Temperature Control

Installation and Programming of Version 3 Cards

INDEX

NOTE: throughout this instruction the following symbols are used to represent the four keys on the keypad,

▲ increment value key
▼ decrement value key
■ cancel (box) key
▶ select, accept key

1. INTRODUCTION

The Temperature Control is a 26 channel unit with optional offcycle defrost timer on each channel. Each channel can be set to control heating or cooling. An individual temperature sensor may be used for each channel or they can share sensors to create a sophisticated multi-stage control.

Each channel has a programmable cut-in temperature, limit start delay and description.

A Presscon Defrost control can be used to switch off channels when a defrost is in progress.

The temperature, control state and description of each channel is shown on the display.

2. INSTALLATION

The display-keyboard module is the same as the rack control, alarm, defrost control etc. except for the software fitted, and is wired the same way. (Refer to Presscon Network Wiring instructions for details).

Mounting is accomplished by removing the screws at the top and bottom of the box and removing the lid. The two holes through the circuit board and back of the box can be used to mount the assembly. Do not put excessive force on the circuit board. The 25mm hole can be used to pass wiring through the box.

3. OPERATION

Function	Keys
Cancel (any function)	■
Move to channel	▼ or ▲
Isolate channel	■ and ▲
Restore channel	■ and ▼
Hold channel for 4 min	▶
Show cut-in / cut-out	▶
Show to / from defrost	▶ again
Initiate/Terminate Def.	▶ again

Normal

The display alternates the following screens;

Presscon v3.0
Control No. 41

The description on the top line can be changed in programming. The bottom line shows the card address of this controller.

01: -20.7°C : off
FROZEN FISH 1A

This display is shown for each channel which is used. The temperature and description of the channel (1 in this case) is shown along with the status as follows;

off	Control output off.
cool	Control on (cooling).
heat	Control on (heating).
delay	Start delay (control off).
def	Defrost (control off).

Current Time
08 : 24

The current time is displayed as above if the offcycle defrosts are used..

Viewing Channels

Rather than wait for a particular screen to be displayed, you can move to the desired one by pressing the ▲ or ▼ keys.

Cut-in and Cut-out

01: -20.7°C : off
-20.0°C : -18.0°C

Press ▶ while any channel is displayed to show the cut-in and cut-out temperatures for this channel. This screen will remain displayed for four minutes or until a key is pressed.

Next and Previous Defrost

All channels which use the internal offcycle defrost can display the time of the next programmed defrost and the time the previous defrost was initiated.

12:	**NEXT**	**PREV**
cool	**08:30**	**00:30**

Press ▶ while the *cut-in and cut-out* temperatures are displayed to move to this screen. The screen shown indicates the next defrost on channel 12 will be at 8:30AM, the last one was at 12:30AM and the channel is currently refrigerating.

Manual Defrost Over-ride

Pressing and then releasing the ▶ key while the *next and previous defrost* screen is displayed will show the following screen.

Manual over-ride
12 cool press >

This means channel 12 is currently refrigerating. Press and hold the ▶ key for five seconds and a defrost will be initiated on channel 12.

If the system is already on defrost the above procedure will terminate that defrost.

Press ■ to return to the normal displays.

Network Status

Net Status : 2
Last Address : 21

This is a count of the number of communication failures by this controller since this display last appeared. The occasional failure and retry is to be expected but more than a few per minute may indicate a network problem. The count is cleared to zero after this display appears. The last address is the card address of the most recent card to have a communication failure.

Isolating Control Channels

If enabled in programming the channel can be isolated (shut off). Press and hold the ■ and ▲ keys for 5 seconds while the desired channel is displayed. When the channel is isolated the screen will show;

01: -20.7°C : isol
FROZEN FISH 1A

Restoring Control Channels

If enabled in programming an isolated channel can be restored (control mode). Press and hold the ■ and ▼ keys for 5 seconds while the desired channel is displayed

Control

A cooling channel will turn the output on when the temperature is higher than the cut-in. A heating channel will turn the output on when the temperature is lower than the cut-in.

A channel will not turn on until at least the Limit Start Time has elapsed since the previous time the channel turned on.

Once on, the channel will turn off when the temperature has returned to the cut-out temperature. Two programmable differentials are available and each channel can use either of these. The cut-out temperature is determined by the cut-in minus the differential if cooling. (cut-in plus differential if heating)

If a defrost is in progress or the channel has been isolated the channel will remain off regardless of temperature.

A sensor used by the Temperature control may also be used by other Presscon controls such as an Alarm control. This eliminates duplication of sensors and wiring.

Off Cycle Defrost

All channels can use an internal offcycle defrost. Each channel's defrost its own programmable duration, number per day and time of first defrost. The defrosts are spaced evenly through the day based on the number and time of first.

External Defrost

Each channel can be set to one of eight external defrost channels. These external defrost channels are controlled by Presscon Defrost modules.

Each external defrost channel (1 to 8) is controlled by the Defrost modules solenoid or liquid line output.

For example, if this temperature control is card number 31 then external defrost channel 1 is controlled by any Defrost control output set to 31:1/O. External defrost channel 2 is controlled by an output set to 31:2/O. External defrost channel 8 is controlled by an output set to 31:8/O.

When an external defrost channel is on defrost, all temperature channels set to that external defrost channel will be on defrost, the display will show *def* and the output will be off.

Time Clock

The internal clock is used to initiate defrosts at their programmed times. This clock can be synchronised to the clock in a Defrost controller or the clock in a Presscon Clock/Modem card.

The clock can also be left free running. Note that a free running clock will restart at 00:00 (midnight) after a power loss and so can not be expected to accurately maintain the correct time.

4. PROGRAMMING

The controller is programmed via its 4 keys and screen. The screen will describe the setting to be adjusted and the current value. The programming method is the same as for other modules, except the menu items vary..

To begin programming, press and hold both the CANCEL(■) and NEXT(▶) keys for around 10 seconds until the following is displayed;

PROGRAMMING

If an access number has been set it must first be entered;

PROGRAMMING : 10
ACCESS NUMBER

and then the main group selected;

SYSTEM OPTIONS
- - - - - - - - - - - - -

CONTROL
- - - - - - - - - - - - -

TIME
- - - - - - - - - - - - -

CONFIGURATION
- - - - - - - - - - - - -

Select the group you wish to program with ▲ and ▼, then select with ▶ (start with system options for a new unit).

Note that pressing CANCEL at any time while in programming will return you to normal mode and leave the displayed setting unaltered.

The groups and menus are described in the recommended programming order for setting up a new controller. If you only wish to make an alteration you may skip to a setting and make the desired change. All settings are adjusted with the ▲ and ▼ keys and then stored with the select key ▶. Refer to the Configuration Sheet for more details.

4.1 SYSTEM OPTIONS

These are the fundamental operating conditions for the Defrost controller.

INITIAL : OFF
SYSTEM SETUP

Turn this on the first time you program a unit. Default values will be loaded based on your settings for previous values, speeding up the programming. If values have previously been programmed these may be upset if this option is on.

CONTROL DESCRIPT
Low Temp Control

Each control can be given a description which will be displayed on the screen during normal operation. See the description list for these descriptions.

NUMBER OF 26
CONTROL CHANNELS

Select the number of channels of

temperature control required.

SLOW SCROLLING
DISPLAY

Set the scrolling rate of the display fast or slow.

CELSIUS (C)
DISPLAY MODE

Set °C or °F display mode.

-40°C to 87°C
TEMP. RANGE

Select a temperature range of -40°C to 87°C in 0.5°C steps or -80°C to 175°C in 1.0°C steps. If Fahrenheit is used the ranges are -40°F to 189°F and -111°F to 347°F.

FAILSAFE OPTION
OUTPUT OFF

This determines the action of the control output if a temperature sensor fails. The choices are;

OFF	Control output off.
ON	Control on.
CYCLES	50% duty cycle.

If set to Output Cycles the output will be on for the Limit Start Time then off for the Limit Start Time.

DO NOT ALLOW
KEYBOARD ISOLATE

Allow or do not allow keyboard isolation of channels.

LIMIT START TIME
60 sec

The Limit Start Time is the minimum period allowed between any consecutive control starts. (i.e. once the control for a channel turns on it can turn off at any time but cannot turn on again until this time has elapsed.)

CONTROL 1.0°C
DIFFERENTIAL 1

The first control differential.

CONTROL 2.5°C
DIFFERENTIAL 2

The second control differential.
Each channel must use one of these two differentials.

CHANGE DESCR: OFF
<USER DESC. 1>

Change to ON to alter the first user programmable description. This can be used as the description for defrost channels along with the fixed descriptions.

ENTER DESCRIPT
<USER DESC. 1>

use ▲ & ▼ to alter each of 12 characters in turn, move across using ▶

CHANGE DESCR: OFF
<USER DESC. 2>

Set the second description the same way;

ENTER DESCRIPT
<USER DESC. 2>

4.2 CONTROL

This group of menus sets the operating parameters of each channel.

SET CHANNEL
NUMBER 2

Select the channel to be programmed or *exit* to move to the next menu group.

DESCRIPTION 2
BAKERY ROOM

Select a description for this channel from the fixed list and the two user programmable descriptions (System Options).

DESCRIPTION No.
BAKERY ROOM 1A

An optional number can be assigned to each description. i.e. none, 1A, 2A, 3A etc. If the same number was already used on a previous channel with the same description, the letter will be "B". Further channels with the same description and number will become "C" then "D" etc. If the channel ends up having a unique description and number the letter will not be displayed.

COOLING MODE
CONTROL

Set this channel to be a heater or cooling channel.

CONTROL 1.0°C
DIFFERENTIAL 1

Select which of the two differentials (set in system options) to use for this channel.

CUT IN : 6.5°C
CUT OUT : 5.5°C

Set the cut-in point for this channel. The cut out is automatically set by the differential chosen previously.

USE SAME SENSOR
AS PREV CHAN : OFF

If allowed in the Cascade Sensors menu under the Configuration menu group, each channel from two up has this menu. If *off* is chosen the channel uses its own sensor. If *on* is chosen this channel uses the temperature reading of the previous channel. No sensor is set for this channel in the Sensors and Relays menu group.

NO
DEFROST CONTROL

If the channel is set for cooling choose the defrost option. Select from *NO, EXTERNAL CHAN. 1 to 8* or *OFF CYCLE*.
The External Channels cause this temperature channel to go into defrost when that external defrost channel goes into defrost

The Off Cycle defrost is an internal defrost timer which uses the following menus.

DEFROST
DURATION 25 min

The duration of each defrost period.

No. OF DEFROSTS
PER 24 HOURS : 4

Set the number of programmed defrosts to occur per day.

TIME OF FIRST
DEFROST 05:30

Each defrost will be evenly spaced throughout the day starting from the Time of First Defrost.

4.3 TIME CLOCK

Set the operating conditions of the time clock used to initiate defrosts.

TIME SOURCE
CLOCK CARD

The time source can be either a CLOCK CARD or FREE RUNNING.
Valid clock cards are Clock/Modem cards and other Defrost controls. If used the clock in this control will mimic the clock on the other control.
A free running clock uses its own internal timer to count time. This will be reset if the power is lost. It is intended to count 24 hour cycles but not necessarily represent the correct time.

HOUR OF DAY 17
(24 Hour Clock)

Set the hour part of the current time in 24 hour clock mode.

SET 17:34
MINUTES ON CLOCK

Set the minutes part of the time.

4.4 CONFIGURATION

Select the configuration option and the following menu asks you to confirm you wish to enter;

ACCESS TO : OFF
CONFIGURATION

change to ON, and press ▶ to gain access to the configuration options;

SECURITY
- - - - - - - - - - - - - - -

NETWORK CARDS
- - - - - - - - - - - - - - -

SENSORS & RELAYS
- - - - - - - - - - - - - - -

exit
- - - - - - - - - - - - - - -

The exit option returns to normal programming.

4.4.1 SECURITY MENU

PRESSCON 3.00
TEMPERATURE CONT

This is the software version number fitted to this control. This item is for reference only and cannot be changed.

CHANGE : 10
ACCESS NUMBER

The access number is a number which must be entered each time programming is entered. Select OFF if this is not required.

CASCADE SENSORS
ON CHANNELS : OFF

If set to on it allows multiple channels to use the same sensor. (see Control menu)

IGNORE : OFF
BINDING WARNINGS

If set to ON, allows you to program cards not yet connected (see Sensors & Relays Menu).

RESET : OFF
ADDRESS TABLE

Used to re-start sensor and relay programming from scratch.

4.4.2 NETWORK CARDS MENU

This menu is used to "find" network cards and then assign a card number from 1 to 99 to each network card. Each card must have a unique card number.

CARD No. : 41
OF THIS DISPLAY

This display prompts for the card number of this controller.

CARD COUNT : 7
CHECK CARDS : OFF

A count of the cards found (not including this one) is displayed. If ON is selected each card is identified and its card number can be altered.

CARD No. of
Alarm : 51

This display shows a card numbered 51 of type ALARM has been identified.

As an alarm card has a display its display will show;

This controller
selected to bind

to help identify it. Cards that do not have a display will stop flashing their selected indicator and turn it steady on.

CARDS FOUND : 7
EXPECTED : 7

After all the cards have been found a summary screen shows the number which were found and the number expected from the card count carried out at the start of the Network Cards menu. If a card did not show up here it may not be communicating correctly and should be investigated

4.4.3 SENSORS & RELAYS

This menu allows you to assign inputs to sensor cards and outputs to relay cards etc. Ensure all other programming has been completed BEFORE accessing this menu.

The "sensors and relays" menu will look at the configuration you have set up - that is how many channels etc. you have chosen and then ask you to identify the source of each input and the location of each output in the system. This menu will vary depending on the system specified.

A maximum of 11 separate cards (total of relay, sensor, clock/modem etc. cards) can be specified under this menu.

Use the table in the Relay card instructions to determine how you wish to program and wire the outputs.

The network addresses are asked for in the following manner;

SENSOR 1: 21:4
BAKERY ROOM

This is the location of the temperature sensor for channel 1 (BAKERY ROOM), as shown it is set to input 4 on sensor card 21.

WARNING THIS IS
ALREADY USED

Each channel must use a unique sensor, this message indicates the sensor has already been used. If a card is specified, but cannot be found, the display shows;

WARNING CARD
NOT FOUND

In this case, you will be re-prompted for the location until found. If "IGNORE BINDING WARNINGS" in the SECURITY menu is set to ON, you can proceed through the SENSORS & RELAYS menu but will get a "binding error“ at the end. This means that not all points set can be found by the card or more than 11 cards have been addressed..

RELAY 1: 11:2/O
BAKERY ROOM

The control outputs are set as above. In this case channel 1’s output is set to relay 2 on card 11 and will be normally open.

CARD No. OF 61
TIME CLOCK CARD

If a clock card is used to set the time enter its card number as above.

After all required inputs and outputs have been prompted and set, the display responds;

Please wait

while the connections are made to the selected cards, then returns to normal operation. If any card cannot be set, the message;

Binding Error

warns you to retry. If the “Sensors and relays” menu is not completed then communications will not occur properly, this message warns of this;

NETWORK BINDING
INCOMPLETE

5. FIXED DESCRIPTIONS

The following descriptions are available to describe defrost channels.

AIR CONDIT
AMBIENT TEMP
BAKERY
BAKERY CASE
BAKERY FREEZ
BAKERY ROOM
BERRIES
BERRY CASE
BERRY ROOM
BLAST FREEZ
BLOOD
BLOOM BOX
BOILER
CABINET
CASE
CHANNEL
CHEESE
CHEESE CASE
CHEESE ROOM
CHICKEN
CHICKEN/FISH
CHICKEN CASE
CHICKEN ROOM
CHILL WATER
CHILLER
COLD ROOM
COLD STORE
COMPUTER RM
CONDENSER
COOL ROOM
COOL TOWER
DAIRY
DAIRY CASE
DAIRY ROOM
DELI
DELI CASE
DELI ROOM
DISPATCH
FISH
FISH CASE
FISH ROOM
FLUORESCENCE
FREEZER
FREEZER ROOM
FROZ BERRIES
FROZ FISH RM
FROZ FOOD RM
FROZ MEAT RM
FROZEN CHICK
FROZEN FISH
FROZEN FOOD
FROZEN MEAT
FRUIT
FRUIT & VEG
FRUIT CASE
FRUIT ROOM
GAS
GENERAL
GLASS DOOR
GLYCOL
ICE CREAM
INCUBATOR
INSIDE TEMP
ISLAND CHEES
ISLAND CHICK
ISLAND DELI
ISLAND FISH
ISLAND MEAT
LIFT
LIQUOR
LIQUOR CASE
LIQUOR ROOM
LIQUID TEMP
LOW TEMP
MEAT
MEAT CASE
MEAT ROOM
MEAT PREP
MEDIUM TEMP
MILK
MILK CASE
MILK ROOM
MORTUARY
NITROUS OXID
OIL
OUTSIDE TEMP
PHARMACY
PIZZA
PIZZA CASE
PIZZA ROOM
PLANT ROOM
PRODUCE
PRODUCE CASE
PRODUCE ROOM
PRODUCE PREP
REFRIGERATOR
ROLL IN MILK
ROOM
SERVICE CHIC
SERVICE DELI
SERVICE FISH
SERVICE MEAT
SMALLGOODS
STORE ROOM
STORE TEMP
SUCTION SYST
SUMP
SUPPLY
TEMP SENSOR
TRANSDUCER
VAULT
WATER
YOGHURT

The following descriptions are available to describe the defrost controller.

Low Temp Control
Med Temp Control
Temperature Cont
Presscon Tcon
Temperature 1
Temperature 2
Temperature 3
Temperature 4
Temperature A
Temperature B

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