PRD/REL
Din Rail Output Card

Installation and Programming

1 INTRODUCTION

The Din rail Output card incorporates eight outputs rated to switch up to 240 VAC with snubbers or 24 VAC without, plus two 0-10V DC Analogue Outputs.

Indicators include the status of each of the eight outputs [red], a power LED [green] and an address LED [red]. Each relay output has a switch which enables control from the Presscon Network (AUTO), or forced ON or OFF. The card can also be set via software to have settings when communications fail, logic functions, virtual outputs and delay times.

2 INSTALLATION

Refer to the *Presscon Network - Wiring Specifications & Startup* document for additional wiring details.

12VDC Power is supplied from the PB60 to the +12V and GND terminals. The bus connection is made to Bus+, Bus- and Shield.

Each Output card must be given a unique network address (via the Network Cards menu of any display card). The factory default address is 10. It is recommended that numbering starts at 11 so new Output cards added to the network will not conflict with existing cards.

3 POWER INDICATOR LED

The green indicator LED is always on whenever 12V power is available.

4 ADDRESS INDICATOR

When the card is being addressed the red address indicator # LED will be on steady, it will flash during normal operation to show the address number of the card. The address is determined by counting the number of long flashes and the number of short flashes. Each long flash counts as ten and each short flash counts as one.

For example, one long flash followed by three short flashes indicates the card is number thirteen. The address indicator LED is always active if power is available and the relay board is operating.

5 SWITCHING RATINGS

The contacts used on the Output card are rated to switch 240VAC @ 2Amps.

6 OUTPUT OVER-RIDE SWITCHES

An over-ride switch for each output is provided. 3 unique positions of the jumper provide output over-ride to "ON", output over-ride to "OFF" and "AUTO".

These are located beside the data BUS terminals.

(see figure 5 for configuration)

7 INDICATOR LEDs

Front panel of the Output card has 8 LED's which illuminate whenever the relay is energised. (LOAD-B is closed). The indicator LEDs will indicate the actual state of the relay coil at all times.

8 SNUBBER

Each relay output has a snubber circuit fitted between its LOAD terminal and the Snubber terminal. This is used to protect the Relay from interference caused by switching 240VAC.

The wiring must be arranged so the load is wired across the LOAD and Snubber terminals. Typically this means feeding active to either the "A" or "B" terminals, and the load to the LOAD terminal. The other side of the load and the Snubber terminal is connected to neutral.

The snubber circuit has a small leakage current (~ 30 mA) which can flow through it. This leakage will connect the eight outputs via the common Snubber terminal.

If low voltage and mains voltage circuits are used on the one card this connection through the snubber will make the low voltage circuit potentially dangerous.

All Outputs 1-8* have a Snubber Jumper which disconnects them from the snubber when removed. Remove jumpers for 24VAC and other low voltage wiring if mains is used on other outputs. Do not use these outputs for 240VAC switching unless the jumpers are in place. * 240vac VERSIONS have the Snubber links for 7 & 8 only.

9 PROGRAMMING

The relay is programmed by the Presscon Controller which will switch it. Each output on these controllers is set to a card number, an output number and a state. For example: 11:4/O represents card 11, output 4, normally open. The normally open, normally closed option and the terminals used determines the switching behaviour.

To determine the programming for a relay follow these steps;

1) If the fail-safe or un-powered state desired is open circuit wire to LOAD and B. If the fail-safe or un-powered state desired is closed circuit wire to LOAD and A.

2) Determine the *active state* of the relay output. The *active state* is the condition when the controller turns the output on. For example a compressor's *active state* is when the Rack controller turns it on. An alarm dialler's *active state* is when there is no alarm condition. See table 2 for more detail.

3) Decide whether the output is required to be on (closed circuit) during the *active state* or off (open circuit) during the *active state*. Normally you will require the output to be on during the *active state*. The exceptions are loads which operate in the opposite way to

what the controller expects. For example, alarm diallers which require a circuit to close to dial out and unloaders which unload when power is removed.

4) Use the following table to determine the programming required based on your decision in steps 1 and 3 above.

Output from "load" during active state.	LOAD - A [Led]	LOAD - B [Led]
ON - 240VAC	*n/C [0]*	***n/O [1]***
OFF - 0 VAC	*n/O [1]*	*n/C [0]*

Table 1. Programming of relays.

OUTPUT TYPE	ACTIVE STATE
Compressors	*Compressor on*
Fans	*Fan on*
Temp Control	*Control on*
Alarm Light	*In Alarm*
Alarm Siren	*In Alarm*
Alarm Dialler	*No Alarm*
Defrost Heater	*During Defrost*
Defrost Fan	*No Defrost*
Defrost Solenoid	*No Defrost*

Table 2. Active state of outputs

9.1 ALARM DIALLER OUTPUT

The alarm dialler output should be set up as follows;

TYPICAL: 1. For dialler systems which require an "OPEN" signal to dial program the output /O. Example 11:7/O. Wire between LOAD and B.

2. For dialler systems which require a "CLOSE" signal to dial, program the output /O. Example 11:8/O. Wire between LOAD and A.

When using the alarm dialler output, the snubber enable jumper for that output should be removed.

9.2 VIRTUAL OUTPUTS

'Virtual' relays are numbered 9 to 16, and 'virtual' analogues are numbered 3 to 4. Virtual relay outputs are addressed differently than normal relays; for example 12:09 represents card 12, virtual output 9, there is no "OPEN" or "CLOSE" state for a virtual relay.

9.3 RELAY FUNCTIONS

Relay outputs can be programmed to use functions (AND, OR, NAND, NOR, XOR, INVERT or COPY). The functions are logic combinations of other relay outputs on the same card. Refer to RELAY PROGRAMMING SHEET for more information.

10 NO COMMUNICATION FAILSAFE

Each relay output can be set to a defined state (Open, Closed or Flashing) if communications between it and the controller card are disrupted. This is programmed via the P.I.N. or Pressnet Software. The time delay and fail-safe state are set for each relay element on the relay card. Do not confuse this with the fail-safe wiring condition (i.e no power to relay board) which may be different.

11 ANALOGUE VOLTAGE OUTPUT

2 analogue outputs are available from the A1 & A2 terminal. The output range is 0 - 10 Volts to GND terminal. Both outputs are ground referenced.

Analogue outputs can be programmed to use functions (MAP, HIGHEST, LOWEST, AVERAGE, INVERT, COPY or AND), or set at 0V or 10V levels. The functions are combinations of other analogue or relay outputs on the same card. Refer to RELAY PROGRAMMING SHEET for more information.

12 ALARM / DIALLER OUTPUTS

The Output card supports "double addressing" whereby multiple system controllers can address a single alarm light relay and dialler relay.

This has the advantage of reducing the relay points required &/or using less channels on system controller, plus reduces alarm response time. Simply program each controller to the relevant relay points (defaults are alarm light relay 7 n/o and dialler relay 8 n/o with the snubber link removed).

13 SOFTWARE REVISION

Din Rail mount Relay cards with over-ride switch and snubbers on each point start at software version 4.20 May 2006.

Relay cards with functions and 'virtual' outputs (RELAY/8+) start at software version 5.00 August 2007, and will work with SYSCON 1.50, MRACK 1.20, AIRCON 1.30 and Pressnet 1.6.2 or later.

To identify software version of the card, view the site information tree in Pressnet which shows the software version beside the card type and network address number.

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Figure 1: System Settings

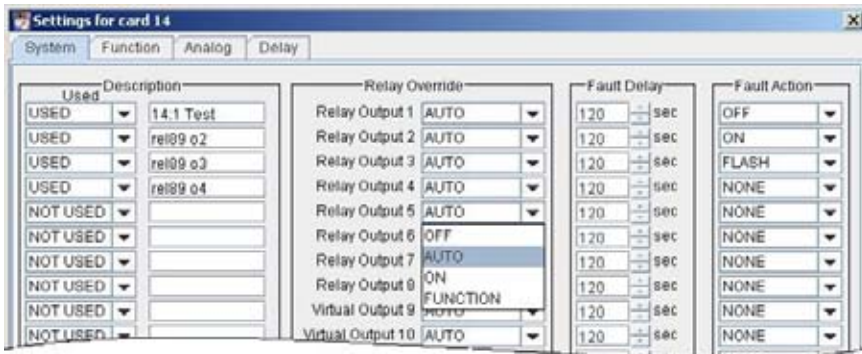**Figure 2: Function Settings**

Figure 3: Analogue Settings

Figure 4: Delay Settings

1 Pressnet allows a description to be entered for each of the 16 points.

2 A relay over-ride can also be set for ON, OFF or FUNCTION (AUTO is the default mode where the relay follows Presscon controller commands).

3 Failsafe: A fault action for no communications after a programmable delay as NONE, OFF, ON or FLASH.

4 **Note: the Over-ride switches on the board take precedence over the software over-rides shown here**.

5 Relay outputs can be programmed with functions (AND, OR, NAND, NOR, XOR, INVERT or COPY) – refer to RELAY PROGRAMMING SHEET for more information.
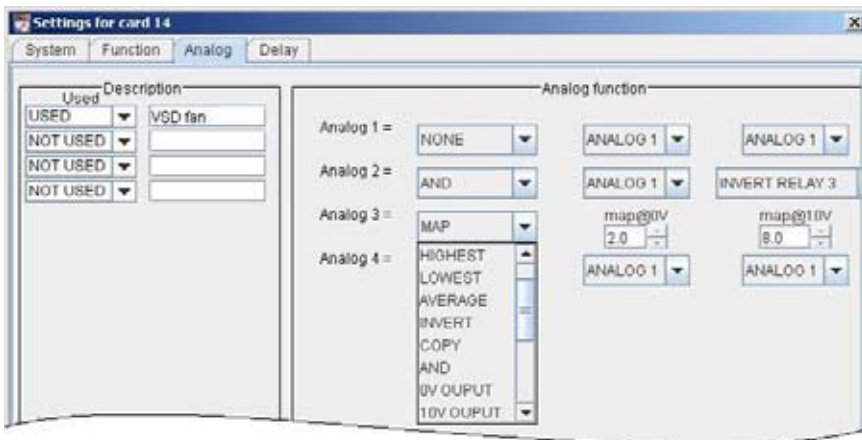
6 Pressnet allows a description for be entered for each of the 4 points.

7 Analogue outputs can be programmed with functions (MAP, HIGHEST, LOWEST, AVERAGE, INVERT, COPY, AND, SELECT, MAP A1, MAP A2, MAP A3 or MAP A4), or set at 0V or 10V levels – refer to RELAY PROGRAMMING SHEET for more information.
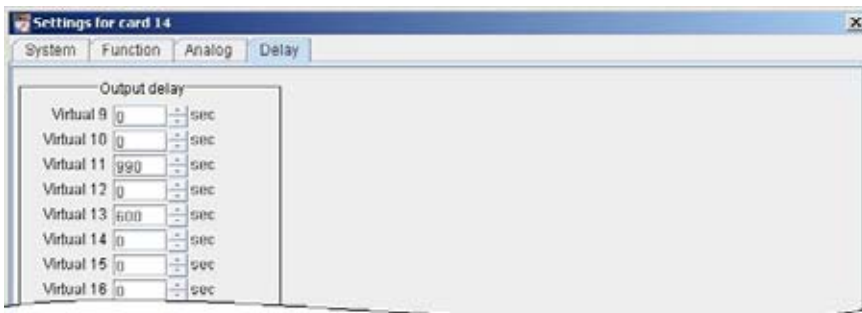
8 Virtual relay outputs can be configured with a delay (between 0 to 990 seconds, in 10 second intervals).

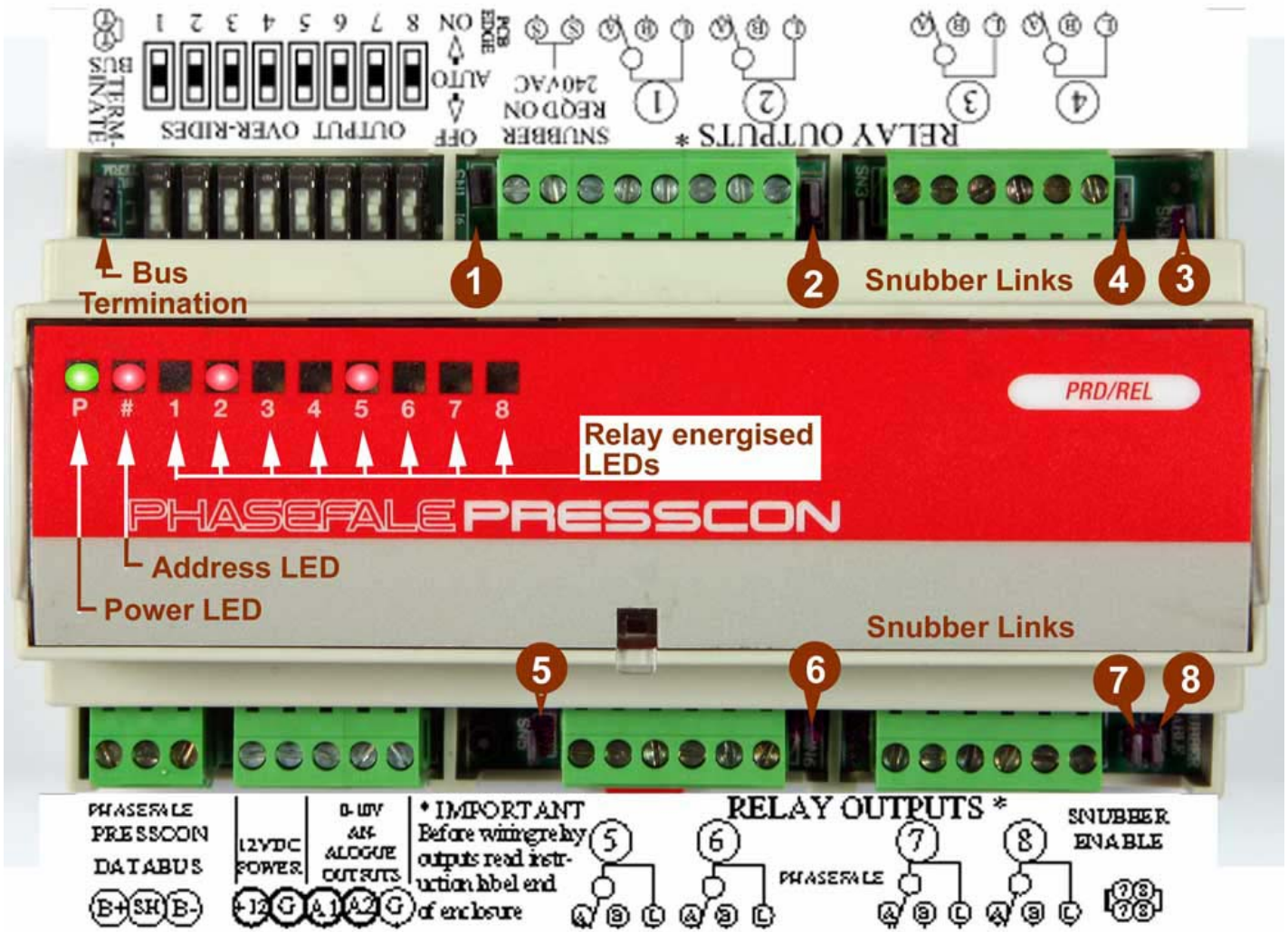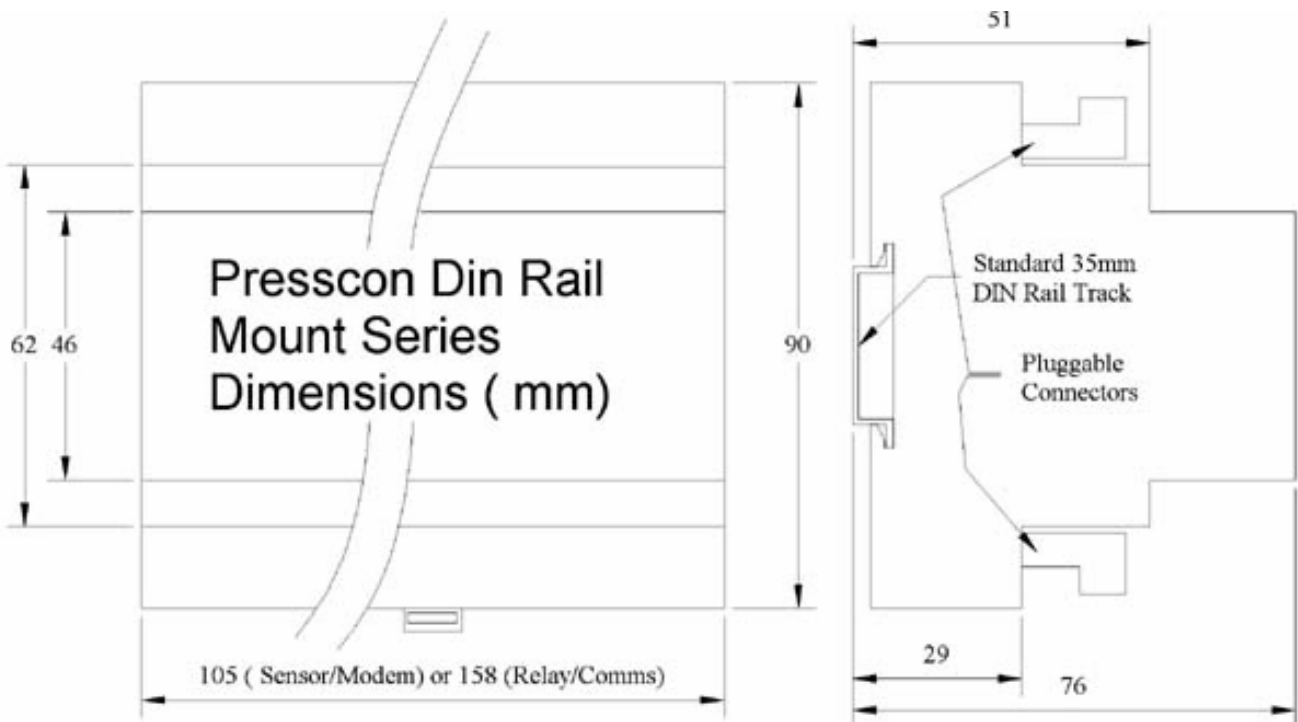**Figure 6: Unit connections and hardware configuration**

Figure 5: Unit dimensions