF is required.

*2. To connect an FX3UC PLC, FX2NC-CNV-IF or FX3UC-1PS-5V is required.

*3. To connect to the FX5U or FX5UC PLC, FX5-CNV-BUS or FX5-CNV-BUSC is required.

*4. For FX3UC-32MT-LT(-2), up to 7 modules can be connected.

Reference data 2: Cautions on substitution

This section describes cautions on substituting the FX2N-1HC, FX2NC-1HC with the FX3U-2HC.

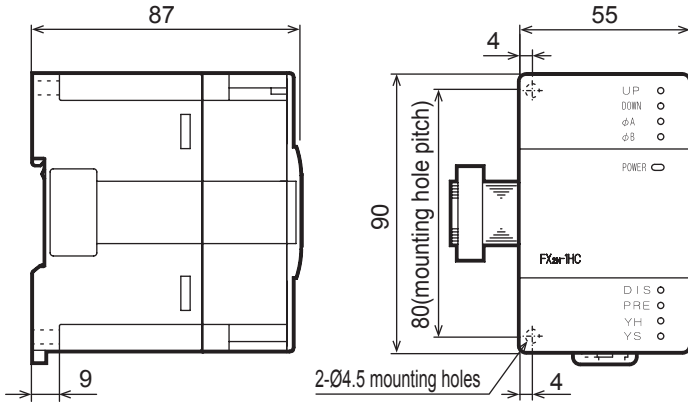
1. Hardware

Below are differences in the hardware.

Major differences	Product size of the FX2NC-1HC and FX3U-2HC are the different size. FX2NC-1HC: (W) 20.2 mm × (D) 89 mm × (H) 90 mm FX3U-2HC: (W) 55 mm × (D) 87 mm × (H) 90 mm * FX2N-1HC and FX3U-2HC are the same in size.
	FX2NC-1HC and FX3U-2HC have a mounting hole in the different position. * FX2N-1HC and FX3U-2HC have a mounting hole in the same position.
	The number of channels is different. FX2N-1HC, FX2NC-1HC: 1 channel FX3U-2HC: 2 channels
	The current consumption FX2N-1HC, FX2NC-1HC: 5 V DC 90 mA (Supplied from the PLC internal power supply) FX3U-2HC: 5 V DC 245 mA (Supplied from the PLC internal power supply)
	Connectable PLCs FX2N-1HC, FX2NC-1HC: FX2N, FX2NC, FX3U, FX3UC FX3U-2HC: FX3U, FX3UC, FX5U, FX5UC
	The terminal layout and the shape of the connector are different.

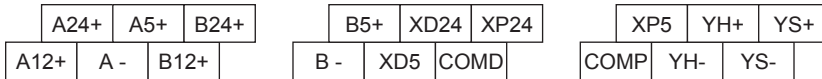
1.1 FX2N-1HC (Production discontinuation)

External Dimensions



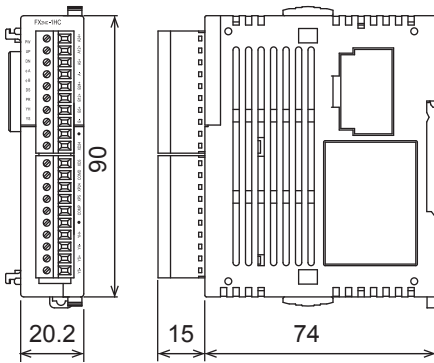
Unit: mm
Weight: Approx. 0.3 kg

Terminal layout



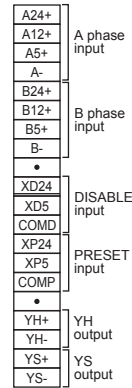
1.2 FX2NC-1HC (Production discontinuation)

External Dimensions



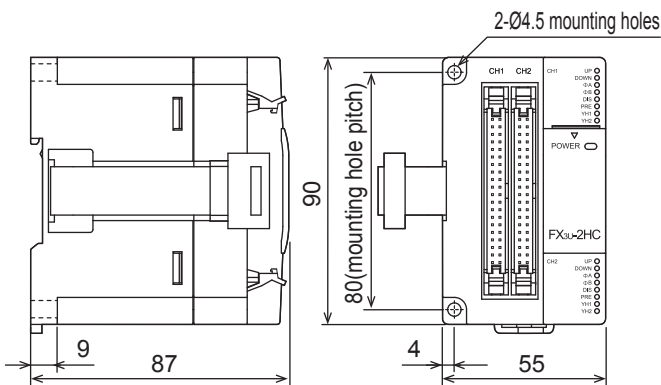
Unit: mm
Weight: Approx. 0.13kg

Terminal layout



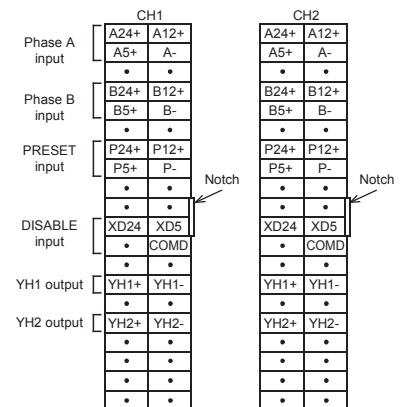
1.3 FX3U-2HC (Substitute model)

External Dimensions



Unit: mm
Weight: Approx. 0.2kg

Connector arrangement



2. Program conversion

Buffer memory arrangement of FX2N-1HC, FX2NC-1HC, and FX3U-2HC(CH1) are the same.

For details of the buffer memory, refer to FX2N-1HC User's Manual, FX2NC-1HC User's Manual, FX3U-2HC User's Manual.

FX2N-1HC, FX2NC-1HC Buffer memory list		FX3U-2HC Buffer memory list		
BFM No.	Name	BFM No.		Name
		CH1	CH2	
#0	Counter mode	#0	#40	Counter mode
#1	DOWN/UP command	#1	#41	DOWN/UP command
#2	Ring length (Lower 16 bit)	#2	#42	Ring length (Lower 16 bit)
#3	Ring length (Upper 16 bit)	#3	#43	Ring length (Upper 16 bit)
#4	Command	#4	#44	Command
#5	Not available	#5	#45	Not available
#6	Not available	#6	#46	Not available
#7	Not available	#7	#47	Not available
#8	Not available	#8	#48	Not available
#9	Not available	#9	#49	Not available
#10	Preset data (Lower 16 bit)	#10	#50	Preset data (Lower 16 bit)
#11	Preset data (Upper 16 bit)	#11	#51	Preset data (Upper 16 bit)
#12	YH compare value (Lower 16 bit)	#12	#52	YH1 compare value (Lower 16 bit)
#13	YH compare value (Upper 16 bit)	#13	#53	YH1 compare value (Upper 16 bit)
#14	YS compare value (Lower 16 bit)	#14	#54	YH2 compare value (Lower 16 bit)
#15	YS compare value (Upper 16 bit)	#15	#55	YH2 compare value (Upper 16 bit)
#16	Not available	#16	#56	Not available
#17	Not available	#17	#57	Not available
#18	Not available	#18	#58	Not available
#19	Not available	#19	#59	Not available
#20	Counter current value (Lower 16 bit)	#20	#60	Counter current value (Lower 16 bit)
#21	Counter current value (Upper 16 bit)	#21	#61	Counter current value (Upper 16 bit)
#22	Maximum count value (Lower 16 bit)	#22	#62	Maximum count value (Lower 16 bit)
#23	Maximum count value (Upper 16 bit)	#23	#63	Maximum count value (Upper 16 bit)
#24	Minimum count value (Lower 16 bit)	#24	#64	Minimum count value (Lower 16 bit)
#25	Minimum count value (Upper 16 bit)	#25	#65	Minimum count value (Upper 16 bit)
#26	Compare results	#26	#66	Compare results
#27	Terminal status	#27	#67	Terminal status
#28	Not available	#28		Not available
#29	Error status	#29		Error status
#30	Model identification code	#30		Model identification code

REVISIONS

Revision	Date	Description
A	March 2018	First edition

The company and product names described in this technical bulletin are trademarks or registered trademarks of their respective companies.