

Presscon DDC V1.2 - the total Air-conditioning control solution

Instructions

Presscon is a modular, networked control system for your HVAC no matter how big or small.

Presscon consists of a range of modules which are connected via a common databus (using industry standard Lonworks® protocol). The databus can be extended over kilometers and include hundreds of devices.

Each Presscon controller controls 8 HVAC plant with user friendly display and control options such as manual over-ride and settings adjustment (password protected if preferred)

All Presscon modules are DIN rail mount and feature pluggable electrical connections for simplified installation and quick field change-over.



Each DDC controller can control eight areas or plant. Connect as many as required for the whole system.

*** Coming soon*

the new Super control in the same package which will offer hundreds of available channels and enhanced functionality including general purpose PLC programming based on international industry standard IEC 1131-3.

DDC Controller features on each of 8 Plant

4 Heat, 4 Cooling stages with programmable delays, analogue heat and cool control, fan speed control, full 265 day time clock function, local over-ride for after hours operation, economising and setback function + much more!



HVAC control in all types of buildings



Output card 8 Relay outputs 240VAC5A, 2 0-10V DC analogue



Presscon can also control and monitor refrigeration systems of all types

Input card accepts 32 inputs including pressure, temperature, digital inputs



Interface card includes 2 high speed RS232 ports, clock, 8MB Datalogging



Power supply 12V DC 5A, includes power filtering & surge protection



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ISO9001 QEC12298 Standards Australia

Pressnet - software for Presscon Refrigeration and Air-conditioning Systems

Pressnet Software allows you to access and control Phasefale's Presscon Refrigeration and Air conditioning control system. From Pressnet you are able to view and change the current system status, check previous events and trends. User friendly, Pressnet software works exactly the same on site or remotely with a range of connection options including the internet, direct PC connection or dial up access over phone lines.

Pressnet has been designed to show problems by exception- so a range of staff can easily be trained to spot problems and react accordingly. But dig a little deeper and technical users can analyze problems using the powerful diagnostic tools included.

Pressnet software is also available in a "lite" where a dedicated on site PC is not required for a lower installed cost. Both versions are intelligent enough to automatically configure themselves to the Presscon, so can be used straight away without complicated installation or configuration. If required, a customized site layout screen is simply setup.



Pressnet Layout is clean and simple to use

History functions for total recall

- Traceable history log of user access and operations
- Search functions in history logs
- offline programming and saving of controller data

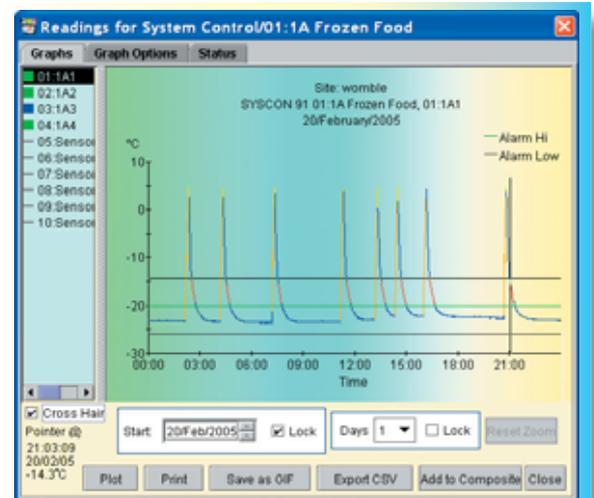
User friendly operation

- Site layout designed for non technical users
- "At a glance" system status for quick recognition of alarm events
- 4 user access levels with unlimited users
- Quickly & easily change setting and status of system
- Automatic configuration to connected Presscon
- Free on-line updates to program via website
- Customize the site layout to suit the specific site requirements.
- Access to unlimited sites from a single screen

Powerful, flexible Graphing

- Graphs include color coded trace to match system status including defrosts, alarm etc..
- View data back to installation date
- Highly detailed graphs with 1 minute resolution & accurate crosshair function
- Composite graphs allow mixing of different parameters (e.g. Temperature & pressure)
- Graph export functions to spreadsheet for detailed analysis
- Graphs saved in memory from commissioning date forward

So for easy, total control of your refrigeration or v plant, whether on site or remotely, Pressnet Software provides a total solution.



System status is displayed with color coded traces



Composite graphs allow comparison of different parameters

* Pressnet lite contains most of the features of Pressnet, the main exceptions being memory limitations (8MB) and recording time base (5 minutes compared



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Presscon DDC

This Document contains all the main information required to install and operate the Presscon DDC Air Conditioning Control System.

Presscon Software – P.I.N. can be obtained from our internet site at www.phasefale.com.au , or on our CD-Rom. Please contact us for details.

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Air Conditioning Controller



Phasefale are excited to announce a revolutionary new air conditioning controller which offers performance approaching that of the most sophisticated systems for the price of regular A/C controls. A major feature of this new system is that the display controller can be used as a user interface and adjustment (within set limits) of the systems, and also a service aid with its advanced programming features. As each controller can control up to **8 major air conditioning plant**, it also offers exceptional value and compactness.

Using technology developed in our Presscon refrigeration controller this new control offers an attractive, user friendly display controller combined with our ultra reliable and proven hardware (including the controller hardware- only the software is new).

After extensive consultation with the air conditioning industry, the new controller's feature set is extremely rich;



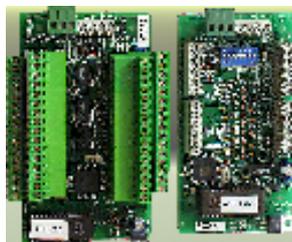
- Intelligent start and stop operation for energy saving operation with comfort settings maintained. Programmable 16 character description for each of 8 plant.
- Two speed fan control.
- 4 stages of cooling and 4 stages of heating
- Economising function.
- Proportional heating and cooling outputs.
- Dehumidification control.
- 7 day clock program with normal, setback, fan only, shutdown and holiday periods.
- Control inputs can over-ride time clock and initiate economise, de-humidify etc.
- Alarm warning and fault inputs
- Commissioning and maintenance

functions to force any selected stage to run.

- Averaging of up to 4 temperature sensors & multiple plant can share common sensors
- Auxiliary outputs to switch other equipment, lights etc.
- FreeVersion of Windows Based monitoring Software



For sites where there is refrigeration control , common data logging and communications equipment can be used further enhancing the cost effectiveness of Presscon's modular design.



8 Channel Relay card (left), 32 & 8 channel sensor cards

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 email- sales@phasefale.com.au
 or visit our Web Site www.phasefale.com.au PN403

Inputs/Outputs per Plant *	
Inputs	Outputs
Room temp 1	Fan lo output
Room temp 2	Fan hi output
Room temp 3	Cooling 1 Out
Room temp 4	Cooling 2 Out
Outdoor air	Cooling 3 Out
Return Air	Cooling 4 Out
Supply Air	Heating 1 Out
Coil Temp	Heating 2 Out
Humidity Transmitter	Heating 3 Out
Control Adjust	Heating 4 Out
Control Input	RV Output
Economize Input	Cooling Analog
Dehumidify Input	Heating Analog
Alarm Input	Economize Analog
Fault Input	Economize Relay Out
	Dehumidify Out
* 8 plant per controller.	Runmode Out
	Setback Out
Input boards are 8 or 32 channel	
Outputs boards are 8 channel (12-240VAC/5A)	



Presscon Network Air Conditioning Button operation for Screens & Navigation

Phasefale P/L PN408.doc
+613 9553 0800
[www. phasefal e. com. au](http://www.phasefal e. com. au)



Up / Down Keys
Functions;
Move up/down menu items
Increase/Decrease values

Cancel Key
Functions;
Move to previous screen
Cancel setting
Cancel out of Program menu

Enter Key
Functions;
Move to next screen
Accept changed setting

Refer to Navigation sheet (PN405) for detailed screen information

Run After Set Hours:
Air Conditioning
Main Screen

Press up to run all AC for 1 Hr. Press again for additional hours to maximum*

Reception	Run	23C
Accounts	Heat	19C
File Server	Cool	24C
Factory	Off	21C

Press down to turn OFF all AC channels.

Reception	Run	1 Hr
Accounts	Run	1 Hr
File Server	Run	1 Hr
Factory	Run	1 Hr

Reception	Off	
Accounts	Off	
File Server	Off	
Factory	Off	

Go to System screen

Go to Plant 1 screen

Adjusting the Temperature *

Select the plant channel

Select the heating/cooling settings

Access the Temp. Adjust Option

Adjust the temperature Up or down

01: Reception	Next OFF	18: 10 FRI
Zone Average		21. 6C
*Temp Adjust		-2. 5C

Cancel to Main Menu

View Zone Temperatures*

Select the plant channel

Select the Zone Reading

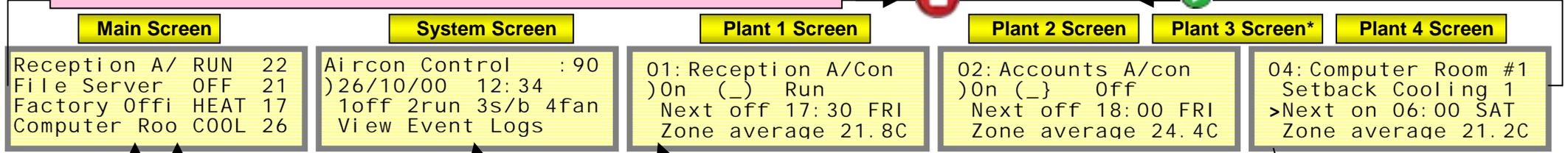
Scroll though the available zone Readings

01: Reception	On	Run
Next	OFF	18: 10 SAT
01: Room 203		22. 6C

Cancel to Main Menu

* Depending on programming:
- run on time can vary
- temperature adjust can vary
- may not be available

Presscon Air Conditioning Control Navigation (non programming mode)



The main screen shows the 4 plant descriptions plus running condition & zone average. This screen is displayed by default. The **over-ride** functions are accessed here with the up & down buttons

Press up button to add 1 hour of additional run time to all 4 plant channels (up to 3 hours run time). Use the down button to turn off all systems

Use red button to view previous screen

Use green button to view next screen

The System screen shows the time & date, alarms, and access to event logs

The plant screens show plant # & name, current mode & cooling or heating status (smiley face when within heating cooling limits), the next clock function, and the zone temperature average

*not shown

For more plant information, use up or down button

The cursor changes from ")" (no further info available, to ">" where further options are available. Use the ^ or v down key on a plant screen to activate the > option on the 3rd line.

Individual Plant information/options

04: Computer Room #1
Setback Cooling 1
>Next on 06:00 SAT
Zone average 21.2C
Heat 19.0C to 20.0C
Mode Input n/used
Dehum n/u: Econ n/u
Alarm

Use green button for more options

04: Computer room #1
*>Force Auto
Off
Fan Only
Setback
On Mode
Run 1Hr
" "
Run 6Hr

Use green button to manually Force options

04: Computer Room #1
>Dehum n/u: Econ n/u
Cool n/u
Heat n/u

View status of dehumidification, Economizing, Cooling & Heating

04: Computer Room #1
>Mode Input n/used
Econ Input n/used
DeHum Input n/used

View external control function status: Economizing & Dehumidification controls

04: Computer Room #1
>Heat 20.0C to 21.0C
Cool 23.0C to 22.0C
Temp Adjust +0.1C

View heating & cooling settings. Use up, down buttons to adjust

04: Computer room #1
*Main Svr 23.6C
Disk Str 23.6C
UPS Room 23.6C
Corrid'r 23.6C
Outside temp 18.9C
Return air 25.6C
Supply air 20.5C
Coil temp 16.8C
Humidity 58%
Av Start 0 min/C

Use green button to view system temperatures, humidity & intelligent start details

Use Red button to CANCEL to earlier screen

Presscon Air Conditioning Control Programming Menus Ref PN406_1 For Aircon1.1

To enter Programming, press & hold   together

```
PROGRAMMING MODE
*ACCESS CODE  none
SOFTWARE      .20
CHECKSUM     207033
```

Enter an access code [if set] then press 

```
SELECT MENU GROUP
>PLANT SETTINGS
CLOCK SETTINGS
GENERAL OPTIONS
HARDWARE SETTINGS
NETWORK CARDS
LOAD DEFAULTS
EXIT PROGRAMMING
```

Screen shown extended. Use up And down buttons To select Programming Option required then   

```
SELECT PLANT
01:Accounts
>02:File Rm
03:Factory
04:Store Rm
DONE
```

```
SELECT CLOCK
CLOCK PROGRAM 1
CLOCK PROGRAM 2
>CLOCK PROGRAM 3
CLOCK PROGRAM 4
DONE
```

To EXIT programming Mode press cancel a few times  

Use up & down buttons to select option to set, then press 

```
PLANT 1 SETTINGS
>Accounts
COOL CUT IN 23.0
COOL CUT OUT 22.0
COOL INC DELAY 60s
COOL DEC DELAY 60s
COOL LIM START 1m
COOL SETBACK 28.0C
HEAT CUT IN 19.0
HEAT CUT OUT 20.0
HEAT INC DELAY 60s
HEAT DEC DELAY 60s
HEAT LIM START 1m
HEAT SETBACK 14.0C
FAN SETBACK CYCLE
DEADBAND DELAY 5m
CLOCK PROGRAM 1
ECONOMISE DIFF 2C
DEHUM. SETPOINT 50%
DEHUM. SETBACK 80%
DEHUM. WITH STAGE 1
ALARM DESC:ALARM P1
ALARM DELAY 300s
FAULT DESC:FAULT P1
FAULT DELAY 300s
FAULT RESTART 15m
FAULT STOPS FAN NO
EARLIEST START 0m
USER ADJUST +/-
KEY OVER-RIDE 2HR
EXT OVER-RIDE 2HR
EXT TYPE ON ONLY
MODE IN PRIORITY HI
SLAVE TO PLANT none
STATIC HIGH 500Pa
STATIC LOW 250Pa
DESC 1 Room 208
DESC 2 Store Rm
DESC 3 Kitchen
DESC 4 Board Rm
DONE
```

```
GENERAL OPTIONS
>Aircon. Control
TEMPERATURE UNIT .C
TIME 01/10/00 06:45
ALARM ACK 10m
ACCESS CODE 0000
DONE
```

```
SELECT HARDWARE
01:PLANT 1
02:PLANT 2
>03:PLANT 3
04:PLANT 4
ALARMS
VALIDCARDS: YES
DONE
```

```
NETWORK CARDS
>EXAMINE NETWORK
NETWORK STATS 0.0%
LAST ERROR CARD 21
PLANT 1 DIAGNOSTICS
PLANT 2 DIAGNOSTICS
PLANT 3 DIAGNOSTICS
PLANT 4 DIAGNOSTICS
DONE
```

```
LOAD DEFAULTS
>FACT SETTING NO
MIMIC CONTRL NO
ARE YOU SURE? NO
DONE
```

```
CLOCK 1 SETTINGS
>MON 09:00 RUN MODE
MON 17:00 OFF
TUE 06:00 FAN ONLY
TUE 08:24 SETBACK
TUE 10:02 RUN MODE
TUE 17:54 OFF
- UP TO 28 ENTRIES..
HOLIDAY 25 APR
HOLIDAY 07 NOV
HOLIDAY 25 DEC
HOLIDAY NOT USED
-UP TO 12 ENTRIES..
**ORDER OF ENTRIES
IS NOT IMPORTANT**
```

```
PLANT 1 HARDWARE
>ZONE TEMP 1 Y 21:01
ZONE TEMP 2 Y 21:02
ZONE TEMP 3 Y 21:03
ZONE TEMP 4 Y 21:04
OUTDOOR AIR Y 21:05
RETURN AIR Y 21:13
SUPPLY AIR Y 21:06
COIL TEMP N
HUMIDITY Y 21:07
REMOTE ADJ Y 21:08
MODE INPUT Y 21:09
ECONOM. INP N
DEHUM. INP Y 21:10
ALARM INPUT Y 21:11
FAULT INPUT Y 21:12
MOM. INPUT y 21:15
STATIC INPUTY 21:16
FAN LO OUT Y 11:10
FAN HI OUT Y 11:20
COOL 1 OUT Y 11:30
COOL 2 OUT Y 11:40
COOL 3 OUT N
COOL 4 OUT N
HEAT 1 OUT Y 12:10
HEAT 2 OUT Y 12:20
HEAT 3 OUT Y 12:30
HEAT 4 OUT N
RV OUTPUT N
```

```
PLANT 1 DIAGNOSTICS
*FAN LOW 11:10 ON
FAN HIGH 11:20 ON
COOLING 1 11:30 OFF
COOLING 2 11:40 OFF
COOLING 3 not used
COOLING 4 not used
HEATING 1 12:10 ON
HEATING 2 12:20 ON
HEATING 3 12:30 OFF
HEATING 4 not used
R/VALVE not used
COOL ANAL 11:1 0V
HEAT ANAL 11:2 3V
ECON ANAL 12:1 0V
ECO RELAY 12:40 OFF
HUM RELAY not used
RUNMODE 13:10 ON
SETBACK 13:5c OFF
```

```
-cont-
>COOL ANALOG Y 11:1
HEAT ANALOG Y 11:2
ECON ANALOG Y 12:1
STATIC ANL. Y 15:1
ECON RELAY Y 12:40
HUMID RELAY N
ON MODE OUT 1 13:10
SETBACK OUT Y 13:5c
DONE
```

```
ALARM HARDWARE
>LIGHT Y 11:50
DIALER Y 11:70
CLOCK Y 61
DONE
```

Navigation in the programming menus



Use Red button to CANCEL to earlier screen.



Use the green button to enter a menu (when sharp cursor > shown), or to accept a changed value.

Use up & Down buttons to move up or Down menu options OR to alter a setting value.  



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V1.2 Presscon Air Conditioning Control - Configuration Sheet

Main Settings

System Settings	units	df	lo	hi
Controller Name	16 Char. Air Con			
Temperature unit	°C	°C	°F	
Alarm Acknowl.	min.	10	0	99
Access Code	nil	0-9999		
Status Info	Fixed		Cycle	
Date Format	DDMMYY MMDDYY			
df = default program setting				

General Outp	Used	Address
Alarm Light		
Alarm Dialer		
Clock		
Fire Trip		

Shaded Outputs are 0-10V Analogue type

Other Outputs 12 - 240Vac 5 Amp Relays

**FOR CLOCK PROGRAMMING SETTINGS
USE SEPARATE SHEET**

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Presscon Air Conditioning Control - Clock Programming Sheet

(Up to 8 Plant Per controller)

Controller Description	
------------------------	--

CLOCK PROGRAM #			
#	DAY	TIME HR: MINS	MODE
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			

PUBLIC HOLIDAYS			
#	DAY	MONTH	
1	ST.		
1	END		
2	ST.		
2	END		
3	ST.		
3	END		
4	ST.		
4	END		
5	ST.		
5	END		
6	ST.		
6	END		
7	ST.		
7	END		
8	ST.		
8	END		

--

DAY OPTIONS	
MON	DAY OF THE WEEK
TUE	DAY OF THE WEEK
WED	DAY OF THE WEEK
THU	DAY OF THE WEEK
FRI	DAY OF THE WEEK
SAT	DAY OF THE WEEK
SUN	DAY OF THE WEEK
N/U	DO N'T USE ENTRY
DEL	DELETE ENTRY
INS	INS NEW ENTRY

MODE OPTIONS	
OFF	
ALL FANS/COOL/HEAT OFF	
FAN ONLY	
FAN ONLY LOW SPEED	
SETBACK	
CONTROLS FANS/H/C TO SETBACK SETTING	
RUN	
CONTROLS FANS/H/C TO RUN SETTING	

PUBLIC HOLIDAYS	
SYSTEM SELECTS LOWEST OPTION FROM DAY SETTINGS AVAILABLE IN PRIORITY	
OFF	LOWEST
FAN ONLY	2nd
SETBACK	3rd
RUN	HIGHEST

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1. INTRODUCTION

The Air Conditioning Controller is a Presscon control unit that will control and monitor up to eight air conditioning plants. Each plant can control up to four cooling stages and four heating stages, two speed fan control, economising, dehumidification as well as proportional cooling and heating outputs and monitoring of fault/alarm inputs.

The plants can each have up to four room temperature sensors that are averaged for control. In addition the controller is able to monitor coil, return, supply and outdoor air temperatures and static air pressure (removed in Version 1.2) for optimal operation of each plant.

Each plant can be programmed to operate according to one of the eight 7 day clock programs which each have up to 28 normal entries and 8 holiday period entries.

All readings and status information is available on the large 4 line display.

Versatile and simple programming in plain English make the Controller a breeze to use.

A separate sheet reference PN403 gives a general overview of the controls capabilities.

Note: This version Air Conditioning controller is supported by Phasefale's PIN Version 1.64 and above. Free updates to registered users of earlier software are available from our web site www.phasefale.com.au but you must ring us for the password to download.

***Prior to powering up the controller for the first time check that the S6 switches on the circuit board have been set as follows for use as an Air Conditioning controller.
S6-1 = Off, S6-2 = On, S6-3 = On***

2. INSTALLATION

The Air Conditioning Controller is supplied in the same enclosure as other Presscon Controllers, and is wired in the same way.

Mounting is accomplished through the two holes in the circuit board and the back of the box. The cover can be removed by inserting a flat blade screw driver into the slot in the bottom of the case and pushing gently to release the cover.

When mounting the controller avoid putting excessive force on the circuit board. The 20 mm hole can be used to pass wiring through the box.

3. ELECTRICAL

An Air Conditioning controller system uses the same type of components as a Phasefale Presscon Network system and as such the same wiring rules apply. Because a system is made up of modular components they must be interconnected in order for the system to work. Each component should be connected together with two core screened data cable, referred to as "the data bus", and two cores for the 12vdc power supply. In order for the system to operate reliably the following minimum wiring standards must be met. Further details are contained in the Presscon Network - Wiring Specification & Startup document, reference PN394.DOC.

3.1 DATA BUS

The data bus cabling is critical to reliable system communication and should be carried out as follows:

- a). Ensure the connections are made in a daisy chain fashion, (i.e. with a start and finish) and that the polarity between cards is maintained (i.e. B+ to B+, B- to B-).
- b). The drain or shield trace wire must be continuous through out and connected to Earth at one end only.
- c). The two end cards must have the termination jumpers fitted (engaged). On all other cards the termination jumpers should be on one pin only (disengaged).

3.2 POWER SUPPLY

Typically system components are powered by a PB60, which is a combined 240vac power filter/surge arrestor and 12vdc power supply unit. The PB60 should be wired as follows:

- a). The PB60 supply terminals should be connected to 240vac Active, Neutral and Earth.
- b). The PB60 12vdc output is distributed to system components requiring a 12vdc supply, with the cabling to controllers done using screened data cable. The drain or trace wire of any screened cable must be connected to Earth at the PB60 end and left un-terminated at the controller end.
- c). Auxiliary equipment such as a modem should be powered from the 240vac Filtered Load terminals of the PB60.

An alternative method of powering system components, for installations without a PB60 unit, is shown and described in PN327.DOC

4. OPERATION

The controller is operated and programmed by four push buttons located below the LCD display on the controller. Navigation of the various screens is achieved as shown in the following table. Refer to PN408.DOC for a summary of screen navigation and to PN405.DOC for a detailed flow chart of the user screens.

Function	Keys
Cancel (any function); Previous Channel	■
Scroll	▲ or ▼
Select; Next Channel	▶

Typically displayed are the descriptions of all plants in use along with running status and zone average. Additional screens show either system information such as the description and network address of the controller along with the date, time, plant status and event logs or plant screens for each plant in use, comprising plant number, name, current mode and zone average. The information shown on the screen will vary depending on the way the Controller has been programmed.

4.1 USER ADJUSTMENTS

Users may change operating parameters via the keypad, external switches or PC, depending on the hardware installed and the programming of each plant.

4.1.1 TEMPERATURE ADJUSTMENT

If programmed users may adjust the temperature settings within the programmed limits via the controller keypad Plant screen/setpoints line. If the optional Remote Adjust input is used then adjustment of the temperature settings can only be done via the potentiometer, also within the programmed limits. Refer to PN408.DOC for step by step instructions.

4.1.2 OPERATING MODE

A user may over-ride all plants on, via the controller keypad Main screen, by pressing the up button for the desired number of hours up to the programmed maximum or over-ride all plants off by pressing the down button. Refer to PN408.DOC.

Alternatively a user may change the current operating mode of each plant individually, via the controller keypad Plant screen/Next clock function line. Refer to PN405.DOC.

If a mode input is used then the external switch can be used to select the desired operating mode of the plant/s.

Each plant can also have a separate or shared momentary push button to over-ride the plant/s to On Only, Off Only or Toggle depending on programming.

The keypad has the highest priority followed by the external switch and then the clock program.

4.2 PLANT CONTROL

Each plant can operate in one of four modes, run, setback, fan only or off, according to a time clock program; master/slave; by manual over-ride via the keypad; mode input; momentary input or PIN / PRESSNET software.

The outputs of each plant operate according to its zone average temperature and the settings as programmed in the Plant Settings menu.

When under clock control, the controller is able to calculate the optimal start time by averaging the time taken to reach the cut-in setting over the last ten starts, it then uses this average to start the plant early, up to the Earliest Start setting.

Once started by an optimal start the plant continues to run as normal until the next clock or over-ride change is made.

Each plant can be programmed to slave from any other plant on the same controller. This means that the slaved plant/s will turn on or off when the master plant turns on or off by any means i.e. time clock, keypad over-ride, momentary input, etc.

An optional relay output for each plant is activated whenever the plant is in run mode.

4.2.1 COOLING

Each plant can have up to four stages of cooling via four relays that switch according to the cut-in, cut-out, inc delay, dec delay and limit start settings. The increment and decrement delays are halved when the temperature is one differential above or below the cut-in or cut-out and one third the delay if two differentials away from cut-in or cut-out. Should the temperature cross the midpoint between the heating and cooling cut-in settings then all stages are turned off without delay and the deadband time commences.

In addition each plant has provision for a proportional cooling output which provides 0 volts at cut-out and 10 volts at cut-in and linear in between.

4.2.2 HEATING

Each plant can have up to four stages of heating via either four heating specific relays or a reversing valve relay and the compressor (cooling) relays. The heating stages switch according to the cut-in, cut-out, inc delay, dec delay and limit start settings. The reversing valve switches at the mid point between the heating and cooling cut-in settings. The increment and decrement delays are halved when the temperature is one differential above or below the cut-in or cut-out and one third the delay if two differentials away from cut-in or cut-out. Should the temperature cross the midpoint between the heating and cooling cut-in settings then all stages are turned off without delay and the deadband time commences.

In addition each plant has provision for a proportional heating output which provides 0 volts at cut-out and 10 volts at cut-in and linear in between.

4.2.3 FANS

If a coil sensor is used, when a plant starts via clock program, the (low speed) fan will not start if the coil and zone average temperatures are either both below heating cut-in or above cooling cut-in. If the coil sensor is not used the fan starts immediately.

When a high speed fan is installed it will switch on when any stage of heating or cooling is on.

The low speed fan can be programmed to be on or to cycle off on temperature during setback operation.

During fan only operation the fan runs at low speed and the rest of the plant is off.

Fan run on function*: a 2 minute run on time of fan when system gets shut off (only for heating mode) unless fault condition. (*Vers 1.2 and higher)

4.2.3.1 COIL SENSOR AND FAN PROOF

If An airflow sensor (close =run) is fitted to this input it acts as an airflow sensor/ proof. With the fan on and no airflow (input=open circuit) the channel displays “No Start”. Once the airflow switch operates the channel indicates “Started”. Pressnet allows a screen icon which changes from black (no airflow) to Green (airflow)

4.2.4 SETBACK

During setback the plants operate according to the setback cut-in, cut-out and de-humidify settings. The low speed fan can be programmed to be on or to cycle off on temperature.

An optional relay output for each plant is activated whenever the plant is in setback mode.

4.2.5 ECONOMISE

The controller compares the outside and return air temperatures and for cooling if the outside air temperature is an economise differential or more lower than the return air then economising will be on. Like wise during heating if the outside air temperature is an economise differential or more higher than the return air then economising will be on.

If no return air sensor is used the zone average temperature is compared to the outside air temperature.

4.2.6 DEHUMIDIFY

The dehumidify output is activated along with the number of cooling stages programmed (Dehum. with stages setting) if the humidity is above the humidity setting for more than five minutes.

4.2.7 STATIC CONTROL*

The proportional static output will provide 0 volts at the Static Low setting, 10 volts at the Static High setting and linear in between. *This feature removed on Version 1.20 and higher

4.3 ALARMS/FAULTS

Each plant has provision for separate alarm and fault inputs that can be set to monitor for either open or closed circuit conditions. Both inputs have programmable descriptions and time delay setting, the expiry of which will cause an alarm.

In the case of the fault input, a fault condition will also stop the plant with the option to leave the fan running. The fault input also has a programmable time delay for restarting the plant after the fault condition clears.

If any of the sensors in use read error an alarm will be initiated. Should all room sensors read error the plant will switch to fan only mode after two minutes.

5. PROGRAMMING

Programming should be done in the following order:

Sequence	Type	Reason	Section
1	Network Cards	Ensure all cards on the system have a valid network address	5.5
2	Hardware	Assign inputs and outputs for various functions	5.4
3	Plant Settings	Adjust control parameters	5.1
4	Clock Setting	Adjust clock parameters	5.2

The Air Conditioning Control 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 enter programming, press and hold both the  and  keys for a few seconds until the PROGRAMMING MODE screen is displayed.

Entry into programming mode can be locked via the access code. To enter the access code press the select key, then use the scroll keys to choose a number and the select key to accept and enter programming. If the wrong access code is chosen an error message will appear and the system will leave the programming mode.

Once access has been granted then the following menus will be available. Refer to PN406.DOC for a detailed flow chart of the programming menus.

5.1 PLANT SETTINGS

This menu allows the user to change the operating settings for each of the plants in use. Select the plant to edit using the ▲, ▼ and ► keys.

5.2 CLOCK SETTINGS

This menu allows the user to change the clock programs, including holiday entries. Select the clock program to edit using the ▲, ▼ and ► keys.

Each clock program allows up to 28 changes to the operating mode of the plant to be automatically carried out. Program settings can be inserted and deleted on a line by line basis, with each line being programmable for day, time and mode (on, off, setback or fan only). The order of the lines is not important. eg. MON then TUE then MON is ok. Up to 8 holiday periods can be programmed which will cause the plant to use the lowest mode of operation programmed for the whole of that period.

The order of operating modes from highest to lowest is : ON; SETBACK; FAN ONLY; OFF.

Clock programs can be over-ridden via the keypad, mode input, optimum start function, PIN or PRESSNET.

5.3 GENERAL OPTIONS

This menu allows the user to change the controller description, temperature unit, time and date, alarm acknowledge time and access code. Select the option to edit using the ▲, ▼ and ► keys..

5.4 HARDWARE SETTINGS

This menu allows the user to edit the use and physical card addresses for each of the plants and alarm outputs. Select the group to edit using the ▲, ▼ and ► keys.

The Controller checks the network and will only allow you to use valid hardware it finds on the network. If you want to program the Controller with cards which are not yet connected or for Virtual inputs and outputs change the setting “USE VALID CARDS” to NO.

5.4.0 VIRTUAL INPUTS AND OUTPUTS

The controllers (Multi Rack, System Control and DDC only) may transfer on/off control signals using Virtual inputs and outputs. Up to 8 Virtual outputs can be assigned per controller (Vo:1 to Vo:8). The action of virtuals can also be reversed by using the opposite sense output- Vo:1/o versus Vo:1/c. To accept a virtual as a input, use the controller number plus the input- e.g. input 92:3 would take the third virtual output form controller 93. Virtual input/outputs are only suitable for digital signals (i.e. ON or OFF only).

**** Important**** To use Virtuals, in Hardware menu (at the bottom) change the setting “USE VALID CARDS” to NO. The use valid cards setting must be set each time it is to be used (not a permanent setting).

5.4.1 MODE INPUT

Each plant can have a mode input allocated to it that will allow various modes to be activated according to the resistance table shown. The plant “Mode In Priority” setting can be set for this input to take priority (Hi) over the keypad and momentary over-rides or (Lo) for the keypad and momentary over-rides to take priority. Note that the Plant off and Auto modes were changed in Version 1.2. * Note: mode functionality is over-ridden by the slave function if enabled.

Mode Input Functions *		
Ver 1.2&+	Ver1.1&-	Version applicable
Resistance	Resist.	Control Function
Short cct	Open cct	time clock control (Auto)
220 k	220k	Run
100 k	100k	Setback mode
47k	47k	Fan Hi output
22k	22k	Fan Lo output
10k	10k	Full Heating
6k8	6k8	Full Cooling
Open circuit	Short cct	Plant Off

5.4.2 MOMENTARY INPUT

Each plant can have a momentary input allocated to it that will allow the plant/s to be operated via a normally open push button. The plant Ext Type setting can select this input to be used as a Toggle, On only or Off only input.

5.4.3 ECONOMISE CONTROL INPUT

Each plant can have an economise control input allocated to it which will allow the following functions to be operated via a switch.

The state of the economise control input by switching

Resistance	Control Function
Open circuit	Normal operation
100 k	Economise function always off
Short circuit	Economise function on while in run or setback

5.4.4 DEHUMIDIFY CONTROL INPUT

Each plant can have a dehumidify control input allocated to it which will allow the following functions to be operated via a switch. The state of

Resistance	Control Function
Open circuit	Normal operation
100 k	Dehumidify function always off
Short circuit	Dehumidify function on while in run or setback

P:\1DOC\PN\PN409A DDC Controller Instruction.DOC

the dehumidify control input by switching resistances is shown in the following table.

5.4.5 STATIC INPUT*

Each plant can have a static pressure input allocated to it that will allow the proportional static output to operate between 0 and 10Vdc. This input accepts a 0 to 5Vdc transducer signal in the range 0 – 1250Pa and can be wired to a Sensor/32 card.

* Discontinued Version 1.20 and higher.

5.4.6 ALARMS

This menu allows the user to set the alarm outputs and clock modem to be used, plus the common Fire Trip input (Version 1.2 and higher only) . Select the option to edit using the ▲, ▼ and ► keys.

Light : select Y or N for a light output on alarm. In this example “11” is the card address, “7” is the relay number and the “o” (default setting) and the “c” indicate whether normally open or closed contacts.

Dialler: enables an automatic dialler or security system to be operated in the case of an alarm In this example “11” is the card address, “8” is the relay number and the “o” (default setting) and the “c” indicate whether normally open or closed contacts. Setting the dialler to “o” gives an output which will open circuit on alarm or power loss.

NOTE: this controller supports double addressing light and dialler relays when used with a version 3.5 or later relay card. ie multiple 4 line controllers can be set to operate a common light relay and a common dialler.

Clock Card: provides the controller with the time and date for use by the Clock Programs and Event Logs. If a clock card is installed it's card address must be entered.

Fire Trip: input point for Fire trip. Refer 5.4.7 for details

NETWORK CARDS	
>THIS CONTROL	80
RELAY/8	11
RELAY/8	12
SENSOR/8	21
SENSOR32	22
COM/CLK	61
DONE	

5.4.7 FIRE TRIP INPUT (Introduced Version 1.2)

For the whole controller a fire trip input can be assigned which affects all plant channels on a controller. If the fire trip input (AC= trip for input closed and AO=trip for input open circuit) is active, all channels will display Fire Trip as their status and all outputs (except the runmode output which will follow its original status) will go to OFF- i.e. Fan outputs, Heating outputs and Cooling outputs are off until fire trip is no longer active. Outputs return to normal running condition when input Fire Trip is cleared.

5.5 NETWORK CARDS

This menu relates to the network system used by the controller. Select the function required using the ▲, ▼ and ► keys. When the DDC controller is used with a refrigeration system, care must be taken not to overlap addresses. For this reason we recommend addresses as follows; DDC Controllers (81,82,83,.....). Input Cards (30,31,32,.....) Relay Output Cards (40,41,42,....). None of these addresses should overlap with Refrigeration cards nor new replacement cards.

5.5.1 EXAMINE NETWORK

Examine Network: identifies the cards connected to the Presscon Network and presents a list of them with itself at the top and the other cards in address order, for example;

NOTE: the contents of the above menu will depend entirely on the cards connected to the Presscon network.

The address number of each card can be edited and must be unique.

5.5.2 NETWORK STATS

Network Stats: percentage of successful network communications. If this falls below 99% it indicates a programming or wiring problem may be occurring.

5.5.3 LAST ERROR

Last error card: identifies the last card that caused an unsuccessful network communication.

5.5.4 PLANT 1 - 8 DIAGNOSTICS

These menus allow the user to check the current state of an output and to over-ride it either on or off. Select the plant to diagnose using the ▲, ▼ and ► keys. The controller will exit diagnostics after a few minutes if no buttons are pressed. All outputs will return to automatic control state.

5.6 LOAD DEFAULTS

This menu allows the factory settings to be re-loaded into the controller or for the entire programming of another Air Conditioning controller to be copied. Select the function required using the ▲, ▼ and ► keys..

5.6.1 FACTORY SETTINGS

To return all settings to the factory settings set both FACTORY SETTING and ARE YOU SURE to YES. All Plants will be NOT USED. The address number will be set to 80.

5.6.2 MIMIC CONTROL

Should a read-only controller be required for viewing the operation of the plant away from the main controller eg. a managers office. The mimic control function permits the entire programming from another Air Conditioning controller to be copied into the control the mimic function is carried out on (the read-only unit). Although all settings including hardware addresses are copied, the outputs (relay addresses) will be turned off so as not to interfere with the main controller.

6. P.I.N.

P.I.N Setup and operation with the DDC is covered in an earlier document PN409, separately available.

7. GLOSSARY & FUNCTIONAL DESCRIPTION.

Access Code	A four digit number used as a password to entering programming mode.	5, 5.3
Address	Each Presscon Card is assigned a system address. The recommended addresses are controller (81,82,...), sensor (21,22,...), relay (11,12,...) and clock card (61,62,...)	5.5.1
Alarm Acknowledge	Once an alarm occurs, if set-up the alarm light and dialler operate. By pressing on the alarm screen the alarm outputs are suppressed for the alarm acknowledge time, but will reactivate after the alarm acknowledge time unless the alarm condition has cleared.	5.3
Alarms	Each plant can monitor the AC plant for fault and alarms. Alarms operate the alarm light, dialler outputs but do not shutdown the AC plant. They are indicated on the Main Screen and individual plant screen. The time and the date of the alarm event can be viewed in the System screen under View Event Logs. An eight character alarm description can be programmed.	4.3 5.4.6
Auto Mode	Where a plant channel runs according to the time clock settings in the control.	5.2
Av Start	An indication of the calculated heating/cooling performance of the AC plant in minutes per °C. The controller uses this value to start the plant earlier to achieve the desired comfort setting at turn on time. Often called intelligent start. An "earliest start" setting limits the running time.	4.2
Clock Card	Circuit board that the system uses to get the time and communicate via PC's or modems.	5.4.6
Clock Program	There are 8 clock programs independently set from the plant channels. Plant channels can be set to clock channel 1 to 8 so some or all plant can "share" a single clock program.	5.2
Coil Temp. /Proof	The air which is passing over the air conditioning systems heat exchanger. This gives an indication of how effectively cooling or heating is occurring in the system. If the coil sensor is replaced by an airflow switch it can be used to indicate fan has started.	4.2.3, 4.2.3.1
Controller	The wall mounting unit which controls the 8 air conditioning plant channels. The controller must communicate with the sensor card to pick up temperature signals and with the relay card to activate outputs. The "processing" of the air conditioning is done in the wall mounting controller	1
Cooling 1-4	The controller has outputs connected to the air conditioning plant via the relay board. Presscon can initiate from 1 to 4 stages of cooling depending on the AC plant being controlled. A single cut-in and cut-out setting is used for all cooling and Presscon intelligently stages the cooling to maintain these limits. When the AC plant has reversing valve control, in programming hardware the description changes to compressor 1-4.	4.2.1
Cut-in	The temperature at which a heating or cooling stage will turn on.	
Cut-out	The temperature at which a heating or cooling stage will turn off.	
Deadband delay	If the Temperature changes between requiring cooling and heating (or vice versa), the control imposes a minimum time between modes run for economy and system safety reasons.	
Deadband	The Temperature range between the cooling and heating cutout. In this range the fan runs for ventilation but neither heating nor cooling is required to maintain comfort settings.	
Dehumidify	In some situations it is desirable to maintain humidity at a low level. In this case cooling	4.2.6

	stages (to reduce humidity) are turned on at the same time as heating stages (which maintain the temperature setting). "Dehum with Stage 1-4" in programming sets how much cooling is allowed to maintain humidity during dehumidification.	5.4.4
Diagnostic Menu Mode	In programming mode, each output can be set to operate. In diagnostic mode, normal operation is suspended and over-ridden. The controller will automatically exit diagnostic mode after a few minutes if no buttons are pressed.	5.5.4
Economise Input	An external device (such as an enthalpy control) can initiate economising instead of the in built economising function.	5.4.3
Economise Output	Whenever a plant channel is operating in economise mode this output is on. Can be used to turn on auxiliary equipment (damper motors, other AC units) or indicator lights etc.	4.2.5
Economise (cooling)	When the outside air is lower than the return air , the plant can open proportional air dampers to use outside air instead of running the air conditioning in cooling mode. If the plant has no return air setup, it compares outside air to the zone average.	4.2.5
Economise (heating)	When the outside air is warmer than the return air , the plant can open proportional air dampers to use outside air instead of running the air conditioning in heating mode. If the plant has no return air setup, it compares outside air to the zone average.	4.2.5
Economise	The process of using outside air in place of heating or cooling.	
Fan Only	(fan in main screen) Condition of a channel of plant where only the fan output is on and no cooling or heating will occur.	4.2.3
Faults	As with alarms, faults indicate a plant problem, but also shutdown the AC plant signals (the fan condition during fault can be set making this input useful for fan proof). A delay and 8 character fault description can be programmed.	4.3
Hardware Setting	In programming mode, setting up a particular input or output is achieved in the Hardware Menu. For each available point set the not used (default) or used option. When used, the hardware address must be set. e.g. an input may be 21:6 (sensor card 21, input 6) and an output 11:5/o (relay card 11, output 5, normally open for OFF)	5.4
Heating 1-4	As with cooling 1-4 Presscon can control from 1 to 4 heating stages from a single cut-in and cut-out. When the reversing valve output is set, the heating hardware option is not available and heating is staged according to heating cut-in and cut-out settings but with compressor outputs as set for cooling stages and the reversing valve on.	4.2.2
Holidays	During Holidays the plant will choose the lowest status available from the available daily settings. If on a Tuesday the settings are 08:00 ON, 17:00 SETBACK, 18:00 off, the plant will be OFF if the holiday falls on a Tuesday. In order of status the options are ON, SETBACK, FAN ONLY, OFF.	5.2
Logging	Recording graphs.	6.4.3
Main Screen	Display screen in normal operation which displays summary information on the whole controller	4
Master Mode	Each plant can act as a master to turn on or off other plant/s.	4.2
Normal Mode	In normal mode, the controller displays the "Main Screen" (see sheet PN405). Additional screens : System, Plant 1.....8 can be viewed by pressing the red (previous) or green (next) buttons. To avoid clutter, only plant turned on in programming will be displayed in normal mode.	4
Not Used (n/used)	As set in programming, a particular plant channel or input or output is not required and therefore not used. In general, this option will therefore not be seen in the normal mode screens.	
Off	Condition of a single channel of Plant where all outputs (except fault & alarm outputs) are off and the air conditioner will not run.	
Operating Mode(s)	The available operating modes for each plant channel are : OFF, FAN ONLY, SETBACK, ON.	4.1.2
Outside Air Temperature	Outside air can be used for economising, but only if it is at the appropriate temperature, hence the need to measure it. The position of the sensor is important and it must not be situated in direct sunlight which will give a higher than air temperature reading.	4.2.5
Over-ride	Whenever a plant channel is switched from its automatic time clock setting by either a keypad or mode/momentary external input (i.e. an input to a sensor card). The priority between the keypad and momentary input versus the mode input can be set to high or low.	4.1.2 5.4.1
PC Connection	The PC Connection is made via the clock modem card. A standard cable (DB9F to DB9M) is used to connect the PC via its RS232 Serial port.	6.4.1
P.I.N.	Presscon Inter Network software for Windows.	6
Plant	Air conditioning channel. There are 8 plant channels in each controller named Plant 1,	

	Plant 2, Plant 3,.. Plant 8 by default. The description for each plant channel is 16 characters and can be changed in programming.	
Programming Mode	The controller has 2 modes; normal and programming. Programming mode is entered by pressing the red and green buttons together (release the red first). If enabled, an access code number needs to be entered to proceed. Sheet PN406 fully details programming options. If no buttons are pressed for a few minutes, the controller reverts to normal mode.	5
Sensor Card	Circuit board with 8 or 32 inputs which connect to the room, coil, return, supply, outside air temperature sensors as well as humidity sensors, mode input switches and fault/alarm contacts. The 8 input sensor card has pressure/temperature switches that, for use with any air conditioning controller, should be set to temperature.	
Relay Card	Circuit board with 8 Relay outputs that connect to the air conditioning system to control individual elements – e.g. cooling or heating point, a fan, an alarm light. The relay card also has 1 or 2 analogue outputs to drive proportional units such as air dampers, water valves etc.	
Return Air	The air which returns from the controlled airspace (e.g. offices) and is re-circulated with a mixture of fresh air back to the air conditioning heat exchanger coil.	4.2.5
Reversing Valve	Reverse cycle AC plant switches from cooling to heating by running the cooling compressor but with the reversing valve on. Depending on the AC plant being controlled, its inputs will either be (for example on a 2 stage system) Cool 1, Cool 2, Heat 1, Heat 2 OR Comp 1, Comp , Rev Valve. Presscon hardware support both type of plant settings.	4.2.2
Run	Condition of a single channel of plant where the air conditioning fan runs and the temperature is within cut-in heating and cooling limits and no heating or cooling is required.	
Runmode Output	A relay output that comes on whenever the plant channel is in Run condition.	4.2
Set Back Mode (s/b, s/back)	A different set of heating and cooling parameters that allow the plant to operate more economically by “relaxing” the settings. For example the heating cut-in setting is lowered from 21°C to 18°C and cooling is raised from 23°C to 26°C. This mode is useful for saving energy costs when a building is unoccupied but needs to be within certain limits. Setback mode can be initiated in a few ways: by time clock, by keypad or by remote input switching. Setback settings for cooling and heating are available for each channel.	4.2.4
Setback	Condition of a single channel of plant where the heating and cooling settings are “relaxed” to expand the comfort range to reduce operating costs of the air conditioning system.	4.2.4
Slave	Each plant can slave from any other plant (master) to turn on and off with the master plant.	4.2
Static Pressure*	Air pressure that can be read and used to control a proportional output to maintain the programmed pressure range. * Discontinued Version 1.2 and higher.	4.2.7 5.4.5
Supply Air	The air that is supplied to the controlled air space from the air conditioning systems ducts.	
System Time & Date	The time and date are set in the clock modem card. Multiple controllers can read and adjust the time and date in the clock modem card.	5.3
Virtual Addresses	The controller can have inputs and outputs programmed that only exist in memory (i.e. not physical connections to sensor or relay cards) that can be from or to other controllers. E.g. Mode output address: Vo/1/o can be read by a System controller to setback a system for a particular time each night. /c reverses logic. Note:Use valid cards must be ON	5.4
Zone Average	The average of the available temperature sensors (from 1 to 4) on each plant channel. When a Zone temperature sensor is not set-up, is not responding, or is faulty, it is not included in the averaging function. Cooling and heating control is based on the zone average.	4.2
Zone Temperature 1- 4	The individual temperature reading on a plant channel. From 1 to 4 temperature sensors can be set-up depending on the size of the controlled space. Each zone temperature sensor can have an 8 character description.	4.

Phasefale Pty Ltd

36 Bulli Street Moorabbin VIC 3189

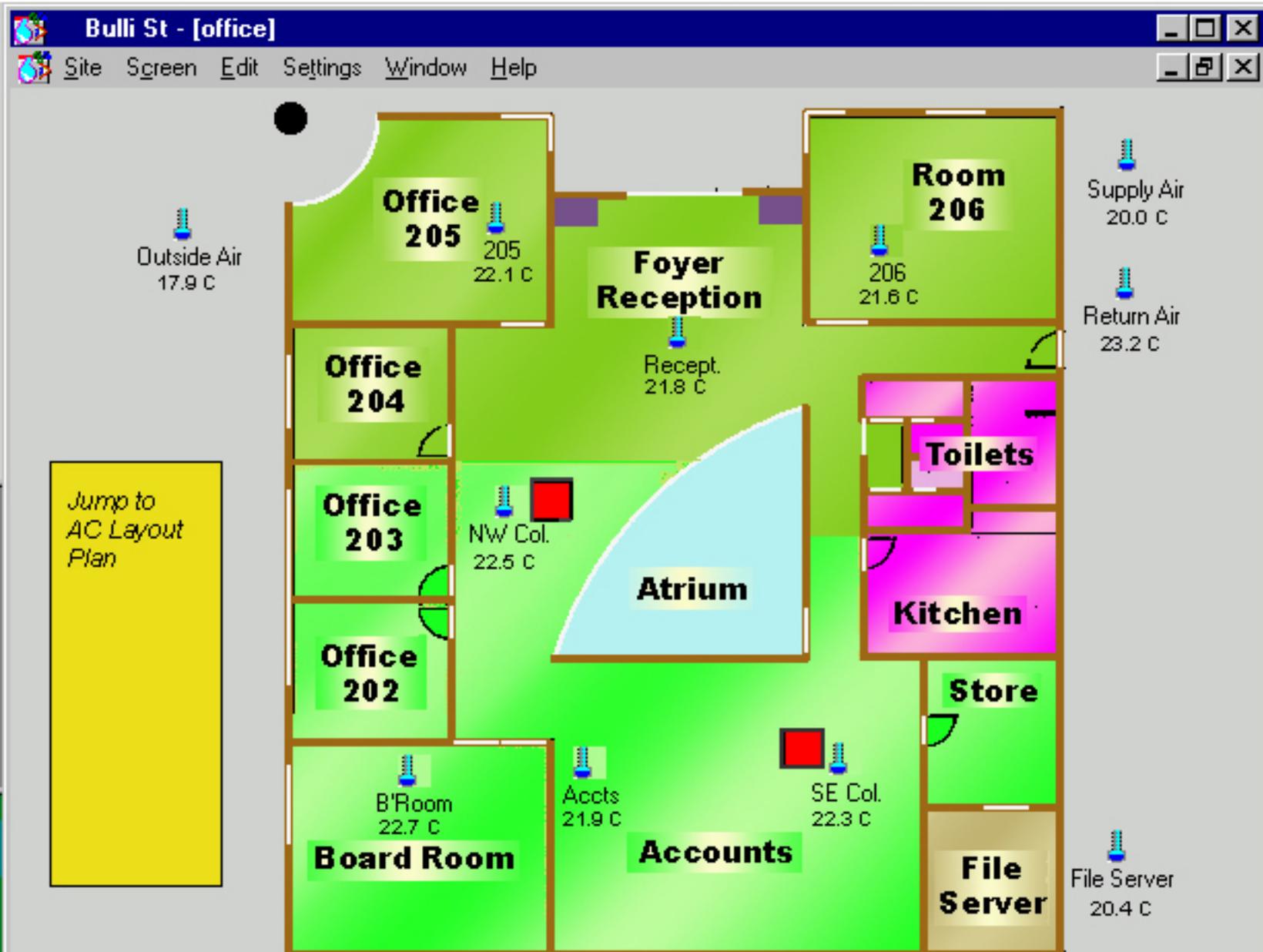
Ph.+61 3 9553 0800 Fax.+61 3 9553 3993 ACN 078 932 448

www.phasefale.com.au sales2@phasefale.com.au

This document requires the Lucida Stars Font & EricssonGA628 when viewed as a computer document.

"Snapshot"

Below is a snapshot of the Presscon Software monitoring the Air Conditioning System at Phasefale's Bulli St Factory. By Clicking on the various temperature icons you can adjust settings etc. and initiate timed over-rides (e.g. for wokking late etc.)



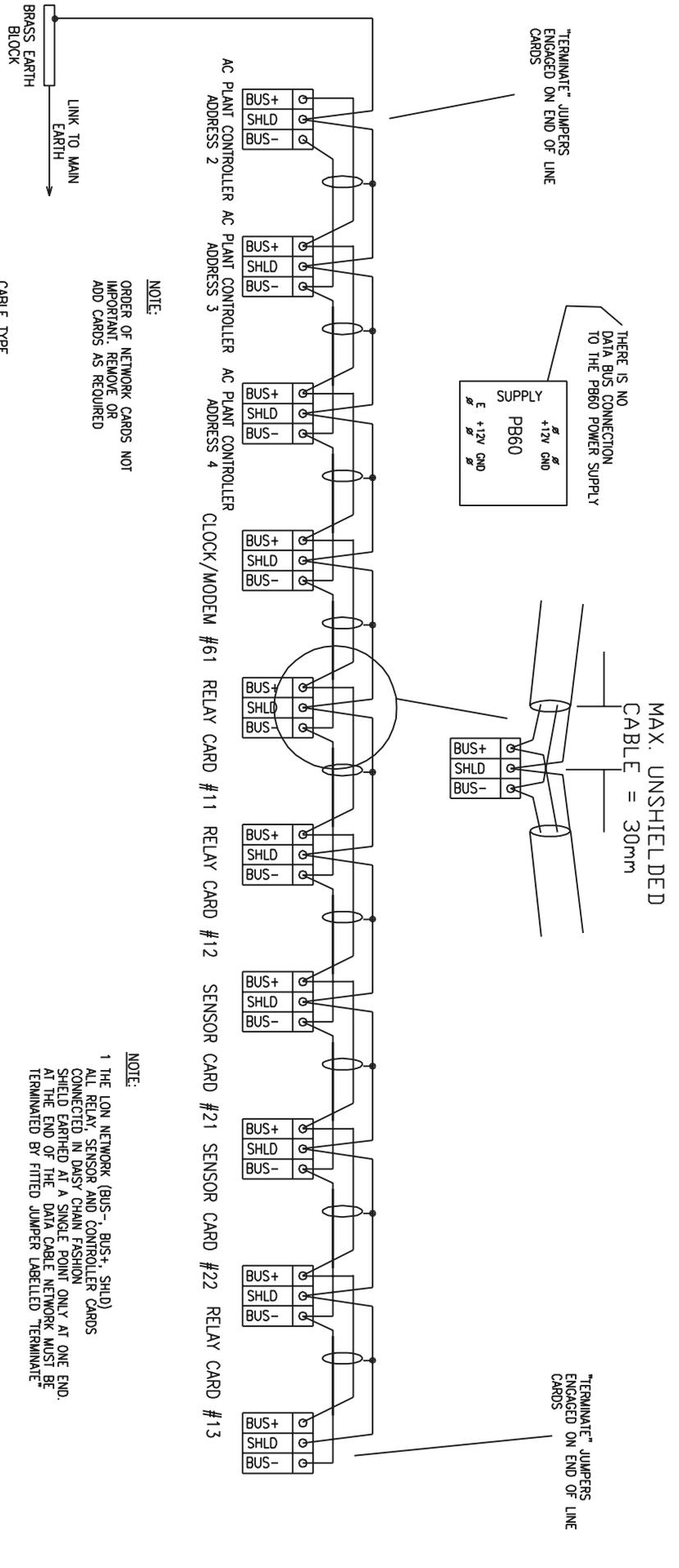


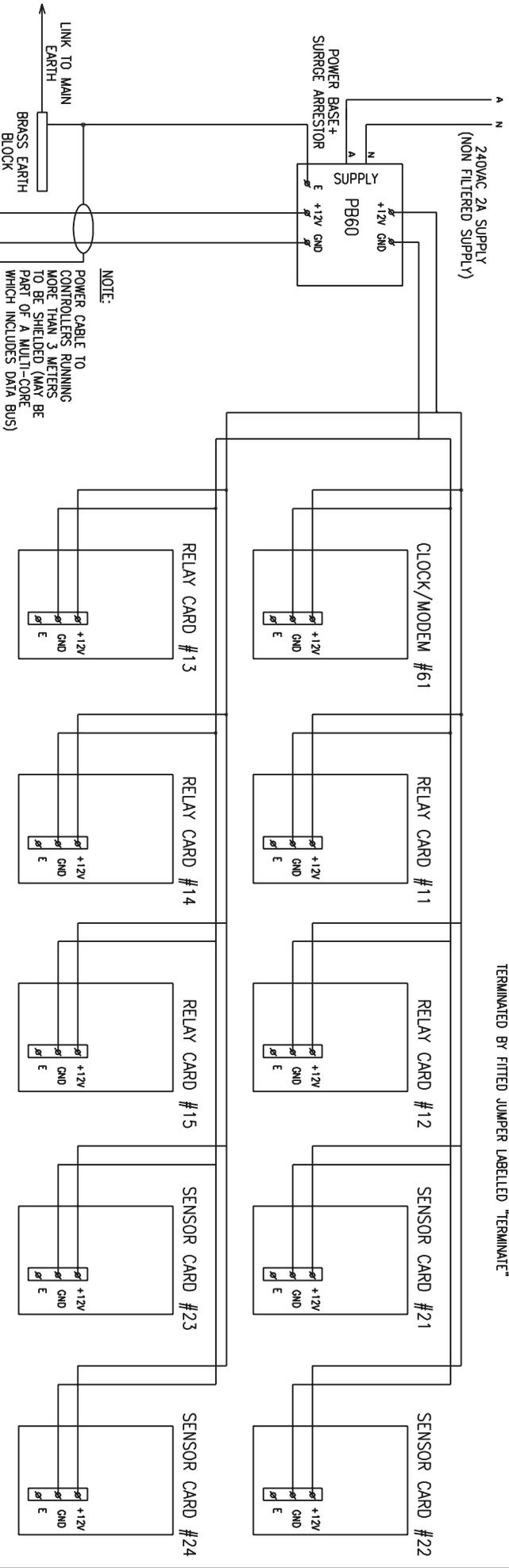
Presscon DDC

Generic Wiring Drawings & Consultants Specifications

PGENBUS.DWG	DATA BUS CONNECTIONS
PGENPWR.DWG	12V DC POWER DISTRIBUTION
PGENINP.DWG	INPUT CONNECTIONS
PGENOUT.DWG	OUTPUT CONNECTIONS
K536.DOC	GENERIC SPECIFICATION

These Drawings also available as cad files & document files suitable for editing, please contact Phasefale on 03 9553 0800, also on Phasefale CD Version 2.2.3 and higher

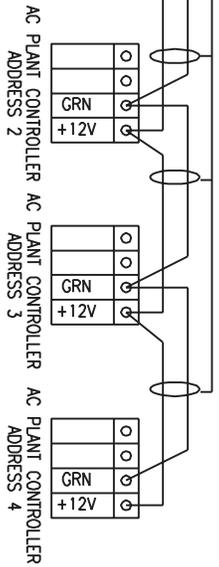




NOTE:
 1 THE ION NETWORK (BUS-, BUS+, SHLD)
 ALL RELAY, SENSOR AND CONTROLLER CARDS
 CONNECTED IN DASHY CHAIN FASHION
 SHIELD EARTHED AT A SINGLE POINT ONLY AT ONE END.
 AT THE END OF THE DATA CABLE NETWORK, MUST BE
 TERMINATED BY FITTED JUMPER LABELLED "TERMINATE"

NOTE:
 POWER CABLE TO
 CONTROLLERS RUNNING
 MORE THAN 3 METERS
 TO BE SHIELDED (MAY BE
 PART OF A MULTI-CORE
 WHICH INCLUDES DATA BUS)

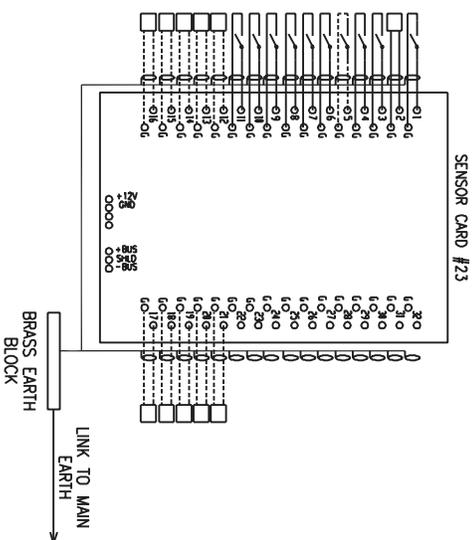
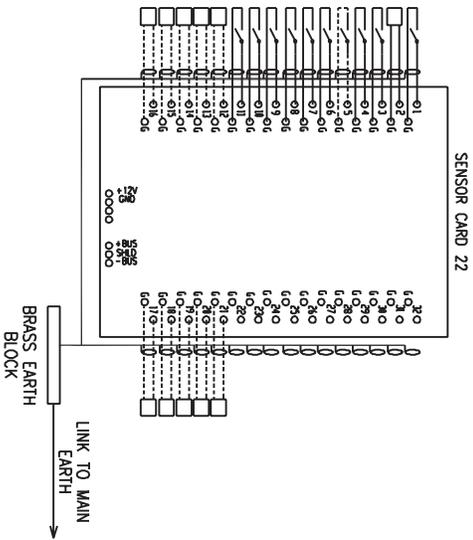
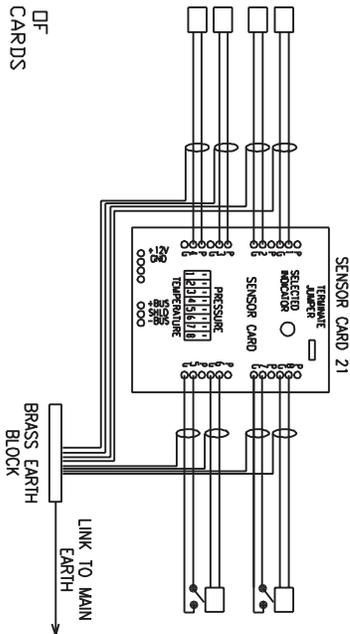
NOTE:
 REMOVE UNUSED RELAY, SENSOR & CONTROLLER
 RELAY ADDRESSES START AT 11
 SENSOR ADDRESSES START AT 21
 CLOCK MODEM STARTS ATR 61
 CONTROLLERS START AT 2



SMALL SYSTEMS WILL USE
 8 CHANNEL SENSOR CARD,
 LARGE SYSTEMS WILL USE
 32 CHANNEL CARD.

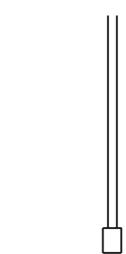
THE ORDER OF SENSORS AND
 SWITCH INPUT IS NOT
 IMPORTANT AND CAN BE SET
 IN PROGRAMMING OF THE
 CONTROLLER

ANY QUANTITY AND COMBINATION OF
 8 & 32 CHANNEL SENSOR INPUT CARDS
 IS ALLOWED



CABLE TYPE

- SINGLE PAIR, TWISTED, RECOMMEND 7/0.20mm
 SHIELDED WITH DRAIN WIRE.
 (OK TO USE TWISTED MULTI-CORE)
- 2 TINNER COPPER CONDUCTOR, 24AWG TINNED COPPER DRAIN, PVC SHEATH
 E.G. GARLAND AUSTRALIA MCP15 03 9543 6411
- CABLECO 1PAIR 7/0.20 DATA (GREY) 03 9887 3712



STANDARD TEMPERATURE INPUT,
 PHASEFALE *M PROBE, WALL,
 DUCT OR ENCAPSULATED. NTC
 THERMISTOR. MUST BE RUN IN
 SHIELDED CABLE FOR RUNS
 GREATER THAN 3 METERS.*



SWITCH INPUT, NORMALLY OPEN
 OR CLOSED (CAN BE SET IN
 PROGRAMMING). VOLT FREE
 CONTACTS FROM AUXILIARY
 EQUIPMENT OR SENSORS - E.G.
 FIRE ALARM, EQUIPMENT FAULT
 MUST BE RUN IN SHIELDED
 CABLE FOR RUNS GREATER
 THAN 3 METERS.*

* MULTI-CORE SHIELDED CABLE
 CAN BE USED WHERE
 APPLICABLE / CONVENIENT

GROUNDING OF DATA CABLE
 DRAIN WIRES IS MORE EFFECTIVE
 WHEN EACH DRAIN WIRE IS
 SEPARATELY CONNECTED TO
 BRASS EARTH BLOCK, SHOWN AS COMMON
 CONNECTION ON 32 CHANNEL
 SENSOR CARD

THE ORDER OF OUTPUTS IS NOT IMPORTANT AND CAN BE SET IN PROGRAMMING OF CONTROLLERS.

THE NUMBER AND ORDER OF RELAY CARDS CAN BE SET TO THAT REQUIRED. REMOVE OR ADD RELAY CARDS AS DESIRED

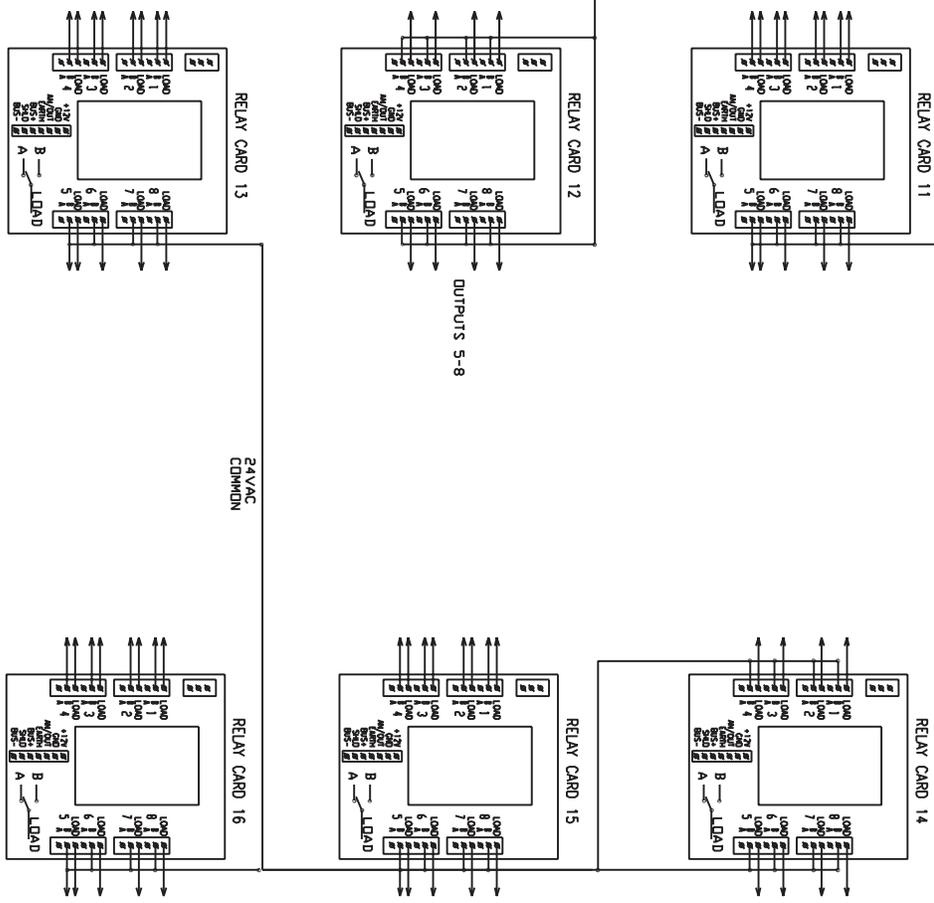
RELAY BOARDS AS SHOWN ARE SUITABLE FOR 24VAC SWAMP SWITCHING. FOR 240VAC 5A SWITCHING SNUBBERS REQUIRED, REFER RELAY8.PDF INSTRUCTION.

ALL OUTPUTS SHOWN WITH COMMON TO 'B'. THIS IS THE NORMALLY OPEN CONTACT WHICH CLOSSES WHEN ENERGISED. FOR CONTACT TO OPEN WHEN ENERGISED, USE 'A' TERMINAL AS COMMON.

'LOAD' IS ALWAYS THE TERMINAL USED TO CONNECT TO THE 24VAC OUTPUT E.G. SOLENOIDS, RELAYS, CONTACTORS ETC.

OUTPUTS FROM RELAYS CARDS ARE VOLT FREE AND RATED TO 5 AMPS RESISTIVE. THEY ARE SUITABLE TO DRIVE MOST 24VAC LOADS, OR CAN BE USED AS INPUTS FOR OTHER SYSTEMS.

COMMON CONTROL ACTIVE TAKEN TO 'B' TERMINAL. 24VAC COMMON FROM OTHER SUPPLY



General Note to Consultants

This document may be used by consultants to specify an air conditioning control system. Presscon DDC meets all the above requirements. The document may be altered as required. It is encouraged that deleting non relevant sections (e.g. **Plant Channel control - Hot/ Cold Water Fan Coil Units** may not be required or relevant on a particular system) or changes (e.g. **Plant Channel control** may only require 2 stages of heating or cooling control (instead of the available 4 stages on Presscon DDC)

Phasefale would value any feedback on this document and suggestions for alterations/ additions are most welcome. Items marked with a * indicate optional components to the basic Presscon DDC.

Specification: Air Conditioning Automatic Controls

The air conditioning plant shall be controlled by a Phasefale DDC system (or approved equivalent) with the following capabilities and features;

Network

All control system components are connected by a data bus capable of allowing system expansion. Additional control channels, inputs and outputs can be added to the system as required.

The data communications between system components shall be Lonworks (Trademark of Echelon Corporation) compatible to ensure for future expansion with compatible modules/ systems.

Communications software via a Windows based program able to monitor and control the system from a local PC or via dial up modem for remote access. Windows based program able to include a graphic of the controlled environment with sensor readings positioned over the relevant positions in the graphic representation.

All network cards to have jumperless address setting and LCD or LED indication of system address from 1~99 to allow for expansion of the system.

Controller(s)

Provide an aesthetic (i.e. suitable for residential or commercial environment) control with multi-line character based LCD panel, keyboard operated user-friendly interface. The panel is to be backlit to ensure legibility in low ambient conditions as encountered in switch rooms. The controller to be suitable for users to access basic system information (e.g. space temperature, plant condition), adjust space temperature (within set limits), and initiate timed over-ride operation of individual or all controlled channels. Controllers also have access codes to limit entry to programmable parameters such as timing and temperature limits, plus diagnostic functions.

Each controller capable of controlling at least 8 plant.

All system settable parameters accessible via controller or via PC interface.

All system parameter to be stored in non-volatile memory of 10 year duration to ensure correct operation after power loss.

Time Clock Function

The system to provide a master time clock function accessible to all controllers and including battery or capacitor backup of at least 1 month in the event of power loss. The time clock to be accurate to 1 minute per month and include full date function including leap year.

Input, Outputs, Power Supply

Inputs from temperature sensors, humidity transmitters, switch inputs to offer high precision of 0.2%, combined with accurate temperature sensors allowing 0.2°C accuracy overall in the operating range of -10~60°C. Output relays of 24VAC 5Amp (resistive rating) capable of driving solenoids, contactors and relays directly. Each output on to have over-ride 3 position off/auto/on switch on the card and an LED indicating energized relay operation. The power supply shall include filtering and noise protection to ensure reliable system operation under all electrical conditions.

Plant Channel control - Reverse Cycle Fan Coil Units

Provide on/off control of up to 4 heating and 4 cooling stages with reversing valve control, high and low fan speed control. Include programmable time delays between heating stages and cooling stages plus a separate heating/cooling changeover delay.

Plant control to be effected from the combined average of from 1 to four space sensors, depending on the size of the space.

Include separate, programmable cooling and heating cutin and cutout temperatures (with a resolution of 0.1°C), plus a setback setting for economical operation. Allow a single user adjustable parameter (limit settable) to raise and lower overall space temperature setting. Allow timed override function from a single button press.

Each plant channel to have provision for individual time clock program with 7 day program, plus public holidays. Time clock functions to include Off, Fan only, Setback and Run control of the plant. Ability for multiple channels to share a common time clock function.

Plant Channel control - Cooling Cycle Fan Coil Units

Provide on/off control of up to 4 cooling stages, high and low fan speed control. Include programmable time delays between cooling stages.

Plant control to be effected from the combined average of from 1 to four space sensors, depending on the size of the space.

Include separate, programmable cooling cutin and cutout temperatures (with a resolution of 0.1°C), plus a setback setting for economical operation. Allow a single user adjustable parameter (limit settable) to raise and lower overall space temperature setting. Allow timed override function from a single button press.

Each plant channel to have provision for individual time clock program with 7 day program, plus public holidays. Time clock functions to include Off, Fan only, Setback and Cool control of the plant. Ability for multiple channels to share a common time clock function.

Plant Channel control - Hot/ Cold Water Fan Coil Units

Provide analogue flow control of heating and cooling water, high and low fan speed control. Include programmable changeover delays between heating and cooling operation.

Plant control to be effected from the combined average of from 1 to four space sensors, depending on the size of the space.

Include separate, programmable cooling and heating cutin and cutout temperatures (with a resolution of 0.1°C), plus a setback setting for economical operation. Allow a single user adjustable parameter (limit settable) to raise and lower overall space temperature setting. Allow timed override function from a single button press.

Each plant channel to have provision for individual time clock program with 7 day program, plus public holidays. Time clock functions to include Off, Fan only, Setback and Run control of the plant. Ability for multiple channels to share a common time clock function.

System Time

Include system time and date function with leap year, accurate to within 2 minutes per month with a battery or capacitor backup function of greater than 3 days in the event of power loss. All system controls and functions operated from a single time/date reference. Include provision in system for public holidays to stop operation of AC plant during these days.

Economizing

Economizing to be based on the outside air temperature being favorable for heating or cooling and operated using analog control of dampers. In economizing mode, proportional control between 0 and 100% of outside air to provide control of inside airspace. Economizing to activate when outside temperature difference is greater than programmed limit (2°C), using return air as reference when fitted.

Ventilation / Exhaust Fans

Include ventilation control based on individual time clock program. Ventilation control to be shut down in the case of fire input being active. Also with the ability to be over-ridden on or off by the controller.

Safety Interface, Alarm Outputs

Allow an external input for fire or other alarm input to shut off system, with the option of automatic or manual reset after fault clears. Allow each AC plant to be monitored for fault condition with a programmable description displayed on the control during fault.

Alarm outputs: maintained fail safe relay output for interface with a security dialer, flashing alarm light to drive local warning light or siren. PC Based software to graphically indicate alarm condition with red flashing icon for quick recognition. (based on the principle of exception reporting)

Trend Logging *

Provide data logging capability of 4M capacity to provide graphing of temperatures, pressure and humidity of system parameters

Power Monitoring *

Provide three phase power monitoring equipment able to provide logs of peak power and elapsed power (in kWhr) for the system to Class 0.5 (0.5%) accuracy.

Refrigeration Control System – Dial in Compatible

The air conditioning control system shall provide a dial in connection via modem for remote access/ diagnosis of the plant and this shall use the same phone line/modem as the Presscon Refrigeration control system. The Refrigeration and DDC system shall have different access passwords to ensure access is restricted to the relevant contractor when dialing in.

Warranty

The control equipment components shall be covered by a 3 year warranty period.

Auxiliary Information

For each plant channel option to display return air temperature, supply air temperature, coil temperature, outside air temperature and space humidity.