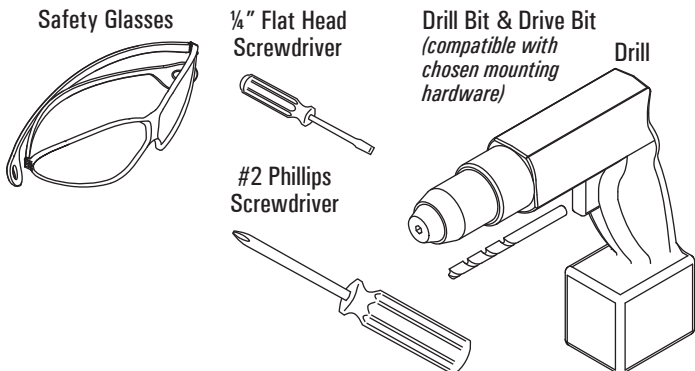# J&D Manufacturing

JDDT1 - Single Stage Digital Thermostat with NTC Style Temperature Probe

The JDDT1 Digital Temperature Switch with NTC Style Temperature Probe combines reliability and an installation friendly weatherproof enclosure. Programming parameters can be quickly completed using the front keys. In order to prevent tampering from unauthorized users, a parameter lock physical jumper and software pass-code security are standard in the unit. The bright, easy-to-read LED display shows the current output status and the temperature measurement.

The multiple conduit knockouts on the JDDT1 give flexibility to the installer to determine the best location for the conduit entry. Another installation friendly feature of the JDDT1 is the ability to quickly jumper the line voltage to the common of the output relay using female disconnects.

RECOMMENDED TOOLS FOR INSTALLATION (NOT PROVIDED)

Safety Glasses

¼" Flat Head Screwdriver

#2 Phillips Screwdriver

Drill Bit & Drive Bit *(compatible with chosen mounting hardware)*

Drill

WARRANTY

J&D Mfg. warrants all products are free from defects in materials and workmanship under normal use for the period of one year from date of purchase and our warranty does not cover normal or regular wear and tear. J&D Mfg can repair or replace at our option, any product or part of the product that is found to be defective. Our warranty applies to materials only and does not include return freight, delivery, loss or damage to personal property, cost of removal or installation, any incidental or consequential damages or labor. This warranty does not apply to products which are misused, abused, altered, improperly installed or subject to negligence. All warranties must be approved through our warranty department. The original purchaser must present a copy of the invoice for the defective product. One year is our standard warranty unless specified on our literature or in the installation instructions/user manuals.
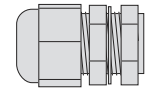
PARTS LEGEND

Control

Temperature Probe with 10' Cord

Cord Grip for Temperature Probe Cord
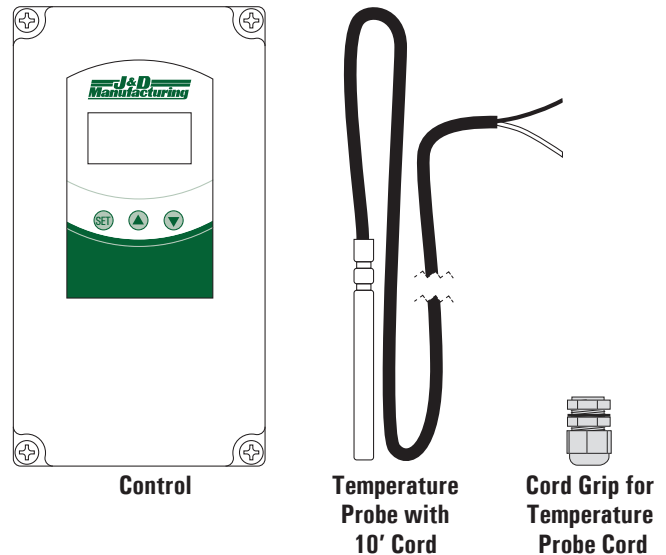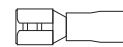
RECOMMENDED (NOT INCLUDED) PARTS
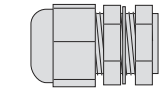
Cord Grip* for Input Power Cord

Cord Grip* for Output Power Cord

*To maintain weather proof enclosure status, ALL entering and exiting wiring requires properly sized watertight cord grips (not provided).

2 Female ¼" Disconnects

For quick jumper option Female Disconnects (not provided) are needed.

INSTALLATION HARDWARE IS NOT PROVIDED

INSTALLATION

Please read over all instructions carefully before you begin. If you have any questions please call your local dealer, or contact J&D Manufacturing at 1-800-998-2398.

SPECIFICATIONS

Probe Range: NTC: -58 to 230°F (-50 to 110°C)

Input: NTC (10KΩ @ 25°C)

Output: R1 SPDT Relay Resistive Load: 20A @ 240 VAC

Horsepower Rating: R1 2HP @ 240 VAC, 1 HP @ 120 VAC

Control Type: On/Off

Power Requirements: 90 to 255 VAC

Power Consumption: 3.6VA

Accuracy: ± 1% FS

Display: 3 digits plus sign
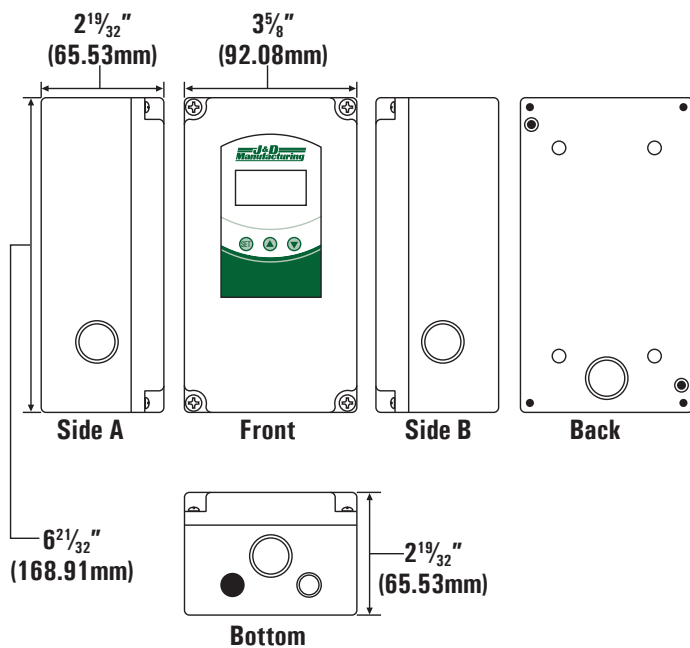
Resolution: .1° < 100°; 1° ≥ 100°

Memory Backup: Non-volatile memory

Ambient Temperature: 32 to 104°F (0 to 40°C)

Weight: 1.2 lbs (544 g)

Front Protection: NEMA 4X (IP66)

Agency Approvals: CE, UL, cUL

$2\frac{19}{32}$"
(65.53mm)

$3\frac{5}{8}$"
(92.08mm)

Side A   **Front**   **Side B**   **Back**

$6\frac{21}{32}$"
(168.91mm)

$2\frac{19}{32}$"
(65.53mm)

Bottom

MOUNTING LOCATION REQUIREMENTS

JDDT1 control should be located in a place free of vibrations, impacts, and corrosive gases.

⚠ **DISCONNECT POWER** ⚠
BEFORE INSTALLING OR SERVICING.

ALL ELECTRICAL WORK SHOULD BE COMPLETED BY QUALIFIED PERSONNEL AND MEET NATIONAL (NEC), REGIONAL AND LOCAL ELECTRIC CODES.

OPENING ENCLOSURE

Using a #2 Phillips Screwdriver, unscrew the 4 screws that secure the control enclosure cover and base together.
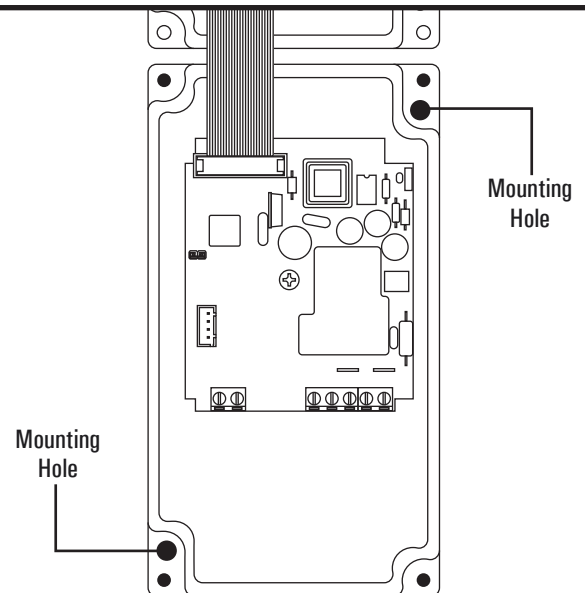
Use #2 Phillips Screwdriver

1
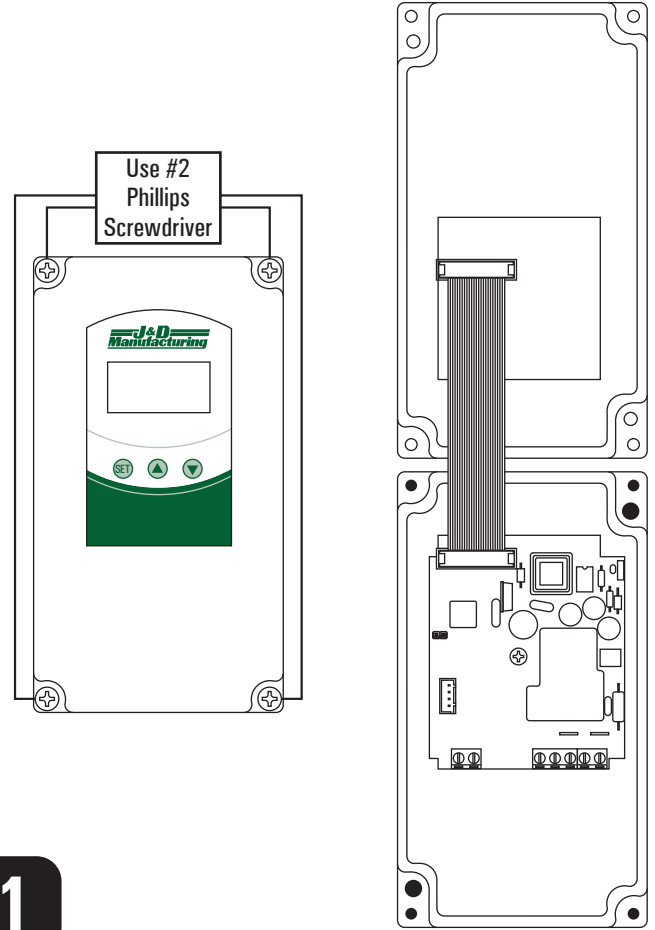
MOUNTING CONTROL

Secure the JDDT1 control to your selected location using the (2) indicated mounting holes and appropriate (not included) hardware.

Mounting hardware must be able to support the weight of the JDDT1, 1.2 lbs (544 g) and be compatible with the mounting surface/structure.
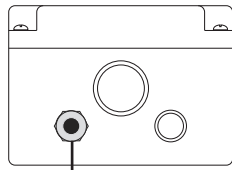
Mounting Hole

Mounting Hole

2

INSTALLING TEMPERATURE PROBE CORD GRIP

Install the included temperature probe cord grip in pre-knocked out location as shown below.

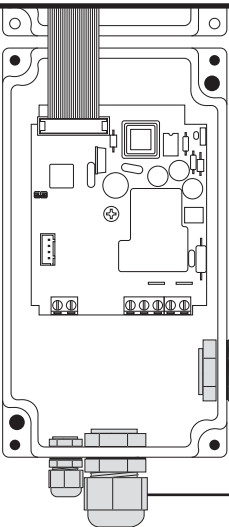### Front View

Temperature Probe Cord Grip

Bottom View

Temperature Probe Cord Grip

2
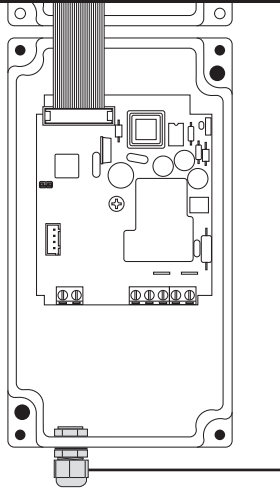
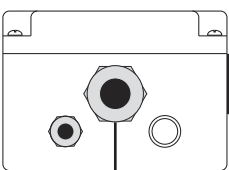## INSTALLING (not provided) INPUT & OUTPUT CORD GRIPS

Select and prepare two knockouts one for input and one for output wiring. To maintain weather proof enclosure status, input and output wiring requires properly sized watertight cord grips (not provided).

NOTE: Use knockouts that are appropriate to your needs and location.
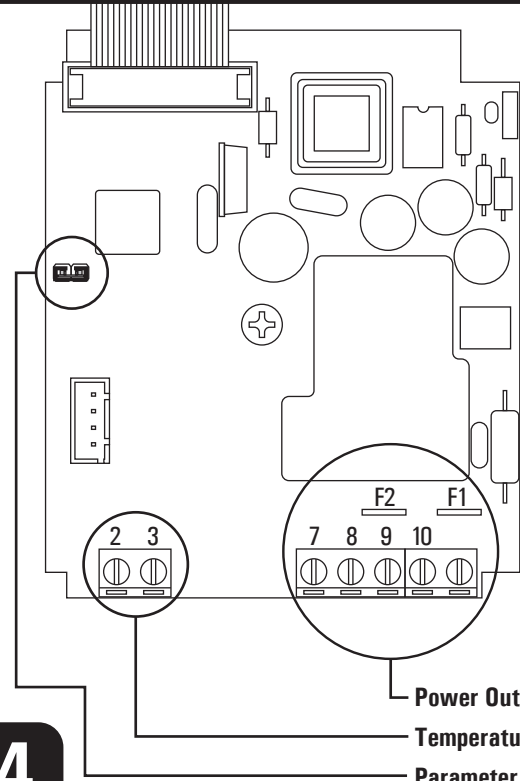
Front View

Properly Sized Cord Grips (not included)

Bottom View

Properly Sized Cord Grips (not included)

3

IDENTIFYING WIRING & PROGRAMMING LOCATIONS

Use the below illustration and call-outs to identify the areas for the future steps of installation.

NOTE: Numbers indicated below and in future steps are to identify the inputs and outputs for ease of installation, the contacts are not labeled in the control.

F2   F1

2   3   7   8   9   10

Power Outputs & Inputs
Temperature Probe Input
Parameter Lock Jumper

4

INSTALLING THE TEMPERATURE PROBE

Thread end of temperature probe through previously installed cord grip. Using a ¼" Flat Head Screwdriver secure the temperature probe wires to 2 and 3 connector as shown below.

2   3

5

WIRING POWER THROUGH CONTROL TO UNIT WITH AN INPUT WIRE OF 14 AWG OR SMALLER

Thread ends of Line Power Input and Output to Unit through previously installed cord grip. Following the table and illustration below, use a ¼" Flat Head Screwdriver to secure wires, as shown.

L2 / N (Input Power for Control & Unit)	**11**
L2 / N (Output to Unit)	**11**
L1 (Input Power for Control & Unit)	**10**
Jumper	**9 to 10**
L1 (Output to Unit)	**8**
Ground (Input)	**Ground** (Unit)
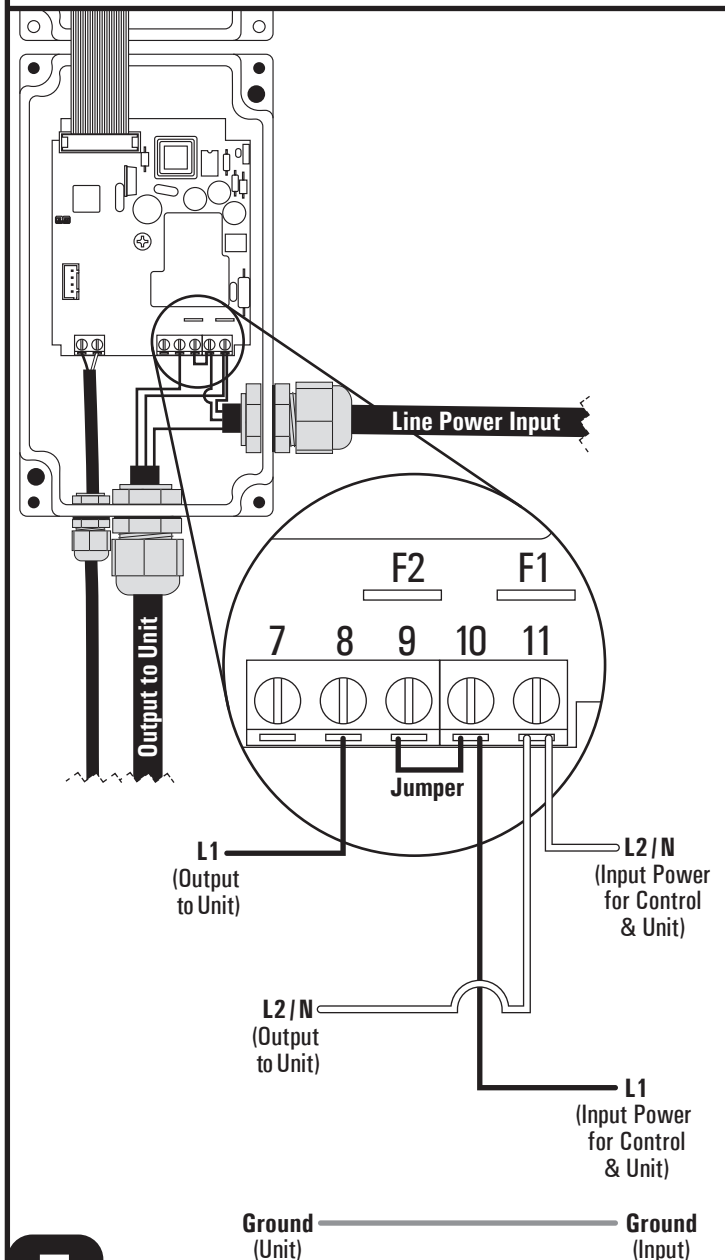
WIRING POWER TO UNIT SEPARATE FROM CONTROL

Thread ends of Line Power Input and Output to Unit through previously installed cord grip. Following the table and illustration below, use a ¼" Flat Head Screwdriver to secure wires, as shown.

L2 / N (Input Power for Control)	**11**
L1 (Input Power for Control)	**10**
L1 (Input Power for Unit)	**9**
L1 (Output to Unit)	**8**
L2 / N (Input Power for Unit)	**L2 / N** (Output to Unit)
Ground (Input)	**Ground** (Unit)

6

7

WIRING POWER THROUGH CONTROL TO UNIT WITH AN INPUT WIRE OF 12 AWG OR LARGER

Thread ends of Line Power Input and Output to Unit through previously installed cord grip. Following the table and illustration below, use a ¼" Flat Head Screwdriver and (2) Female ¼" Disconnects (not provided) to secure wires, as shown.

L2 / N (Input Power for Control & Unit)	11
L2 / N (Output to Unit)	11
L1 (Input Power for Control & Unit)	10
L1 (Output to Unit)	8
Jumper	F1 to F2
Ground (Input)	Ground (Unit)

Line Power Input

Output to Unit

F2   F1

Jumper

7   8   9   10   11

L1 (Output to Unit)

L2 / N (Input Power for Control & Unit)

L2 / N (Output to Unit)

L1 (Input Power for Control & Unit)

Ground (Unit)   Ground (Input)

8

UNLOCK CONTROL FOR PROGRAMMING

In order to adjust parameter values, the parameter lock jumper must be set in unlocked position, as shown below.

Locked

Unlocked

9

CLOSE ENCLOSURE

Using a #2 Phillips Screwdriver, screw the 4 screws that secure the control enclosure cover and base together.

Use #2 Phillips Screwdriver

10

ACCESSING & SECURING PARAMETERS

To allow access (unlock) ALL parameters

- Lock jumper must be set to unlocked, refer to **Step 9**
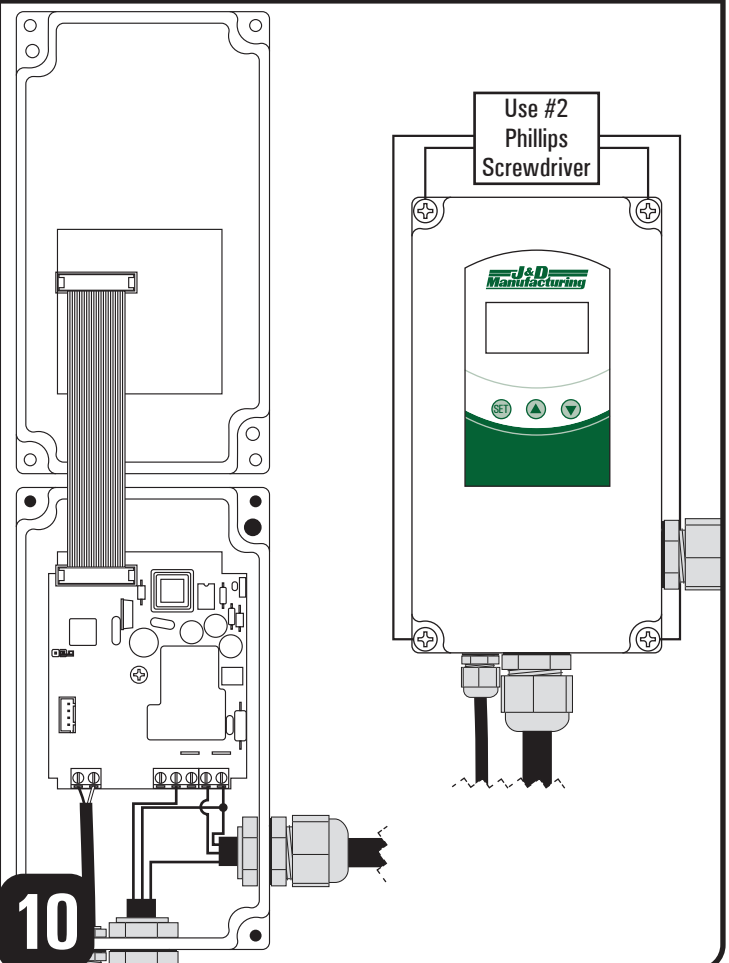- Parameter Access Code must be correct, see **Step 12**
  - Control access code comes factory preset at 0
  - If you have customized the control access code, you will need to enter it for access

To allow access (unlock) to ONLY the SP, Set Point, parameter

- Lock jumper must be set to unlocked, refer to **Step 9**
- Parameter Access Code must be customized and with any number from 1-99, see **Step 12**

To block access (lock) ALL parameters

- Lock jumper must be set to locked, refer to **Step 9**

11

ENTERING PARAMETER ACCESS CODE TO UNLOCK ALL PARAMETERS

- Press SET for 8 seconds.
  The access code value 0 is shown on the display.

If this is initial setup or if you chose to keep the factory set code of 0

- Press SET to confirm 0 as the code.
  –The first parameter reference, SP (Set Point), will be shown on the display.

If you have already customized the H5 Parameter Access Code

- Use the UP and DOWN keys to increase the number to match your custom code, then press SET to confirm code.
  –The first parameter reference, SP (Set Point), will be shown on the display.

If you have customized the H5 Parameter Access Code but cannot remember the chosen code, you can reset the Parameter Access Code to the factory set code of 0.

- Press and hold the SET key and cycle power to the control.

NOTE: Once you have unlocked the parameters 1 minute of inactivity will timeout the unlock and the access code will again need to be entered to resume programming.

12

CUSTOMIZING PARAMETERS

Once parameters are unlocked they can be customized

- Using the UP and DOWN keys, move to the desired parameter you wish to customize.
- Press SET to see the value of the parameter.
- Modify the value with the UP and DOWN keys.
- Press SET to save the new value and return to parameter list.
- Press SET and DOWN to quit programming, or wait 1 minute for TIMEOUT.

13

PARAMETER LIST & DESCRIPTIONS

	Description	Range
SP	**Set Point** Temperature desired to regulate the unit	r1 to r2
r0	**Differential or Hysteresis** Heating: If temperature is ≥ SP then output is OFF If temperature is < SP – r0 then output is ON Cooling: If temperature is ≥ SP + r0 then output is ON If temperature is < SP then output is OFF	1 to 20°
r1	**Lower Set Point Limit**	–50 to 302°F –50 to 150°C
r2	**Upper Set Point Limit**	–50 to 302°F –50 to 150°C
d0	**Heating or Cooling Control** **Ht** = Heating Control **Co** = Cooling Control	Ht / Co
d2	**Defrosting Time Remaining** If **d2** = 0, defrosting will not start	0 to 59 Minutes
d8	**Interval Between Two Defrostings**	0 to 24 Hours
c0	**Minimum Time for Compressor to be OFF** Minimum time for compressor to stop until it can start again.	0 to 59 Minutes
c1	**Continuous Cycle Time** The remaining time for a continuous cold cycle.	0 to 24 Hours
c2	**ON Time of fault cycle, during probe error**	0 to 999 Minutes
c3	**OFF Time of fault cycle, during probe error**	0 to 999 Minutes
P0	**Temperature Units Selection**	°C/°F
P1	**Ambient Probe Calibration** If extending probe beyond 10' measure temperature and adjust probe calibration	–10 to 10°
H5	**Parameter access code** *(Factory set to 0)*	0 to 99
H6	**Selection of Input Probe Type**	NTC
t0	**Temperature Display Limit** Maximum temperature shown on the display, although the real temperature can be greater.	–50 to 302°F –50 to 150°C

INDICATORS & ERROR MESSAGES

Indicators

❄ This indicates that the output is energized or that the compressor is connected. It waits for the programmed minimum stop time of the compressor.

💧 This indicates that defrosting is activated.

Error Messages

In normal operation, the probe temperature will be shown.
In case of alarm or error, the following messages will be shown:

- **Er-** Memory error
- **--** Shorted-circuited probe error
- **oo-** Open probe error

NOTE: If the probe or thermostat memory should fail, the compressor will be connected in accordance to the parameters set in C2 and C3.

MAINTENANCE

After final installation of the JDDT1 Digital Temperature Switch, no routine maintenance is required. A periodic check of system calibration is recommended.

J&D Manufacturing

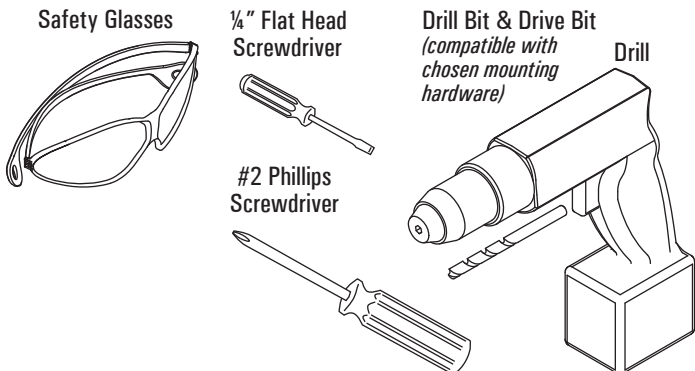## JDDT2 - Dual Stage Digital Thermostat with NTC Style Temperature Probe

The JDDT2 Dual Stage Digital Thermostat with NTC Style Temperature Probe combines reliability and an installation friendly weatherproof enclosure. Programming parameters can be quickly completed using the front keys.

In order to prevent tampering from unauthorized users, a parameter lock physical jumper and software pass-code security are standard in the unit. The bright, easy-to-read LED display shows the current output status and the temperature measurement.

The multiple conduit knockouts on the JDDT2 give flexibility to the installer to determine the best location for the conduit entry. Another installation friendly feature of the JDDT2 is the ability to quickly jumper the line voltage to the common of the output relay using female disconnects.
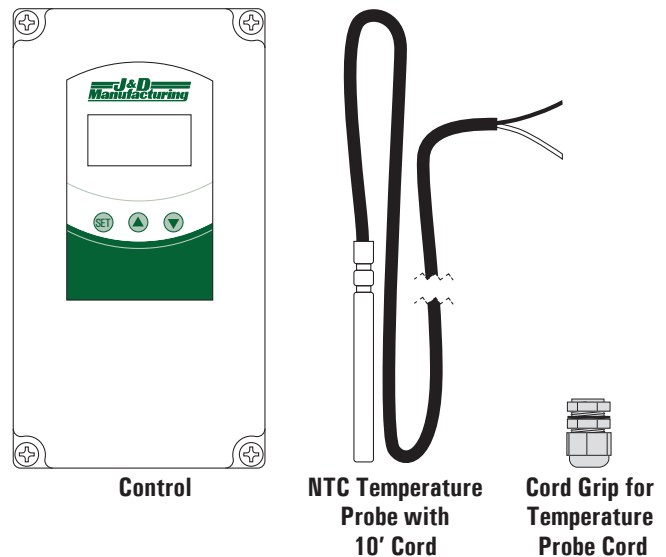
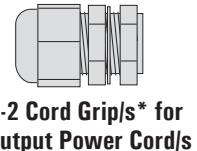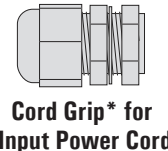### RECOMMENDED TOOLS FOR INSTALLATION (NOT PROVIDED)

Safety Glasses

¼" Flat Head Screwdriver

#2 Phillips Screwdriver

Drill Bit & Drive Bit *(compatible with chosen mounting hardware)*

Drill

PARTS LEGEND

Control

NTC Temperature Probe with 10' Cord

Cord Grip for Temperature Probe Cord

RECOMMENDED (NOT INCLUDED) PARTS

Cord Grip* for Input Power Cord

1-2 Cord Grip/s* for Output Power Cord/s

*To maintain weather proof enclosure status, ALL entering and exiting wiring requires properly sized watertight cord grips (not provided).

3 Female ¼" Disconnects

For quick jumper option Female Disconnects (not provided) are needed.

INSTALLATION HARDWARE IS NOT PROVIDED

INSTALLATION

Please read over all instructions carefully before you begin. If you have any questions please call your local dealer, or contact J&D Manufacturing at 1-800-998-2398.

SPECIFICATIONS

Probe Range: NTC: -58 to 230°F (-50 to 110°C)

Input: NTC (10KΩ @ 25°C)

Output: R1 SPDT Relay Resistive Load: 20A @ 240 VAC;
R2 SPDT Relay Resistive Load: 8A @ 240 VAC,
Inductive Load: 3A @ 240 VAC.

Horsepower Rating: R1 2 HP @ 240 VAC, 1 HP @ 120 VAC,
R2 $^1/_2$ HP @ 240 VAC, $^1/_4$ HP @ 120 VAC

Control Type: On/Off

Power Requirements: 90 to 255 VAC

Power Consumption: 3.6VA

Accuracy: ± 1% FS

Display: 3 digits plus sign

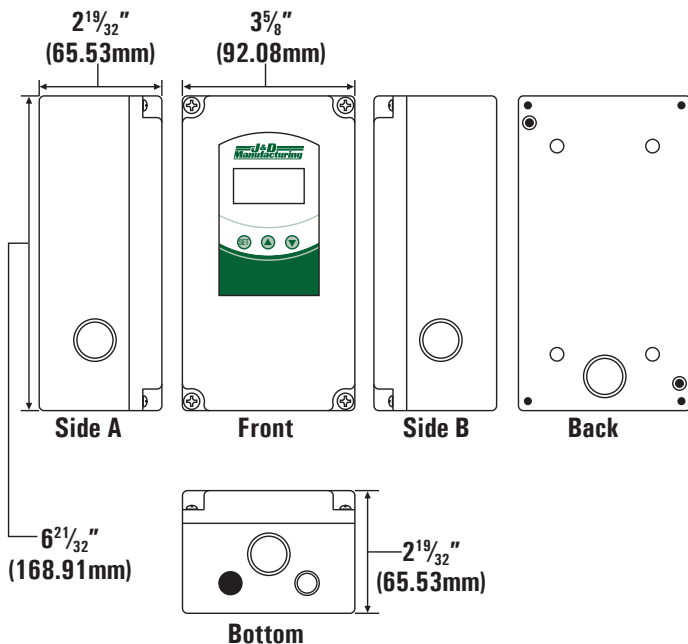**Resolution:** .1° < 100°; 1° ≥ 100°

Memory Backup: Non-volatile memory

Ambient Temperature: 32 to 104°F (0 to 40°C)

Weight: 1.2 lbs (544 g)

Front Protection: NEMA 4X (IP66)

Agency Approvals: CE, UL, cUL

$2^{19}/_{32}$"
(65.53mm)

$3^5/_8$"
(92.08mm)

Side A   **Front**   **Side B**   **Back**

$6^{21}/_{32}$"
(168.91mm)

$2^{19}/_{32}$"
(65.53mm)

Bottom

MOUNTING LOCATION REQUIREMENTS

JDDT2 control should be located in a place free of vibrations, impacts, and corrosive gases.

> ⚠ **DISCONNECT POWER** ⚠
> **BEFORE INSTALLING OR SERVICING.**
>
> **ALL ELECTRICAL WORK SHOULD BE COMPLETED BY QUALIFIED PERSONNEL AND MEET NATIONAL (NEC), REGIONAL AND LOCAL ELECTRIC CODES.**

OPENING ENCLOSURE

Using a #2 Phillips Screwdriver, unscrew the 4 screws that secure the control enclosure cover and base together.

Use #2
Phillips
Screwdriver

1
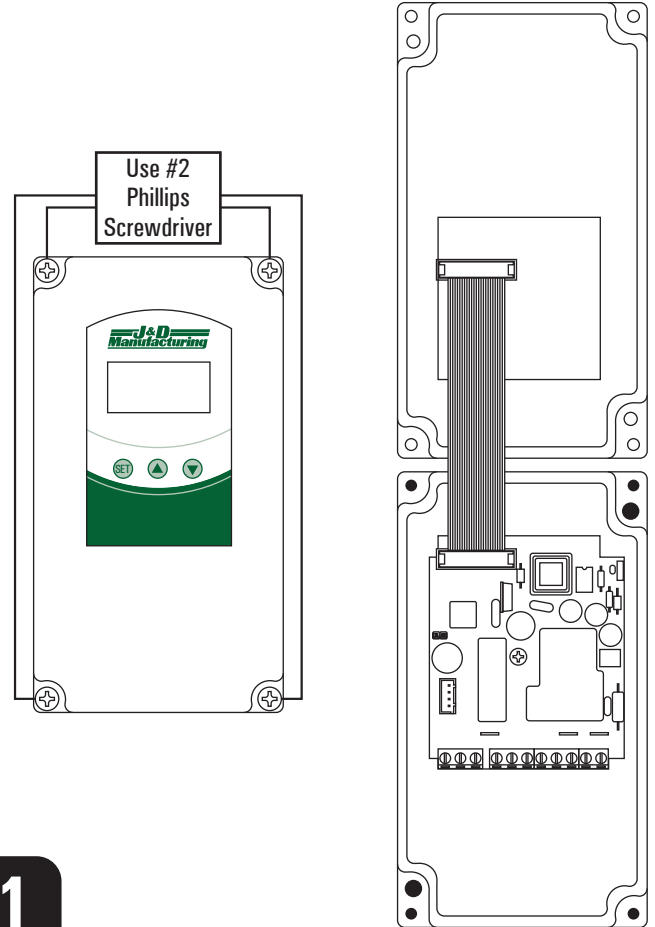
MOUNTING CONTROL

Secure the JDDT2 control to your selected location using the (2) indicated mounting holes and appropriate (not included) hardware.

Mounting hardware must be able to support the weight of the JDDT2, 1.2 lbs (544 g) and be compatible with the mounting surface/structure.

Mounting
Hole

Mounting
Hole

2

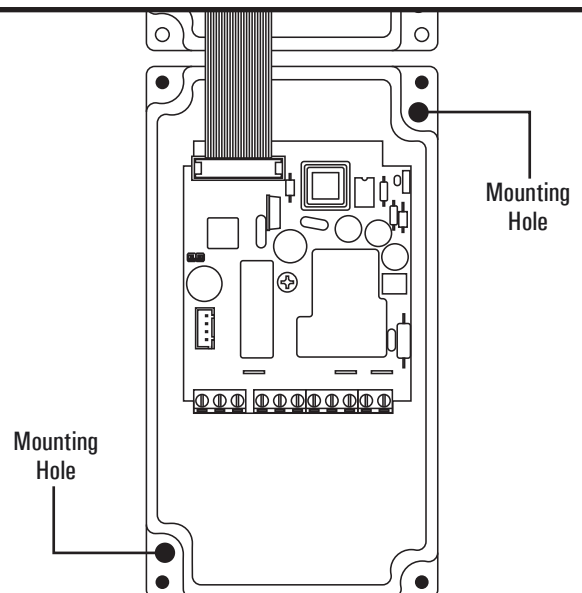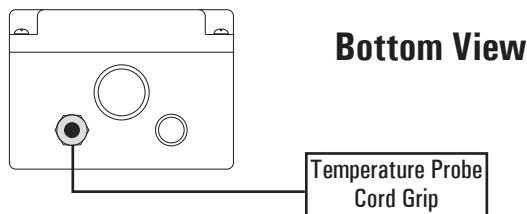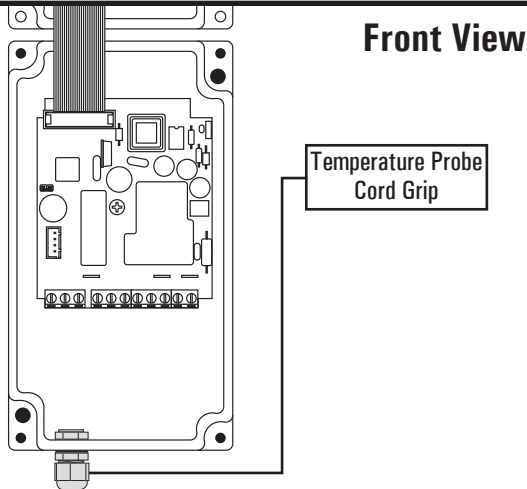## INSTALLING TEMPERATURE PROBE CORD GRIP

Install the included temperature probe cord grip in pre-knocked out location as shown below.

Front View

Temperature Probe Cord Grip
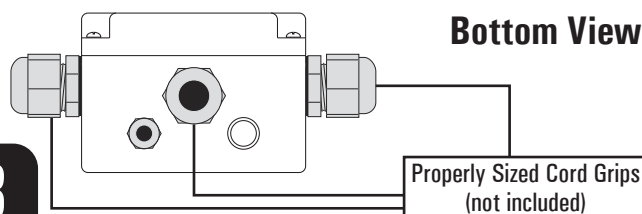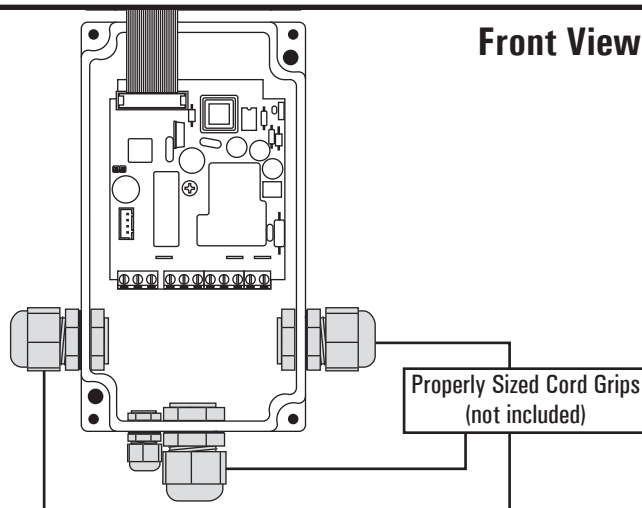
Bottom View

Temperature Probe Cord Grip

2

INSTALLING (not provided) INPUT & OUTPUT CORD GRIPS

Select and prepare knockouts for input and output wiring, the number of knockouts needed will depend on the number of units being controlled. To maintain weather proof enclosure status, input and output wiring requires properly sized watertight cord grips (not provided).

NOTE: Use knockouts that are appropriate to your needs and location.

Front View

Properly Sized Cord Grips (not included)

Bottom View

Properly Sized Cord Grips (not included)

3

IDENTIFYING WIRING & PROGRAMMING LOCATIONS

Use the below illustration and call-outs to identify the areas for the future steps of installation.

NOTE: Numbers indicated below and in future steps are to identify the inputs and outputs for ease of installation, the contacts are not labeled in the control.

F3   F2   F1

1 2 3   4 5 6 7 8 9 10 11

Power Outputs & Inputs

Temperature Probe Input

Parameter Lock Jumper
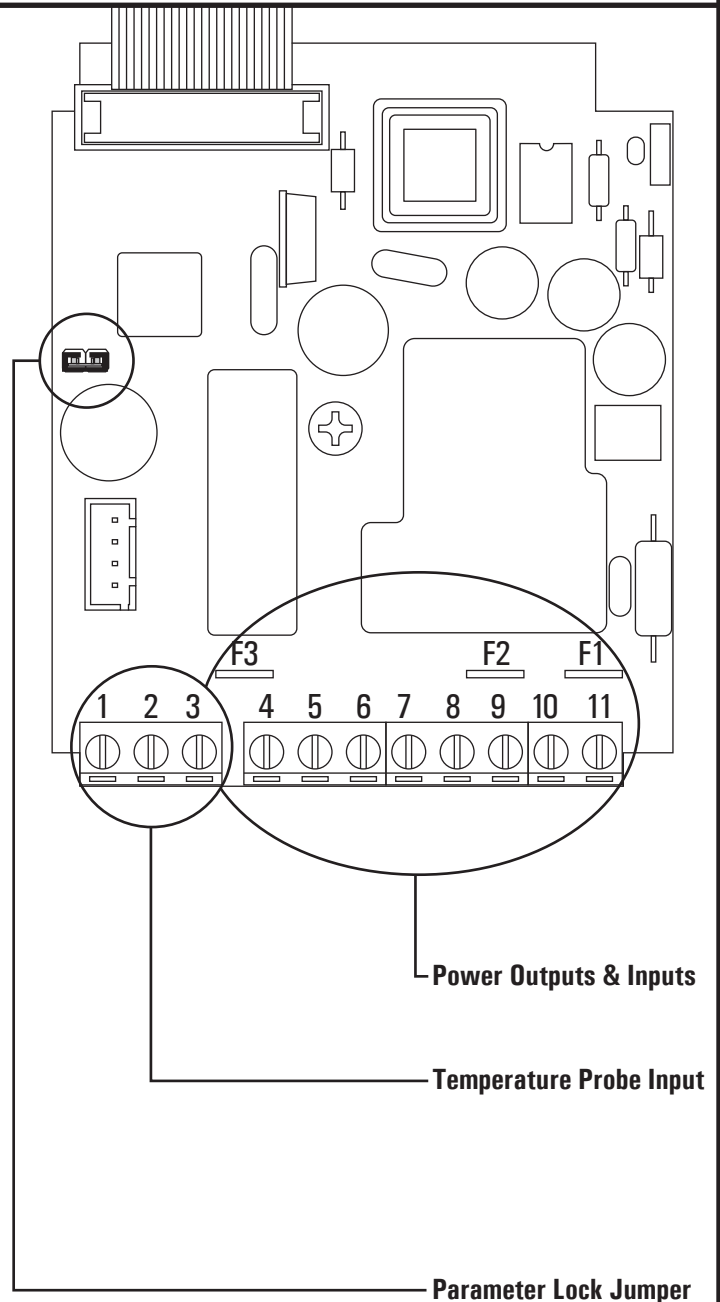
4

If powering units through control, proceed to <u>Step 5</u>.

If power for units is run separate from control, proceed to <u>Step 6</u>.

If power for 2 speed unit is run through control, proceed to <u>Step 7</u>.

WIRING POWER THROUGH CONTROL TO UNITS

Thread ends of Line Power Input and Output to Unit through previously installed cord grip. Following the table and illustration below, use a ¼" Flat Head Screwdriver to secure wires, as shown.

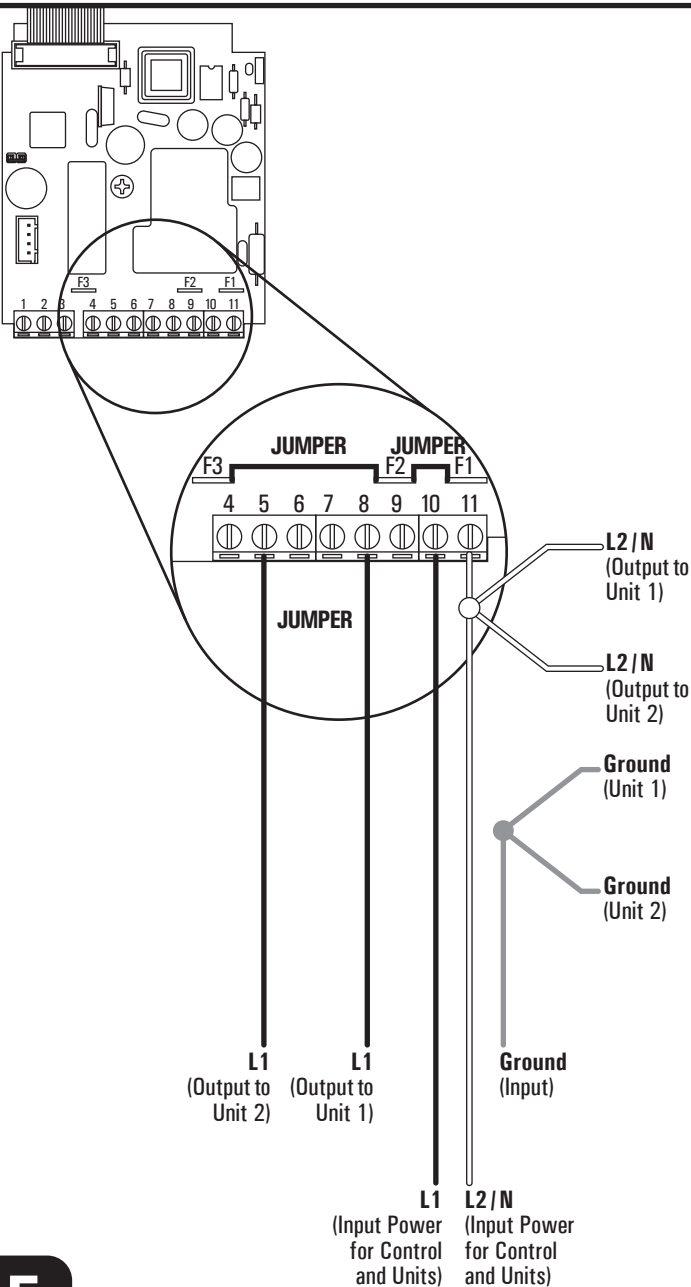| L2 / N (Input Power for Control & Units)	11
L2 / N (Output to Unit 1)	11
L2 / N (Output to Unit 2)	11
L1 (Input Power for Control & Units)	10
L1 (Output to Unit 1)	8
L1 (Output to Unit 2)	5
Jumper	F1 to F2
Jumper	F2 to F3
Ground (Input)	Ground (Unit 1 & 2)

5

WIRING POWER TO UNITS SEPARATE FROM CONTROL

Thread ends of Line Power Input and Output to Unit through previously installed cord grip. Following the table and illustration below, use a ¼" Flat Head Screwdriver to secure wires, as shown.

L2 / N (Input Power to Control)	11
L1 (Input Power to Control)	10
L1 (Input Power for Unit 1)	9
L1 (Input Power to Unit 2)	8
L1 (Output to Unit 1)	5
L1 (Output for Unit 2)	4
L2 / N (Input Power for Unit 1)	L2 / N (Output to Unit 1)
L2 / N (Input Power for Unit 2)	L2 / N (Output to Unit 2)
Ground (Input)	Ground (Unit 1 & 2)

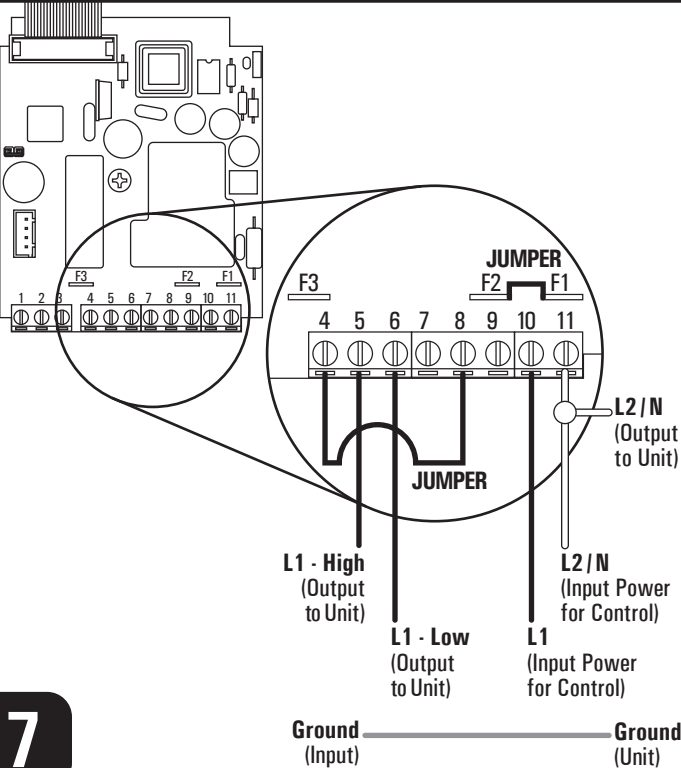
6

Once finished with Step 5, proceed to Step 8.
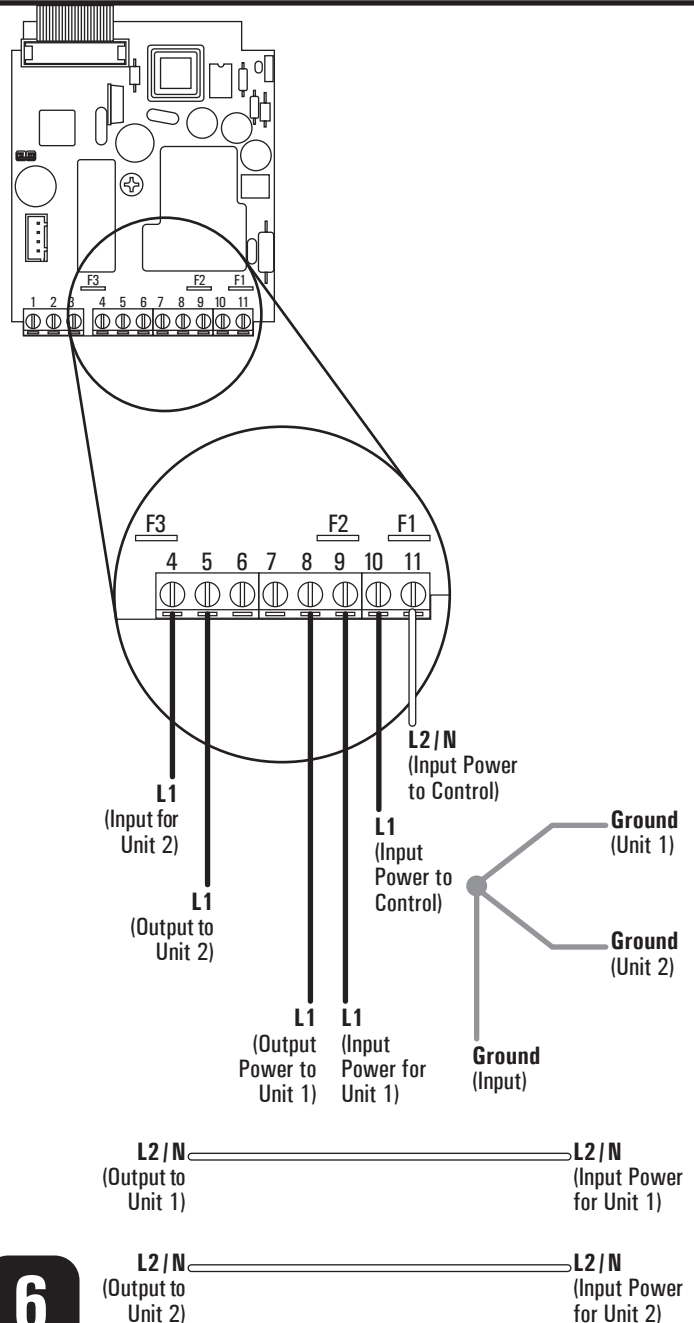
Once finished with Step 6, proceed to Step 8.

WIRING POWER THROUGH CONTROL TO 2 SPEED UNIT

Thread ends of Line Power Input and Output to Unit through previously installed cord grip. Following the table and illustration below, use a ¼" Flat Head Screwdriver to secure wires, as shown.

L2 / N (Input Power for Control & Unit)	**11**
L2 / N (Output to Unit)	**11**
L1 (Input Power for Control)	**10**
L1 - Low (Output to Unit)	**6**
L1 - High (Output to Unit)	**5**
Jumper	**4** to **8**
Jumper	**F1** to **F2**
Ground (Input)	**Ground** (Unit)

JUMPER

L2 / N (Output to Unit)

JUMPER

L1 - High (Output to Unit)

L1 - Low (Output to Unit)

L1 (Input Power for Control)

L2 / N (Input Power for Control)

Ground (Input) —————— **Ground** (Unit)

7

INSTALLING THE TEMPERATURE PROBE

Thread end of temperature probe through previously installed cord grip. Using a ¼" Flat Head Screwdriver secure the temperature probe wires to 2 and 3 connector as shown below.

Temp Prob 1

1 2 3

8
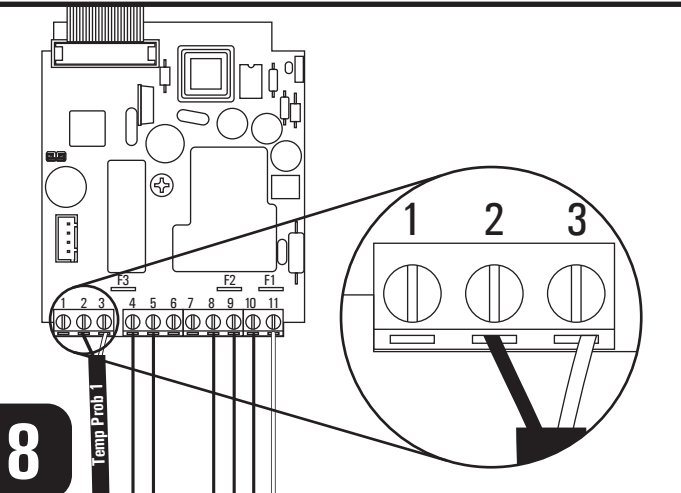
INSTALLING OPTIONAL 2ND TEMPERATURE PROBE

Thread end of (not included) 2nd temperature probe through a (not included) second properly sized installed cord grip. Using a ¼" Flat Head Screwdriver secure the temperature probe wires to 1 and 3 connector as shown below.
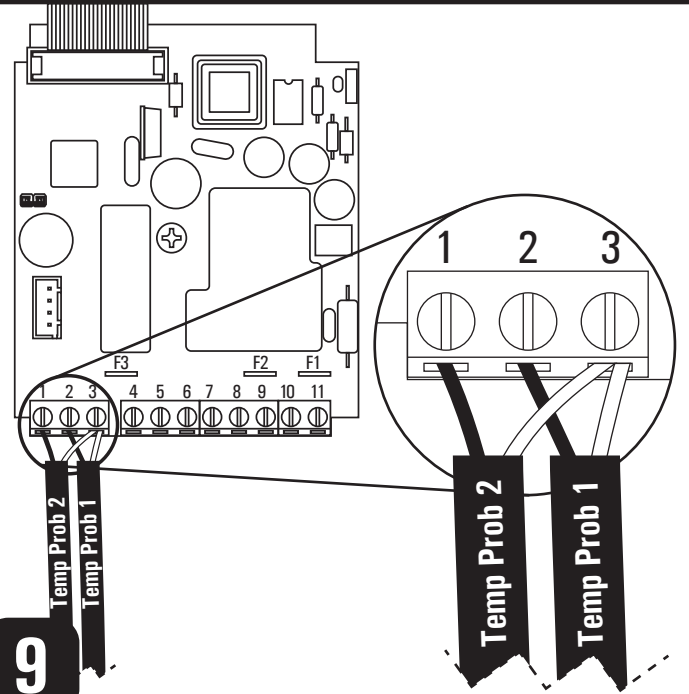
1 2 3

Temp Prob 2

Temp Prob 1

9

UNLOCK CONTROL FOR PROGRAMMING

In order to adjust parameter values, the parameter lock jumper must be set in unlocked position, as shown below.

Locked

Unlocked

10

CLOSE ENCLOSURE

Using a #2 Phillips Screwdriver, screw the 4 screws that secure the control enclosure cover and base together.

11
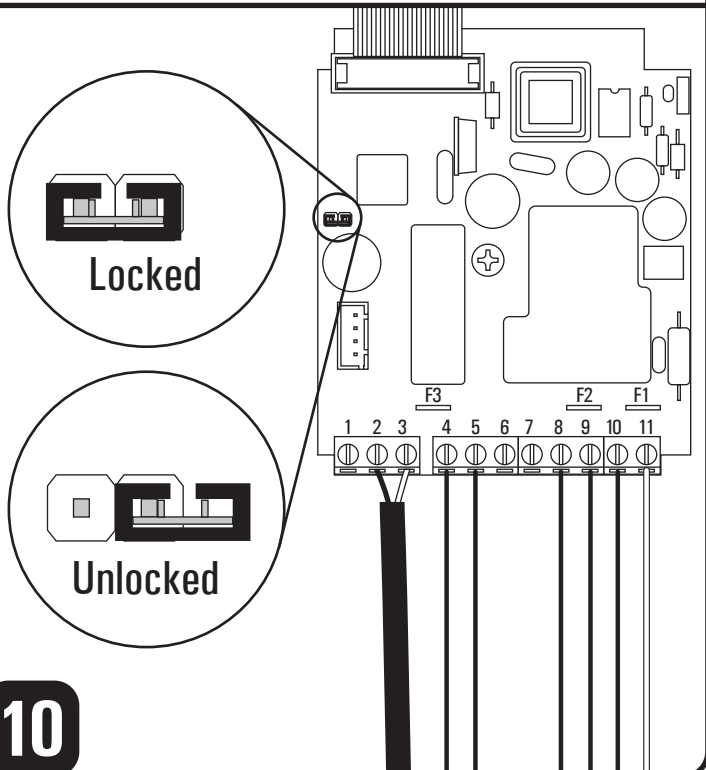
Use #2 Phillips Screwdriver

⚠ WARNING ⚠
Only provide power to control when enclosure is closed and cover is secure.

ACCESSING & SECURING PARAMETERS

To allow access (unlock) ALL parameters

- Lock jumper must be set to unlocked, refer to **Step 9**
- Parameter Access Code must be correct, see **Step 12**
  – Control access code comes factory preset at 0
  – If you have customized the control access code, you will need to enter it for access
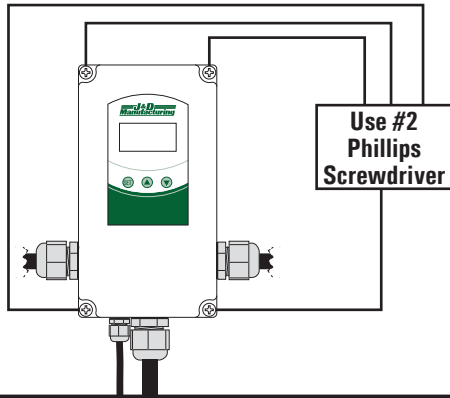
To allow access (unlock) to ONLY the SP, Set Point, parameter

- Lock jumper must be set to unlocked, refer to **Step 9**
- Parameter Access Code must be customized and with any number from 1-99, see **Step 12**

12   **To block access (lock) ALL parameters**

- Lock jumper must be set to locked, refer to **Step 9**

ENTERING PARAMETER ACCESS CODE TO UNLOCK ALL PARAMETERS

- Press SET for 8 seconds.
  The access code value 0 is shown on the display.

If this is initial setup or if you chose to keep the factory set code of 0

- Press SET to confirm 0 as the code.
  –The first parameter reference, SP1 (Set Point 1), will be shown on the display.

If you have already customized the H5 Parameter Access Code

- Use the UP and DOWN keys to increase the number to match your custom code, then press SET to confirm code.
  –The first parameter reference, SP1 (Set Point 1), will be shown on the display.

If you have customized the H5 Parameter Access Code but cannot remember the chosen code, you can reset the Parameter Access Code to the factory set code of 0.

- Press and hold the SET key and cycle power to the control.

13 **NOTE:** Once you have unlocked the parameters 1 minute of inactivity will timeout the unlock and the access code will again need to be entered to resume programming.

CUSTOMIZING PARAMETERS

Once parameters are unlocked they can be customized

- Using the UP and DOWN keys, move to the desired parameter you wish to customize.
- Press SET to see the value of the parameter.
- Modify the value with the UP and DOWN keys.
- Press SET to save the new value and return to parameter list.
- Press SET and DOWN to quit programming, or wait 1 minute for TIMEOUT.

14

RESETTING PARAMETERS TO FACTORY VALUES

- Access parameter H0 as explained in programming parameters.
- Value 0 will be displayed.
- Press SET for 8 seconds. Pro will be displayed if they have been setup correctly.
- Press SET and DOWN to exit setup or wait for 1 minute.

INDICATORS

OUT1 Indicates relay 1 On or Off as per parameter H2. If H2 = dir, with relay 1 On, LED lit, if H2 = inv, with relay 1 on, LED off. It blinks when SP1 is displayed.

OUT2 Indicates relay 2 On or Off as per parameter H3. If H3 = dir, with relay 2 On, LED lit, if H3 = inv, with relay 2 on, LED off. It blinks when SP2 is displayed.

❄ This indicates that the output is energized or that the compressor is connected. It waits for the programmed minimum stop time of the compressor.

💧 This indicates that defrosting is activated.

ERROR MESSAGES

In normal operation, the probe temperature will be shown.
In case of alarm or error, the following messages will be shown:

- Err Memory reading error
- ErP Error of the probe not shown on the display
- $AH1$ Maximum temperature alarm, probe 1
- $AL2$ Minimum temperature alarm, probe 1
- $AL1$ Maximum temperature alarm, probe 2
- $AH2$ Minimum temperature alarm, probe 2
- ooo Open probe error
- $---$ Shorted-circuited probe error

NOTE: If the probe or thermostat memory should fail, the compressor will be connected in accordance to the parameters set in C2 and C3.
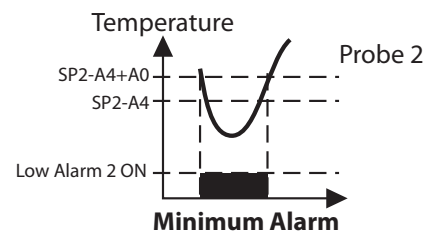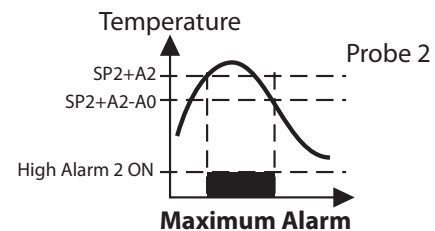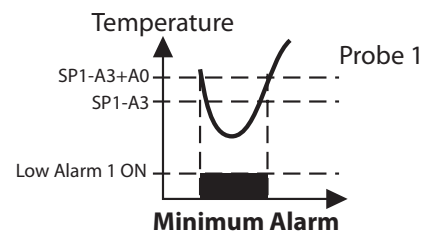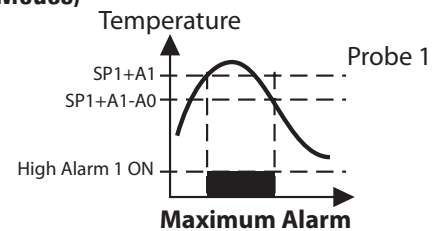
SILENCE THE BUZZER

Pressing the SET and DOWN keys simultaneously silences the buzzer. The message of alarm continues appearing in the display.

PARAMETER LIST & DESCRIPTIONS

	Description	Range	Factory Preset	Units
SP1	**Set Point 1** Temperature desired to regulate the Relay/Unit 1	r4 to r6	10.0	Degrees
SP2	**Set Point 2** Temperature desired to regulate the Relay/Unit 2	r5 to r7	10.0	Degrees
r0	**Dependency between SP1 & SP2** Only for mode ON/OFF 1 **ind**(ependent) = set point for relay 2, SP2 **dep**(endent) = set point for relay 2, SP1+SP2	ind / dep	ind	Option
r1	**Differential or Hysteresis for SP1** Temperature differential between ON/OFF of Relay 1 in ON/OFF control	0.1 to 20.0°	1.0	Degrees
r2	**Differential or Hysteresis for SP2** Temperature differential between ON/OFF of Relay 2 in ON/OFF control	0.1 to 20.0°	1.0	Degrees
r3	**Band differential** Temperature differential between ON/OFF of Relays 1 and 2 in neutral area control. For Relay 1 it is added to SP1 and for Relay 2 it is subtracted from SP1.	0.1 to 20.0°	1.0	Degrees
r4	**Lowest value for SP1**	−99.9° to r6	−99.9	Degrees
r5	**Lowest value for SP2**	−99.7° to r7	−99.9	Degrees
r6	**Highest value for SP1**	r4 to 302°	302	Degrees
r7	**Highest value for SP2**	r5 to 302°	302	Degrees
r8	**Regulation or Operating Mode** Selection of the operating mode.	On1, On2, nEU	On1	Option
A0	**Alarm Differential** Temperature differential between the alarm On and Off cycle	0.1 to 20.0°	0.1	Degrees
A1	**Maximum Alarm Probe 1** Maximum alarm ON when Probe 1 is higher than SP1+A2 Maximum alarm OFF when Probe 1 is lower than SP1+A2−A0	0.1 to 99.9°	99.9	Degrees
A2	**Maximum Alarm Probe 2** Maximum alarm ON when Probe 2 is higher than SP2+A2 Maximum alarm OFF when Probe 2 is lower than SP2+A2−A0	0.1 to 99.9°	99.9	Degrees
A3	**Minimum Alarm Probe 1** Minimum alarm ON when Probe 1 is lower than SP1−A3 Minimum alarm OFF when Probe 1 is higher than SP1−A3+A0	0.1 to 99.9°	99.9	Degrees
A4	**Minimum Alarm Probe 2** Minimum alarm ON when Probe 2 is lower than SP2−A4 Minimum alarm OFF when Probe 2 is higher than SP2−A4+A0	0.1 to 99.9°	99.9	Degrees

	Description	Range	Factory Preset	Units
A5	**Alarm Verification Time** Time from the alarm event until it trips *h-m are data in format XX.Y where XX are hours and Y tens of minutes	0.0 to 18.0	18.0	h-m(*)
A6	**Alarm Probe 1 Selection** *(See Figure 1)* AHL = Maximum and minimum Alarm Probe 1 enabled Ano = No Alarm Probe 1 AH = Maximum Alarm Probe 1 enabled AL = Minimum Alarm Probe 1 enabled	AHL, Ano, AH, AL	AHL	Option
A7	**Alarm Probe 2 Selection** *(See Figure 1)* AHL = Maximum and minimum Alarm Probe 2 enabled Ano = No Alarm Probe 2 AH = Maximum Alarm Probe 2 enabled AL = Minimum Alarm Probe 2 enabled	AHL, Ano, AH, AL	AHL	Option

FIGURE 1
(Alarm Modes)

Temperature — Probe 1 — SP1+A1 — SP1+A1-A0 — High Alarm 1 ON — **Maximum Alarm**

Temperature — Probe 1 — SP1-A3+A0 — SP1-A3 — Low Alarm 1 ON — **Minimum Alarm**

Temperature — Probe 2 — SP2+A2 — SP2+A2-A0 — High Alarm 2 ON — **Maximum Alarm**

Temperature — Probe 2 — SP2-A4+A0 — SP2-A4 — Low Alarm 2 ON — **Minimum Alarm**

|	Description	Range	Factory Preset	Units
c0	**Minimum Relay Stop Time** Minimum time from the disconnection of a relay until it can be switched on again	0 to 240	0	Minutes
c1	**Operation Relay 1** Selection between direct or reverse operation for Relay 1	dir / inv	dir	Option
c2	**Operation Relay 2** Selection between direct or reverse operation for Relay 2	dir / inv	dir	Option
c3	**Default operation Relay 1**. In case of failure of Probe 1: **oPn** = Relay 1 will remain open **Clo** = Relay 1 will remain closed	Opn / Clo	Opn	Option
c4	**Default operation Relay 2**. In case of failure of Probe 2: **oPn** = Relay 2 will remain open **Clo** = Relay 2 will remain closed	Opn / Clo	Opn	Option
P0	**Temperature Units Selection**	°C / °F	°C	Option
P1	**Calibration of Probe 1** If extending probe beyond 328' measure temperature and adjust probe calibration	–20 to 20°	0.0	Degrees
P2	**Calibration of Probe 2** If extending probe beyond 328' measure temperature and adjust probe calibration	–20 to 20°	0.0	Degrees
P3	**Decimal Point** If the displayed value of the probes is desired with decimals or not	no / yes	yes	Option
P4	**Probe to be displayed** Probe always on the display The other probe can be seen pressing the keys SET+UP **Sd1** = Probe 1 **Sd2** = Probe 2	Sd1 / Sd2	Sd1	Option
P5	**Number of Probes** If P5=1, there is no ON/OFF 2 mode. If selected, it will operate as ON/OFF 1.	1 / 2	1	Option
H0	**Factory Reset Values**	0	0	Option
H1	**Keypad tamper protection** To change the settings, enter into parameter and exit again. The protection setting is momentarily released. It switches on again 1 minute after the last time a key was pressed. **Yes** = Keyboard Protected **No** = Keyboard non protected	no / yes	no	Option
H2	**Operation of OUT1 LED** **dir**(ect) = On when Relay 1 is ON **inv**(erted) = On when Relay 1 is OFF	dir / inv	dir	Option
H3	**Operation of OUT2 LED** **dir**(ect) = On when Relay 2 is ON **inv**(erted) = On when Relay 2 is OFF	dir / inv	dir	Option
H4	**Serial Communication Address** Address for computer communication	0-999	0	Range
H5	**Parameter Access Code**	0-999	0	Range
H6	**Selection of Input Probe Type**	NTC/PTC	NTC	Option

OPERATING MODES

Mode ON OFF1 (On1) with r0=independent

Relay 1 with c1=direct
(Figure 2)
    Temperature of probe 1 $>$ =SP1+r1 --$>$ Relay 1 ON
    Temperature of probe 1 $<$ =SP1 --$>$ Relay 1 OFF

FIGURE 2
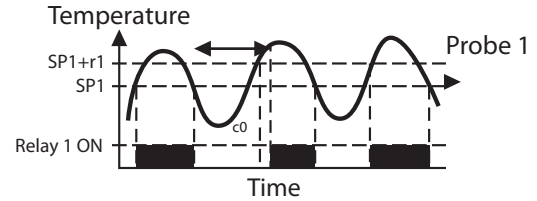
Relay 1 with c1=inverted (reversed)
(Figure 3)
    Temperature of probe 1 $<$ =SP1–r1 --$>$ Relay 1 ON
    Temperature of probe 1 $>$ =SP1 --$>$ Relay 1 OFF

FIGURE 3
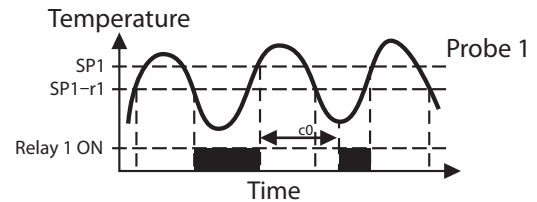
Relay 2 with c2=direct
(Figure 4)
    Temperature of probe 1 $>$ =SP2+r2 --$>$ Relay 2 ON
    Temperature of probe 1 $<$ =SP2 --$>$ Relay 2 OFF

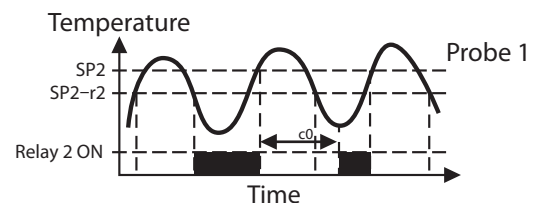### FIGURE 4
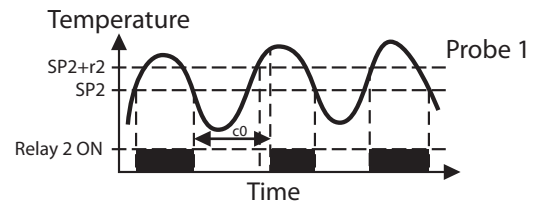
Relay 2 with c2=inverted (reversed)
(Figure 5)
    Temperature of probe 1 $<$ =SP2–r2 --$>$ Relay 2 ON
    Temperature of probe 1 $>$ =SP2 --$>$ Relay 2 OFF
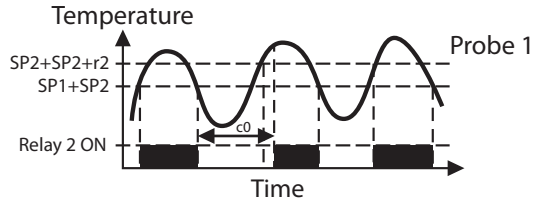
FIGURE 5

Mode ON OFF1 (On1) with r0=dependent

Output 1 works as an independent ON/OFF control, but output 2 works as follows:

Relay 2 with c2=direct
(Figure 6)
Temperature of probe 1 $>$ = SP1+SP2+r2 --> Relay 2 ON
Temperature of probe 1 $<$ = SP1+SP2 --> Relay 2 OFF

FIGURE 6

Temperature

SP2+SP2+r2
SP1+SP2

Relay 2 ON

c0

Time

Probe 1

Relay 2 with c2=inverted (reversed)
(Figure 7)
Temperature of probe 1 $<$ = SP1+SP2–r2 --> Relay 2 ON
Temperature of probe 1 $>$ = SP1+SP2 --> Relay 2 OFF

FIGURE 7

Temperature

SP1+SP2
SP1+SP2–r2

Relay 2 ON

c0

Time
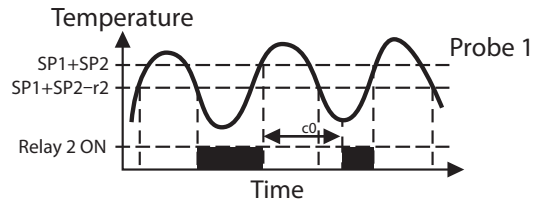
Probe 1

Neutral Area Mode (nEU)

Relay 1
(Figure 8)
Temperature of probe 1 $>$ = SP1+r3 --> Relay 2 ON
Temperature of probe 1 $<$ = SP1 --> Relay 2 OFF

FIGURE 8

Temperature

SP1+r3
SP1

Relay 2 ON

c0

Time
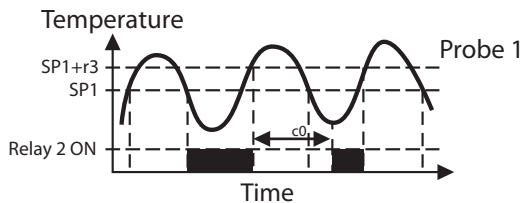
Probe 1

Relay 2
(Figure 9)
Temperature of probe 1 $<$ = SP1–r3 --> Relay 2 ON
Temperature of probe 1 $>$ = SP1 --> Relay 2 OFF

FIGURE 9

Temperature

SP1
SP1–r3

Relay 2 ON

c0

Time
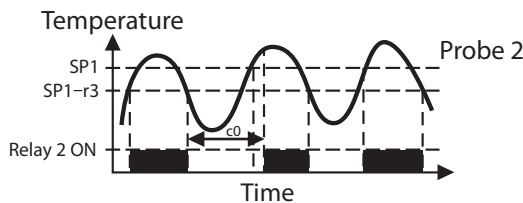
Probe 2

VIEW SECONDARY (if applicable) PROBE TEMPERATURE

When setting parameters you have the option to choose either probe 1 (Sd1) or probe 2 (Sd2) as the displays standard reading (see P4 in parameters).

To temporarily change the display to view the secondary probe information press SET and UP keys simultaneously. The display will not alternate between temperature reading and probe number (Sd1 or SD2) of secondary probe.

To exit back to the standard display press SET and DOWN , or wait 1 minute for TIMEOUT.

OPERATION IN CASE OF ERROR

If probe 1 fails, the operation is through c3. (See Parameter description.)
If probe 2 fails, the operation is through c4. (See Parameter description.)
In case of memory failure, both relays will remain open.

MAINTENANCE

After final installation of the JDDT2 Dual Stage Digital Thermostat, no routine maintenance is required. A periodic check of system calibration is recommended.