Digital Temperature Control

FX3S User's Manual

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Cautions

DOTECH **SENSING & CONT**

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DOTECH INC. 6F, JOONGANG-ILBO B/D, 30, Dongsan-ro, Danwon-gu, Ansan-si, Gyeonggi-do, KOREA

- 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. Power input must be within the designated ranges.
- 5. 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.
- 6. Please be understood that if this product is dismantled or modified discretionary, after sales service will not be able to be provided.
- 7. An output wire to be used for this product should be inflammable grade FV1 (V-1 grade or above), the thickness of the wire should be AWG No. 20 or $above(0.50mm^2)$
- 8. In order to prevent it from an inductive noise, please maintain the high-voltage wire and power wire separated.
- 9. Please avoid installing the product in a place where a strong magnetism, noise, severe vibration and impact exist.
- 10. When extending the sensor wire, use a shield wire and do not extend it unnecessary long
- 11. The sensor wire and signal wire should be away from the power and load wires using conduits separately installed.
- 12. Please 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)
- 13. Product's damages other than those decribed in the guarantee conditions provided by the manufacturer shall not be responsible by us. 14. If this unit is used to control machineries (Medical equipment, vehicle, train, airplane, combustion apparatus, entertainment, processing and
- transportation equipment, elevator and various safety device etc.) enabling to effect on human or property, it is required to install fail-safe device.
- * The Aforementioned precautions must be observed, and if you fail to do so, it may cause a product's breakdown. * The specifications, dimensions, and etc. are subject to change for enhancement without a prior notice.



- Selection of Output(Heating/Cooling)
- Precise Temperature Control
- Sensor Calibration
- Sensor Error Detection
- Auto Save and Restoration of Parameter Values
- Minimum On/Off Duration Time Setup
- Minimum Duty Cycle Output Setup

Technical Specifications

Power	100–240Vac, 50/60Hz
Current	MAX 6 VA
Connection	Screw Bolt Connector(1.5mm ² Wire Use Possibility)
Output	Relay Output 1 Point (250Vac/16A)
Input	Temp. Sensor Input 1 Point
Dimensions	78(W)mm X 35(H)mm X 78(D)mm
Operation	Temperature: -10 ~ 50°C, Humidity: Below 90%RH
Storage	Temperature: -20 ~ 60°C, Humidity: Below 90%RH

Ordering guide

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FX3S-00	Basic Model (220Vac)
FX3S-00-T	Basic Model (12Vdc)
FX3S-00-H	Basic Model (24/48Vdc)

Components







Product

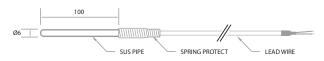
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User's Manual
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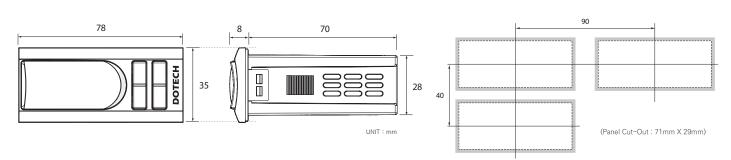
DPR-TH01-ET : NTC 5 KΩ at 25 °C / -50~105 °C / ±0.3 °C at 25 °C



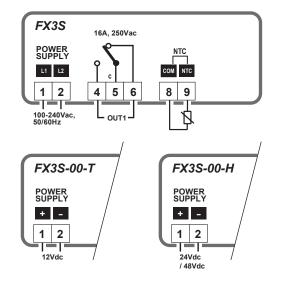
DPR-TH02-P6D100L : NTC 10 KΩ at 25 °C / -50~150 °C / ±1.5 °C at 25 °C

* Specifications are subject to change without prior notice.

Dimensions and Panel Cut-Out Form



Wiring



No	Label	Description				
1	POWER	100-240Vac, 50/60Hz				
2	POWER	100-240vac, 50/60H2				
4	OUT1 (Relay output)	Relay output OUT1 when closed				
5		Common signal				
6		Relay output OUT1 when open				
8	SENSOR (NTC)	Common signal				
9		Temperature sensor input				

Constitution (Function of Display Lamp and Button)



OUT1	Turn on when output #1 is ON (Flickering at standby)					
°C / °F	Celsius / Fahrenheit display units					
A	ON at trip, Flickering at alarm					
8	Parameter set up locked					
PRG	Use at program setup					
SEL	Execute selected menu or Input setup value					
	Move between menus & Increase setup value					
▼	Move between menus & Decrease setup value					
PRG + ▼	If pushing for 10 sec. at the same time , setup value is initialized					
	°C / °F					

Display Message

Code	Menu	Description / Instructions	Response at Detection	Reset Type
dEF	Natural defrost	Present temperature and ${}_{{\cal E}}{}^{{\cal E}}$ message display by turns at natural defrost.	Immediate Stop	

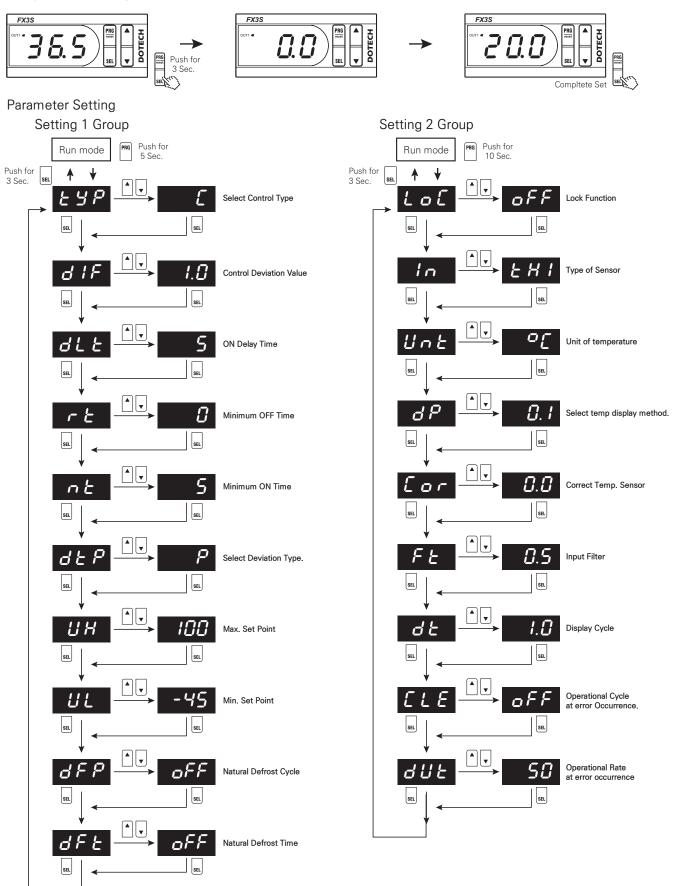
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Trip / AlarmLARM MESSAGES

Code	Menu	Description / Instructions	Response at Detection	Reset Type
555	Internal Parameter Error	In Case of change of set value by an unknown case.	Immediate Stop	Automatic Reset
oPn	Sensor Open	In case of Input sensor open wire(Normal operation after sensor connecting)	Immediate Stop	Automatic Reset
SHE	Sensor Short	In case of Input sensor short circuit	Immediate Stop	Automatic Reset
LLL	Lower Input	Lower sensor input than measuring range	Immediate Stop	Automatic Reset
ННН	Higher Input	Higher sensor input than measuring range	Immediate Stop	Automatic Reset

% In case of error occurring, the following messages are flickering at every 0.5 sec. intervals.

Temperature Setting



Temperature Setting (SEL Button Push for 3 Sec.)

No	Menu	Code	Unit	Step	Min.	Max.	Default	CustomSetup
001	Temperature Setting		°C	0.1	UL	UH	0.0	

Setting 1 Group (PRG Button Push for 5 Sec.)

No	Menu	Code	Unit	Step	Min.	Max.	Default	CustomSetup
001	Type Select(※1)	ĿУP	off : D	isplay [:	Cooling H : Heating		Ľ	
002	Control Deviation	d IF	°C	0.1	0.1	99.9	1.0	
003	ON Delay Time(%2)	dLE	sec	1	0	999	S	
004	Min. OFF Time(%3)	rt	sec	1	0	999	0	
005	Min. ON Time(%4)	nt	sec	1	0	999	5	
006	Deviation Type(%5)	dEP	P (0	$P(0)$: +Deviation $P_{n}(1)$: ± Deviation		ρ		
007	Set Value Max.	UH	°C	1	UL	150	100	
008	Set Value Min.	UL	°C	1	-50	UH	-45	
010	Natural Defrost Cycle(%6)	dFP	Min	1	oFF(0)	999	oFF	
011	Natural Defrost Time(%7)	dFE	Min	1	oFF(0)	999	oFF	

(X1) Select Control Type : σFF = No use output function (Use display mode only.) \mathcal{L} = Use cooling control only (Use OVER temperature sensing only.) H = Use heating control only (Use UNDER temperature sensing only.)

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(※2) ON Delay Time	Even under the output condition, it outputs after delay time which is set. (During ON delay time, lamp flickers on a quick cycle and lights when it outputs.)
(※3) Min. OFF Time	: It does not output during minimum OFF time after OFF. (During minimum OFF time, lamp flickers every second and lights when it outputs.)
(※4) Min. ON Time	To prevent frequent ON/OFF of control outputs, it maintains ON status during minimum ON time after switching to ON even under the OFF condition (immediately switching to OFF when error)
(%5) Deviation Type	 Select deviation type of control output. e.g)Condition : Cooling mode, setting temp.10.0°C, deviation 1.0°C. +Deviation control : ON at 11.0°C, OFF at 10.0°C. ±Deviation control : ON at 10.5°C, OFF at 9.5°C.
(%6) Natural Defrost Cycle	: It is a time interval between defrost, and outputs without defrost for the set time. e.g) If <i>dEP</i> is 300 minutes and <i>dFE</i> is 20 minutes, it outputs according to temp. for 300 minutes, and defrost output works for 20 minutes.

(X7) Natural Defrost Time : It is time that real defrost output is working X Either of those two is OFF, natural defrost function is not work.

No	Menu	Code	Unit	Step	Min.	Max.	Default	CustomSetup
400	Lock Function	LoC		oFF : Lock Cancel L[1: Setting 1 Group Lock L[2: Setting 1,2 Group Lock L[3: All Setting value Lock			oFF	
401	SensorType	In	EHI : DPR-TH	01 (-50~105°C)	<i>≿H2</i> : DPR-TH	02 (-50~150°C)	٤HI	
402	Unit of temperature	Unt	٥٢ : ٢	Celsius	<i>оF</i> :Fahr	enheit	٥٢	
403	Point Display	dP	[]. I : Decimal	D. I : Decimal point display I : Do not display decimals		D. I		
404	Sensor Correction(%1)	Eor	°C	0.1	-99.9	99.9	0.0	
406	Input Filter(※2)	FE	sec	0.1	0.1	5.0	0.5	
407	Display Cycle	dĿ	sec	0.1	0	5.0	1.0	
408	Error Occur Run Cycle(※3)	ELE	min	1	0	999	oFF	
409	Error Occur Operation Rate(%4)	dUE	%	1	0	100	S <i>0</i>	
(※1) Correc	t Temp. Sensor : Correct the acc	uracy of the	temp sensor.					

Setting 2 Group (PRG Button Push for 10 Sec.)

: Correct the accuracy of the temp sensor.

e.g) If displayed temp. is 19°C and measured temp. is 18°C, it is corrected by in putting –1.0°C.

(%2) Input Filter

: Set a sensor input filter value. In case of frequent hunting of the current temp., it is corected by increasing filter value.

(%3) Error Occur Run Cycle

: Input ON/OFF cycle of output at sensor error. e.g) If *LLE* is 20 Min., *dUL* is 10% the output at sensor error is OFF for 18 Min. and ON for 2Min.

(%4) Error Occur Operation Rate : Input ON/OFF ratio of output at sensor error.

* No display in case of *LLE* OFF.