

[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 FX_{2N}-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

MITSUBISHI ELECTRIC CORPORATION

[1/9]

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

1. Specification

			Specification							
	Item		FX2N-2LC	FX3U-4LC						
			(Models to be discontinued)	(Replacement models)						
Control method			Two-position control PID control	Two-position control PID control Heating/ cooling PID control Cascade control						
Control operation	n period		500ms/2ch	250ms/4ch						
Set temperature	range ^{*1}		 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) 	 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 disconne	ction detec	tion	Alarm is detected by buffer men 0.0 to 100.0 A.)	nory (Variable within range from						
	Number o	f input points	2 points	4 points						
	Input type (A different input can be	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						
	selected for each channel.)	Micro voltage input	-	DC0 to 10mV, DC0 to 100mV						
Input			[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.						
specifications	Measuren	nent precision	[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 ^{*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 is disconn Operation shortcircu	when input ected/ when input is ited	Upscale/ Downscale (When res	istance thermometer is used)						

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

		Specification						
ltem		FX2N-2LC	FX3U-4LC					
		(Models to be discontinued)	(Replacement models)					
	Number of input points	2 points	4 points					
Current detector (CT) input specifications	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.					
	Number of output points	2 points	4 points					
	Output method	NPN open collector transistor						
Output Specifications	Rated load voltage	5 to 24V DC (Maximum load vol	tage: 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 po	ints	8 points (Taken from either the input or output points of the PLC.)						
Applicable PLC		FX2N, FX2NC PLC ^{*4} FX3U, FX3UC PLC Ver. 2.20 FX3U, FX3UC PLC ^{*2} Iater ^{*2} FX5U, FX5UC PLC ^{*3} FX5UC PLC ^{*3}						
Number of connectable equ	uipment	FX2N, FX3U, FX3UC: Up to 8 FX2NC: Up to 4	FX ₃ U: Up to 8, FX ₃ UC: Up to 6 ^{*2} FX ₅ U, FX ₅ UC: 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 FX5 \cup or FX5 \cup C PLC, the bus conversion module is required.

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

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

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:
 - $\label{eq:FX2N-2LC: (W) 55 mm \times (D) 87 mm \times (H) 90 mm} FX_{3U}-4LC: (W) 90 mm \times (D) 86 mm \times (H) 90 mm$
- B. Mounting hole positions
- C. The number of channels is different. (2 channel \rightarrow 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.

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



MASS(Weight) : 0.3kg(0.66lbs)

Terminal Layout

	24	-	OU	IT1	ΟU	IT2		С	Т	F	G	T(P1	С- ГВ		С	Т	F	G	T(P1	C- TB
24	+	1.	Ļ	СС	DM		С	Т	P	FA	T(P1)+ TB		С	Т	PT	A	T(P1)+ TB	
									CI	-11						СН	12			

■FX3U-4LC (Substitute model)



MASS(Weight): 0.4kg(0.88lbs)

Terminal Layout

	(0	Т	F	G	PTB/T(C-/COM	0	Т		FG	PTB/TC	C-/COM	OU	JT1	OU	T2
24	4+	24	4-		CT T	PTA	/•/•	PTB/T0	C+/VL+	Ċ	T	PTA	/•/•	PTB/TC	;+/VL+	CC	0M1	
				-					_									
		•		<u></u>	F	G	PTB/T(C-/COM	0	<u></u>	Н4	FG	PTB/TC	C-/COM	OU	T3	OU	T4
	•		•		CT	PTA	J./.	PTB/T	C+/VL+	Č	T	PTA	/./.	PTB/TC	;+/VL+	co	M2	

2. Program conversion

When replacing the program, note that the arrangement of the buffer memory is different between FX_{2N}-2LC and FX_{3U}-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	l No.	Namo
CH1	CH2	Name
#	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
#1	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
#3	30	Unit type code
#3	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
#7	72	Alarm 1 mode setting
#7	73	Alarm 2 mode setting
#7	74	Alarm 3 mode setting
#7	75	Alarm 4 mode setting
#7	76	Alarm 1/2/3/4 dead zone setting
#7	77	Number of times of alarm 1/2/3/4 delay
#7	78	Number of times of heater disconnection alarm delay
#7	79	Temperature rise completion range setting
#8	30	Temperature rise completion soak time
#8	31	CT monitor method changeover

BFM	No.	Nama
CH1	CH2	Name
#8	32	Set value range error address
#83		Set value backup command

■ FX3U-4LC Buffer memory list

Nation#0Flag#1#2#3#4Event#5#6#7#8Measured value (PV)#9#10#11#12PID controlControl output value (MV) monitor#13#14#15#16PID controlNot used#21#22#23#24#24P20Control output flag#22#26#27#28External input valueControl output value (MV) monitor#30#33#34#35PID controlNot used#33#34#35PID controlExternal input value#33#34#35PID controlExternal output value monitor#44#45#46#47Control onde monitorNot used#34#35PID controlExternal output value monitor#44#45#46#47Control mode monitorNot used#44#45#46#47Control mode monitorNot used#44#45#46#47Control mode monitorMain#44#45#46#47Control mode monitorMain#44#45#46#47Control mode monitorMain#44#45#46#47Control mode monitor#44#48#128#168Set value#55#91#131#171Alarm 3 set value#56#94#133#173Heater disconnection alarm set value#57#97 <th< th=""><th></th><th>BFN</th><th>No.</th><th></th><th></th><th>Nome</th></th<>		BFN	No.			Nome					
#ig#1#12#3#4Event#1#12#16Measured value (PV)Control output value (MV) monitor#9#10#11#12PID controlControl output value (MV) monitor#13#14#15#16PID controlNot used#17#18#19#20Control output flagNot used#21#22#23#24Heater current measured valueNot used#22#23#24Heater current measured valueControl output value (MV) monitor#21#22#23#24Heater current measured value#22#23#24Heater current measured value#36#37#38#34PID controlExternal output value monitor#33#34#35PID controlNot used#44#45#46#47Control mode monitorLeating external output value monitor#48#37#38#39PID controlNot used#44#45#168Set value (SV)Image#44#45#168Set value (SV)Image#44#45#168Marm 1 set valueImage#44#45#168Alarm 1 set valueImage#45#90#130#170Alarm 2 set valueImage#44#45#136#174Alard 1 set valueImage#45#94#138#178Heater disconnection alarmImage#46#94	CH1	CH2	CH3	CH4		Name					
#1 #2 #3 #4 Event #5 #6 #7 #8 Measured value (PV) #9 #10 #11 #12 PID control Control output value (MV) monitor #13 #14 #15 #16 PID control Not used #21 #22 #23 #24 Heating/cooling PID control Control output value (MV) monitor #21 #22 #23 #24 Heating/cooling PID control Control output value #24 #24 #24 Heating/cooling PID control External output value monitor #33 #34 #35 FO control Not used #33 #34 #35 External output value monitor #44 #44 #45 #46 #47 #44 #45 #46 #47 Control mode monitor #44 #45 #46 #47 Control mode monitor #44 #45 #46 #47 Control mode monitor #44 #45 #46		#	0		Flag						
#5#6#7#8Measured value (PV)#9#10#11#12PID controlControl output value (MV) monitor#13#14#15#16PID controlNot used#17#18#19#20Control output fag#21#22#23#24Heater current measured value#21#22#23#24Heater current measured value#25#26#27#28External input value#27#28External input value#30#33#34#35PID controlExternal output value monitor#31#33#34#35PID controlNot used#32#33#34#35PID controlNot used#44#44#44#45#46#47#44#45#46#47Control output on the controlNot used#44#45#46#47Atom a set value#51#91#131#171Atam 3 set value#52#92#132#172Atam 4 set value#53#93#136#176AT (auto tuning) execution command#54#94#134#171Atam 3 set value#55#95#136#176AT (auto tuning) execution command#54#94#134#176AT (auto tuning) execution command#55#95#136#176AT (auto tuning) execution command#56#9	#1	#2	#3	#4	Event						
#10 #11 #12 PID control Heating/cooling PID control Control output value (MV) monitor #13 #14 #15 #16 PID control Not used #21 #22 #23 #24 Heating/cooling PID control Cooling control output value (MV) monitor #21 #22 #23 #24 Heater/current measured value Image: Cooling PID control Cooling control output value (MV) monitor #21 #22 #23 #24 Heater/current measured value Image: Cooling PID control Control start/stop changeover #33 #34 #35 PID control External output value monitor #432 #33 #34 #36 PID control Not used #44 #45 #46 #47 Control mode monitor Not used #44 #45 #46 #47 Control mode conitor Cooling external output value monitor #44 #45 #46 #47 Control mode monitor Not used #44 #45 #46 #47 Control mode conitor Cooli	#5	#6	#7	#8	Aeasured value (PV)						
#10 #11 #12 Heating/cooling PID control Not used #13 #14 #15 #16 PID control Not used #21 #22 #23 #24 Heating/cooling PID control Cooling control output value (MV) monitor #25 #26 #27 #28 External input value #25 #26 #27 #28 External input value #30 #31 #34 #35 PID control External output value monitor #33 #33 #34 #35 PID control Not used #44 #45 #46 #47 Control mode monitor Not used #44 #45 #46 Set value (SV) Not used #44 #45 #16 Alarn 1 set value #50 #00 #130 #171 Alarn 3 set value #51 #131 #171 Alarn 4 set value #55 #92 #132 #173 Harn 3 set value #55 #94 #134					PID control	Control output value (MV) monitor					
#13 #14 #15 #16 PID control Heating/cooling PID control Not used #17 #18 #19 #20 Control output flag	#9	#10	#11	#12	Heating/cooling PID control	Heating control output value (MV) monitor					
#13 #14 #15 #16 Heating/cooling PID control Cooling control output value (MV) monitor #17 #18 #19 #20 Control output flag					PID control	Not used					
#17 #18 #19 #20 Control output flag #21 #22 #23 #24 Heater current measured value #25 #26 #27 #28 External input value #30 #34 #35 External input value External input value #31 Not used FX Series model code Not used #32 #33 #34 #35 PID control External output value monitor #40 #41 #42 #43 Set value monitor Not used #44 #45 #46 #47 Control mode monitor Not used #44 #45 #46 #47 Control mode monitor Marm 1 set value #50 #90 #130 #170 Alarm 2 set value Marm 2 set value #51 #91 #131 #111 Alarm 2 set value Marm 4 set value #52 #92 #132 #172 Alarm 4 set value Marm 4 set value #54 #94 #134 #171 Alarm 2 set	#13	#14	#15	#16	Heating/cooling PID control	Cooling control output value (MV) monitor					
#21#22#23#24Heater current measured value#25#26#27#28External input value#29Control start/stop changeover#31#34#35PID controlExternal output value monitor#32#33#34#34#35PID controlExternal output value monitor#36#37#38#39PID controlNot used#40#41#42#46#47Control mode monitor#44#45#46#47Control mode monitor#44#45#46#47Control mode monitor#44#45#46#47Control mode monitor#44#45#46#47Control mode monitor#47#39#129#169Alarm 1 set value#50#90#131#171Alarm 3 set value#51#91#131#171Alarm 3 set value#52#92#132#177PID controlMANUAL output set value#54#94#134#174AUTO/MANUAL mode changeover#55#95#135#175PID controlMANUAL output set value#56#96#138#178PID controlMANUAL output set value#57#97#137#177Operation mode#58#98#138#178PID controlNot used#56#99#138#178PID controlNot used#60#100#144#143PID control <td>#17</td> <td>#18</td> <td>#19</td> <td>#20</td> <td>Control output flag</td> <td></td>	#17	#18	#19	#20	Control output flag						
#25 #26 #27 #28 External input value #29 Control start/stop changeover #31 #33 #34 #35 FID control External output value monitor #32 #33 #34 #35 FID control External output value monitor #44 #45 #438 #39 PID control Not used #44 #44 #46 #16 Control mode monitor Cooling external output value monitor #44 #44 #45 Set value (SV) Heating/cooling PID control Cooling external output value monitor #44 #44 #11 #117 Control mode monitor Cooling external output value monitor #44 #41 #128 #168 Set value (SV) Heating/cooling PID control Cooling external output value monitor #44 #43 #1171 Alarm 4 set value Heating/cooling PID control Kolina #50 #90 #133 #171 Alarm 4 set value Maximum 4 Heating/cooling PID control Not used #51 #91 #117 PID control MANUAL output set value Hea	#21	#22	#23	#24	Heater current measured va	lue					
#29Control start/stop changeover#30FX Series model code#31Not used#32#33#34#35PID controlExternal output value monitor#36#37#38#39PID controlNot used#440#41#42#43Set value monitorNot used#440#41#42#43Set value monitorNot used#440#41#42#43Set value monitorNot used#441#45#46#47Control mode monitorNot used#441#45#46#47Control mode monitorNot used#441#42#43Set value (SV)#44#45#46#47Control mode monitor#44#48#129#168Alarm 1 set value#50#90#130#170Alarm 2 set value#51#91#111#171Alarm 3 set value#52#92#133#173Heater disconnection alarm set value#54#94#134#174AUTO/MANUAL mode changeover#55#95#135#175PID controlMAUAL output set value#56#96#138#176AT (auto tuning) execution command#57#97#137#177PID controlNot used#58#98#138#178PID controlNot used#60#100#140#144#181Derivative time (D)	#25	#26	#27	#28	External input value						
#30FX Series model code#31Not used#32#33#34#35PID controlExternal output value monitor#36#37#38#38#39PID controlNot used#40#41#42#43#43#10 controlNot used#44#45#46#47Control mode monitorNot used#44#45#46#47Control mode monitor#44#45#46#47Control mode monitor#44#45#46#47Control mode monitor#44#45#46Marn 2 set value#50#90#130#170Alarm 3 set value#51#91#113#171Alarm 3 set value#52#92#133#173Heater disconnection alarm set value#53#93#133#174Alarm 4 set value#54#94#134#174Alarm 0 controlNot used#55#95#135#175PID controlMANUAL output set value#56#96#138#178PID controlNot used#57#97#137#177Operation mode#58#98#138#178PID controlProportional band (P)#610#140#143#178PID controlNot used#63#100#140#148PID controlNot used#64#100#143#183PID controlNot used#63 <t< td=""><td></td><td>#2</td><td>29</td><td></td><td>Control start/stop changeove</td><td></td></t<>		#2	29		Control start/stop changeove						
#31Not usedExternal output value monitor#32#33#34#35PID controlExternal output value monitor#36#37#38#39PID controlNot used#40#41#42#43Set value controlCooling external output value monitor#44#45#46#47Control mode monitorCooling external output value monitor#48#88#128#168Set value (SV)#49#89#129#169Alarm 1 set value#50#90#130#177Alarm 2 set value#51#91#117Alarm 3 set value#52#92#132#172Alarm 4 set value#53#93#133#173Heater disconnection alarm set value#54#94#134#174AUTO/MANUAL mode changeover#55#95#135#176PID controlMANUAL output set value#56#96#136#177Operation mode#57#97#137#177Operation mode#58#98#138#178PID controlNot used#60#100#140#180Integral time (I)#61#101#141#181PID controlNot used#63#103#143#178PID controlNot used#64#104#144#184PID controlNot used#65#105#145#188PID controlOutput limiter upper limit#65		#3	30		FX Series model code						
#32#33#34#35PID controlExternal output value monitor Heating/cooling PID controlHeating external output value monitor#36#37#38#39PID controlNot used#40#41#42#43Set value monitorCooling external output value monitor#44#45#46#47Control mode monitorCooling external output value monitor#44#45#46#47Control mode monitorCooling external output value monitor#48#128#168Set value (SV)		#3	31		Not used						
					PID control	External output value monitor					
#36 #37 #38 #39 PID control Heating/cooling PID control Cooling external output value monitor #44 #445 #46 #47 Control mode monitor Cooling external output value monitor #48 #88 #128 #168 Set value monitor Image: Cooling external output value monitor #44 #45 #46 #47 Control mode monitor Image: Cooling external output value monitor #44 #45 #46 #47 Control mode monitor Image: Cooling external output value monitor #44 #48 #128 #168 Set value (SV) Image: Cooling external output value monitor #44 #48 #171 Alarm 4 set value Image: Cooling external output value #52 #92 #133 #173 Heater disconnection alarm set value #53 #93 #133 #174 AUTO/MANUAL mode changeover #154 #94 #134 #174 AUTO/MANUAL mode changeover #155 #95 #135 #175 PID control NANUAL output set value #456	#32	#33	#34	#35	Heating/cooling PID control	Heating external output value monitor					
#36 #37 #38 #39 Heating/cooling PID control Cooling external output value monitor #44 #45 #46 #47 Control mode monitor Control mode monitor #44 #45 #46 #47 Control mode monitor Control mode monitor #44 #45 #46 #47 Control mode monitor 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 #173 Heater disconnection alarm set value #53 #93 #133 #174 AUTO/MANUAL mode chargeover #54 #94 #134 #174 AUTO/MANUAL mode chargeover #55 #95 #135 #175 PID control MANUAL output set value #55 #94 #138					PID control	Not used					
#40 #41 #42 #43 Set value monitor #44 #45 #46 #47 Control mode monitor #44 #45 #46 #47 Control mode monitor #48 #88 #128 #169 Set value (SV) #49 #89 #129 #169 Alarm 1 set value #50 #90 #130 #170 Alarm 2 set value #51 #91 #131 #171 Alarm 2 set value #52 #92 #132 #172 Alarm 4 set value #54 #94 #134 #174 AUTO/MANUAL mode changeover #55 #95 #135 #175 PID control MANUAL output set value #56 #96 #136 #176 AT (auto tuning) execution command Mareing/cooling PID control Not used #57 #97 #137 #177 Operation mode PID control Not used #66 #108 #178 Brivative time (D) Not used Heating/cooling PID control	#36	#37	#38	#39	Heating/cooling PID control	Cooling external output value monitor					
#44 #45 #46 #47 Control mode monitor #48 #88 #128 #168 Set value (SV) #49 #99 #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 #176 AT (auto tuning) execution command #56 #96 #136 #176 AT (auto tuning) execution command #57 #97 #137 #177 Operation mode #58 #98 #138 #178 PID control Not used #60 #100 #140 #180 Integral time (I) Not used #60 #100 #140 #181 Derivative time (D) Not used #61 #101 #141 #181 <td>#40</td> <td>#41</td> <td>#42</td> <td>#43</td> <td>Set value monitor</td> <td></td>	#40	#41	#42	#43	Set value 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 #133 #172 Alarm 4 set value #53 #93 #133 #174 Alarm 4 set value #54 #94 #134 #174 AUTO/MANUAL mode changeover #55 #95 #135 #177 Heater disconnection alarm set value #56 #96 #136 #176 AT (auto tuning) execution command #57 #97 #137 #177 Operation mode #58 #98 #138 #178 PID control Proportional band (P) #58 #98 #138 #178 PID control Not used #60 #100 #140 #180 Integral time (I) #61 #101 #141 #181 Derivative time (D) #62 #102 #142 #182	#44	#45	#46	#47	Control mode monitor						
#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 #56 #96 #136 #176 AT (auto tuning) execution command PID control #57 #97 #137 #177 Operation mode Proportional band (P) #58 #98 #138 #178 PID control Not used #59 #99 #139 #179 PID control Not used #60 #100 #140 #180 Integral time (I) Heating/cooling PID control Control response parameter #61 #101 #141 #181 Derivative time (D) Heating/cooling PID control Overlap/Dead band	#48	#88	#128	#168	Set value (SV)						
#50 #50 #130 #170 Alarm 2 set value #51 #91 #131 #171 Alarm 2 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 #56 #96 #136 #176 AT (auto tuning) execution command #57 #97 #137 #177 Operation mode #58 #98 #138 #178 PID control Proportional band (P) #58 #99 #139 #179 PID control Not used #60 #100 #140 #180 Integral time (I) #61 #101 #141 #181 Derivative time (D) #62 #102 #142 #182 Control response parameter #63 #103 #143	#49	#89	#129	#169	Alarm 1 set value						
#31 #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 #56 #96 #136 #176 AT (auto tuning) execution command #57 #97 #137 #177 Operation mode #58 #98 #138 #178 PID control Proportional band (P) #58 #98 #138 #177 PID control Not used #59 #99 #139 #179 PID control Not used #60 #100 #140 #180 Integral time (I) #64 #61 #101 #141 #181 Derivative time (D) #62 #102 #143 #183 PID control Not used #64 #104 #144 #184 PID control Output limiter upp	#50	#90	#130	#170	Alarm 2 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 #56 #96 #136 #176 AT (auto tuning) execution command MANUAL output set value #57 #97 #137 #177 Operation mode PID control Proportional band (P) #58 #98 #138 #178 PID control Proportional band (P) #60 #100 #140 #180 Integral time (I) PID control Not used #61 #101 #141 #180 Integral time (I) Heating/cooling PID control Cooling proportional band (P) #62 #102 #142 #182 Control response parameter Heating/cooling PID control Not used #63 #103 #143 #183 PID control Output limiter upper limit	#51	#91	#131	#171	Alarm 3 set value						
#53#93#133#173Heater disconnection alarm set value#54#94#134#174AUTO/MANUAL mode changeover#55#95#135#175PID controlMANUAL output set value#56#96#136#176AT (auto tuning) execution command#57#97#137#177Operation mode#58#98#138#178PID controlProportional band (P)#58#98#138#178PID controlNot used#59#99#139#179PID controlNot used#60#100#140#180Integral time (I)Heating/cooling PID controlCooling proportional band (P)#61#101#141#181Derivative time (D)Heating/cooling PID controlCooling proportional band (P)#63#103#143#183PID controlNot used#64#104#144#184PID controlOutput limiter upper limit#66#106#146#186PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput limiter setting#68#108#144#144#148#69#108#144#148PID controlOutput limiter setting#69#106#146#186PID controlNot used#69#108#144#148PID controlOutput limiter setting <td>#52</td> <td>#92</td> <td>#132</td> <td>#172</td> <td>Alarm 4 set value</td> <td></td>	#52	#92	#132	#172	Alarm 4 set value						
#54#94#134#174AUTO/MANUAL mode changeover#55#95#135#175PID controlMANUAL output set value#56#96#136#176AT (auto tuning) execution command#57#97#137#177Operation mode#58#98#138#178PID controlProportional band (P)#58#98#138#177Operation mode#59#99#139#179PID controlNot used#60#100#140#180Integral time (I)#61#101#141#181Derivative time (D)#63#103#143#183#64#104#144#184#65#105#145#185#66#106#146#186#67#107#147#187PID controlNot used#68#100#144#144#184PID controlOutput limiter lower limit#66#106#146#107#147#187PID controlNot used#67#107#147#107#148#108#148PID controlNot usedHeating/cooling PID controlOutput limiter upper limitHeating/cooling PID controlOutput limiter upper limitHeating/cooling PID controlNot usedHeating/cooling PID controlNot usedHeating/cooling PID controlNot usedHeating/cooling PID controlN	#53	#93	#133	#173	Heater disconnection alarm	set value					
#01#101#111Normation and sector and good angle of	#54	#94	#134	#174	AUTO/MANUAL mode chan	neover					
#55#95#135#175Heating/cooling PID controlNot used#56#96#136#176AT (auto tuning) execution command#57#97#137#177Operation mode#58#98#138#178PID controlProportional band (P)#59#99#139#179PID controlNot used#60#100#140#180Integral time (I)Not used#61#101#141#181Derivative time (D)Cooling proportional band (P)#62#102#142#182Control response parameter#63#103#143#183PID controlNot used#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148#187PID controlNot used#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#100#148#187PID controlNot used#69#108#148#187PID controlNot used#66#106#146#186PID controlNot used#67#107#147#187 <td< td=""><td></td><td></td><td></td><td></td><td>PID control</td><td>MANUAL output set value</td></td<>					PID control	MANUAL output set value					
#56#96#136#176AT (auto tuning) execution command#57#97#137#177Operation mode#58#98#138#178PID controlProportional band (P)#59#99#139#179PID controlNot used#60#100#140#180Integral time (I)Not used#61#101#141#181Derivative time (D)#63#103#143#183PID controlNot used#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter upper limit#66#106#146#186PID controlNot used#67#107#147#187PID controlNot used#68#108#146#186PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlNot used#68#108#146#186PID controlNot used#69#108#146#186PID controlNot used#68#108#146#186PID controlNot used#69#108#146#186PID controlNot used#60#106#146#186PID controlNot used#67#108#146#186PID controlNot used#68#108#14	#55	#95	#135	#175	Heating/cooling PID control	Not used					
#57#97#137#177Operation mode#58#98#138#178PiD controlProportional band (P)#59#99#139#179PiD controlNot used#60#100#140#180Integral time (I)Not used#61#101#141#181Derivative time (D)#62#102#142#182Control response parameter#63#103#143#183PID controlNot used#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlNot used#68#108#149#188PID controlNot used#67#108#148#188PID controlNot used#68#108#149#188PID controlNot used#67#108#148#188PID controlOutput limiter lower limit#68#108#148PID controlNot used#67#107#147#188PID controlNot used#68#108#148PID controlNot used#69#108#148#188PID controlNot used#69#108#148#188PID controlNot used#69#108#148#188PID control	#56	#96	#136	#176	AT (auto tuning) execution c	ommand					
#61#161#171Bipstate minute#58#98#138#178PID controlProportional band (P)#59#99#139#179PID controlNot used#60#100#140#180Integral time (I)Not used#61#101#141#181Derivative time (D)#62#102#142#182Control response parameter#63#103#143#183PID controlNot used#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput control#68#108#149#188PID controlNot used#67#107#147#187PID controlOutput control#68#108#148#188PID controlNot used#68#106#146#186PID controlNot used#67#107#147#187PID controlOutput control coling upper output limiter setting#68#108#148#188PID controlNot used#69#140#148#188PID controlNot used#60#106#146#186PID controlNot used#60#146#146#186PID controlNot used#61 <td< td=""><td>#57</td><td>#97</td><td>#137</td><td>#177</td><td>Operation mode</td><td></td></td<>	#57	#97	#137	#177	Operation mode						
#58#98#138#178 #138H180H180 Heating/cooling PID controlHeating proportional band (P)#59#99#139#179PID controlNot used#60#100#140#180Integral time (I)#61#101#141#181Derivative time (D)#62#102#142#182Control response parameter#63#103#143#183PID controlNot used#64#104#144#184PID controlOverlap/Dead band#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput control#68#108#148#188PID controlNot used#69#106#148#188PID controlNot used#60#106#146#186PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148#188PID controlNot used#67#107#148#188PID controlNot used#68#108#148#188PID controlNot used#69#108#148#188PID controlNot used#60#106#146#186PID controlN					PID control	Proportional band (P)					
#59#99#139#179PID controlNot used#60#100#140#180Integral time (I)Cooling proportional band (P)#61#101#141#180Integral time (I)#62#102#142#182Control response parameter#63#103#143#183PID controlNot used#64#104#144#184PID controlOverlap/Dead band#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput control#68#108#148#184#67#107#148#184#68#108#148PID controlNot used#68#108#148#187#68#107#148#188#68#108#148#187#68#108#148#188PID controlNot usedHeating/cooling PID controlNot usedHeating/c	#58	#98	#138	#178	Heating/cooling PID control	Heating proportional band (P)					
#59#99#139#179H1D controlNot used#60#100#140#180Integral time (I)#61#101#141#181Derivative time (D)#62#102#142#182Control response parameter#63#103#143#183PID controlNot used#64#104#144#183PID controlOverlap/Dead band#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#149#188PID controlNot used#67#107#147#187PID controlNot used#68#108#148#188PID controlNot used#69#107#147#187PID controlNot used#69#108#148#188Sepage correction value controlNot used					PID control	Not used					
#60#100#140#180Integral time (I)#61#101#141#181Derivative time (D)#62#102#142#182Control response parameter#63#103#143#183PID controlNot used#64#104#144#184PID controlOverlap/Dead band#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter upper limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput control#68#108#148#188PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148#188PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148#148Same controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148#148Same controlNot used#67#107#147#188Same controlOutput change ratio limiter	#59	#99	#139	#179	Heating/cooling PID control	Cooling proportional band (P)					
#60#100#110#110#110#110#110#110#110#110#110#110#110#110#110#110#111#111Derivative time (D)#61#102#142#182Control response parameterNot used#63#103#143#183PID controlNot used#64#104#144#184PID controlOutput limiter upper limit#64#104#144#184PID controlOutput limiter upper limit#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148#188PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148#188Sanage correction value controlNot used	#60	#100	#140	#180	Integral time (I)						
#61 #101 #111 #101 Derivative time (D) #62 #102 #142 #182 Control response parameter #63 #103 #143 #183 PID control Not used #64 #104 #144 #184 PID control Output limiter upper limit #64 #104 #144 #184 PID control Output limiter upper limit #65 #105 #145 #185 PID control Output limiter lower limit #66 #106 #146 #186 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #187 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #188 PID control Not used Heating/cooling PID control Not used #67 #107 #147 #187 Sepage correction value cottion Not used	#61	#101	#141	#181	Derivative time (D)						
#62 #162 #112 #162 bind receptine parameter #63 #103 #143 #183 PID control Not used #64 #104 #144 #184 PID control Output limiter upper limit #64 #104 #144 #184 PID control Output limiter upper limit #65 #105 #145 #185 PID control Output limiter lower limit #66 #106 #146 #186 PID control Not used #67 #107 #147 #187 PID control Output control #68 #108 #148 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #148 Separation protection protection Not used	#62	#102	#142	#182	Control response parameter						
#63 #103 #143 #183 HD control Not used #64 #104 #144 #184 PID control Output limiter upper limit #64 #104 #144 #184 PID control Output limiter upper limit #65 #105 #145 #185 PID control Heating/cooling PID control Heating output limiter upper limit #66 #106 #146 #186 PID control Output limiter lower limit #66 #106 #146 #186 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #148 Separation protection value activities PID control Not used	1102	1102		1102	PID control	Notused					
#64 #104 #144 #184 PID control Output limiter upper limit #65 #105 #145 #185 PID control Heating/cooling PID control #66 #106 #146 #186 PID control Output limiter lower limit #66 #106 #146 #186 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #147 #187 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #148 Sapara correction value control Not used	#63	#103	#143	#183	Heating/cooling PID control	Overlan/Dead band					
#64 #104 #144 #184 In Brondon Brondon Brondon #64 #104 #144 #184 Heating/cooling PID control Heating output limiter upper limit #65 #105 #145 #185 PID control Output limiter lower limit #66 #106 #146 #186 PID control Not used #66 #106 #147 #186 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #148 Sapara correction value control Not used					PID control						
#65#105#145#185PID controlOutput limiter lower limit#66#106#146#186PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#147#187PID controlNot used#67#107#147#187PID controlOutput change ratio limiter#68#108#148FID controlOutput change ratio limiter	#64	#104	#144	#184	Heating/cooling PID control	Heating output limiter upper limit					
#65 #105 #145 #185 In Discontrol Output infinite nower infinite #66 #106 #146 #186 PID control Not used #66 #106 #146 #186 PID control Not used #67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #148 Separation provide pr					PID control	Outout limiter lower limit					
#66 #106 #146 #186 PID control Not used #67 #107 #147 #187 PID control Cooling upper output limiter setting #68 #108 #147 #187 PID control Output change ratio limiter #68 #108 #148 FID control Output change ratio limiter	#65	#105	#145	#185	Heating/cooling PID control	Not used					
#66 #106 #146 #186 Indextored intermediated intermedintermedinted intermediated intermediated intermediated					PID control	Not used					
#67 #107 #147 #187 PID control Output change ratio limiter #68 #108 #148 Final control Not used	#66	#106	#146	#186	Heating/cooling PID control	Cooling upper output limiter setting					
#67 #107 #147 #187 Heating/cooling PID control Not used					PID control	Output change ratio limiter					
#60 #100 #140 #190 Concer correction value action	#67	#107	#147	#187	Heating/cooling PID control	Not used					
#00 #100 #140 #100 3PUSOLCOTECTION VALUE \$PUTO	#68	#108	#148	#188	Sensor correction value sett	ing					

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

	BFN	l No.			News			
CH1	CH2	CH3	CH4		Name			
#69	#109	#149	#189	Adjustment sensitivity (dead	zone) setting			
				PID control	Control output cycle setting			
#70	#110	#150	#190	Heating/cooling PID control	Heating control output period setting			
				PID control	Not used			
#71	#111	#151	#191	Heating/cooling PID control	Cooling control output period setting			
#72	#112	#152	#192	Primary delay digital filter se	tting			
#73	#113	#153	#193	Setting change ratio limiter				
#74	#114	#154	#194	AT (Auto tuning) bias				
				PID control	Normal/reverse operation selection			
#75	#115	#155	#195	Heating/cooling PID control	Not used			
#76	#116	#156	#196	Setting limiter upper limit				
#77	#117	#157	#197	Setting limiter lower limit				
				PID control	Loop breaking alarm judgement time			
#78	#118	#158	#198	Heating/cooling PID control	Not used			
				PID control	Loop breaking alarm dead zone			
#79	#119	#159	#199	Heating/cooling PID control	Not used			
#80	#120	#160	#200	Micro voltage input scaling u	pper limit			
#81	#121	#161	#201	Micro voltage input scaling lo	ower limit			
#82	#122	#162	#202	External input range upper li	mit			
#83	#123	#163	#203	External input range lower li	nit			
#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	loominana			
#200	#215	#220	#220	Alarm 1 alarm mode setting				
#210	#216	#227	#228	Alarm 2 alarm mode setting				
#210	#210	#222	#220	Alarm 3 alarm mode setting				
#217	#217	#223	#2230	Alarm 4 alarm mode setting				
#212	#210	#224	#200	Not used				
#215	#215	#225	#201	PID control	Notused			
	#2	32		Heating/cooling PID control	cooling method setting			
	#2	33		Alarm dead band setting				
	#2	34		Alarm delay count				
	<i>TL</i>	0-1		Number of times of heater disconnection alarm delay/Number of times of				
	#2	35		current error detection when output is OFF delay				
	#2	36		Temperature rise completion range setting				
	#2	37		Temperature rise completion range setting				
	#2	38		CT monitor method switch				
	#2	39		CT ratio setting				
#2	40	#2	41	Control mode switch				
				PID control	SV tracking selection			
#2	42	#2	43	Heating/cooling PID control	Not used			
				PID control	Cascade ON/OFF			
#2	44	#2	45	Heating/cooling PID control	Not used			
				PID control	Cascade gain			
#2	46	#2	47	Heating/cooling PID control	Not used			
				PID control	Cascade bias			
#2	48	#2	49	Heating/cooling PID control	Not used			
#2	50	#2	51	Cascade monitor				
	#2	52		Set value range error addres	6S			
	#2 #2	53		Error reset command				
	#2 #2	54		Set value backup command				
	#2 #2	55		Initialization command				
	#256 t	o #862		Not used				

Revised History

Date	Revision	Description
April 2017	А	First Edition

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