

SHOWCASE & COLDROOM CONTROLLER [FX32R SERIES]



⚠ PreCaution for Use

1. This product may cause an electric shock in handling. Please do not attempt to open it with power turned on.
 2. This product should be installed in a place fixed secured by a rack or panel.
 3. This product can be used under the following environmental condition
 - ① Indoor
 - ② Pollution Degree 2
 - ③ At an altitude of 2000m or below
 - ④ Installation Category II
 4. To turn on or turn off power supply for this product, please the circuit breaker or switch of a standard product of IEC 60947-1 or IEC 60947-3 product and install it within a close distance allowing convenient operation by user.
 5. Please be understood that if this product is dismantled or modified discretionarily, after sales service will not be able to be provided.
 6. An output wire to be used for this product should be inflammable grade FV-1 (V-1 grade or above), the thickness of the wire should be AWG No. 20 or above. (0.50mm)
 7. In order to prevent at inductive noise, please maintain the high-voltage wire and power wire separated.
 8. Avoid installing the product in a place where a strong magnetism, noise, severe vibration and impact exist.
 9. When extending the sensor wire, use a shield wire and do not extend it unnecessary long.
 10. The sensor wire and signal wire should be away from the power and load wires using conduits separately installed.
 11. Avoid using the product near a device generating strong high frequency noise (high-frequency welding machine, high-frequency sewing machine, high-frequency radiotelegraph, high capacity SCR controller)
 12. PRODUCT'S DAMAGES OTHER THAN THOSE DESCRIBED IN THE GUARANTEE CONDITIONS PROVIDED BY THE MANUFACTURER SHALL NOT BE RESPONSIBLE BY US.
- ※ The Aforementioned precautions must be observed, and if you fail to do so, it may cause a product's breakdown.

■ Basic Specification

Model	FX32R Showcase & Coldroom Controller
Power	AC100-240V~, 50/60Hz, 8VA
Connector	Connector (Molex)
Input / Output	Relay output 4p (250Vac/5A) Temp. sensor input 3p Digital input 7p
Operation	Temp. : -10~50°C, Humidity : Under 90%RH
Storage	Temp. : -20~60°C, Humidity : Under 90%RH
Sensor	Temp. sensor : DOTECH Standard NTC sensor DPR-TH01-ET 5kΩ at 25°C, Limit : -50 ~ 105°C, Accuracy : ±0.3°C at 25°C

■ Order Information

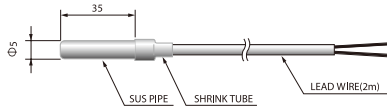
FX32R - 00 : Basic Model

FX32R - R4 : RS485 Communication (Modbus RTU/ASCII)

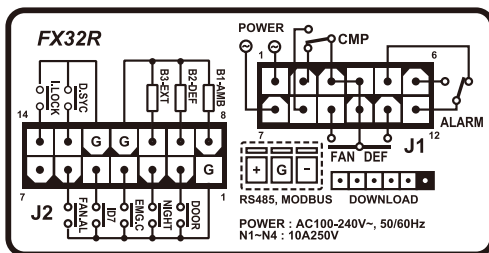
Connector Kit : FX-CSR CABLE-20(2.0m)

Temp. Sensor : DPR-TH01-ET

Sensor type : NTC 5KΩ
Range : -50 ~ 105°C
Accuracy : ±0.3°C at 25°C
Sheath : Φ4 X 40mm, SUS
Cable : 2C X 0.5mm

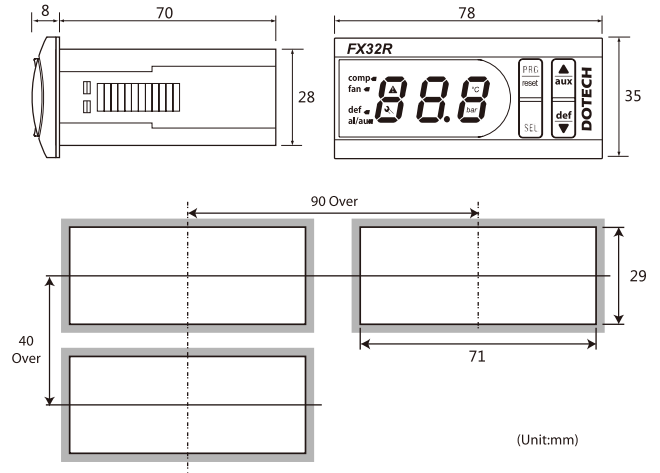


■ Connection Diagram

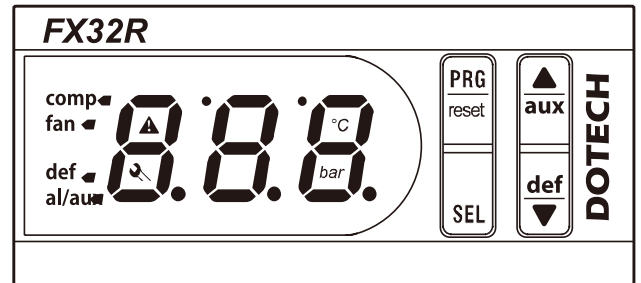


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|--|--|
| B1-AMB : Room temp. Sensor (Inlet) | N1 : Comp. (SOL) control output |
| B2-DEF : Defrost recovery temp. sensor | N2 : Fan control output |
| B3-EXT : Outlet temp. sensor | N3 : Defrost control output |
| ID1-D.SYC : Defrost sync. signal input | N4 : Alarm/Defrost sync./Heater control output |
| ID2-LOCK : Interlock signal input | ID5-NIGHT : NIGHT SETBACK signal input |
| ID3-FAN.AL : Fan alarm signal input | ID6-DOOR : Door open S/W signal input |
| ID4-EMG.C : Emergency (confinement) S/W signal input | |

■ Dimensions and Panel Cut-Out Form



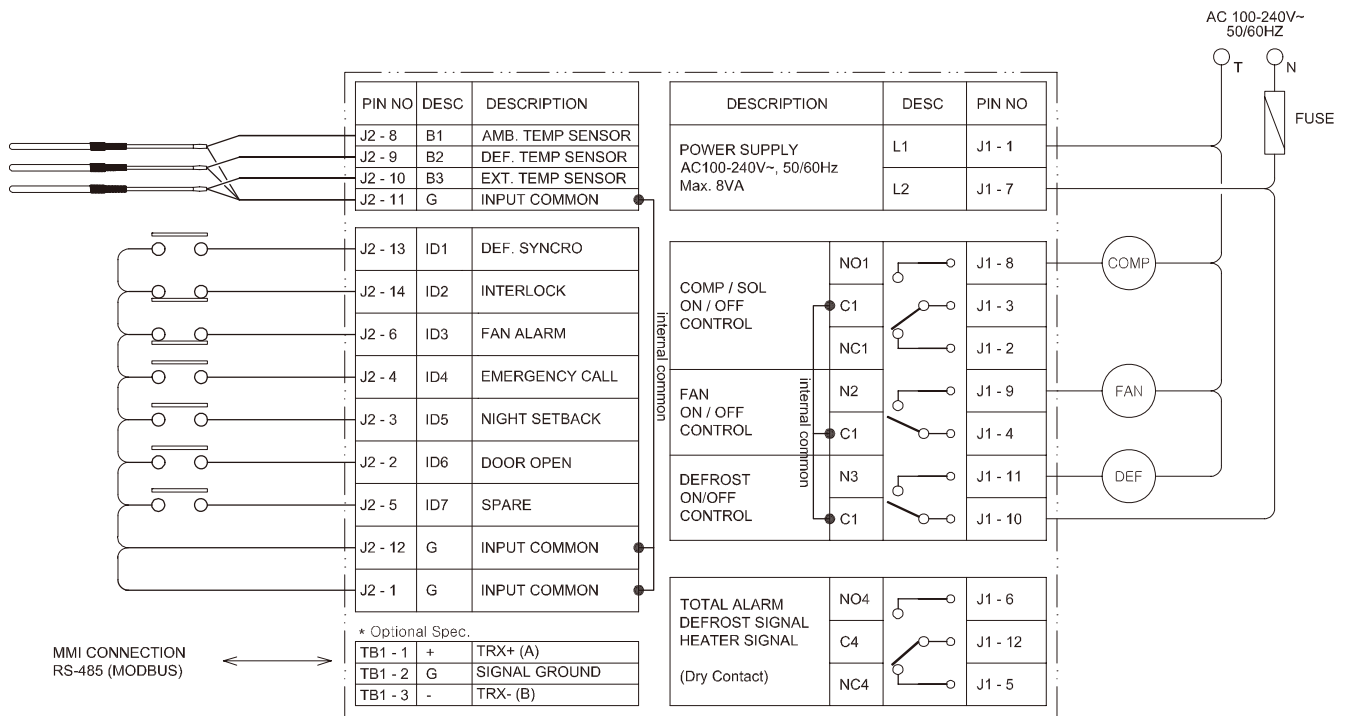
■ Constitution (Function of Display Ramp and Button)



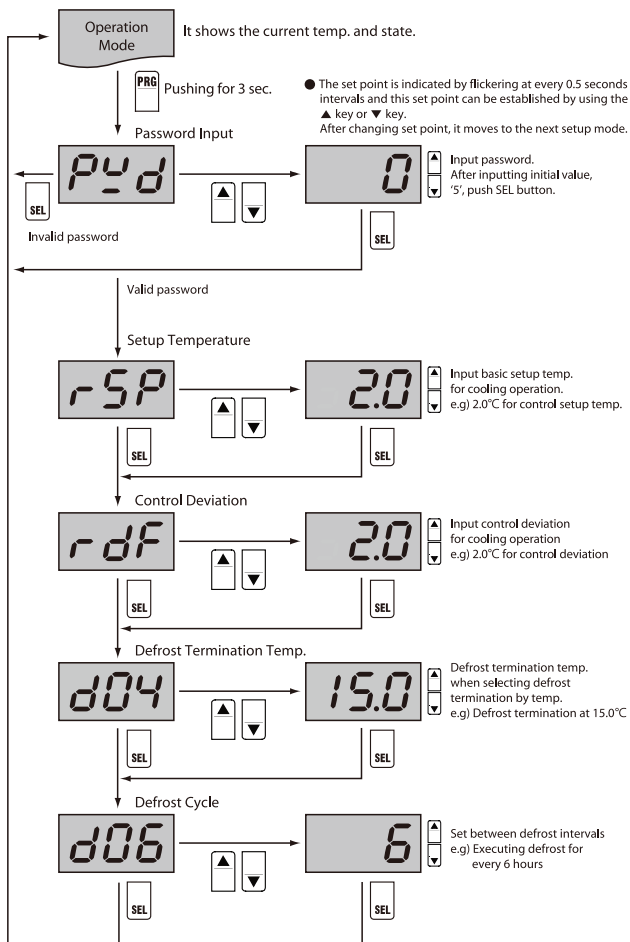
comp	ON at comp. (SOL) operation
fan	ON at fan control output
def	ON at defrost control output
al/aux	ON at alarm/aux. control output on
°C	ON at temp. display
⚠	ON at trip

PRG reset	- Program setup (Push for 5 sec.) - Alarm reset (Push 2 times quickly & successively)	aux	- Moving between menus - Increasing/decreasing setup value
SEL	- Execution for selected menu - Input of setup value	def	- Moving between menus - Increasing/decreasing setup value
PRG reset + SEL	Confirm setup temp. and time	If pushing for 1 sec., it shows setup temp. for 2 sec. and then the current time for 6 sec.	
aux + def	Confirm temp. sensor	If pushing for 1 sec. it displays B1 temp. ▶ B2 temp. ▶ B3 temp. ▶ Current state (B1: Comp. LED flickering, B2: Fan LED flickering, B3 : def LED flickering)	
aux	Confirm aux. output function	If pushing for 2 sec, it confirms aux. output function. AL o : Using as alarm output dFo : Using as defrost sync. output He o : Using as heater output	
PRG reset + aux	Initializing setup value	If pushing for 2 sec. with power input, setup value is initialized	
def	Forced defrost mode	Forced defrost mode entry by pushing for 3 sec. Forced defrost mode reset by pushing for 3 sec.	
SEL + def	Cleaning mode	Cleaning mode entry by pushing for 5 sec. at the same time Cleaning mode reset by pushing for 5 sec. at the same time	

WIRING DIAGRAM

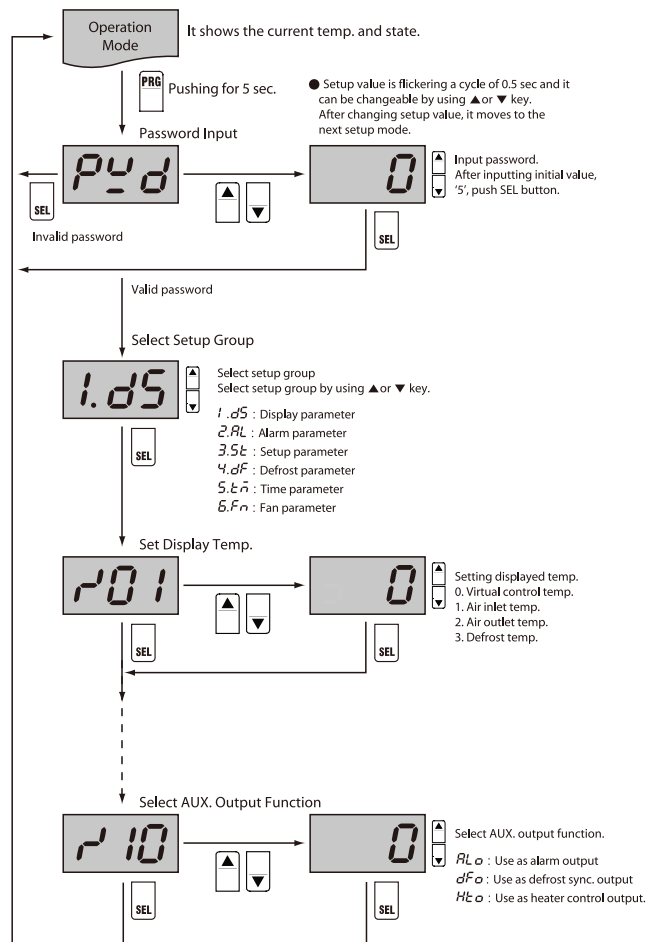


Quick Setup (Required temp., Control deviation, Defrost termination temp., Defrost cycle)



● If there's no input made for a period of 180 seconds during the setting, then it returns back to the run mode automatically.

Changing and Confirming All Data At Once



● If there's no input made for a period of 180 seconds during the setting, then it returns back to the run mode automatically.

1.d5 (Display Parameter setup)

ITEM	CODE	DESCRIPTION	MIN	MAX	DEFAULT	UNIT	DETAIL ESTABLISHMENT
101	r01	Display temp select	0	3	0	-	0: Virtual control temp. 1: Air inlet temp. 2: Defrost temp., 3: Air outlet temp.
102	r02	Alarm display	-	-	1	-	no: Not displayed, YES: Displayed
103	r03	Decimal point display setup	-	-	0.1	-	0.1: Decimal point displayed, 1: Decimal point not displayed
104	r04	Defrost display	0	2	0	-	0: dF 1: dF+Defrost sensor temp. 2: dF+controlled temp.
105	r05	Password	0	999	5	-	Password
107	r07	AMB(Inlet) Temp offset	-19.9	+19.9	0.0	0.1°C	Input temp. offset value for inlet sensor
108	r08	DEF Temp offset	-19.9	+19.9	0.0	0.1°C	Input defrost temp. offset for defrost sensor
109	r09	EXT(Outlet) Temp offset	-19.9	+19.9	0.0	0.1°C	Input temp. offset value for outlet sensor
110	r10	Auxiliary Output select	0	2	RL0	-	Select AUX. output function RL0: Use as alarm output dFo: Use as defrost sync. output HLo: Use as heater output

2.AL (Alarm Parameter setup)

ITEM	CODE	DESCRIPTION	MIN	MAX	DEFAULT	UNIT	DETAIL ESTABLISHMENT
201	AL1	High Temp. Alarm	0	50.0	5.0	0.1K	High temp. alarm setup value. (In case of setting "no" and 5.0°C higher than setup temp., no alarm occurred)
202	AL2	Low Temp. Alarm	0	50.0	3.0	0.1K	Low temp. alarm setup value. (In case of setting as "no" and 3.0°C lower than setup temp., no alarm occurred)
203	AL3	High Temp. Alarm delay after defrost	0	240	50	min	Delay time for alarm sensing after defrost termination
204	AL4	High Temp. Alarm delay	0	240	50	min	Delay time for alarm occurring in case of over high temp. alarm setup value
205	AL5	Low Temp. Alarm delay	0	240	50	min	Delay time for alarm occurring in case of below low temp. alarm setup value

3.SP (Standard Parameter setup)

ITEM	CODE	DESCRIPTION	MIN	MAX	DEFAULT	UNIT	DETAIL ESTABLISHMENT																
301	r01	Temp. Control Mode	0	2	1	-	0: No temp. control, Continuous cooling 1: Cooling, dead-band control (Stop: setup value, Run: setup value + deviation) 2: Cooling, modulating control (Stop, Run: setup value±deviation/2)																
302	r02	Sensor use Mode	1	3	2	-	<table border="1"> <thead> <tr> <th>Sec.</th> <th>Air inlet (B1 - AMB TEMP)</th> <th>Defrost recovery (B2 - DEF TEMP)</th> <th>Air outlet (B3 - EXT TEMP)</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>Use(When Eb2/Eb3 occurred, combined use for defrost automatically)</td> <td>Use</td> <td>Use (When Eb2 occurred, combined use for defrost)</td> </tr> <tr> <td>2</td> <td>Use(When Eb2 occurred, combined use for defrost automatically)</td> <td>Use (Combined use for control)</td> <td>Not use (Eb3 Alarm : X)</td> </tr> <tr> <td>1</td> <td>Use (Combined use for defrost)</td> <td>Not use (Eb2 Alarm : X)</td> <td>Not use (Eb3 Alarm : X)</td> </tr> </tbody> </table> <p>Eb1: Air inlet temp. sensor error, Eb2: Defrost recovery sensor error, Eb3: Air outlet sensor error</p>	Sec.	Air inlet (B1 - AMB TEMP)	Defrost recovery (B2 - DEF TEMP)	Air outlet (B3 - EXT TEMP)	3	Use(When Eb2/Eb3 occurred, combined use for defrost automatically)	Use	Use (When Eb2 occurred, combined use for defrost)	2	Use(When Eb2 occurred, combined use for defrost automatically)	Use (Combined use for control)	Not use (Eb3 Alarm : X)	1	Use (Combined use for defrost)	Not use (Eb2 Alarm : X)	Not use (Eb3 Alarm : X)
Sec.	Air inlet (B1 - AMB TEMP)	Defrost recovery (B2 - DEF TEMP)	Air outlet (B3 - EXT TEMP)																				
3	Use(When Eb2/Eb3 occurred, combined use for defrost automatically)	Use	Use (When Eb2 occurred, combined use for defrost)																				
2	Use(When Eb2 occurred, combined use for defrost automatically)	Use (Combined use for control)	Not use (Eb3 Alarm : X)																				
1	Use (Combined use for defrost)	Not use (Eb2 Alarm : X)	Not use (Eb3 Alarm : X)																				
303	r03	Set point range Min.	-50.0	r04	-40.0	0.1°C	Min. settable value for rSP (Range Set Point)																
304	r04	Set point range Max.	r03	70.0	30.0	0.1°C	Max. settable value for rSP (Range Set Point)																
305	r05	Injection Time	0	240	0	min	If cooling is lasted for setting time, cooling is stopped as long as pump. down time and "LO" alarm is occurred																
306	r06	Night Time Mode	0	2	0	-	0:Not use for night operation, 1:Use for night operation(by setting time), 2:Use for night operation(by ID5 contact)																
307	r07	Control Temp Ratio	0	100	0	%	Virtual temp. value ratio for outlet (100%) and inlet (0%) sensor																
308	r08	Set point offset Night Run	-10.0	50.0	2.0	0.1K	Delta setup value applied for night operation (SP = rSP + r08)																
309	r09	Difference Value Night Run	0.1	20.0	3.0	0.1K	Operation range applied for night operation																
310	rSP	Set point	r03	r04	2.0	0.1°C	Standard setup value for cooling operation																
311	r dF	Difference Value	0.1	20.0	2.0	0.1K	Control deviation for cooling operation																
312	HSP	Set point offset Heat Run	-50.0	70.0	2.0	0.1°C	Standard setup value for heating operation (Not affected by delta value of night operation)																
313	HdF	Difference Value Heat Run	0.1	20.0	2.0	0.1K	Control deviation for heating operation (Not affected by operation deviation of night operation)																

4.dF (Defrost Parameter setup)

ITEM	CODE	DESCRIPTION	MIN	MAX	DEFAULT	UNIT	DETAIL ESTABLISHMENT
400	d00	Defrost Terminate Mode	1	4	2	-	Stop by defrost time, No alarm occurred Stop by whichever occurred first between defrost termination time and max. defrost time, No alarm occurred Stop in terms of satisfaction with both defrost termination time and max. defrost time, No alarm occurred Stop by whichever occurred first between defrost termination temp. and max. defrost time (In case of 2 successive defrost stop by defrost time, EdE alarm occurred)
401	d01	Defrost Group	1	2	1	-	1: Master (Defrost sync. output possible) 2: Slave (Defrost sync. input possible mode)
402	d02	Pump Down Time	0	240	1	min	Refrigerant pump down time inside of cooler pipe, before defrost output operating.
403	d03	Drain Time	0	240	2	min	Moisture draining time after defrost
404	d04	Defrost Terminate Temp	-40.0	90.0	15.0	0.1°C	Termination temp. when choosing termination by temp.
405	d05	Defrost Time Schedule Mode	0	1	0	-	0: [d06:Defrost cycle]Cycle by setting 1: Real time defrost (It is only applicable when [d01: Defrost group setup] is set as '1: Master')
406	d06	Defrost Interval Time	0	192	6	hr	Interval time between defrosts
407	d07	Defrost Time Max.	d08	240	30	min	Max. operation time for real defrost output operation
408	d08	Defrost Time Min.	0	d07	0	min	Min. operation time for real defrost output operation

5.5.1 (Time Parameter setup)

ITEM	CODE	DESCRIPTION	MIN	MAX	DEFAULT	UNIT	DETAIL ESTABLISHMENT
500	H00	Current Time Hour set	0	23	curr. hr	hr	At the initial stage, it shows the current hour. It is manually settable by pushing UP/DN key.
501	H01	Current Time Min. set	0	59	curr. min	min	At the initial stage, it shows the current minute. It is manually settable by pushing UP/DN key.
502	H02	Night setback Time Start	00.0	23.5	00.0	10 min	It is followed by 24-hour display. 10 digit : It is showing hour Down to decimal place : It is showing minute. e.g.) 9:2 ▶ 9:20 am 14:3 ▶ 2:30 pm 00:0 ▶ 0:00 am 00:3 ▶ 0:30 am n.o ▶ No display for defrost (Input on remote is '-1').
503	H03	Night setback Time End	00.0	23.5	08.0	10 min	
505	H01	Defrost Time 1st Time	00.0	23.5	n.o	10 min	
506	H02	Defrost Time 2nd Time	00.0	23.5	n.o	10 min	
507	H03	Defrost Time 3th Time	00.0	23.5	n.o	10 min	
508	H04	Defrost Time 4th Time	00.0	23.5	n.o	10 min	
509	H05	Defrost Time 5th Time	00.0	23.5	n.o	10 min	
510	H06	Defrost Time 6th Time	00.0	23.5	n.o	10 min	
511	H07	Defrost Time 7th Time	00.0	23.5	n.o	10 min	
512	H08	Defrost Time 8th Time	00.0	23.5	n.o	10 min	

5.5.2 (Fan Parameter setup)

ITEM	CODE	DESCRIPTION	MIN	MAX	DEFAULT	UNIT	DETAIL ESTABLISHMENT
600	F00	Fan Run mode at Clean Process	0	1	0	-	0 : Stop, 1 : Run
601	F01	Fan Run Mode at Cool stop state	0	2	1	-	0 : Stop, 1 : Run, 2 : [F02:Fan stop delay time]stop after delay
602	F02	Fan stop delay time	0	600	0	sec	In case of [F01 : Fan run when cooling stop] = 2, stop delay time
603	F03	Fan Run Mode at Defrost state	0	1	0	-	0 : Stop(Defrost for heat source), 1 : Run(Natural defrost)
604	F04	Fan Run Mode at Defrost Terminated	0	2	0	-	0 : Run at once, 1 : Run after [Fan run delay after defrost], 2 : Run after achieving [Fan run temp. after defrost]
605	F05	Fan Run Delay at Defrost Terminated	0	600	0	sec	In case of [F04 : Fan run mode after defrost]=1(Run dealy), Fan delay time
606	F06	Fan Run Temp at Defrost Terminated	-40.0	50.0	0	0.1°C	In case of [F04 : Fan run mode after defrost]=2(Run temp), Fan run temp.
607	F07	Door Alarm detect delay time	1	180	10	min	Setting alarm delay time when door is opened
608	F08	Emergency Alarm detect delay time	0	600	3	sec	Setting alarm delay time for Emergency (confinement) stop alarm input
613	id	Communication ID	0	32	1	-	Setting communication address : 1station ~ 32station
614	bPS	Communication Baudrate	0	3	1	-	48 : 4800BPS, 96 : 9600BPS, 192 : 19200BPS, 384 : 38400BPS

5.5.3 TRIP / ALARM MESSAGE

ITEM	CODE	DESCRIPTION	DETAIL ESTABLISHMENT	OPERATION WHEN SENSING	RESET
1	SYS	Internal control variable error	Occurrence : When internal important control variable has been changed due to external strong magnetic or noise. Reset : Resetting variable value and reboot	Stop at once	Automatic
2	EHH	Higt temp. alarm			Automatic
3	ELL	Low temp. alarm			Automatic
4	RFn	Fan error, All output stop		Stop at once	Automatic
5	Edo	Door open alarm		-	Automatic
6	Edt	Defrost termination (frost piling) alarm		-	Automatic
7	RES	Emergency Alarm	All control outputs are OFF and alarm output is ON.	Stop at once	Manual
9	Eb1	Air inlet temp. sensor error		-	Automatic
10	Eb2	Defrost recovery sensor error		-	Automatic
11	Eb3	Air outlet temp. sensor error		-	Automatic
12	REC	Emergency cooling operation	When all control sensors' error	Emergency normal operation	Manual
13	ELt	High temp. range operating after defrost		-	Automatic
14	RIt	Interlock alarm	Stop at once when interlock alarm is occurred	Stop at once	Automatic
15	ELL	Internal real time timer stop alarm	Detecting only when real time defrost. If internal real time timer is stopped, it is automatically transferred to regular cycle defrost type.	-	Automatic

5.5.4 STATE MESSAGE

1	CLn	Cleaning mode operation state			
2	SoF	Manual comp. (SOL.) output stop	Possible to remote control		
3	FoF	Manual cooling fan output stop	Possible to remote control		
4	Lo	Injection cooling operation state	Solenoid valve temporary emergency stop		
5	dPd	Pump down state display before defrost	Comp.(SOL.) OFF, Defrost output OFF		
6	dDr	Drain time state display after defrost	Comp.(SOL.) OFF, Defrost output OFF		
7	dF	Defrost state display	Comp.(SOL.) OFF, Defrost output ON		

※ Please push PRG button in 2 successive time if you want to reset manually in terms of meeting reset condition. (It is also applicable to reset the power)