Vector 1

Analogue Addressable
Fire Control Panel
Printer

V2.0 and above

Installation and Commissioning Manual

MVEC-03 Issue 1.0 Feb 2005

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INTRODUCTION

The PRN Vector 1 is an add-on printer option for the Vector 1 analogue addressable fire alarm system .
The printer can be integrated into a control panel lid or fitted as a stand alone unit. The printer operates on a network basis and can therefore be used to produce print outs for any panel on the network. The Printer can be configured to record all events from a network or just from a local panel only . Up to 16 printers can be connected to any individual network.

The thermal printer produces high speed clear prints. No ink ribbon is required. The printer does require a thermal paper roll.

The printer will record all fire events, fault events , alarm log , fault log and user log, control panel parameters and disablements. The printer is also used to log engineer tests and produce a maintenance report.

The printer is complete with a paper feed button and 'paper out' indicator. Two printer options are available via on board dual in line switch. 1) system wide or local printing. 2) suppress fault printing or print all faults. Each printer has an address switch which is used to associate a printer with a particular panel on a network.

ESD Precaution

Electronic components are vulnerable to damage by Electrostatic Discharges (ESD). An ESD wrist strap, suitably grounded, should be worn at all times when handling pcbs. These wrist straps are designed to prevent the build up of static charges, not only within a persons body, but on many other materials.
ESD damage is not always evident immediately, faults can manifest themselves at anytime in the future.
All pcbs should be stored in static shielded bags (silvered) for safe keeping, when not mounted in the control panel. Do not use "black" or "pink" bags and **never** allow pcbs to come in contact with bubble wrap or expanded polystyrene (packing chips).

INSTALLATION.

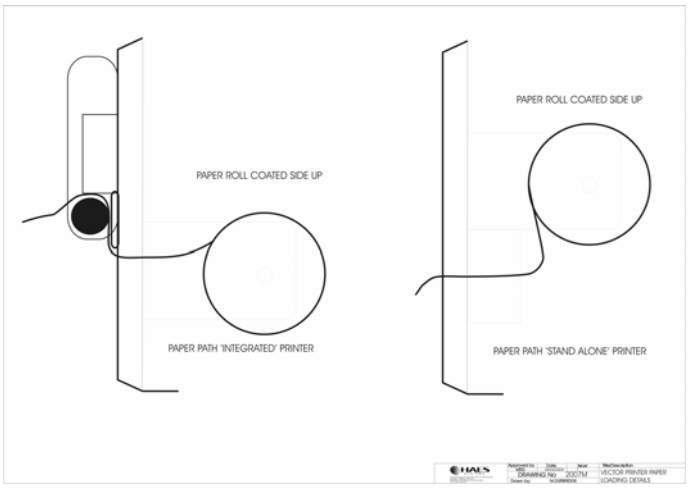
The Printer requires a 24 volt supply (derived from the control panel or remote battery charger). Also a CAN bus connection. In the case of the integrated model the connection cables will be supplied. When installing the stand alone printer a screened cable is recommended for the CAN bus (e.g. Belden) standard two core cable should be used for the supply.
Note:- The CAN bus requires that there is at least one 120R terminating resistor fitted to the bus. In the case of a single panel, fit the resistor in the CAN NET terminals of the main alarm panel. Where a a large network is involved, a 120 R resistor should be placed at the ends of the furthest branches of cable. A maximum of two terminating resistors are allowed on any one network.

INSTALLING THE INTEGRATED PRINTER. (Retro-fit)
Firstly remove the existing control panel lid. Disconnect the key-switch and earth link cables from the back box, Then undo the brass hinge spacers at the left hand corners of the box. Once removed lift away the lid and fit the new lid in a similar manner, Terminate cables in line with the Drawing 2004M.

INSTALLING THE STAND ALONE PRINTER.
The stand alone printer unit can be mounted adjacent to a control panel or anywhere up to 1,000 metres away. Ensure the unit is mounted in a clear accessible location. Fix the unit using the rear mounting holes provided.

PRINTER SET UP
Once the printer has been installed and prior to powering up, ensure that the address and control settings of the printer are set correctly. The printer must be associated with a particular control panel by setting its address the same also, selection can be made as to whether the printer is local to the panel only or system wide. The printing of faults may be suppressed.

REPLACING PAPER ROLL
The printer requires special thermal paper which can be obtained from the suppliers. To fit the paper roll, undo the two screws which retain the paper roll holder bar and fit a new roll of paper, ensure the loose end of the paper roll is facing towards the back of the lid . Feed the paper through the slot with the coated side uppermost. Re-fix the paper roll holder bar. Insert the lead of the paper roll up and under the rubber guide roller so that the coated side is against the lid, using the thumbwheel to advance the paper. The paper should appear from above the roller with the coated side uppermost.



INSTRUCTIONS.

POWERING UP THE PRINTER

Once all the settings are checked the cabling connected and the paper roll installed, the printer may be powered up (along with the control panel) . The printer will record a message:-

Vector 1 system (or local) Printer V1.0
Panel xx
Fault printing disabled

This message reflects the switch settings.

In order to reduce traffic on the communications bus, the text messages reside in a memory on the printer interface. These are automatically updated by the system.

After a short time the printer may record a message saying :-
Device names updated, panel xx

This message will be printed each time a name is changed in any panel on the network either by download or manual editing. If communications are not being received by the printer the message will read :-
'Comms disconnected'

INDICATIONS
Printer Supply. Green light will be illuminated when power is at the printer interface.
No paper. Will pulse if paper is not present in the printer rollers. Note, the mechanism will not attempt to print if paper is not fitted.

Paper feed
Pressing this button will advance the paper. N.B.This will only function if the associated panel controls activated key-switch is turned to 'on'.

PRINT OPTIONS
In the Vector control panel menu, item no 7. PRINT OPTIONS four options are available:-

1. PRINT ALARM LOG. Prints all alarms and evacuations in the form,

FIRE ADD 013 OPT ZONE 03 11:39 13/04.
alarm address type zone time date dd/mm

2. PRINT FAULT LOG . Prints all faults in the form.

UNASSIGNED ADD 013 OPT 11:39 13/04.
fault address type time date dd/mm

3.PRINT USER LOG. Prints type time and date of user actions.

PRINT OPTIONS (contd)

4. PRINT DEVICE PARAMETERS. Prints device information in the form

```
001 OPT                    ZONE  01  G****
address type               zone      groups
SMOKE DETECTOR GROUND FLOOR
text message.
```

This print will report all devices assigned to the panel selected.
With one option above chosen, select the required panel on the network by scrolling the panel number from 00 to 15. The selection should default to the local panel. Press button 5 to print . Press menu button to exit.

OTHER PRINTOUTS.

The printer will print all alarms and faults (if selected) in real time in the form:-

```
**********FIRE**********
FIRE  PANEL 00          ZONE 04
TYPE MAN    ADDRESS 020          22:48   04/01
MANUAL CALL POINT  TEXT MESSAGE HERE
```

Test mode . When test mode is used the printer will record the devices tested:-

```
TEST     ADD 020  MAN  ZONE  04   22:43  04/01
TEST     ADD 019   OPT  ZONE  04   22:41 04/01
```

Maintenance check. When this engineering mode is used, the printer will record devices with an analog value above the threshold selected, They are printed as the display is manually scrolled.

```
Maintenance P00  OPT Ana 34
maintenance P00  ION   Ana 32
```

P00 refers to the panel number , Ana 34 refers to the analog value returned by the device.

TROUBLESHOOTING.

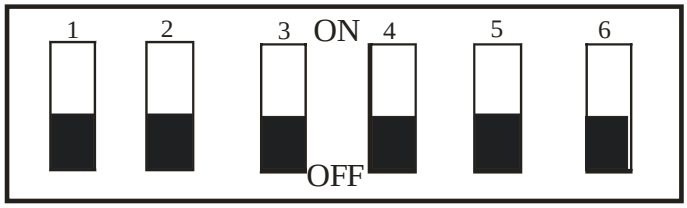
The printer will not print :- is there paper available, is the printer address correct, are dil switch options set correctly. Is panel V2.0 or above, is paper correctly installed.? (i.e. coating upwards).

Comms disconnected:- Check connections to CAN NET and 120 R resistor.

Paper will not feed Is the panel key-switch set to activated

‘Printer supply’ led out Check ancillary supply fuse

Dual in Line Switch.



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Switch 1.
↕
Switch 4.

These four switches are used for network addressing. They represent a Binary value with switch 4 as the least significant bit, and switch 1 as the most significant bit. ie :- switch 4 = 1, 3 = 2, 2 = 4 and 1 = 8.

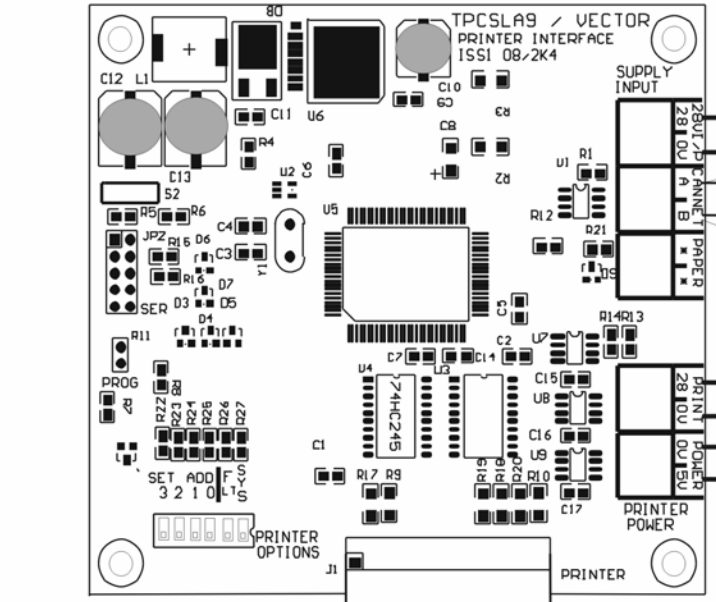
Switch 5. In the ON position , prevents fault events from being printed

Switch 6. When ON,prints all fire and fault events from the network and when OFF, prints only the local panel information.

NOTE:- Each printer on the network must occupy a different address. .

The address of the printer should be made to coincide with the address of the local fire alarm control panel

IMPORTANT :- PRINTERS REQUIRE PANELS TO HAVE SOFTWARE V2.0 OR ABOVE TO FUNCTION

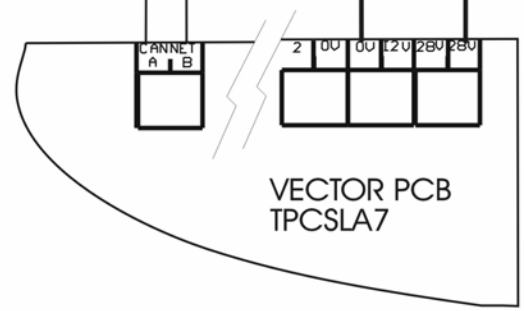


RED = 28V
BLACK = 0V
POWER CONNECTION

CAN NETWORK CONNECTION
WHITE = CAN A
BLACK = CAN B

FIT 120R TERMINATING RESISTOR IF REQD.

WHITE = 28V
BLACK = 0V
RED = 5V



PRINTER OPTIONS:-
SET ADDRESS TO SAME AS LOCAL PANEL
0= 1, 1 = 2, 2 = 4, 3 = 8.
FLT SWITCH, OFF = ALL FAULTS PRINTED
ON = FAULTS SUPRESSED
SYS SWITCH, OFF = LOCAL PRINTER
ON = SYSTEM WIDE PRINTER

26 RIBBON PRINTER CONTROL PCB

LOOM TO PRINTER CONTROL PCB

NOTE:- TERMINATING RESISTORS. MAX TWO SHOULD BE FITTED AT EITHER END OF LONGEST NETWORK NODES. SYSTEM REQUIRES AT LEAST ONE IF A PRINTER IS FITTED

HAES SYSTEMS
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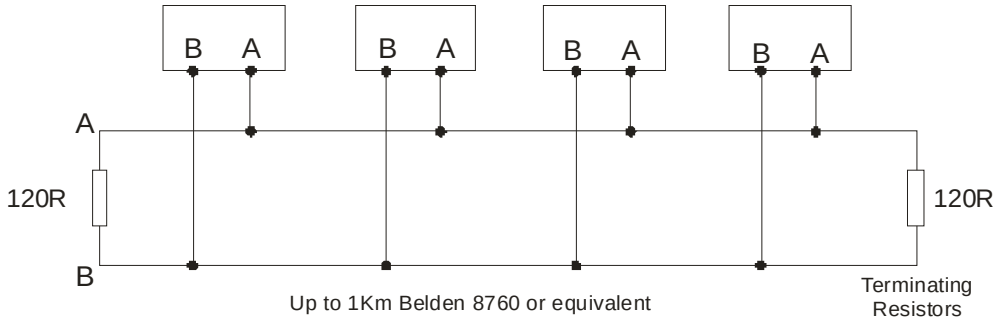
Uxbridge, Middlesex, UB8 2JP
Telephone: West Drayton (01895) 422066
Fax: (01895) 420603

Approved by	Date	Issue	Title/Description
MRD	08/04/2005	1	VECTOR PRINTER INTERFACE CONNECTION DETAILS
DRAWING No	2004M		
Drawn by:	M.DURBRIDGE		

Networking of Panels and printers.

The Vector 1 utilises CAN (controller area networking) Protocol to provide a fast reliable network of up to 16 control panels. Also repeater panels, printers and other devices may utilize the same bus (over 1,000 devices can be used on same twisted pair). A twisted screened pair data type cable is recommended. In particular, use of BELDEN 8760 1 pair cable is advised. Up to 1km of cable may be used over the network. For installations exceeding this requirement protocol repeaters may be available please contact the technical dept for further information. The CAN bus wiring standard requires the use of 120 ohm termination resistors at the furthest ends of the cabling, regardless of its length, or the number of nodes fitted. Where only one panel is in use, the terminating resistors are not required. The CAN bus connections are labelled A and B all A terminals are connected together and all B terminals are connected together. Signal levels around 5 volts would typically be seen when the bus is running.

Typical CAN bus wiring:-



Setting up Network

Each panel in the network must be set with a unique address starting at 0 this is selected on the address switches of each panel in turn . Each panel has a parameter in the Engineering Options Menu ‘set system parameters’, option No 3 this sets the number of remote panels. This quantity needs to be set on each panel to represent the number of other panels fitted in the system e.g. in a network of five panels this figure will be set to 4 in each case. Once set correctly the system will be in the quiescent state.

Network diagnostics

As each panel operates on a peer to peer basis i.e. independently. All panels monitor each other. Each panel sends a regular ident pulse which is monitored by all others. If an error is present it will be annunciated on all panels. A fault message is given if a panel is lost or if a panel is seen on the network which is not expected. Also the integrity of the message packets received is constantly monitored. If data corruption is occurring (perhaps due to cabling faults) this will be annunciated as a ‘network message error’ along with the number relating to the panel affected. (Note due to display restrictions panels 10 to 15 are indicated by letters A=10, B=11, C=12, D=13, E=14, F=15,) This indication may also be given if there are two identical addresses on the network. To clear the fault check all address settings or cable integrity.

TECHNICAL SPECIFICATION

Specification.

Power supply	**27.6 V DC ± 2V (15 Watts Max)**	
supply fuse	**1 Amp quick blow nanofuse**	**Replace only with similar type**
Power consumption	**42 milliamps in quiescent**	
Power consumption	**500 milliamps peak during printing**	
Printing method	**High speed thermal**	
Paper	**Thermal coated 58mm x 25 metre roll**	THM582512
Signalling	**CAN 2.0 data bus**	Max 16 printers per network
Dimensions (lid mount)	**90mm x 60mm x20mm pod on door front**	
Dimensions (stand alone)	**320mm high x 160mm wide x 85mm deep**	**Weight 2.4 Kg**
Cabling	**FP200 or equivalent (maximum capacitance 1µF, maximum inductance 1 millihenry)**	**Cable glands must be used.**