

[Issue No.] HIME-T-P-0177A

[Title] Production Discontinuation of the PLC MELSEC-F Series Temperature Control Block FX2N-2LC

[Date of Issue] April 2017

[Relevant Models] MELSEC-F series FX2N-2LC

Thanks to the loyal support of our customers the MELSEC-F series of PLCs has been and continues to be very successful.

At this time we would like to announce that the production of the temperature control block FX2N-2LC for the PLC MELSEC-F Series will be ending in the upcoming future.

1. Models for which production will be discontinued

FX2N-2LC: Temperature control block for the MELSEC-F Series.

2. Time of production discontinuation

March 31, 2018

3. Reason for production discontinuation

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

4. Time of transition to build-to-order system

Transition to build-to-order system: January 1, 2018

Order acceptance deadline: February 28, 2018

The approximate delivery time is "1 months after order acceptance".

We will stop accepting orders at the end of February 2018, 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.

5. Repair acceptance period

We will accept requests for repair for 7 years after production is discontinued (by the end of March, 2025.).

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

6. Substitute model

FX3U-4LC

Reference data 1 : Specifications of FX2N-2LC, FX3U-4LC

1. Specification

Item	Specification			
	FX2N-2LC (Models to be discontinued)	FX3U-4LC (Replacement models)		
Control method	Two-position control PID control	Two-position control PID control Heating/ cooling PID control Cascade control		
Control operation period	500ms/2ch	250ms/4ch		
Set temperature range ¹	<ul style="list-style-type: none"> • K: -200.0 to 1300°C (-100 to 2400°F) • J: -200.0 to 1200°C (-100 to 2100°F) • Pt100 (3-wire): -200.0 to 600.0°C (-300.0 to 1100°F) 	<ul style="list-style-type: none"> • K: -200.0 to 1300°C (-100 to 2400°F) • J: -200.0 to 1200°C (-100 to 2100°F) • Micro voltage input: DC0 to 10mV, DC0 to 100mV • Pt100 (3-wire): -200.0 to 600.0°C (-300.0 to 1100°F) • Pt1000 (2-wire/ 3-wire): -200.0 to 650.0°C (-328 to 1184°F) 		
Heater disconnection detection	Alarm is detected by buffer memory (Variable within range from 0.0 to 100.0 A.)			
Input specifications	Number of input points	2 points	4 points	
	Input type (A different input can be selected for each channel.)	Thermocouple	K, J, R, S, E, T, B, N JIS C 1602-1995 PL II, W5Re/W26Re, U, L	
		Resistance thermometer	3-wire Pt100 JIS C 1604-1997 3-wire JPt100 JIS C 1604-1981	3-wire Pt100 JIS C 1604-1997 3-wire JPt100 JIS C 1604-1981 2-wire or 3-wire Pt1000 JIS C 1604-1997
		Micro voltage input	-	DC0 to 10mV, DC0 to 100mV
	Measurement precision	[When ambient temperature is 23°C ±5°C] ±0.3% of range span ±1 digit	[When ambient temperature is 25°C ±5°C] K type Thermocouple Input range 500°C or more: Approx. ±0.3% (±1 digit) of full scale.	
		[When ambient temperature is 0 to 55°C] ± 0.7 % of range span ±1 digit However, 0 to 399°C (0 to 799 °F) in B inputs as well as 0 to 32°F in PLII and WRe5-26 inputs are outside precision guarantee range.	[When ambient temperature is 0 to 55°C] K type Thermocouple Input range 500°C or more : Approx. ±0.7% (±1 digit) of full scale.	
	Resolution ¹	0.1°C (0.1°F) or 1°C (1°F)	0.1°C (0.1°F), 1°C (1°F), 0.5μV or 5.0μV	
	Sampling period	500ms/2ch	250ms/4ch	
Operation when input is disconnected/ Operation when input is shortcircuited	Upscale/ Downscale (When resistance thermometer is used)			

Item		Specification	
		FX2N-2LC (Models to be discontinued)	FX3U-4LC (Replacement models)
Current detector (CT) input specifications	Number of input points	2 points	4 points
	Current detector: (manufactured by U.R.D. Co., Ltd.)	CTL-12-S36-8 CTL-6-P-H	CTL-12-S36-8 CTL-12-S56-10 CTL-6-P-H
	Sampling period	1 sec.	0.5 sec.
Output Specifications	Number of output points	2 points	4 points
	Output method	NPN open collector transistor	
	Rated load voltage	5 to 24V DC (Maximum load voltage: 30V DC or less)	
	Maximum load current	100 mA (Leakage current while the power is off: 0.1 mA or less)	
	Control output cycle	Variable within range from 1 to 100 seconds	Variable within range from 0.5 to 100.0 seconds
Power Supply	5V DC, 70 mA (supplied from inside of the PLC) 24V DC, 55 mA (supplied from the external power source)	5V DC, 160 mA (supplied from inside of the PLC) 24V DC, 50 mA (supplied from the external power source)	
Insulation method	The photocoupler is used to insulate the analog input area and transistor output area from the PLC.		
Number of I/O occupied points	8 points (Taken from either the input or output points of the PLC.)		
Applicable PLC	FX2N, FX2NC PLC ^{*4} FX3U, FX3UC PLC ^{*2}	FX3U, FX3UC PLC Ver. 2.20 and later ^{*2} FX5U, FX5UC PLC ^{*3}	
Number of connectable equipment	FX2N, FX3U, FX3UC: Up to 8 FX2NC: Up to 4	FX3U: Up to 8, FX3UC: Up to 6 ^{*2} FX5U, FX5UC: Up to 8 ^{*3}	

*1: It depends on the sensor input range.

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

*3: To connect to the FX5U or FX5UC PLC, the bus conversion module is required.

*4: To connect an FX2NC PLC, FX2NC-CNV-IF is required.

Reference data 2 : Cautions on substitution

This section describes cautions on substituting the FX2N-2LC with the FX3U-4LC.

1. Hardware

Below are differences in the hardware.

A. The product size is as follows:

FX2N-2LC: (W) 55 mm × (D) 87 mm × (H) 90 mm

FX3U-4LC: (W) 90 mm × (D) 86 mm × (H) 90 mm

B. Mounting hole positions

C. The number of channels is different. (2 channel→4 channel)

D. The current consumption

DC24V [Supplied from the external power supply]: 55mA→50mA

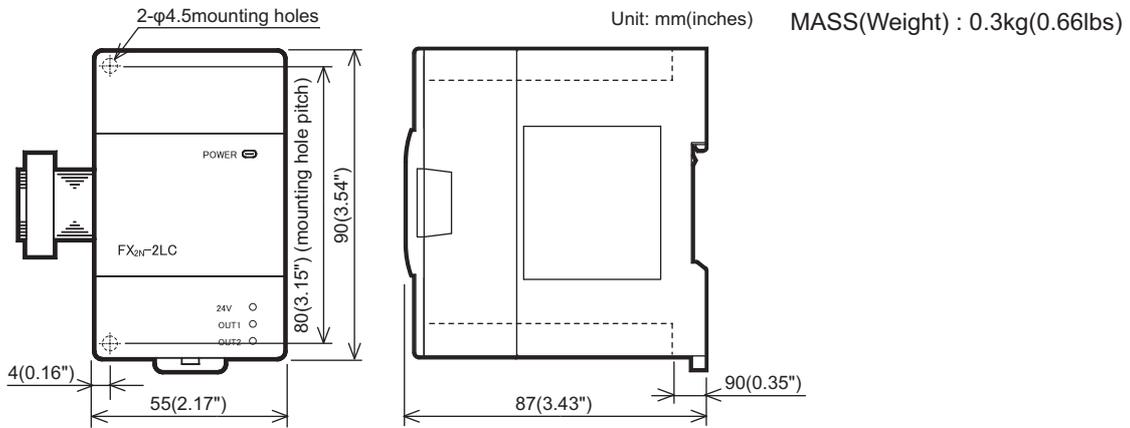
DC5V [Supplied from the PLC internal power supply]: 70mA→160mA

E. Connectable PLCs (FX2N, FX2NC, FX3U, FX3UC → FX3U, FX3UC, FX5U*, FX5UC*)

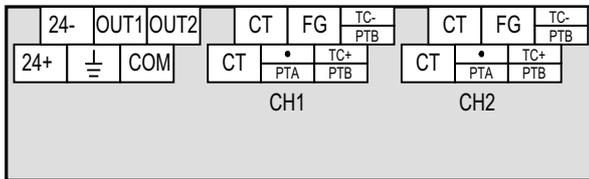
* To connect to the FX5U or FX5UC series CPU module, the bus conversion module is required.

F. Terminal layout is different.

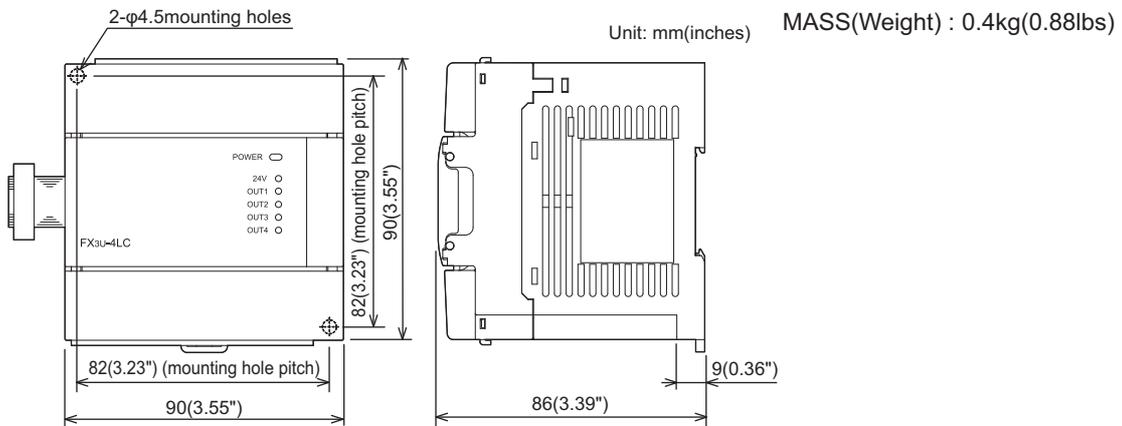
■FX2N-2LC (Model to be discontinued)



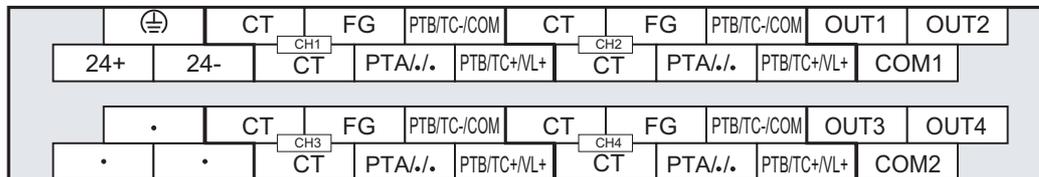
Terminal Layout



■FX3U-4LC (Substitute model)



Terminal Layout



2. Program conversion

When replacing the program, note that the arrangement of the buffer memory is different between FX2N-2LC and FX3U-4LC.

For details of the buffer memory, refer to FX2N-2LC User's Manual, FX3U-4LC User's Manual.

■ FX2N-2LC Buffer memory list

BFM No.		Name
CH1	CH2	
#0		Flag
#1	#2	Event
#3	#4	Measured value (PV)
#5	#6	Control output value (MV)
#7	#8	Heater current measured value
#9		Initialization command
#10		Error reset command
#11		Control start/stop changeover
#12	#21	Set value (SV)
#13	#22	Alarm 1 set value
#14	#23	Alarm 2 set value
#15	#24	Alarm 3 set value
#16	#25	Alarm 4 set value
#17	#26	Heater disconnection alarm set value
#18	#27	Auto/manual mode changeover
#19	#28	Manual output set value
#20	#29	Auto tuning execution command
#30		Unit type code
#31		Prohibited
#32	#51	Operation mode
#33	#52	Proportional band
#34	#53	Integral time
#35	#54	Derivative time
#36	#55	Control response parameter
#37	#56	Output limiter upper limit
#38	#57	Output limiter lower limit
#39	#58	Output change ratio limiter
#40	#59	Sensor correction value setting (PV bias)
#41	#60	Adjustment sensitivity (dead zone) setting
#42	#61	Control output cycle setting
#43	#62	Primary delay digital filter setting
#44	#63	Setting change ratio limiter
#45	#64	AT (auto tuning) bias
#46	#65	Normal/reverse operation selection
#47	#66	Setting limiter upper limit
#48	#67	Setting limiter lower limit
#49	#68	Loop breaking alarm judgement time
#50	#69	Loop breaking alarm dead zone
#70	#71	Input type selection
#72		Alarm 1 mode setting
#73		Alarm 2 mode setting
#74		Alarm 3 mode setting
#75		Alarm 4 mode setting
#76		Alarm 1/2/3/4 dead zone setting
#77		Number of times of alarm 1/2/3/4 delay
#78		Number of times of heater disconnection alarm delay
#79		Temperature rise completion range setting
#80		Temperature rise completion soak time
#81		CT monitor method changeover

BFM No.		Name
CH1	CH2	
#82		Set value range error address
#83		Set value backup command

■ FX3U-4LC Buffer memory list

BFM No.				Name	
CH1	CH2	CH3	CH4		
#0				Flag	
#1	#2	#3	#4	Event	
#5	#6	#7	#8	Measured value (PV)	
#9	#10	#11	#12	PID control	Control output value (MV) monitor
				Heating/cooling PID control	Heating control output value (MV) monitor
#13	#14	#15	#16	PID control	Not used
				Heating/cooling PID control	Cooling control output value (MV) monitor
#17	#18	#19	#20	Control output flag	
#21	#22	#23	#24	Heater current measured value	
#25	#26	#27	#28	External input value	
#29				Control start/stop changeover	
#30				FX Series model code	
#31				Not used	
#32	#33	#34	#35	PID control	External output value monitor
				Heating/cooling PID control	Heating external output value monitor
#36	#37	#38	#39	PID control	Not used
				Heating/cooling PID control	Cooling external output value monitor
#40	#41	#42	#43	Set value monitor	
#44	#45	#46	#47	Control mode monitor	
#48	#88	#128	#168	Set value (SV)	
#49	#89	#129	#169	Alarm 1 set value	
#50	#90	#130	#170	Alarm 2 set value	
#51	#91	#131	#171	Alarm 3 set value	
#52	#92	#132	#172	Alarm 4 set value	
#53	#93	#133	#173	Heater disconnection alarm set value	
#54	#94	#134	#174	AUTO/MANUAL mode changeover	
#55	#95	#135	#175	PID control	MANUAL output set value
				Heating/cooling PID control	Not used
#56	#96	#136	#176	AT (auto tuning) execution command	
#57	#97	#137	#177	Operation mode	
#58	#98	#138	#178	PID control	Proportional band (P)
				Heating/cooling PID control	Heating proportional band (P)
#59	#99	#139	#179	PID control	Not used
				Heating/cooling PID control	Cooling proportional band (P)
#60	#100	#140	#180	Integral time (I)	
#61	#101	#141	#181	Derivative time (D)	
#62	#102	#142	#182	Control response parameter	
#63	#103	#143	#183	PID control	Not used
				Heating/cooling PID control	Overlap/Dead band
#64	#104	#144	#184	PID control	Output limiter upper limit
				Heating/cooling PID control	Heating output limiter upper limit
#65	#105	#145	#185	PID control	Output limiter lower limit
				Heating/cooling PID control	Not used
#66	#106	#146	#186	PID control	Not used
				Heating/cooling PID control	Cooling upper output limiter setting
#67	#107	#147	#187	PID control	Output change ratio limiter
				Heating/cooling PID control	Not used
#68	#108	#148	#188	Sensor correction value setting	

BFM No.				Name	
CH1	CH2	CH3	CH4		
#69	#109	#149	#189	Adjustment sensitivity (dead zone) setting	
#70	#110	#150	#190	PID control	Control output cycle setting
				Heating/cooling PID control	Heating control output period setting
#71	#111	#151	#191	PID control	Not used
				Heating/cooling PID control	Cooling control output period setting
#72	#112	#152	#192	Primary delay digital filter setting	
#73	#113	#153	#193	Setting change ratio limiter	
#74	#114	#154	#194	AT (Auto tuning) bias	
#75	#115	#155	#195	PID control	Normal/reverse operation selection
				Heating/cooling PID control	Not used
#76	#116	#156	#196	Setting limiter upper limit	
#77	#117	#157	#197	Setting limiter lower limit	
#78	#118	#158	#198	PID control	Loop breaking alarm judgement time
				Heating/cooling PID control	Not used
#79	#119	#159	#199	PID control	Loop breaking alarm dead zone
				Heating/cooling PID control	Not used
#80	#120	#160	#200	Micro voltage input scaling upper limit	
#81	#121	#161	#201	Micro voltage input scaling lower limit	
#82	#122	#162	#202	External input range upper limit	
#83	#123	#163	#203	External input range lower limit	
#84	#124	#164	#204	External output range upper limit	
#85	#125	#165	#205	External output range lower limit	
#86	#126	#166	#206	Transistor output selection	
#87	#127	#167	#207	ST (startup tuning) execution command	
#208	#214	#220	#226	Input range	
#209	#215	#221	#227	Alarm 1 alarm mode setting	
#210	#216	#222	#228	Alarm 2 alarm mode setting	
#211	#217	#223	#229	Alarm 3 alarm mode setting	
#212	#218	#224	#230	Alarm 4 alarm mode setting	
#213	#219	#225	#231	Not used	
#232				PID control	Not used
				Heating/cooling PID control	cooling method setting
#233				Alarm dead band setting	
#234				Alarm delay count	
#235				Number of times of heater disconnection alarm delay/Number of times of current error detection when output is OFF delay	
#236				Temperature rise completion range setting	
#237				Temperature rise completion soak time	
#238				CT monitor method switch	
#239				CT ratio setting	
#240		#241		Control mode switch	
#242				PID control	SV tracking selection
				Heating/cooling PID control	Not used
#244				PID control	Cascade ON/OFF
				Heating/cooling PID control	Not used
#246				PID control	Cascade gain
				Heating/cooling PID control	Not used
#248				PID control	Cascade bias
				Heating/cooling PID control	Not used
#250		#251		Cascade monitor	
#252				Set value range error address	
#253				Error reset command	
#254				Set value backup command	
#255				Initialization command	
#256 to #862				Not used	

Revised History

Date	Revision	Description
April 2017	A	First Edition

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