

# MANUAL

TRD-16D

2010.07.02 VER

### WARNING

FOR AVOIDING ANY EXCESS RISE IN TEMPERATURE DUE TO THE TROUBLE OF THIS PRODUCT, PLEASE USE THE OVERHEATING PREVENTION DEVICE.

FOR AVOIDING AN ELECTRIC SHOCK, MUST CUT OFF THE POWER SUPPLY BEFORE THE INSTALLATION OF THIS PRODUCT OR WIRING WORK.

MUST NOT DISASSEMBLE, PROCESS, REMODEL, OR REPAIR THIS PRODUCT, WHICH MAY CAUSE THE RISK OF MALFUNCTION OR FIRE RISK.

MAKE IT SURE OF WIRING THE POWER SUPPLY AND THE OUTPUT UNIT OF THIS PRODUCT TIGHTLY. A LOOSE WIRING WORK MAY CAUSE THE RISK OF FIRE.

WARNING

A CARELESS HANDLING ON WARNING MAY CAUSE A SERIOUS BODILY INJURY OR DEATH OF THE USER.

CAUTION

A CARELESS HANDLING ON CAUTION MAY CAUSE A SLIGHT BODILY INJURY OF THE USER OR PHYSICAL DAMAGE.

### HOW TO INSTALL TRD-16D THERMOSTAT

MODEL	SCOPE OF TEMP	SENSOR	FUNCTION / MOTION
TRD-16D	0°C ~ 80°C	NTC 5KΩ	SENSOR MODE (CENTIGRADE) / STRENGTH MODE

THANK YOU FOR YOUR PURCHASING OUR URIEL PRODUCT.

THIS MANUAL IS SUPPLIED FOR INFORMING HOW TO INSTALL THE PRODUCT ACCURATELY WHICH WILL PROTECT AGAINST THE DAMAGE OR TROUBLE CAUSED BY CARELESS INSTALLATION. MUST READ THIS MANUAL CAREFULLY BEFORE INSTALLATION.

### CAUTIONS

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PLEASE USE THE OUTLET PREPARED BY A QUALIFIED SERVICEMAN AND MUST CONFIRM IT BEFORE APPLY[SING AN ELECTRIC CURRENT WHETHER OR NOT THERE IS ANY MISTAKE IN WIRING WORK OR ERROR ON THE VOLTAGE.

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THIS PRODUCT HAS NO MAIN CIRCUIT BREAKER, PLEASE INSTALL IT ON THE OUTSIDE, IF NECESSARY.

!

THIS PRODUCT SHOULD BE USED AND MAINTAIN WITHIN THE CONDITIONS AND ENVIRONMENT SCOPE OF SPEC (VIBRATION/TEMP/HUMIDITY).

!

FOR PRECISE TEMP CONTROL, THE SENSOR SHOULD BE PLACED ON AN APPROPRIATE LOCATION AND PLACE.

※

THIS PRODUCT SHOULD NOT BE USED AT A PLACE WHERE IS FILLED WITH INFLAMMABLE, CORROSIVE OR EXPLOSIVE GAS OR VAPOR.

※

IF THE PRESENT TEMP IS EXCEEDING OVER THE SET TEMP, PLEASE SHUT OFF THE POWER SUPPLY AND CONTACT TO THE QUALIFIED ELECTRICIAN OR OUR HELP DESK.

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FOR CLEANING THE SURFACE OF THIS PRODUCT, WASH IT LIGHTLY WITH WET AND SOFT CLOTH. DO NOT USE A DETERGENT OR THINNER.



#### BEFORE USE

- FOR PERFECT AND SAFE USE, PLEASE READ ALL INSTRUCTIONS IN THIS MANUAL.
- WHOLE OR PARTIAL REPRODUCTION OR COPY WITHOUT PERMISSION FORBIDDEN.
- THE CONTENTS OF MANUAL IS SUBJECT TO AN UNANNOUNCED CHANGE .
- IN CASE OF FINDING CONTENTS THAT IS AMBIGUOUS OR OMITTED, PLEASE CONTACT TO US BEFORE INSTALLATION.
- IN CASE OF NOT OBSERVING THIS MANUAL IN INSTALLATION OR WORKING, THE WARRANTY MAY NOT BE VALID.

#### SAFETY TIPS

SAFETY TIPS IS FOR USING THE PRODUCT APPROPRIATELY AND FOR PREVENTING AGAINST ANY BODILY INJURY OR PHYSICAL DAMAGES IN ADVANCE. IT IS STRONGLY RECOMMENDED TO FOLLOW THE SAFETY TIPS

# FUNCTIONAL MOTIONS (SENSOR MODE)

## DESCRIPTION OF LAMP

- HEAT** : HIGH OUTPUT IS INDICATED IN ON (RED LAMP)  
**SET** : ON AT THE TIME OF ONLY SET (GREEN LAMP)  
**POWER** : IN THE STATE OF CONTROLLER'S POWER IS ON, FLICKERS (RED LAMP)

## BASIC MOTIONS

WITH POWER KEY, POWER ON/OFF; AT THE TIME OF OFF, NO MOTION IN ANY KEYS.  
 BY PUSHING  $\vee$  OR  $\wedge$  BUTTON, SET LED IS ON AND SET VALUE IS DISPLAYED. IF LEFT UNTOUCHED FOR 3 SEC AFTER CHANGING THE SET TEMP, SET LED IS OFF AND THE PRESENT TEMP IS DISPLAYED.

## FUNCTIONAL MOTIONS

BY PUSHING  $\vee$  &  $\wedge$  KEYS FOR 3 SEC SIMULTANEOUSLY, “tn” - THE SIGNAL OF START OF FUNCTION – IS DISPLAYED.  
 BY PUSHING  $\wedge$  KEYS IN THE STATE OF “tn” DISPLAY, THE ORDER OF – “Sn - tl - St” IS DISPLAYED. PLEASE PUSH  $\vee$  &  $\wedge$  KEYS SIMULTANEOUSLY FOR SELECTING A MENU.

**Sn Mode** = AS SENSOR MODE, SET TEMP FOLLOWING TO THE ORDER ON ( TABLE 1 ).

For set, AFTER SETTING A TEMP, PUSH  $\vee$  &  $\wedge$  KEYS SIMULTANEOUSLY. IN THE LAST STAGE, AU FLICKERS FOR 3 TIMES AND THE SET VALUE IS STORED. AFTER FINISHING THE SET, FOR SETTING TEMP, SET WITH  $\vee$  OR  $\wedge$  KEY. IF NO CHANGE IN KEY, THE PRESENT TEMP IS DISPLAYED AND WORKS AFTER 3 SEC.

**TABLE 1**

ROLE	DISPLAY	BASIC SET	SCOPE OF SET	MOTION DESCRIPTIONS
FUNCTION CLASSIFICATION	t n	SEN	SEN , TIME , RESET	SEN(Sensor Motion Method) , TIMER(Time Motion Method) , RESET(initialization function)
MIN TEMP SET	t L	0℃	0℃ ~ UNDER MAX TEMP	MIN TEMP WITHIN THE SCOPE OF TEMP SET
MAX TEMP SET	t H	60℃	OVER MIN TEMP ~80℃	MAX TEMP WITHIN THE SCOPE OF TEMP SET
TEMP DEFLECTION SET	d F	2℃	0℃ ~5℃	ON /OFF AT THE DEFLECTION BETWEEN SET TEMP AND PRESENT TEMP
DELAY TIME SET	d L	20 SEC	01 SEC ~ 60 SEC	When output is ON, it works after delay as long as set time
OVERHEATING TEMP SET	o H	60℃	OVER MAX TEMP ~ 80℃	WHILE INDOOR SENSOR, WHEN FLOOR TEMP EXCEEDS OVERHEATING SET TEMP, ERROR IS OCCURRED (OPTION)
COMPENSATING TEMP SET	r S	00℃	-9℃ ~ 10℃	SCOPE OF FOR COMPENSATING ACTUAL TEMP DEFLECTION

# FUNCTIONAL MOTION(TIMER MODE)

† I MODE = AS TIMER MODE, IT MEANS THE MOTION ACCORDING TO SET CYCLE AND STAGES (SEE TABLE 2)

## TIMER FUNCTION

BY PUSHING ∨ & ∧ KEYS FOR 3 SEC SIMULTANEOUSLY, INITIAL 'tn' IS DISPLAYED. THEN BY PUSHING ∧ KEY FOR ONCE, 'Sn' IS DISPLAYED. 'S n' WORKS BY SENSOR AND AT THE SAME TO THE PRESENT METHOD, BY TOUCHING ∧ KEY ONCE AGAIN, 'ti' IS DISPLAYED. THEN BY PUSHING ∨ & ∧ KEYS SIMULTANEOUSLY, THE PRESENT CYCLIC VALUE IS DISPLAYED. WITH ∨ AND/OR ∧ KEY, SET THE CYCLE. THEN BY PUSHING ∨ & ∧ KEYS SIMULTANEOUSLY ONCE AGAIN, 'AU' FLICKERS AND THE CYCLIC VALUE IS STORED AND THE PRESENT SET STRENGTH IS DISPLAYED  
**SERVICEMAN** = PUSH ∨ & ∧ KEYS SIMULTANEOUSLY → '수' IS DISPLAYED → 'ti' SELECTION → PUSH ∨ & ∧ KEYS SIMULTANEOUSLY → CYCLIC VALUE IS DISPLAYED (CYCLE) → CYCLE SELECTION (BASIC 3 MIN) → SET CYCLIC VALUE → PUSH ∨ & ∧ KEYS SIMULTANEOUSLY - 'AU' FLICKERS - SAVE COMPLETION

**CAUTION: THIS SET IS NOT ALLOWED TO USER**

**USER** = SELECT THE USE STRENGTH WITH ∨ AND/OR ∧ KEY (BASIC 1 STAGE)

TABLE 2

STEP	OUTPUT (ON)	OUTPUT (OFF)	REMARKS
1	15SEC * S	45SEC * S	※ S - SELECTED CYCLIC VALUE  IF 1MIN, S=1 IF 3MIN, S=3 IF 5MIN, S=5 * *  ※ (IF 20MIN, S = 20, VALUE MULTIPLYING BY 20)  ※ (IF 60MIN, S = 60 , VALUE MULTIPLYING BY 60) IT IS THE LENGTH OF ON AND OFF.
2	20SEC * S	40SEC * S	
3	25SEC * S	35SEC * S	
4	30SEC * S	30SEC * S	
5	35SEC * S	25SEC * S	
6	40SEC * S	20SEC * S	
7	45SEC * S	15SEC * S	
8	50SEC * S	10SEC * S	
9	50SEC * S	10SEC * S	
10	50SEC * S	10SEC * S	

# INITIALIZATION FUNCTION

- ※ BASIC CYCLE IS SET A 3-MIN CYCLE (POSSIBLE TO SELECT CYCLE FROM 1 MIN TO 60 MIN)
- ※ AFTER SELECTING CYCLE, BY PUSHING ∨ & ∧ KEYS SIMULTANEOUSLY, SET IS COMPLETED WITH THE FLICKER OF AU (SERVICEMAN)
- ※ THE STRENGTH IS SELECTED BY USER ACCORDING TO THE TEMP FIXED BY USER.. (USER)
- ※ THE BASIC STAGE IS SET AS THE 1<sup>st</sup> STAGE . (POSSIBLE TO SELECT THE STRENGTH FROM 1<sup>st</sup> TO 10<sup>th</sup> STAGE)

## INITIALIZATION SET

1. BY PUSHING ∨ & ∧ KEYS FOR 3 SEC SIMULTANEOUSLY, “tn” IS DISPLAYED. THEN BY PUSHING ∧ KEYS IN THE STATE OF “tn” DISPLAY, THE ORDER OF – “Sn - ti - St” IS DISPLAYED. BY PUSHING ∨ & ∧ KEYS SIMULTANEOUSLY AT THE MENU OF “St”, ‘FF’ IS DISPLAYED. THEN BY PUSHING ∧ KEY ONE TIME AND THEN BY PUSHING ∨ & ∧ KEYS FOR 3 SEC SIMULTANEOUSLY, ‘SAU’ FLICKERS FOR 3 TIMES AND INITIALIZATION IS COMPLETED.



2. BY PUSHING POWER (ON/OFF) BUTTON ABOUT FOR 10 SEC, ‘AU’ FLICKERS FOR 3 TIMES AND INITIALIZATION IS COMPLETED

(INITIALIZATION RESTORE THE SENSOR SET VALUE AND TIMER MODE VALUE TO THE BASIC SET VALUE)



# TROUBLESHOOTING

## ERROR MESSAGE

### SNAPPING TEMP SENSING SENSOR

BASICALLY THE CONTROLLER IS ON/OFF ACCORDING TO THE INDOOR TEMP SENSING SENSOR.  
IF THE INDOOR TEMP SENSING SENSOR IS SNAPPED, THE FLOOR SENSOR TEMP VALUE IS APPLIED AUTOMATICALLY.  
IF THERE IS NO FLOOR SENSOR OR THE FLOOR SENSOR IS SNAPPED TOO, THE ERROR OF 'EO' IS DISPLAYED AND THE OUTPUT IS OFF PROMPTLY.

(SUCH ERROR IS HAPPENED DUE TO THE FAILURE OF SENSOR SENSING UNIT; SHORT OF SENSOR EXTENSION CABLE; ELECTRIC LEAKAGE FROM THE SPOT ATTACHING SENSOR . INSPECTION IS NECESSARY AND IN CASE OF TERMINATION, RETURN AUTOMATICALLY.)



### SHORT CIRCUIT OF TEMP SENSING SENSOR

BASICALLY THE CONTROLLER IS ON/OFF ACCORDING TO THE INDOOR TEMP SENSING SENSOR..  
IF THE INDOOR TEMP SENSING SENSOR IS SHORT, "ES" ERROR IS DISPLAYED AND POWER IS OFF.  
IF THE FLOOR SENSING TEMP SENSOR IS SHORT, "FS" ERROR IS DISPLAYED , AND POWER IS OFF.



INDOOR SENSOR SHORT    FLOOR SENSOR SHORT

(SUCH ERROR IS HAPPENED DUE TO THE FAILURE OF SENSOR SENSING UNIT; SHORT OF SENSOR EXTENSION CABLE; ELECTRIC LEAKAGE FROM THE SPOT ATTACHING SENSOR . INSPECTION IS NECESSARY AND IN CASE OF TERMINATION, RETURN AUTOMATICALLY)

### OVERHEATING ERROR

THIS HAPPENS WHEN FLOOR SENSOR SENSING TEMP IS HIGHER THAN OVERHEATING SET TEMP .  
"OH" IS DISPLAYED AND THE OUTPUT IS OFF PROMPTLY.

FOR MANUAL RETURN, OFF-ON THE POWER IN THE STATE THAT OVERHEATING ERROR IS TERMINATED.

( CHECK THE STATE OF OVERHEATING SENSOR; CONTROLLER RELAY MOTION; SNAPPING OF FLOOR TEMP SENSOR; SET TEMP VALUE)



**SPEC.**

CLASSI	ITEMS		SPECIFICATIONS
POWER UNIT	RATED INPUT VOLTAGE		100V AC ~ 240V AC (UNIVERSAL VOLTAGE)
	OUTPUT VOLTAGE		100V AC ~ 240V AC (UNIVERSAL VOLTAGE)
	DRIVING METHOD		ELECTRONIC TYPE
	MAX OUTPUT		2.6 KW/220V
	LOAD	NO. OF CIRCUIT	1 CIRCUIT
MAX CAPACITY		12 A (RESISTANCE LOAD)	
PRECISION	TEMP PRECISION		$\pm 1^{\circ}\text{C}$ : CHANGE CONDITION OF $1^{\circ}\text{C}$ PER 30 SEC (DELAY OPTION 20 SEC)
MOTION	POWER INPUT DISPLAY		DISPLAY ON, POWER LAMP ON
	OUTPUT DISPLAY		HEAT LAMP 'ON' DISPLAY
	SCOPE OF TEMP		POSSIBLE TO SELECT WITHIN THE SCOPE OF $0^{\circ}\text{C} \sim 80^{\circ}\text{C}$
	OUTPUT DELAY ( OPTION)		01 SEC-60 SEC
SENSOR	KIND		NTC : NEGATIVE TEMPERATURE COEFFICIENT EPOXY MOLDING
	PRECISION %		1 %
	25 $^{\circ}\text{C}$ RATED RESISTANCE		5000 OHM
	QUANTITY		SENSOR 1 : FOR SENSING INDOOR TEMP , SENSOR 2 : FOR SENSING FLOOR TEMP (OPTION)
FUNCTION (CAPACITY)	SAFETY DEVICE	SNAPPING, SHORT OF SENSOR LINE	AT THE TIME OF SNAPPING INDOOR FLOOR SENSING TEMP SENSOR: "EO" (ERROR OPEN) IS DISPLAYED AND OUTPUT IS OFF ; AT THE TIME OF SHORT OF INDOOR SENSOR: "ES" (ERROR SHORT); AT THE TIME OF SHORT OF FLOOR: "FS" (FIELD SHORT) IS DISPLAYED AND OUTPUT IS OFF (AUTO RETURN)
		OVERHEATING PREVENTION SENSOR (OPTION)	IF FLOOR SENOR SENSING TEMP IS HIGHER THAN OVERHEATING SET TEMP, 'OH' IS DISPLAYED AND OUTPUT IS OFF (AUTO RETURN)
		RESISTANCE FOR FUSE	10 ohm (FOR PROTECTING THE INNER CIRCUIT OF CONTROLLER)
OTHERS	OUTER CASE		ANTI-FLAMMABLE
	WEIGHT		130 g
	DIMENSION (mm)		90(W) $\times$ 90(H) $\times$ 45(D)
	USE TEMP	AIR TEMP	$0^{\circ}\text{C} \sim 40^{\circ}\text{C}$
		AIR HUMIDITY	UNDER 80 %



