Defrost Control

Installation and Programming of Version 3.1 Cards

INDEX

NOTE: throughout the text,
keys referred to are:

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

1. INTRODUCTION

The Defrost Control is an eight channel defrost timer. Each channel is an independent, full function electric or hot gas defrost timer with pump down, defrost, drain and fan periods.
Each channel can have up to eight programmed defrost periods per day.
Defrosts can be initiated via the keypad or via any control which has voltage free contacts or via P.I.N. software..
Defrosts can be terminated based on time, temperature, any control which has voltage free contacts, via the keypad or via P.I.N. software.
The defrost status, the time of the previous and next defrost, a description of the channel and the terminate sensor readings are available on the display in plain English.

2. INSTALLATION

The display-keyboard module is the same as the rack, alarm, or temperature 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 ▲
Initiate Defrost	▶ (5 sec.)
Terminate Defrost	▶ (5 sec.)

Normal

The display alternates the following screens;

Presscon Defrost
Control No. 31

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

Ch 1 Next Prev
Run 10:00 4:30

This display is shown for each channel which is used. The times under *Next* and *Prev* indicate the starting time of the next and previous defrosts. The status of the channel is as follows;

RUN	Refrigeration running.
P/D	Pump down for hot gas.
DEF	Defrost in progress.
DRN	Drain period.
FAN	Fan delay period.

Ch 1 FREEZER ROOM
Run 10:00 4:30

This display is shown for each channel which is used. The description on the top line is programmable. The bottom line shows the status, next and previous defrosts.

Ch 1 TEMP. -22°C
-21°C -22°C off

This display is shown for each channel which uses defrost terminate inputs. These may be temperature probes or clean contact switches. The temperatures are the current probe temperature, an open circuit is *off* and a closed circuit is *on.*

Current Time
08 : 24

The current time is displayed as above.

Viewing Channels

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

Manual Over-ride

Pressing and then releasing the ▶ key while one of the channel status screens is shown will give you the option of changing the status of that channel. The following screen will appear.

Manual over-ride
3 RUN press >

This means channel 3 currently is in run mode. Press and hold the ▶ key for five seconds and the defrost will be initiated on channel 3.
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.

Electric Defrost

When the control is set to Electric defrost mode, Each channel can control the heater, refrigeration solenoid and evaporator fan.
The defrost sequence is as follows;

Mode	*Refrig.*	*Heater*	*Fan*
RUN	ON	OFF	ON
DEF	OFF	ON	OFF
DRN	OFF	OFF	OFF
FAN	ON	OFF	OFF
RUN	ON	OFF	ON

The refrigeration output may be either a relay on a Presscon Relay card or an external defrost channel on a Presscon Temperature control. The heater and fan outputs are relays on a relay card.
If the Fan delay is set to zero the fan output is not used.
If the drain period is set to zero the heater output is not used.

Hot Gas Defrost
When the control is set to Hot Gas defrost mode, each channel controls the hot gas solenoid, liquid solenoid, suction solenoid and evaporator fan.
A single optional auxiliary relay is also switched when any hot gas defrost is in progress. This can be used to force refrigeration to run to generate the hot gas.
The defrost sequence is as follows;

Mode	*Liquid*	*Suction*	*Hot Gas*	*Fan*	*Auxiliary*
RUN	ON	ON	OFF	ON	OFF
P/D	OFF	ON	OFF	ON	ON
DEF	OFF	OFF	ON	OFF	ON
DRN	OFF	OFF	OFF	OFF	OFF
FAN	ON	ON	OFF	OFF	OFF
RUN	ON	ON	OFF	ON	OFF

The liquid output may be either a relay on a Presscon Relay card or an external defrost channel on a Presscon Temperature control. The suction, hot gas, auxiliary and fan outputs are relays on a relay card.
If the Fan delay is set to zero the fan output is not used.
If the drain period is set to zero the heater output is not used.
If the pump down period is set to zero the suction output is not used.

External Termination
Each channel can have up to four termination inputs. A maximum of 16 termination inputs can be used on one control, composed of one per channel plus a maximum of eight to be split amongst the channels.
The terminate input may be either a M probe or a clean contact switch. The contact closing or the temperature rising above the programmed setting will terminate the defrost.
Where more than one input is used on a channel, all inputs must call for termination before the defrost will terminate.
When the defrost duration elapses the defrost will terminate regardless of the state of the terminate inputs.

External Initiate
Each channel can have an external initiate input. This can be any set of clean "voltage free" contacts such as pressure, temperature or push button switches. The defrost will begin when the contacts close.

Time Clock
The internal clock is used to initiate defrosts at their programmed times. This clock can be synchronised to the clock in any other defrost controller or the clock in a Presscon Clock/Modem card.
The clock can also be left free running or reset to a programmed time whenever a set of contacts closes (i.e. a time clock set to close contacts once per day)
Note that a free running clock will restart at 00:00 (midnight) after a power loss.

Modem Power Output
The modem power output switches off at 11:59 and 23:59 for one minute. This can be used to routinely drop the power to equipment prone to lock-ups such as modems.

4. PROGRAMMING
The Defrost module 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 ■ and ▶ 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
- - - - - - - - - - - - -

DEFROST CHANNELS
- - - - - - - - - - - - -

TIME CLOCK
- - - - - - - - - - - - -

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

Move to the group you wish to program with ▼ or ▲, then select with ▶ (start with system options for a new unit).
Note that pressing ■ 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 ▶ key. Refer to the Defrost 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
Defrost 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.

No OF 8
DEFROST CHANNELS

Set the number of channels to use.

SLOW SCROLLING
DISPLAY

Set the scrolling rate of the display fast or slow.

CELSIUS (C)
DISPLAY MODE

Set °C or °F display mode.

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 ^ & v 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 DEFROST CHANNELS

Set the parameters for each defrost channel.

SET : 1
DEFROST CHANNEL

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

DESCRIPTION 1
FROZEN FOOD

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

CH1 : PUMP DOWN
PERIOD 2 mins

Set the pump down period in minutes. This menu is only available if Hot Gas defrosts has been selected in the configuration menu..

CH1 : DEFROST
DURATION 30 mins

Set the maximum defrost period in minutes.

CH1 : DRAIN
PERIOD 5 mins

Set the drain period required in minutes.

CH1 : FAN DELAY
2 min 30 secs

Set the fan delay period.

CH1 : 4 DEFROSTS
PER 24 HOURS

Set the number of programmed defrosts to occur per day.

CH1 : START TIME
DEFROST 1 05:30

For each defrost set the time of day for it to occur.

CH1 : DEFROST OFF
INITIATE INPUT

If required a switch or contact can be used to initiate the defrost.

CH1 : DEFROST 1
TERMINATE INPUTS

Select the number of terminate inputs to be used on this channel.

CH1 : TERMINATE 1
TEMPERATURE 5 °C

Set the temperature all temperature terminate probes must reach to end the defrost.

4.4 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, a SYNC. SWITCH or FREE RUNNING.

Valid clock cards are Clock/Modem cards and other Defrost controls. If a Clock Card is used the time on this Defrost control will follow the time on the selected card.

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.

A sync. switch can be used to make the internal free running clock more accurate. When a contact closes the internal clock will be set to a specified 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.

TIME AT 12:00
SYNCHRONISING

The clock is set to this time when the synchronising input closes.

4.5 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.

4.5.1 SECURITY MENU

PRESSCON 3.10
DEFROST CONTROL

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.

ELECTRIC DEFROST
OPERATING MODE

Set the control for either Electric or Hot Gas defrosts.

AUXILIARY
OUTPUT OFF

If Hot Gas defrost has been selected set whether the auxiliary output is used. If Electric defrost is selected this menu will not appear.

MODEM OFF
POWER OUTPUT

Set the modem power output on or off.

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. This option also puts the control into *initial system setup* mode.

4.5.2 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. : 31
OF THIS DISPLAY

This display prompts for the card number of this defrost controller.

CARD COUNT : 7
CHECK CARDS : OFF

A count of the cards found 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

4.5.3 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 defrost 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;

LOCATION 11:1/O
SOLENOID : 1

This is the location of the refrigeration solenoid relay for defrost channel 1.

WARNING THIS IS
ALREADY USED

Each channel must use a unique relay, this message indicates the relay 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..
Note: The Solenoid or Liquid line output can be set to either a Relay card or a Temperature control. Terminate sensors, external initiate, external terminate and sync. inputs are set to sensor cards with the sensor card input/s set to *Temperature*.

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.

BAKERY
BAKERY CASE
BAKERY FREEZ
BAKERY ROOM
BERRIES
BERRY CASE
BERRY ROOM
BLAST FREEZ
BLOOD
BLOOM BOX
CABINET 1
CABINET 2
CABINET 3
CABINET 4
CASE 1
CASE 2
CASE 3
CASE 4
CHANNEL 1
CHANNEL 2
CHANNEL 3
CHANNEL 4
CHANNEL 5
CHANNEL 6
CHANNEL 7
CHANNEL 8
CHEESE
CHEESE CASE
CHEESE ROOM
CHICKEN
CHICKEN/FISH
CHICKEN CASE
CHICKEN ROOM
CHILL WATER
CHILLER
CO2
COLD ROOM
COLD STORE
COOL ROOM 1
COOL ROOM 2
COOL ROOM 3
COOL ROOM 4
DAIRY
DAIRY CASE
DAIRY ROOM
DEFROST 1
DEFROST 2
DEFROST 3
DEFROST 4
DEFROST 5
DEFROST 6
DEFROST 7
DEFROST 8
DELI
DELI CASE
DELI ROOM
DISPATCH
FISH
FISH CASE
FISH ROOM
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
GLASS DOOR
GLYCOL
ICE CREAM
ISLAND CHEES
ISLAND CHICK
ISLAND DELI
ISLAND FISH
ISLAND MEAT
LIQUOR
LIQUOR CASE
LIQUOR ROOM
LOADING DOCK
LOW TEMP
MEAT
MEAT CASE
MEAT ROOM
MEAT PREP.
MEDIUM TEMP
MILK
MILK CASE
MILK ROOM
MODEM
MORTUARY
NITROUS OXID
PHARMACY
PIZZA
PIZZA CASE
PIZZA ROOM
PRODUCE
PRODUCE CASE
PRODUCE ROOM
PRODUCE PREP
REFRIGERATOR
ROLL IN MILK
ROOM 1
ROOM 2
ROOM 3
ROOM 4
SERVICE CHIC
SERVICE DELI
SERVICE FISH
SERVICE MEAT
SMALLGOODS
STORE ROOM
STORE TEMP.
YOGHURT

The following descriptions are available to describe the defrost controller.

Air Defrost
Defrost Control
Defrost 1
Defrost 2
Defrost 3
Defrost 4
Defrost A
Defrost B
Electric Defrost
Hot Gas Defrost
Low Temp Defrost
Med Temp Defrost
Off Cycle Defr.
Presscon Defrost.

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