



**Laboratory Equipment Pty Ltd**

# **INSTRUCTION MANUAL FOR BOX FURNACES**

*Laboratory Equipment Pty Ltd*  
*"Proudly Australian Owned and Operated."*  
26 Farr Street, Marrickville NSW 2204  
Phone +61 02 95602811 Fax +61 02 95606131  
[www.labec.com.au](http://www.labec.com.au)

# Content

I.	Introduction.....	2
II.	Main technical Parameters.....	2
III.	Characteristics.....	3
IV.	Installation and operation.....	4
V.	Attentions.....	5
VI.	Controller operation instruction.....	8
	SX4-P Model Japanese Fuji Color LCD 64 - Segment programmed Temperature controller.....	13
VII.	Wiring Diagram.....	14
	iii.SX4- P Model Japanese Fuji Color LCD 64 - Segment programmed Temperature controller.....	22
VII.	Fault analysis.....	16
VIII.	Safety Information.....	16
IX.	Declaration of Conformity.....	19

## I. Introduction

This series of furnace are used for analyzing element in laboratories, mineral enterprises and science research institutes. It is also used in heating processing for the small size steel annealing and tempering.

## II. Main Technical Parameters

Model		SX4-7-12PB
Heating mode		Alloy wire heating in three sides left; right; top side.
Function	Temp. Range	100-1200°C
	Temp. Resolution Ratio	1°C
	Temp. motion	±1°C
	Temp. Rise time to max temp	≤30min
Structure	Chamber material	Ceramic fiber
	Outer shell	cold rolling steel electrostatic spraying exterior; B model: stainless steel
	Insulation layer	Ceramic fiber
	Heater	Alloy heating wire
	Power rating	3.0kW
	Exhaust hole	φ30mm(chimney size 80*60mm)
Controller	Temp. control mode	SX4 P model: : Imported 40.sections program temperature control device form Japan
	Temp. setting mode	Touch button setting
	Temp. display mode	Measuring temperature: LED upper row, setting temperature: the lower row
	Timer	0-9999min (with timing wait function)
	Operation function	Fixed temperature operation, timing function, auto stop.
	Additional function	Sensor deviation correction, Temperature overshoot self-tuning, Internal parameter locked, Power-off parameter memory
	Sensor	SX4:High precision K type sensor
Safety device		Manual door security lock, over temperature sound-light alarm, door opening electrical outage, over-temperature protection , thermocouple failure
Specification	Inner Chamber size (W*L*H)(mm)	200*300*120
	Exterior size (W*L*H)(mm)	530*785*640
	Packing size (W*L*H)(mm)	660*875*770

	Volume	7L
	Current rating (50/60HZ)	AC220V/13.6A
	NW/GW (kg )	45/50
Optional type		LCD program temperature control device with USD date storage

### III. Characteristics

1. Imported double insulation ceramic inner chamber with stable performance.
2. Vacuum formed polycrystalline mullite fibre refractory providing high efficiency insulation. Heating elements are located on the side walls and roof of furnace to provide optimum temperature uniformity.
4. Furnace is provided with a high precision micro-computer controller and accurate sensor to provide precise temperature control.
5. Double-shell hollow thermal insulation and double ventilation duct with advantages of excellent ventilation, not hot shell and quick internal cooling.
6. The furnace heating is interlocked with a door closed microswitch and a high temperature alarm cutout. The high temperature alarm activates an audio-visual alarm.

#### **Additional characteristics of SX4 series:**

1. The furnace is fitted with induced draft exhaust fan to provide an ashing capability.
2. The side walls and roof elements can be replaced individually if required.
3. Furnace is fitted with a multistep program temperature controller.











### IV. Installation and operation

Remove all packing and protective wrapping from both interior and exterior of the furnace. Check the furnace for any possible transit damage. Ensure all ordered accessories are present. If any physical damage or shortage is evident, do not discard the packaging material until the furnace is inspected by the distributor, agent or manufacturer.

NOTE: All claims for shortage or damage must be made within fourteen days (14) from delivery.

Subject to our standard published conditions of sale, we have reasonable grounds to believe that we have ensured, so far as is reasonably practicable that the products listed in our catalogue and brochures have been designed and constructed so as to be safe and without risk to health when properly installed and used in their environment by appropriate and trained personnel, and where applicable, in accordance with our published instructions.

## V. Attentions

	Install the outer ground protection to ensure safety of machine and experiment; ensure power as the machine required.
	This equipment is forbid to use in inflammable and explosive, poisonous and strong corrosive experiments.
	Make sure horizontal installation.
	Non-professionals are not allowed to disassemble and repair this machine.
	Pay attention to the setting temperature when dealing with inflammable matters.
	Make sure dry the resin container, if the temperature is setting too high by accident, the container would be dissolved and then fall on the heater, which will cause fire.
	Overfilled of sample will lead to overheat of working room under part, which will dissolve the inflammable material and cause fire.
	While the machine is working, don't touch the device top, as well as observation window and exhaust port to keep away from high-temperature burns.
	<b>Please do not open the door when the temperature more than 500°C!</b>
	<b>please use the temp.100℃ less than the Max. temp. for long hours use!</b>



Read the instruction book before operation.

## **Factors Influencing Furnace Life**

### **Corrosive Materials**

Materials such as sodium containing compounds, fluxes, case hardening compounds, acids and other reactive salts readily penetrate the ceramic lining of the chamber and attack the elements; they may also cause the chamber lining to melt.

When using such materials the furnace must be protected and care must be taken to avoid contamination of the furnace lining. The best method is to use a replaceable work-tube or hearth plate.

### **Metal Work Pieces**

Care should be taken to avoid melting metal into the chamber walls. If metal is melted into the chamber walls the furnace should be switched off immediately. The heating element is cast into the chamber walls, and electricity can be conducted from the element if metal is melted into the walls. The element will need to be replaced to continue operation of the furnace.

### **Operating Temperature**

Although the furnace is designed to operate at the maximum temperature, element life can be significantly prolonged by avoiding unnecessary operation at temperatures around the maximum.

### **Operating Time**

The element deteriorates with time in operation so turning the furnace off when not in use saves element life as well as electricity. Unlike silicon carbide elements, there is no advantage in leaving the furnace switched on.

### **Use for "Burning Off"**

If the furnace is regularly used for burning off materials (especially dental technicians and jewellers) it should be occasionally heated to above 800°C to remove carbon

residues from the chamber. The vent tube at the rear should be checked regularly to ensure that it has not been blocked by condensed residue.

### **Ceramic Tube Installation**

A ceramic tube is included with the furnace. This tube should slide through the hole in the rear of the furnace and allows natural venting. DO NOT fix the tube into position as it should be able to move. Position it evenly between the inner liner and outer rear wall. The tube should angle slightly upwards at the rear as it allows for natural convection. Remove the tube and fill the hole with fibre wool if a more sealed environment is required.

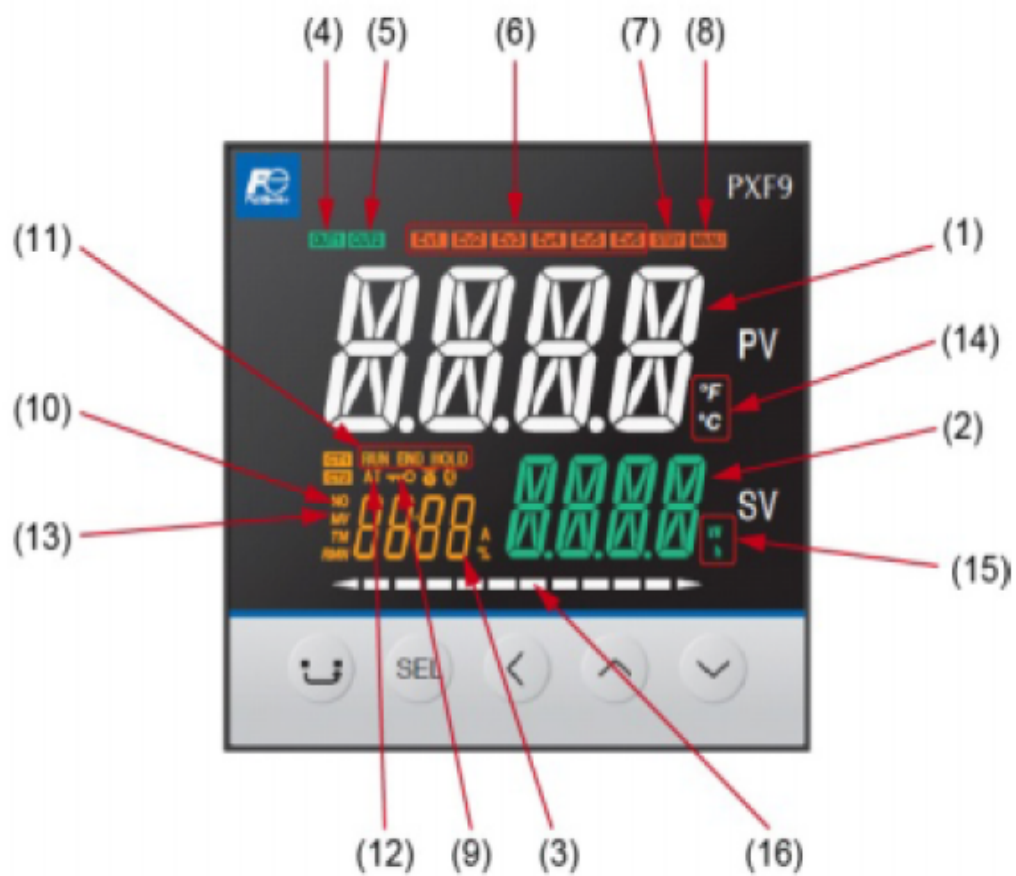
### **Thermocouple**

It is advised to check the thermocouple output periodically, either by a calibration test, or by comparing the output with a new reference thermocouple which has been subjected to high temperature for a minimum length of time. Connections for the thermocouple are at the rear behind the rear cover.

Failure to check the thermocouple may result in overheating of the load and furnace.

## **VI. Controller Operation**

# PXF9





- (1) **Indicates process value (PV)**  
Shows parameter name when in parameter setting.
- (2) **Set point (SV)**  
Shows set value. Shows parameter set point when in parameter setting.
- (3) **Screen No.**  
Shows screen No. when in parameter setting.
- (4) **OUT1 indicator**  
Lights during control output 1 is ON.
- (5) **OUT2 indicator**  
Lights during control output 2 is ON.
- (6) **EV 1, EV 2, EV 3 indicators**  
Lights during digital output 1 to 3 are ON.
- (7) **STBY indicator**  
Lights during standby.
- (8) **MANU indicator**  
Lights during manual mode.
- (9) **Lock indicator**  
Lights during key lock.
- (10) **No. indicator**  
Lights during a screen No. is displayed.
- (11) **RUN/HOLD/END indicators**  
Lights during ramp/soak operation.
- (12) **AT indicator**  
Lights during auto tuning.
- (13) **MV indicator**  
Lights during MV is displayed on SV display.
- (14) **°C/°F indicator**  
Shows the temperature unit under use.

(15) A, %, kW/h indicator

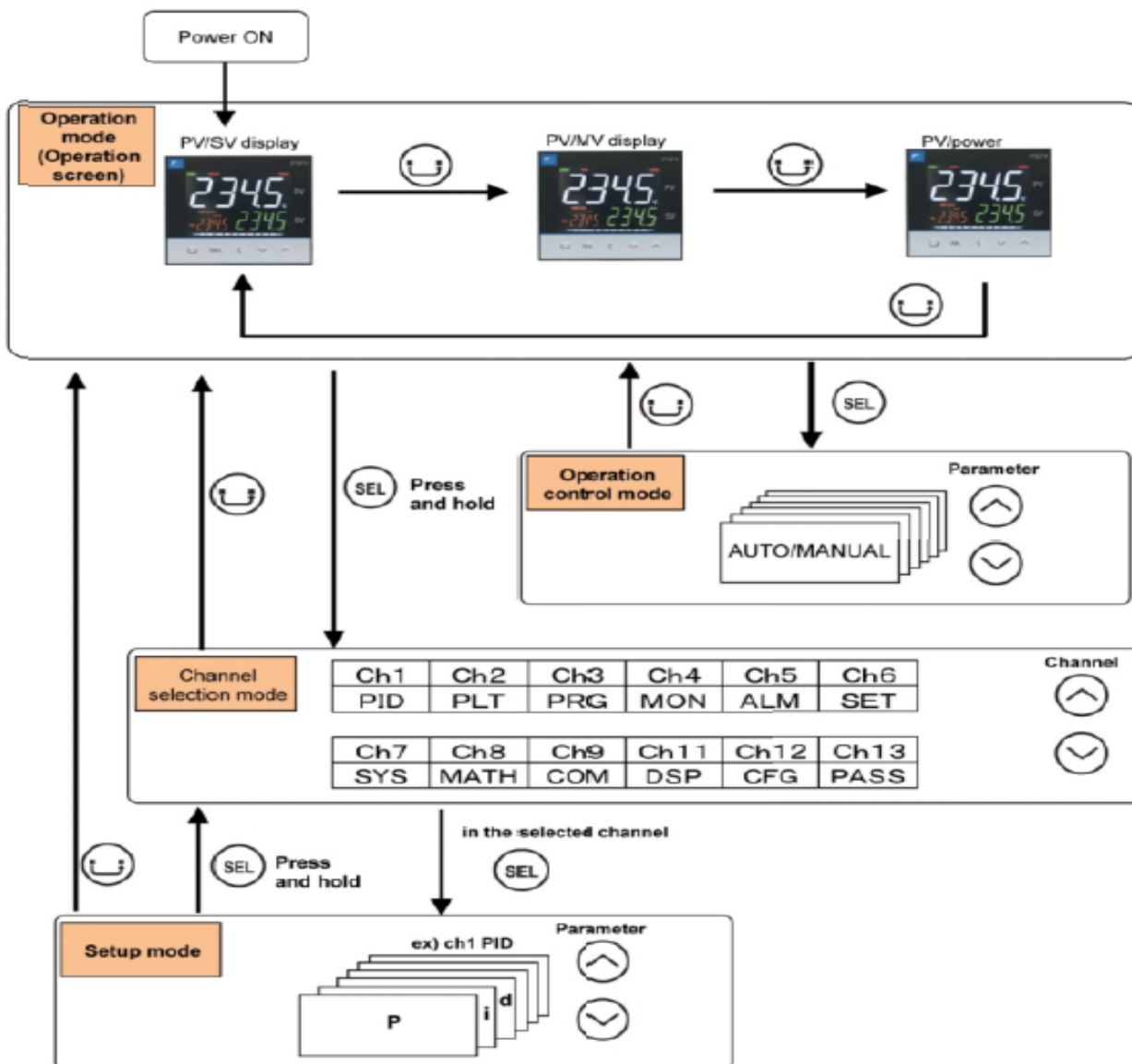
Shows the unit being applied to values on SV display during the operation mode.

(16) Bar graph

Shows MV.

## 2-1 Basic operation

The below figure illustrates the mode transition and the key operations.



Press ( ^ ) or ( v ) keyboard to change the setting number, press ( < ) to change the number is more easy and fast .

At temperature self-tuning :

Press SEL 5 seconds, the display shows MAN, press SEL again

till display the AT, you can see display OFF, please change it to ON by (^) or (v) , press the SEL and the back keyboard and the machine doing the self-tuning.

The display shows AT, the AT will disappear when the self-tuning work stop, please do not turn off the power, if turn off the power, please reset again. Please make sure there is no sample in the machine when doing the AT work.

**Press the SEL to modify the follow specification:**

Parameter		Function	Setting range	Initial value	Remarks	
No	Display Name					
001	MAN	Switchover between auto and manual mode	Switchover between auto and manual modes	oFF (auto) / on(manual)	oFF	This parameter is not displayed in default setting. If you need to change this parameter, change the setting of "Ch11 dSP" so that it appears.
002	StBY	Switchover between RUN and standby	Switchover the operation mode between RUN and standby	oFF(RUN) / on(standby)	oFF	
003	REM	Local/remote switchover	Switches SV between local/remote.	LoCL (local) / REM (remote)	LoCL	
004	PRoG	Ramp soak control command	Changes ramp soak run states	oFF (stop)/Un (run)/hLd (hold)	oFF	Displays End (when ending) or GS (during guaranty soak).
005	AT	Auto-tuning run command	Runs auto-tuning.	oFF (stop/finish)/on (normal type)/Lo (low PV type)	oFF	
006	LATCH	Alarm output latch release command	Cancels the alarm output latch state	oFF / rST (latch resets)	oFF	
007	SV#	SV selection	Chooses the SV No. used for control	LoCL Sv1 Sv2 Sv3 Sv4 Sv5 Sv6 Sv7 di (chooses SV according to DI)	LoCL	"When changing the SV with the front key, do not change the "Sv#" parameter via communication. Otherwise, the changed SV may not be stored correctly."
008	PL#	PID selection	Chooses the PID No. used for control	LoCL (PID ch) Pid 1 (PID group No. 1) Pid 2 (PID group No. 2) Pid 3 (PID group No. 3) Pid 4 (PID group No. 4) Pid 5 (PID group No. 5) Pid 6 (PID group No. 6) Pid 7 (PID group No. 7) di (chooses PID group according to DI)	LoCL	
009	AL1	ALM1 set value	Sets the alarm value for ALM1.	Absolute value alarm: 0 to 100% FS Deviation alarm: -100 to 100% FS	2.50%FS	
010	R1-L					
011	R1-H					
012	AL2	ALM2 set value	Sets the alarm value for ALM2.	Absolute value alarm: 0 to 100% FS Deviation alarm: -100 to 100% FS	2.50%FS	
013	R2-L					
014	R2-H					
015	AL3	ALM3 set value	Sets the alarm value for ALM3.	Absolute value alarm: 0 to 100% FS Deviation alarm: -100 to 100% FS	2.50%FS	
016	R3-L					
017	R3-H					
018	AL4	ALM4 set value	Sets the alarm value for ALM4.	Absolute value alarm: 0 to 100% FS Deviation alarm: -100 to 100% FS	2.50%FS	
019	R4-L					
020	R4-H					
021	AL5	ALM5 set value	Sets the alarm value for ALM5.	Absolute value alarm: 0 to 100% FS Deviation alarm: -100 to 100% FS	2.50%FS	
022	R5-L					
023	R5-H					
027	ALM#	Electric power calculation command	Switches among on/off/hold of electric power calculation.	oFF (stop calculation) rUn (run calculation) hLd (suspend calculation)	oFF	
028	LoL	Key lock	Sets the key lock to prevent wrong operation	oFF (no lock) ALL (all lock) PARA (All but SV locked)	oFF	

**Press the SEL 5 seconds to modify the follow specification:**

### Ch1 PID (control parameters)

Parameter		Function	Setting range	Initial value	Remarks
No	Display Name				
050	$P$	Proportional band (%)	0.1 to 999.9%	5.0%	
051	$I$	Integration time	0 to 3200 sec	240 sec	
052	$D$	Differential time	0.0 to 999.9 sec	60.0 sec	
053	$HYS$	ON/OFF control hysteresis	0 to 50%FS	0.25%FS	
054	$Cool$	Sets the proportional band coefficient for cooling. Setting '0.0' will turn the cooling into an ON/OFF control.	0.0 to 100.0	1.0	
055	$db$	Dead band (%)	-50.0 to 50.0%	0.0%	
056	$bRL$	Output convergence value (%)	-100.0 to 100.0%	0/50 (single/dual)	
057	$RP$	Anti-reset windup	0 to 100%FS	100%FS	
058	$REV$	Normal/reverse operation	rv-- (heat (reverse)/cool (none)) no-- (heat (normal)/cool (none)) rvno (heat (reverse)/cool (normal)) norv (heat (normal)/cool (reverse)) rvrv (heat (reverse)/cool (reverse)) nono (heat (normal)/cool (normal))	rv--/rvno (single/dual)	[RESET]
059	$SVL$	SV limit (lower)	0 to 100%FS	0.00%FS	Note 1)
060	$SVH$	SV limit (upper)	0 to 100%FS	100.00%FS	Note 1)
061	$LC1$	OUT1 proportion cycle	1 to 150 sec	30 (relay) 2 (SSR) 1 (current)	
062	$LC2$	OUT2 proportion cycle	1 to 150 sec	30 (relay) 2 (SSR) 1 (current)	
063	$PLC1$	OUT1 lower limit	-5.0 to 105.0%	-5.0%	
064	$PUC1$	OUT1 upper limit	-5.0 to 105.0%	105.0%	
065	$PLC2$	OUT2 lower limit	-5.0 to 105.0%	-5.0%	
066	$PUC2$	OUT2 upper limit	-5.0 to 105.0%	105.0%	
067	$PLUL$	Type of output limiter	0 to 15	0	
073	$ALPA$	Alpha	-199.9 to 300.0%	40.0%	
074	$BETA$	Beta	0.0 to 999.9%	100.0%	

Note 1: "SVL" and "SVH" must be set so that SvL < SvH. When you change the values for "SVL" and "SVH", check SV 1 ("Sv1 Ch2") through SV 7 ("Sv7 Ch2").

## Programmable Temperature setting specification

Parameter		Function	Setting range	Initial value	Remarks	
No	Display Name					
200	$PLN$	Ramp soak operation pattern (Step No.)	Sets which steps to use in the ramp soak operation pattern	0 (uses steps 1 to 8) 1 (uses steps 9 to 16) 2 (uses steps 17 to 24) 3 (uses steps 25 to 32) 4 (uses steps 33 to 40) 5 (uses steps 41 to 48) 6 (uses steps 49 to 56) 7 (uses steps 57 to 64) 8 (uses steps 0 to 16) 9 (uses steps 17 to 32) 10 (uses steps 33 to 48) 11 (uses steps 49 to 64) 12 (uses steps 0 to 32) 13 (uses steps 33 to 64) 14 (uses steps 0 to 64) 0i (depending on DI)	14	Note 1)
201	$LCMU$	Ramp soak time units	Sets the units of the ramp soak time	hh.MM (hour:min) MM.SS (min:sec)	hh.MM	
202	$SV-1$	Ramp soak 1 seg/SV 1	Sets the SV	0 to 100%FS	0%FS	
203	$LMRP$	Ramp soak 1 seg ramp time	Sets the ramp time.	00:00 to 99:59 (hour:min:min:sec)	00:00	
204	$LMIS$	Ramp soak 1 seg soak time	Sets the soak time.	00:00 to 99:59 (hour:min:min:sec)	00:00	
205	$SV-2$	Ramp soak 2 seg/SV 2	Sets the SV	0 to 100%FS	0%FS	
206	$LM2P$	Ramp soak 2 seg ramp time	Sets the ramp time.	00:00 to 99:59 (hour:min:min:sec)	00:00	
.	.	.	.	.	.	.
389	$LC3P$	Ramp soak 63 seg ramp time	Sets the ramp time.	00:00 to 99:59 (hour:min:min:sec)	00:00	
390	$LC3S$	Ramp soak 63 seg soak time	Sets the soak time.	00:00 to 99:59 (hour:min:min:sec)	00:00	
391	$SV64$	Ramp soak 64 seg/SV 64	Sets the SV	0 to 100%FS	0%FS	
392	$LC4P$	Ramp soak 64 seg ramp time	Sets the ramp time.	00:00 to 99:59 (hour:min:min:sec)	00:00	
393	$LC4S$	Ramp soak 64 seg soak time	Sets the soak time.	00:00 to 99:59 (hour:min:min:sec)	00:00	
394	$Mod$	Ramp soak mode	Sets the program operation method	0 to 15	0	
395	$CSOH$	Guaranty soak ON/OFF	Sets the guaranty soak ON or OFF	oFF (guaranty soak off) on (guaranty soak on)	oFF	
396	$CS-L$	Guaranty soak band (Lower)	Sets the lower limit of guaranty soak	0 to 50%FS	1.25%FS	
397	$CS-H$	Guaranty soak band (Upper)	Sets the upper limit of guaranty soak	0 to 50%FS	1.25%FS	
398	$PVSE$	PV start	Sets whether or not to start ramp soak with PV.	oFF (PV start off) on (PV start on)	oFF	
399	$CaNL$	Restore mode	Sets how to restart when the controller is restored after a power loss.	rES (Reset) Con (Continue) ini (Restart)	rES	
400	$PLNM$	Max pattern selection	Sets the maximum pattern number selectable by using the user key.	0 to 14	14	
401	$PLNH$	Min pattern selection	Sets the minimum pattern number selectable by using the user key.	0 to 14	0	

Note 1: Do not change this parameter during the ramp soak operation. Be sure to set "PRG" = "oFF" before changing the parameter

After setting, please press SEL to change the PROG specification to RUN and then works till the finish END display.

## Ch 5 ALM (alarm parameters)

No	Parameter		Function	Setting range	Initial value	Remarks
	Display	Name				
470	<i>ALP</i>	ALM1 alarm type	Set the alarm type for ALM1.	0 to 47	0	Refer to section 11 for the detail.
471	<i>ALHY</i>	ALM1 hysteresis	Sets the hysteresis for alarm output 1 ON/OFF	0 to 50%FS	0.25%FS	
472	<i>ALY1</i>	ALM1 delay	Sets the delay before detecting alarm output 1	0 to 9999 [sec/min]	0	
473	<i>ALU1</i>	ALM1 delay time units	Sets the delay time units for alarm output 1	sec (second)/Min (minute)	sec	
474	<i>ALOP1</i>	ALM1 option function	Assigns the optional functions to ALM1 Ones digit: alarm output latch Tens digit: error alarm Hundreds digit: inverted output Thousands digit: hold reset	0000 to 1111	0000	
•	•	•	•	•	•	•
490	<i>AL5P</i>	ALM5 alarm type	Set the alarm type for ALM5.	0 to 58	0	Refer to section 11 for the detail.
491	<i>AL5HY</i>	ALM5 hysteresis	Sets the hysteresis for alarm output 5 ON/OFF	0 to 50%FS	0.25%FS	
492	<i>AL5Y5</i>	ALM5 delay	Sets the delay before detecting alarm output 5	0 to 9999[sec/min]	0	
493	<i>AL5U5</i>	ALM5 delay time units	Sets the delay time unit for alarm output 5	sec (second)/Min (minute)	sec	
494	<i>AL5PS</i>	ALM5 option	Assigns the optional functions to ALM5 Ones digit: alarm output latch Tens digit: error alarm Hundreds digit: inverted output Thousands digit: hold reset	0000 to 1111	0000	
500	<i>HB1</i>	HB alarm set value	Sets the value to activate the heater burnout alarm.	0.0 to 100.0 (A)	0.0 A	
501	<i>HB1H</i>	HB alarm hysteresis	Sets an ON/OFF hysteresis for the heater burnout alarm.	0.0 to 100.0 (A)	0.5 A	
502	<i>HS1</i>	Shorted-load alarm set value	Sets the value to activate the shorted load alarm.	0.0 to 100.0 (A)	0.0 A	
503	<i>HS1H</i>	Shorted-load alarm hysteresis	Sets an ON/OFF hysteresis for the shorted heater-load alarm.	0.0 to 100.0 (A)	0.5 A	
508	<i>LbLM</i>	Loop break detection time	Sets the time before detecting a broken loop	0 to 9999 sec	0 (Off)	
509	<i>LbAb</i>	Loop break detector detection range (°C)	Sets the temperature range before detecting a broken loop	0.0 to 100.0%FS	2.50%FS	
511	<i>WHRL</i>	Electricity alarm setpoint	Sets the value for electricity alarm.	0-9999KWh	0	

## CH 6 SET (setup parameters)

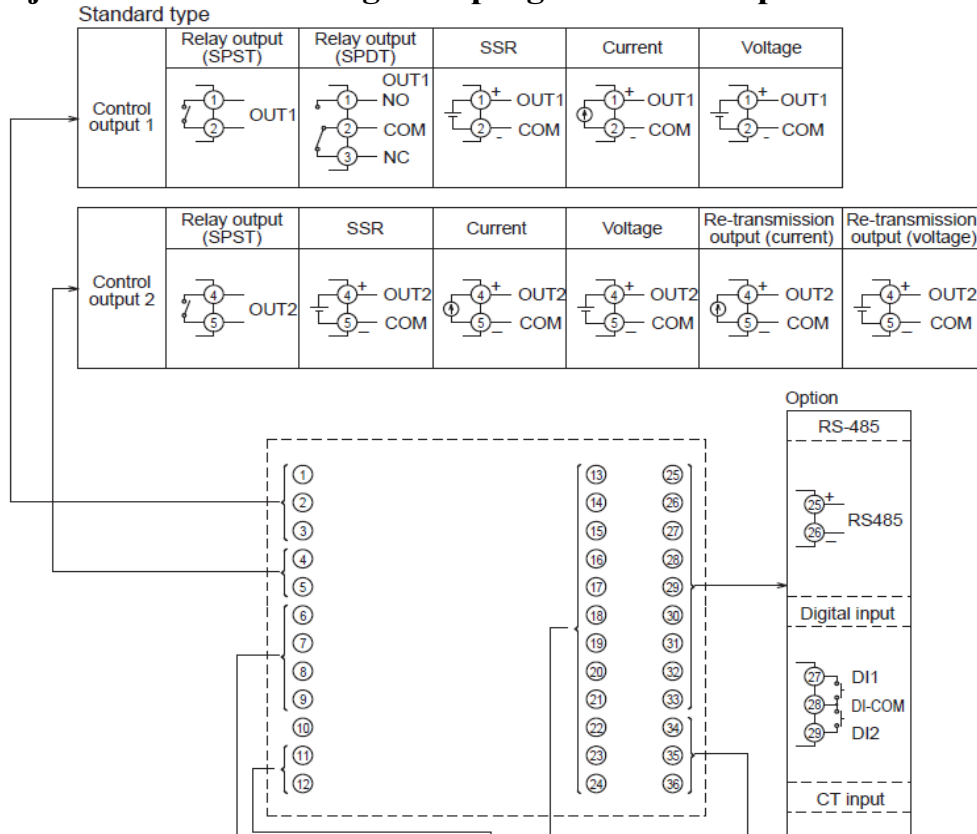
No	Parameter		Function	Setting range	Initial value	Remarks
	Display	Name				
530	<i>PVt</i>	PV input type	Sets the type of input sensor	JPT1: 0.0 to 150.0°C JPT2: 0.0 to 300.0°C JPT3: 0.0 to 500.0°C JPT4: 0.0 to 600.0°C JPT5: -60.0 to 100.0°C JPT6: -100.0 to 200.0°C JPT7: -199.9 to 600.0°C PT1: 0.0 to 150.0°C PT2: 0.0 to 300.0°C PT3: 0.0 to 500.0°C PT4: 0.0 to 600.0°C PT5: -50.0 to 100.0°C PT6: -100.0 to 200.0°C PT7: -199.9 to 600.0°C PT8: -200 to 850°C J1: 0.0 to 400.0°C J2: -20.0 to 400.0°C J3: 0.0 to 800.0°C J4: -100 to 1000°C K1: 0 to 400°C K2: -20.0 to 500.0°C K3: 0.0 to 800.0°C K4: -200 to 1300°C R: 0 to 1700°C B: 0 to 1800°C S: 0 to 1700°C T1: -199.9 to 200.0°C PT2: -199.9 to 400.0°C E1: 0.0 to 740.0°C E2: -150.0 to 740.0°C E3: -200 to 740°C L: -100 to 850°C U1: -199.9 to 400.0°C U2: -200 to 400°C N: -200 to 1300°C W: 0 to 2300°C PL-2: 0 to 1300°C D-5 V: 0 to 5 V 1-5 V: 1 to 5 V 0-10: 0 to 10 V 2-10: 2 to 10 V MV: 0 to 100 mV 0-20: 0 to 20 mA 4-20: 4 to 20 mA	K1	[RESET] Refer to section 10 for the detail.
531	<i>PVb</i>	PV input lower limit	Sets the lower limit of PV input	-1999 to 9999	0	[RESET]
532	<i>PVf</i>	PV input upper limit	Sets the upper limit of PV input	-1999 to 9999	400	[RESET]
533	<i>PVd</i>	Decimal point position	Sets the decimal point position for the PV/SV	0: No digit after decimal point 1: 1 digit after decimal point 2: 2 digit after decimal point 3: 3 digit after decimal point	0	[RESET]

## VII. Wiring Diagram

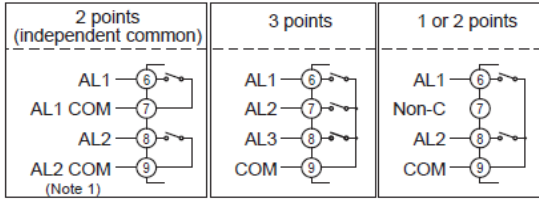
## ii. SX4 Model Japanese Conduction Single-Stage Temperature Controller

### iii. SX4-P Model

## Japanese Fuji Color LCD 64 – Segment programmed Temperature controller

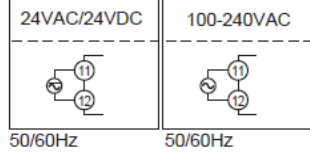


**Alarm output**

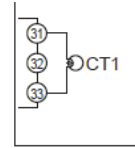
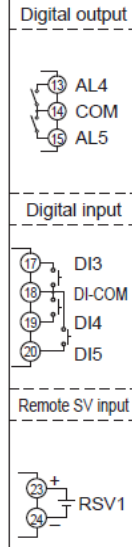


Note 1: Power supplies for AL1 and AL2 must be of the same type, either AC or DC.

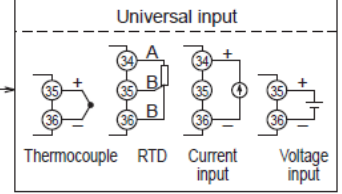
**Power supply**



**Option**



**Process value input**



## VIII. Fault analysis

Phenomena		Causation	Treatment Method
No power		<ol style="list-style-type: none"> <li>1. No Power Supply</li> <li>2. Switch broken</li> <li>3. Wire short or fuse broken</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the power or change the plug socket</li> <li>2. Change the switch</li> <li>3. Check the wire or change the fuse</li> </ol>
SX3	SV display OraL	Sensor broken	Change the sensor
SX4	HHHH	<ol style="list-style-type: none"> <li>1. Sensor line broken</li> <li>2. Sensor resistance A broken or measure Number higher 10% than the max. number</li> </ol>	<ol style="list-style-type: none"> <li>1. Check the sensor line to make sure connect very well.</li> <li>2. If connect well, need change the sensor</li> </ol>
Alarm or Over temperature light on		Machine body higher than the limited temperature, protect now!	The Temperature down to safety temperature and recover by itself (Inspect the reason or change the limited temperature)
Not work		Specification wrong changed	Change the specification
Temperature no rising		<ol style="list-style-type: none"> <li>1. Controller broken</li> <li>2. Heating Element broken</li> </ol>	Contact with the repair

## IX. Safety Information

Isolate the furnace from the electrical supply before changing elements or thermocouples or undertaking other routine maintenance. Ensure that the furnace is cold.

When reconnecting the furnace, ensure that the electrical connections are sound including earth supply continuity.

Wear appropriate safety clothing when operating the furnace including a heat resistant face shield (tinted for eye protection), gloves and apron.



Load and unload "hot" work with furnace tongs.

Do NOT use the furnace in the presence of inflammable or combustible chemicals; fire or explosion may result.

To avoid fire, do not expose combustible materials to heat from the open furnace door.

### **Safety Note Insulation**

This furnace contains refractory fibres in its thermal insulation. The materials used may be in the form of fibre blanket or felt, vacuum formed board or shapes, mineral wool slab or loose fill fibre. Normal use of the furnace will not result in any significant level of airborne dust from these materials; but much higher levels may be encountered in maintenance or repair.

Whilst there is no evidence of any long-term health hazards, we strongly recommend that safety precautions are taken whenever the materials are handled.

Exposure to dust from fibre which has been used at high temperature may cause respiratory disease.

When handling fibre always use an approved mask, eye protection, gloves and long sleeved clothing.

After handling, rinse exposed skin with water and wash work clothing separately.

Before commencing any major repairs we recommend reference to:

- ECFIA Bulletin Number 11
- Guidance Note EH46 (U.K. Health and Safety Executive.)

We will be pleased to provide further information on request. Our Service Department will quote any repairs to be carried out on site at your premises or at our works.

### **Declaration of Conformity**

Each product is thoroughly inspected and tested to not only ensure that it meets the specifications provided, but to also meet Australian Electrical Standard AS/NZ3820 and EMC Standard AS/NZ1044:1995, and therefore being accredited with a C Tick label.