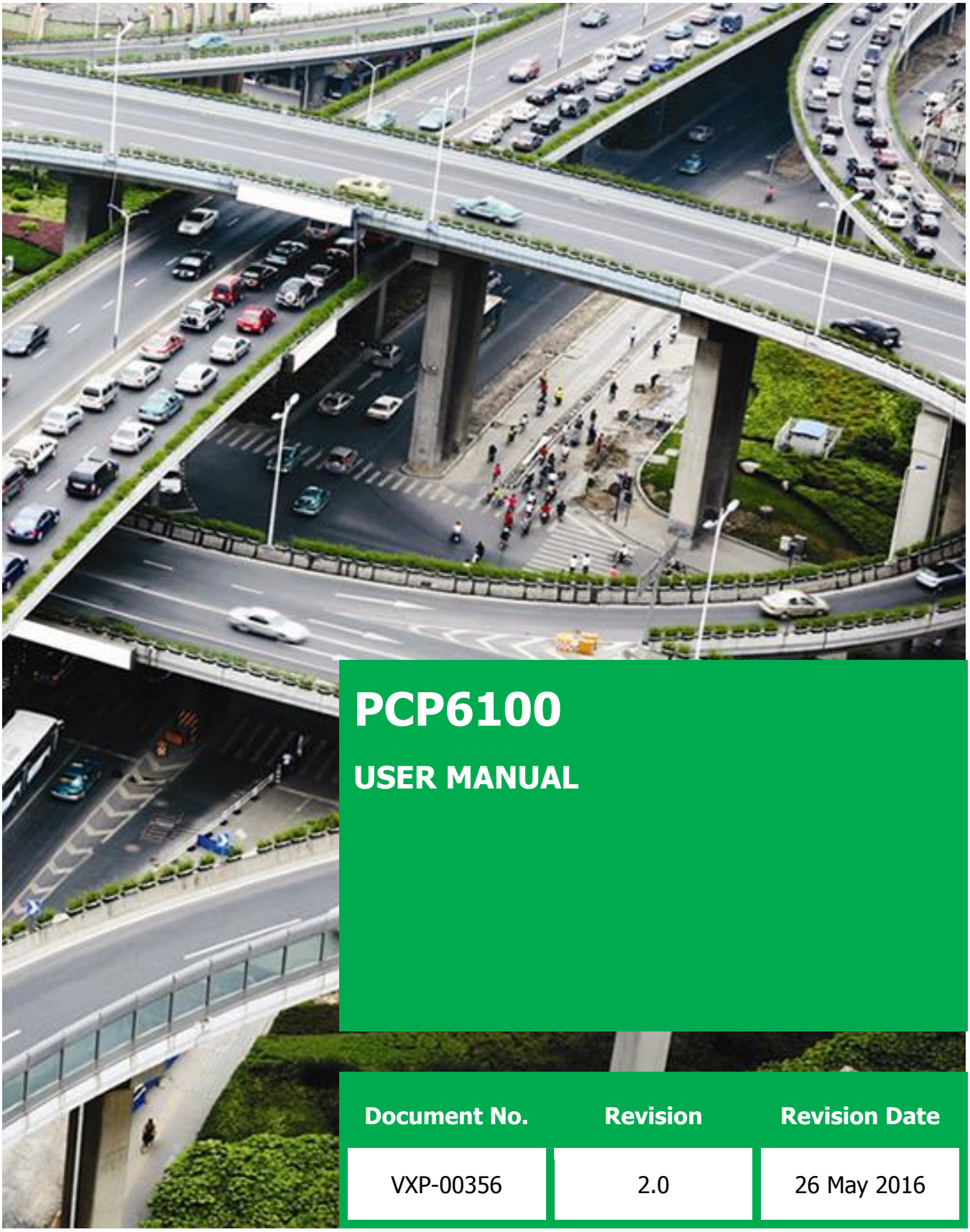

PCP6100

USER MANUAL

Document No.	Revision	Revision Date
VXP-00356	2.0	26 May 2016

Document History

Revision	Revision Date	Description	Author
.1	19 May 2013	Initial Draft	Chris Bailye
.2	24/05/2013	Updated Power Supply to 24VDC device	Chris Bailye
.3	24/05/2013	Updated the data ports	Chris Bailye
1.0	26/05/2016	Updated to include FCC compliance statement	Gino Bertino
2.0	6/09/2016	Added FCC warning and RF exposure statement.	Gino Bertino

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1 Introduction

This installation guide provides the instructions for installing and setting up a PCP6100 also known as the PCP5700.EMV. From here on in, this document will refer to the unit simply as the PCP6100.

1.1 Purpose

The purpose of this document is to provide general installation guidelines for the PCP6100 Validator. It includes instructions for mechanical installation, cabling, testing, and configuration procedures.

Figure 1 shows the PCP6100 Validator.

Figure 1: PCP6100 Validator

1.2 Scope

The scope of the document is limited to describing the installation guidelines for the PCP6100 only. This manual is to be used by Supervisors and Technicians performing on site installations.

1.3 Who Should Read This Manual

This document is intended for use by technicians installing PCP6100 Validator units, such as:

- Installation personnel

  Work on mounting, commissioning and removal, primarily of the operational apparatus systems.

1.4 Terminology

The following table contains a list of common acronyms/terms and their meanings.

Table 1: Terminology

Term	Definition
AFC	Automatic Fare Collection
AS	Australian Standard
BoM	Bill of Materials
CF	Compact Flash memory card
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
HBOM	Hardware Bill Of Materials
HD	Hot Dipped (galvanising)
LAN	Local Area Network
LCD	Liquid Crystal Display
OD	Outside Diameter
OS	Operating System
PC	Personal Computer (desktop or compatible)
PCD	Pitch Circle Diameter
PCP6100	Validator
PVC	Poly Vinyl Chloride
RS232	Serial Communications Standard
SBOM	Software Bill Of Materials
SP	Service Pack (of an operating system)
SSH	Secure Shell network protocol
UD	Usage Data
WXP	Windows XP operating system (desktop edition)

1.5 Safety

All installation work must be carried out in accordance with relevant Safety Codes and Codes of Practice as well as recognized industry standards. The appropriate protective clothing must be worn where necessary. Tools must be used in accordance with manufacturers' instructions and suitable for the task.

Personnel attempting to perform any work on the electrical wiring must be trained and suitably qualified in the appropriate electrical codes of practice and must work in accordance with those codes.

1.5.1 Safety Precautions

This document presents important information that is intended to ensure the safe and effective use of this device. Please read this information carefully, and store it in an accessible location near your installation.

1.5.2 Warnings and Cautions

Warnings and cautions are used to call attention to potential hazards. Failure to observe the information provided with the warnings and cautions may result in injury or property damage. Be sure that you understand the meaning of each before you proceed.

WARNING:

Indicates a potentially lethal hazard. Failure to observe a WARNING may result in severe injury or death.

CAUTION:

Failure to observe a CAUTION may result in personal injury or damage to the device or other property.

WARNING:

- The device should only be installed, serviced and maintained by qualified service personnel. Improper repair work can be dangerous. Tampering with this device may result in injury, fire, or electric shock.
- In accordance with local requirements, the device should only be installed by a qualified electrician. Improper work can be dangerous. Tampering with this device may result in injury, fire or electric shock.
- Disconnect all power before carrying out repairs or service.
- Be sure to use the specified power source for the device. Connection to an improper power source may cause fire or electric shock.

CAUTION:

- This device must be earthed (grounded).
- The enclosure section of this device is heavy caution needs to be used when opening the device to avoid damage or injury.

1.5.3 EMC and Safety Standards Applied

Product Name: PCP6100

The following standards have been applied to this device:

- CE Marking
- Safety: EN60950-1:2002
- FCC Part 15

1.5.3.1 FCC compliance statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encourage to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

WARNING:

THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

1.5.3.2 Human exposure statement:

To meet human exposure requirements a separation distance of > 20cm should be maintained.

2 Overview

This document details the process for installing the PCP6100 Validator.

The PCP6100 Validator can be installed in either of two configurations, pole mounted or wall mounted.

2.1 Installation Component List

Before proceeding with installation, check that the BoM and the equipment is to the latest applicable revision.

The components shown in Table 2 are required to install the PCP6100 Validator.

Table 2: Components required to install the PCP6100 Validator

Item	Quantity		Reference
	Pole mounted	Wall mounted	
PCP-6100 Validator assembly	1	1	PCP6100 Item No. PCP6100 AEAA
PCP5000 Install Kit	1	1	ASS0085
M8 Cap Head Bolts	3	3	
M8 Spring Washer	3	3	
M8 Flat Washer	3	3	
Mounting Gasket	1	1	
Pole Mount Assembly	1		POLE PCP6100 Item No. PROP0036
Power Supply Assembly	1		
Base Cover (2 parts)	1		
M6 Tamperproof Button Head Screws for base cover	4		
Pole Mounting Gasket	1		
Loctite for use with base cover screws	1		
Wall Mount Assembly		1	CRADLE WALL BRACKET 90 BOT ENT PCP6100 Item No. PROD0038
Power Supply assembly		1	
Wall Mounting Gasket		1	
Silicone for mounting bracket to wall		1	
Chemical Resin Studs M16 dia x 125 deep for fixing pole to floor or bracket to wall	4	4	Pre installed by VIX TECHNOLOGY/CLIENT
Shielded Network Cable	1	1	Pre installed by Client
Power Supply/Cable	1	1	Pre installed by Client

2.2 Installation Process

The installation procedure is:

1) Install the pole on a level concrete pad or install the wall mounting bracket on a suitable vertical masonry or concrete wall, with appropriate access for cables.

2) Fit the sealing gasket to the pole or wall mounting bracket.

   Apply silicone to the rear of the wall mounting bracket to seal the bracket to the wall.

3) Connect the power and Ethernet cables to the rear of the Validator.

4) Fit the Validator and mounting bracket (door) to the pole or bracket and secure with three M8 bolts.

5) Close the Validator onto the mounting bracket (door), close the lock and remove the key.

6) Fit and secure the lock cover using tamperproof screws.

3 Mounting Design

The following sections describe the mounting design for the PCP6100.

3.1 PCP6100 Mounting

The following section provides a step-by-step installation procedure for mounting a pole cradle for a PCP6100

The following PCP6100 variants are designed and supplied:

Support stand to affix to floor – for one PCP6100

The design of the stand is documented in Appendix A.

Stands and wall brackets are installed in a manner that any standard design fixings are concealed and access to them is not available to the public.

3.2 Tools

Installation personnel should have a variety of tools available to cope with the different types of installation situations that may be encountered. Depending on station access, mounting surface construction, available power outlets, blocking of public thoroughfares for installation etc. Include items such as, safety barriers, warning signs and marking tape, safety vest etc.

The following tools are required to mount a PCP6100:

- Ratchet handle with ¼” drive or adaptor
- 1/4” drive universal joint
- ¼” drive 100mm long extension
- 5mm hexagonal ball drive
- ¼” drive socket to suit wall bolts/nuts
- 13mm ¼” drive deep socket (optional)
- M6 tamperproof screwdriver for base cover
- M16 ring spanner.
- M16 socket with ratchet handle and ½” drive.
- Power drill 10mm chuck.
- Hilti TE 40-AVR rotary hammer drill or similar for drilling 18mm holes in concrete
- Masonry drills, 18mm and others
- Extension lead
- RCD outlet
- Battery operated drill with adjustable clutch settings
- Selection of screwdriver bits and sockets to fit battery drill.
- 230V isolating transformer
- Torque wrench

Figure 2 shows a PCP6100 Validator mounted on its support stand.

Figure 2: PCP6100 Validator mounted on support pole

3.3 Positioning

The following sections describe how the PCP6100 Validator is to be mounted and positioned.

Note: *Install the PCP6100 in a location and orientation that minimises direct sun penetration onto the LCD display in order to avoid screen glare and overheating.*

3.3.1 General Mounting Procedure

3.3.2 Mounting Pole

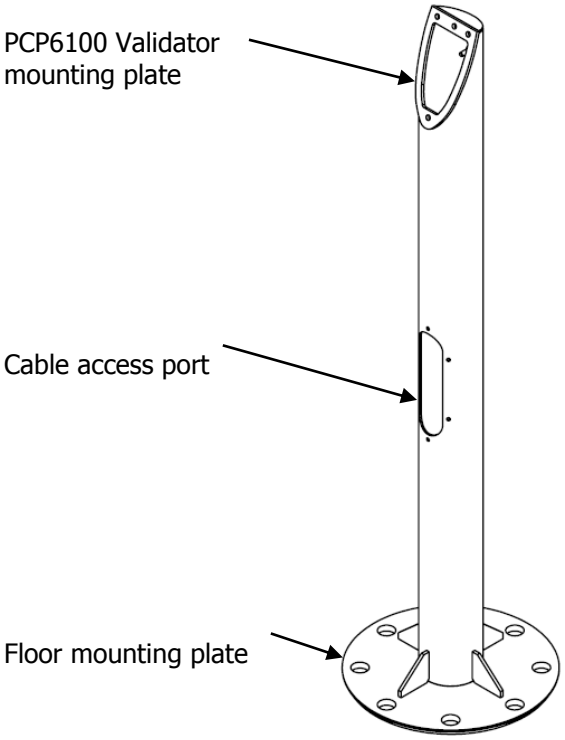


Figure 3: PCP6100 mounting pole.

The mounting pole is manufactured from stainless steel tube O.D.90mm, Grade 316, wall thickness 2.7mm.

The pole arrangement is weld fabricated in accordance with relevant structural steel welding standards.

The pole is electro-etched after fabrication to provide a long lasting satin textured surface finish similar to the casing.

The pole is mechanically fixed to the station platform by four fasteners.

The pole includes a round flat base with eight mounting holes to facilitate the mounting of the PCP6100 at 45º increments.

A stainless steel base cover, finished in a long lasting satin textured surface, encloses the base plate.

The base cover hides the mounting fasteners.

The pole is fitted with terminal blocks and a ground stud. Refer to Appendix A.1

3.3.3 Pole Mounting Procedure

- The pole is mounted on a suitable concrete substrate.
- 4 x 18mm holes are drilled to a depth of 130mm equally spaced on 250mm PCD as shown in Figure 4.

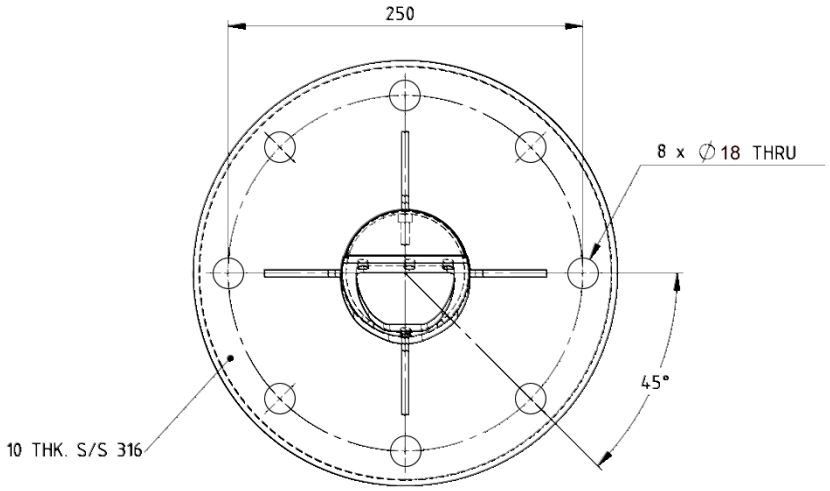


Figure 4: 250mm PCD

- Install chemical resin studs of M16 set 125mm deep into the concrete. For procedures on the use of chemibolts refer to the manufacturer's instructions supplied with the bolts.
- Cable access to the PCP6100 Validator is through the concrete base and the mounting pole.
- Following installation of the pole, a base cover is installed to hide the floor fixing bolts. Apply "Loctite" to the 4 x M6 x 35 tamperproof button head screws shown in Figure 5.

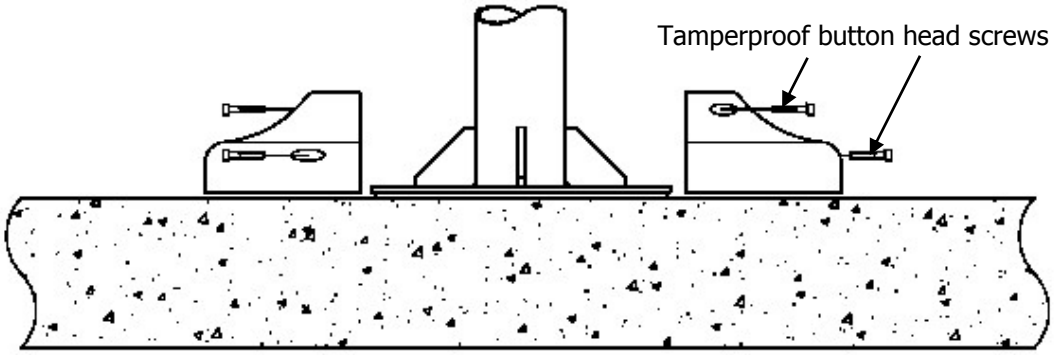


Figure 5: Base cover

3.3.4 Wall Cradle

The wall cradle is manufactured from stainless steel sheet, Grade 316, 2.0mm thick.

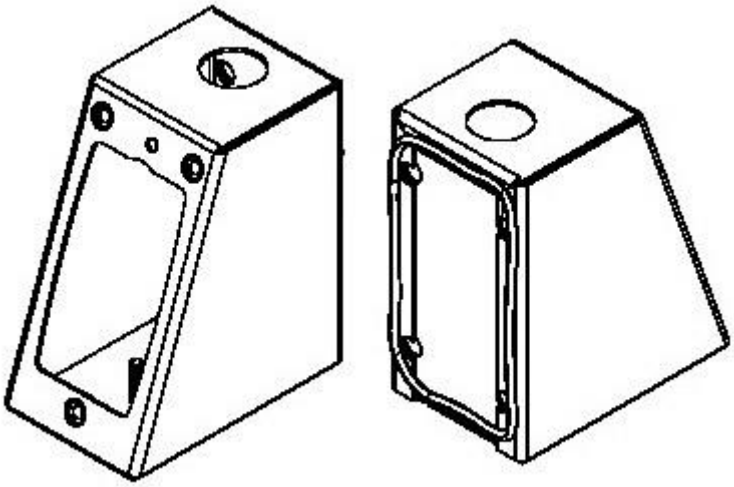


Figure 6: Wall Cradle Assembly

The cradle assembly is weld fabricated in accordance with relevant structural steel welding standards.

The cradle assembly is electro-etched after fabrication to provide a long lasting satin textured surface finish similar to the casing.

The cradle can be mechanically fixed to a vertical surface, requiring a vertical area of 145mm wide by 170mm high. Mount the device using the appropriate fixing method to suit the surface, e.g. Chemibolts for concrete walls etc.

The wall cradle is fitted with terminal blocks and an earth stud.

The cradle is fitted with two 25mm conduit glands. The glands are positioned on the topside of the cradle, to suit conduits entering from above.

A single conduit entry point is provided at either the top, bottom or rear of the cradle. The entry point is designed to support a 25mm HD PVC conduit or 25mm HD galvanised steel conduit. The Principal must specify the quantity of cradles by orientation and entry point to ensure supplied cradles have correct entry point for required orientation.

Refer to Appendix A.2 for details of the wall cradle.

3.3.5 Wall Cradle Mounting Procedure

The available wall configuration.

90° cable bottom entry

Refer to Appendix A.2 for mounting procedures.

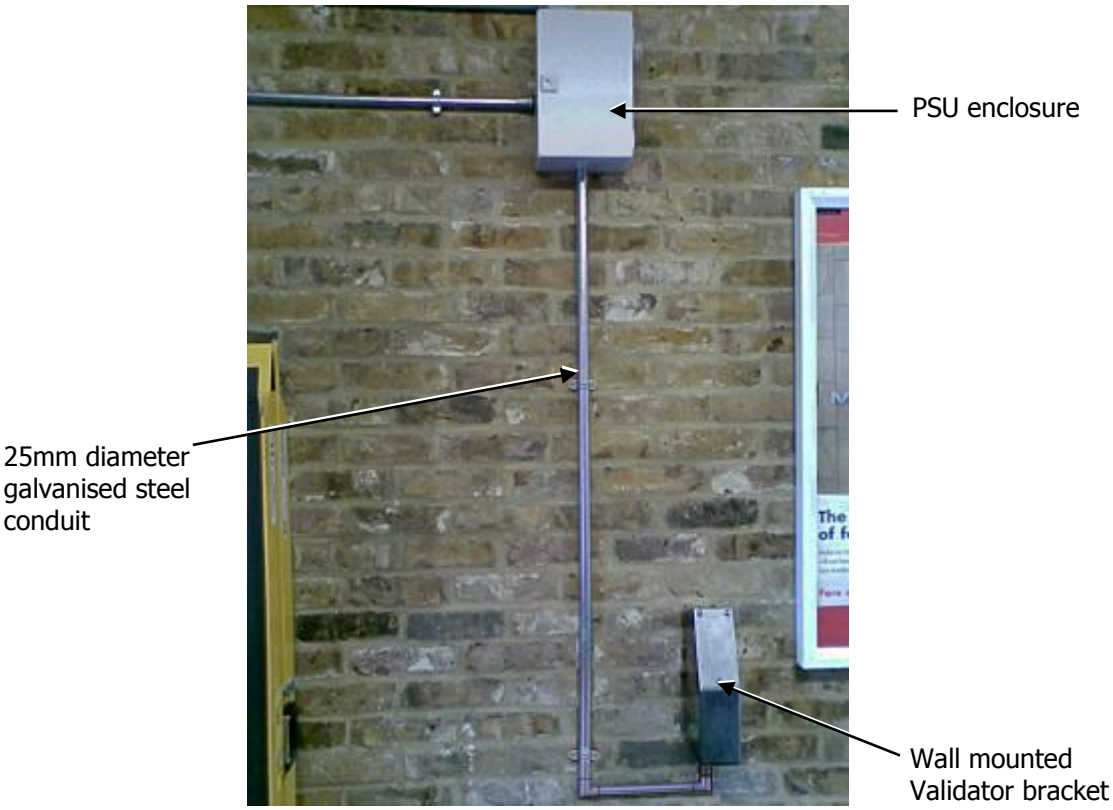


Figure 7: Typical Client enclosure and wall mounted bracket awaiting Validator installation

Enclosures are provided and installed by CLIENT. The enclosure must provide 24VDC and a RJ45 data outlet.

4 Cable Installation

This section provides a step-by-step installation procedure for routing cables to the PCP6100 mounting pole or bracket.

WARNING:

Disconnect the mains power before you start any work. Ensure appropriate over current and earth fault protection are provided in the mains supply.

The PCP6100 needs to be supplied with 24VDC.

4.1 Procedure

Floor Mounted Pole Assembly:

1) Prior to the PCP6100 being fitted to the mounting pole, a 24VDC power cable and a shielded RJ45 cable need to be inserted from the bottom of the pole, out through the top.

2) Client may install a suitably certified 24VDC power supply in the pole of the pole mounted device. This power supply, must be provided, installed and tested by the CLIENT.

Wall Mounted Bracket Assembly:

1) Prior to the PCP6100 being fitted to the mounting bracket, a 24VDC power cable and a shielded RJ45 cable need to be inserted from the bottom of the bracket, out through the top.

2) Client may install a suitably certified 24VDC power supply in a CLIENT provided enclosure. This power supply, must be provided, installed and tested by the CLIENT.

4.2 Tools

The following tools are required to terminate a PCP6100:

- Flat head screw driver
- Wire Cutter/Stripper
- RJ45 Crimping Tool

4.3 Power Supply Cabling

The PCP6100 operates from a nominal 24V DC Power Supply.

The PCP6100's operating voltage is 16V DC to 36V DC nominal. The under-voltage detect voltage is 15V DC nominal. The over-voltage shutdown is 38V DC +/- 2V DC and reverse polarity protection up to 400V DC

Data cabling installation and testing is carried out by CLIENT.

4.4 Power Cable Pin-Out

Refer to Appendix B.1 for Power Cable Pin-Out details.

4.5 Network Cable

CLIENT will supply Cat5 cabling and a Hub (cable length limited to 100m from the 10BaseT Hub to the foundation of the device, cable is terminated with RJ45 connectors) to connect the PCP6100 to the station's LAN as shown in Figure 8.

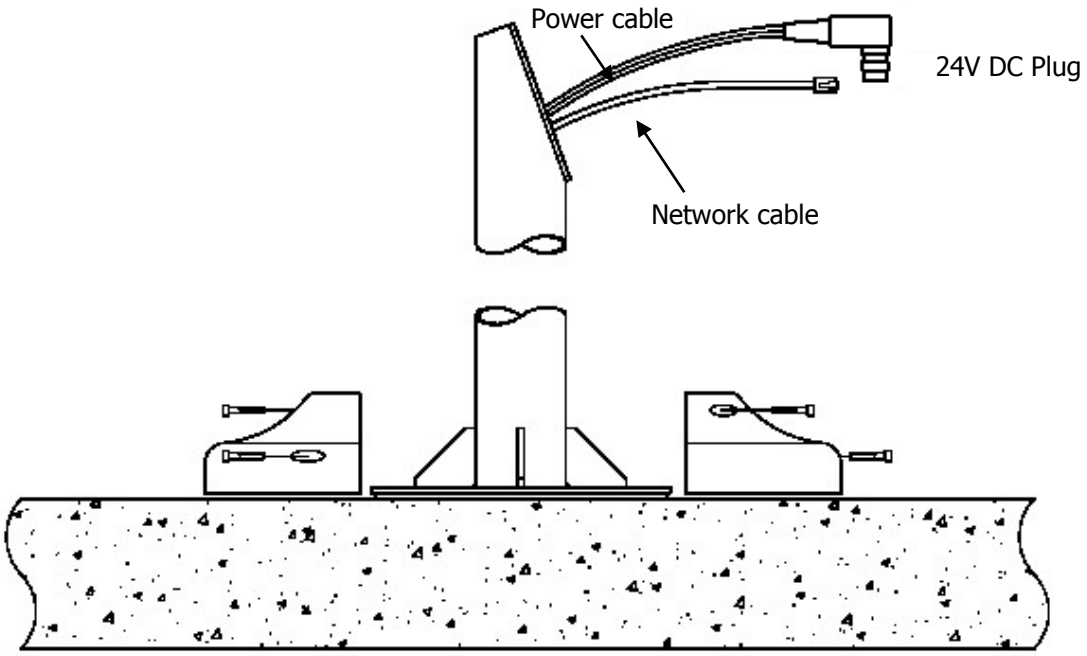


Figure 8: Power & Network Supply Cabling

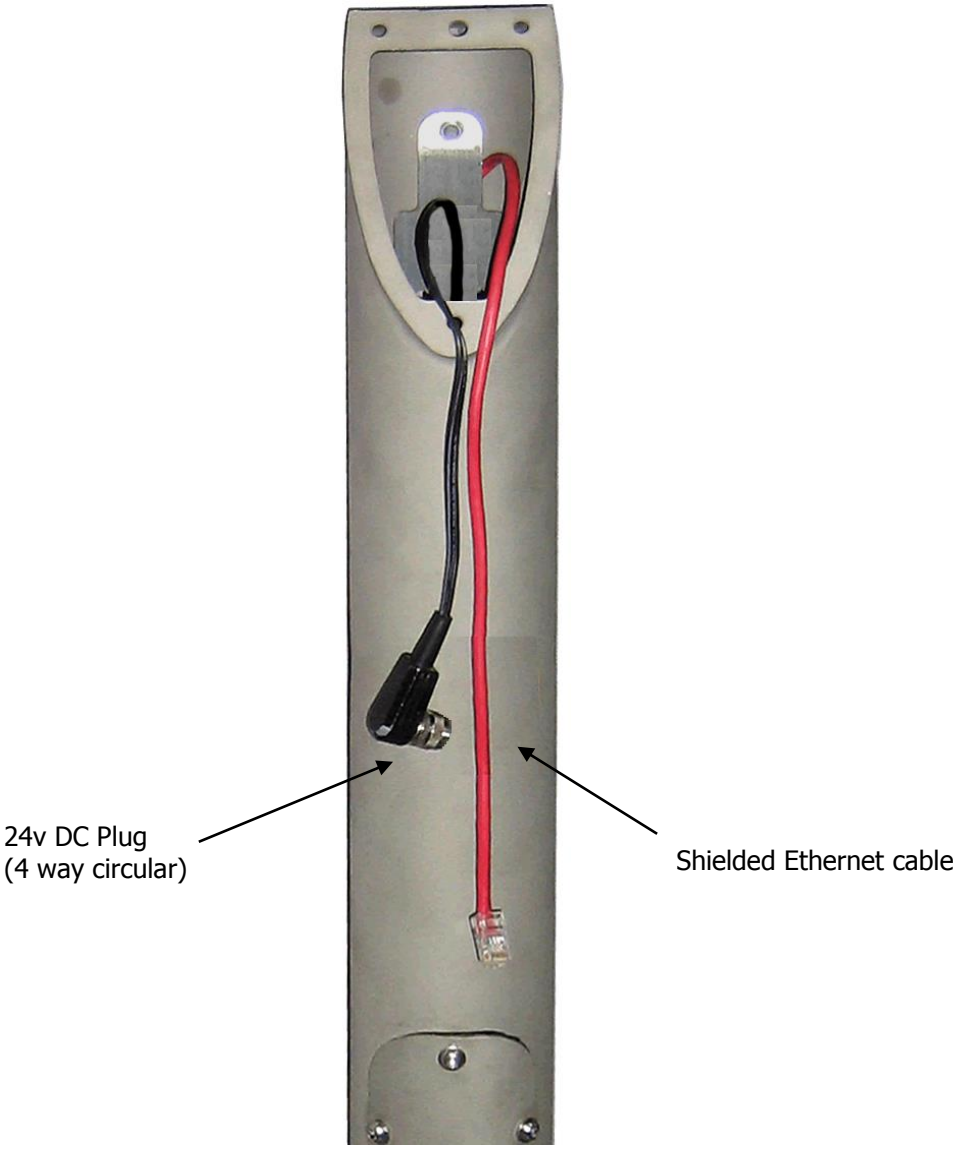


Figure 9: Power cable and network cable at the pole, ready to be connected to the Validator

4.6 Network Cable Assembly

The RJ45 connector should suit 8 way CAT 5 cable used:

- Shielded
- Solid/Stranded
- Small Core/Large Core
- Round/Flat/D-shaped

4.7 Network Cable Pin-Out

Refer to Appendix B.2 for Network Cable Pin-Out details.

5 PCP6100 Termination

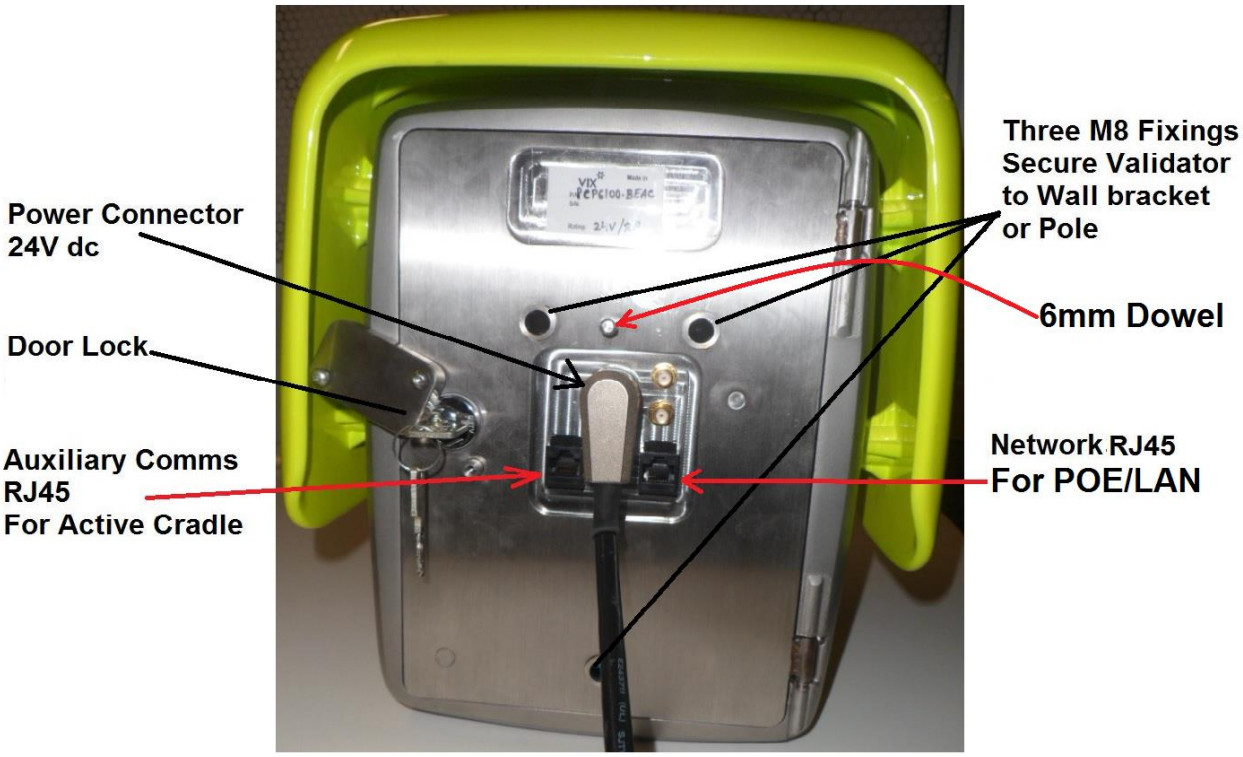


Figure 10: PCP6100 Power and Network connections

- Connect 24V DC plug (4 way circular) in PCP6100;
- Connect RJ45 connector into Ethernet LAN port in PCP6100.

5.1 Data Ports

the PCP6100 contains 4 data ports –

External Ethernet LAN RJ45 (shown in Figure 10)

External Aux Communications RJ45 (shown in Figure 10)

Internal USB (shown in Figure 12Figure 10)

Internal Serial Port (shown in Figure 12Figure 10)

CAUTION:

Any equipment that is plugged into the External Aux Communications RJ45 port, internal USB port or the internal serial port, must comply with clause 4.7 of EN 60950-1:2006.

6 PCP6100 Installation

The mounting plate is fitted to the rear of the casing to provide a complete unit for easy transport and handling.

The mounting plate is manufactured from 5mm thick stainless steel.

6.1 Tools

- 5mm hexagonal ball drive

6.2 Mounting PCP6100 Base Plate

The mounting base is located to the mounting fixture by one 6mm locating dowel, and mechanically fixed using three M8 stainless steel set screw fasteners.

Torque the screw fasteners to 15Nm.

6.3 Locking PCP6100

The PCP6100 uses a lock manufactured by DOM. Refer to VIX TECHNOLOGY for lock details.

A lock cover with sealing O-Ring is provided, to protect the lock, and to ensure the IP rating of the unit.

Warning:

Ensure the PCP6100 is locked. When PCP6100 is unlocked the key is captured and cannot be removed.

Replace lock cover ensuring O-ring is positioned correctly and using tamper resistant fasteners.

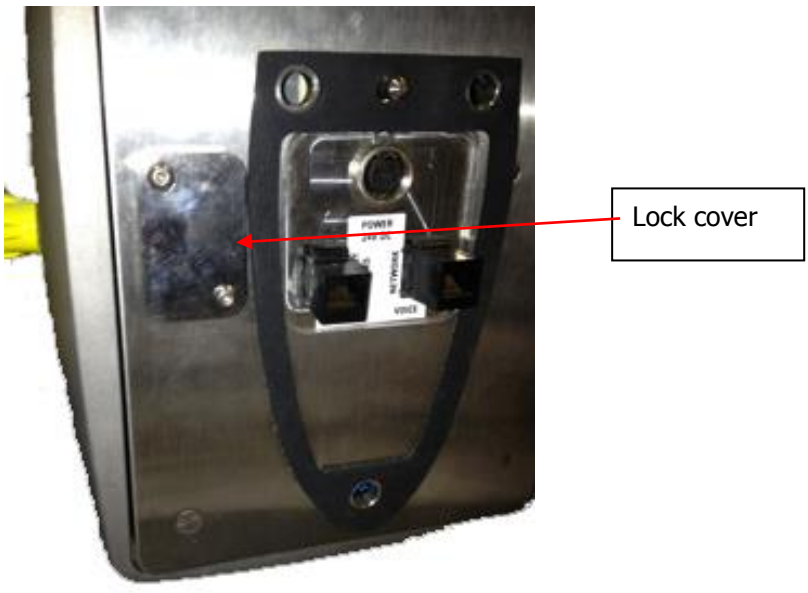


Figure 11: Lock cover fitted

7 Changing SAM

Preconfigured SAM cards need to be installed into the Validator at the locations shown below. Installation of the card is conducted in a workshop situation prior to installing the PCP6100 Validator.

Figure 12: Location of SAM slots.

8 PCP6100 Software Installation

This section describes how to re-install factory software onto the PCP6100 validator.

8.1 Required Equipment

The following items are required in order to successfully complete the software installation:

- PCP6100 validator
- Regulated power supply: 24 VDC, 3 A
- PC with Windows XP SP2, RS232, Ethernet
- Power cable from validator rear power socket to the DC regulated power supply
- Ethernet cable from validator rear network socket to PC
- Serial cable from validator internal DE9 connector (on main board) to PC
- Vix software package: "SW8484.02012017CR msp_lnx_cobra v1.0.zip"

8.2 Procedure

On the PC:

- Set network IP address / mask to 172.18.255.254 / 255.255.0.0
- Unzip the SW8484 software package to any convenient directory
- Invoke the CobraLoad utility from within the unzipped package
- Start up a terminal emulator such as HyperTerminal, with serial communication settings 115200bps, 8-N-1

Power up the validator while holding down the enter key on the terminal - this should interrupt the boot process

Observe output on the terminal stops at a U-Boot prompt

Type "run msp" (without quotes) at the prompt

Observe that the validator starts downloading software from the PC over the Ethernet connection (moving progress bars will appear in CobraLoad, and progress will be reported at the terminal)

Once complete, the validator will reboot and go into DAMS (Diagnostic and Manufacturing Software)

Within DAMS, the validator will proceed automatically to soak testing (a series of non-interactive tests)

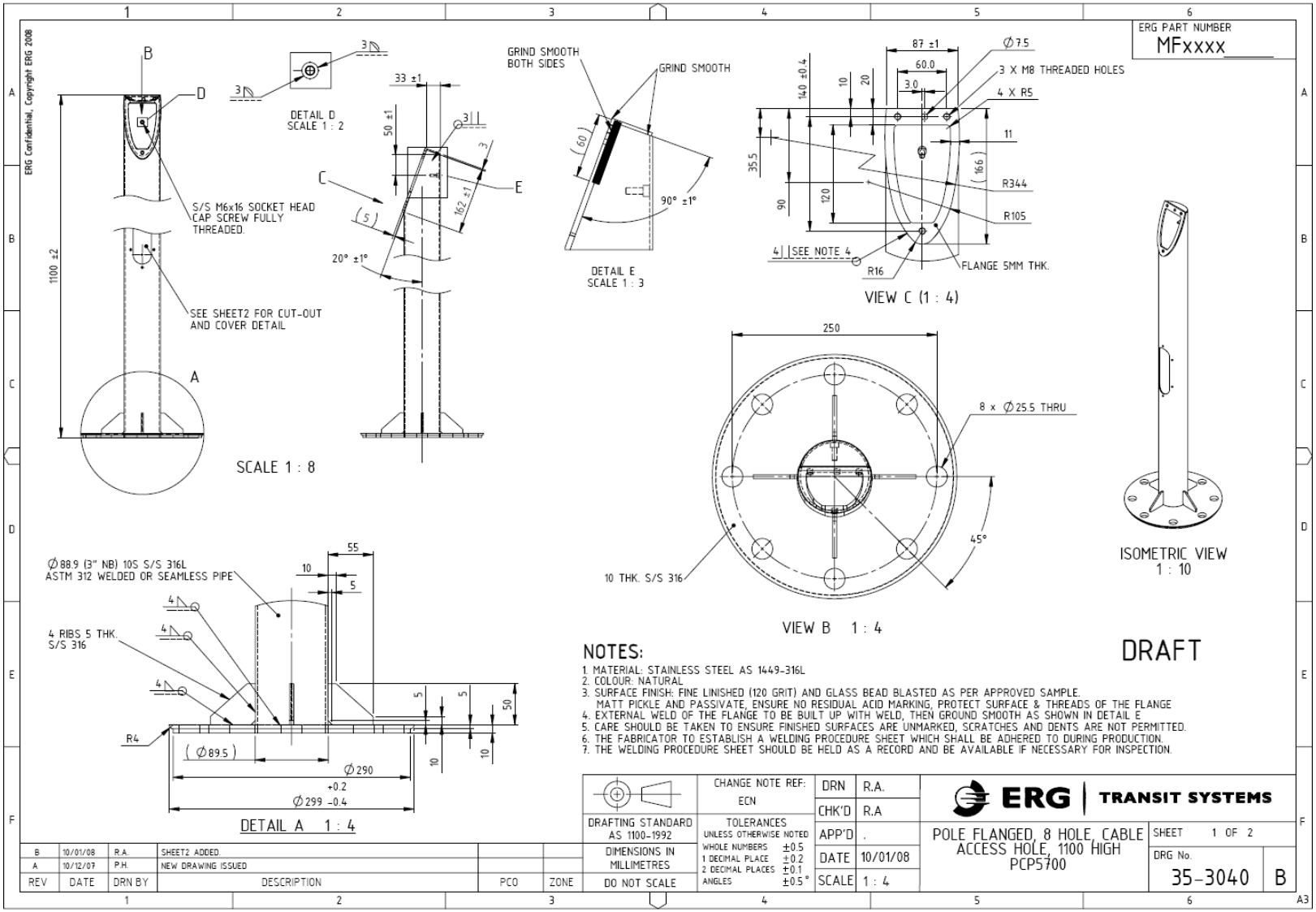
The validator is now ready for safety testing.

Appendix A Attachments

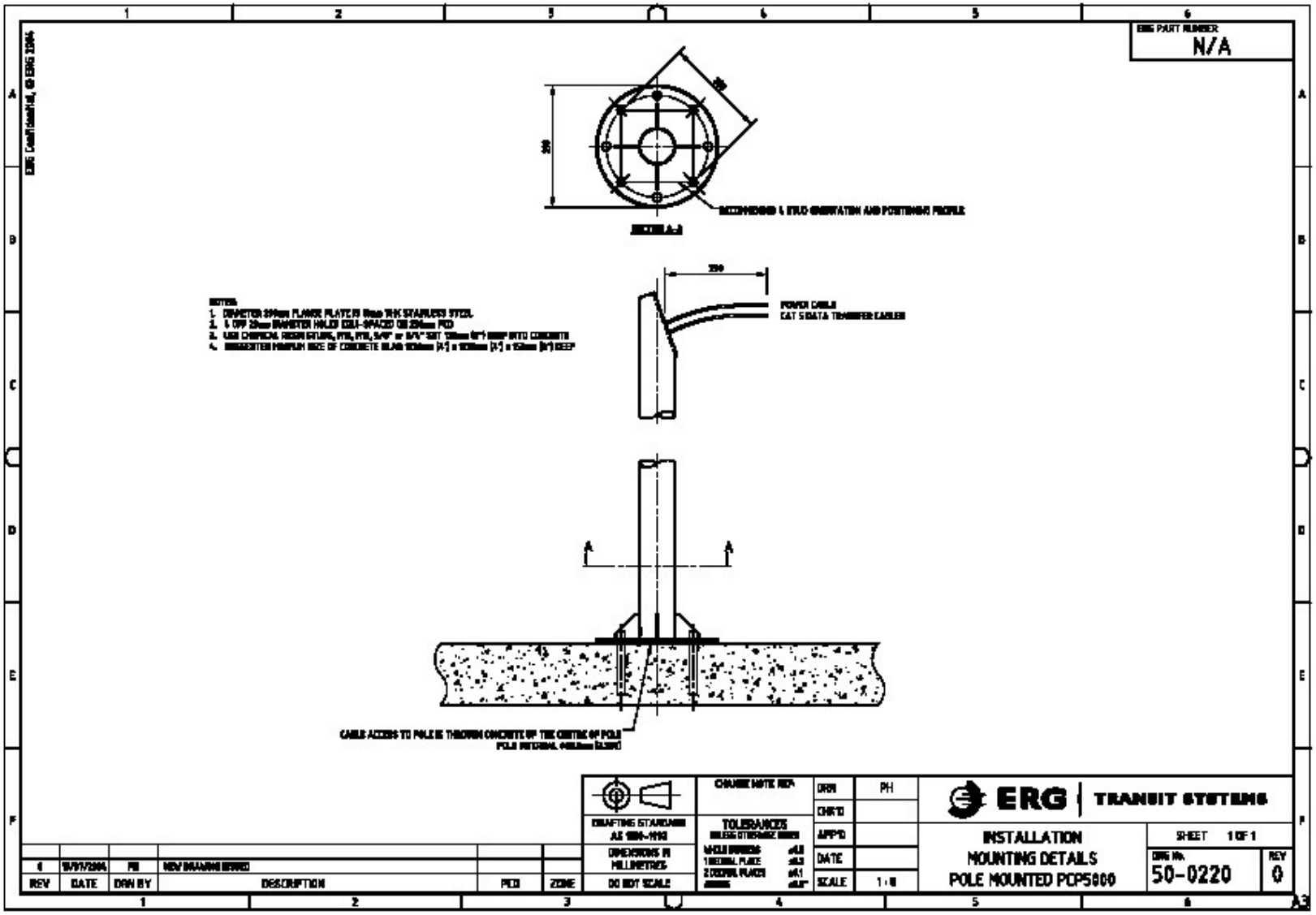
A.1 Installation Guides for Pole Mounted PCP6100

- Pole Flanged Single Head Pole Mounted PCP5000 – Drg:35-3040
- Installation Pole Mounting Details – Drg No: 50-0220
- Installation Pole Electrical – Drg No: 50-0221

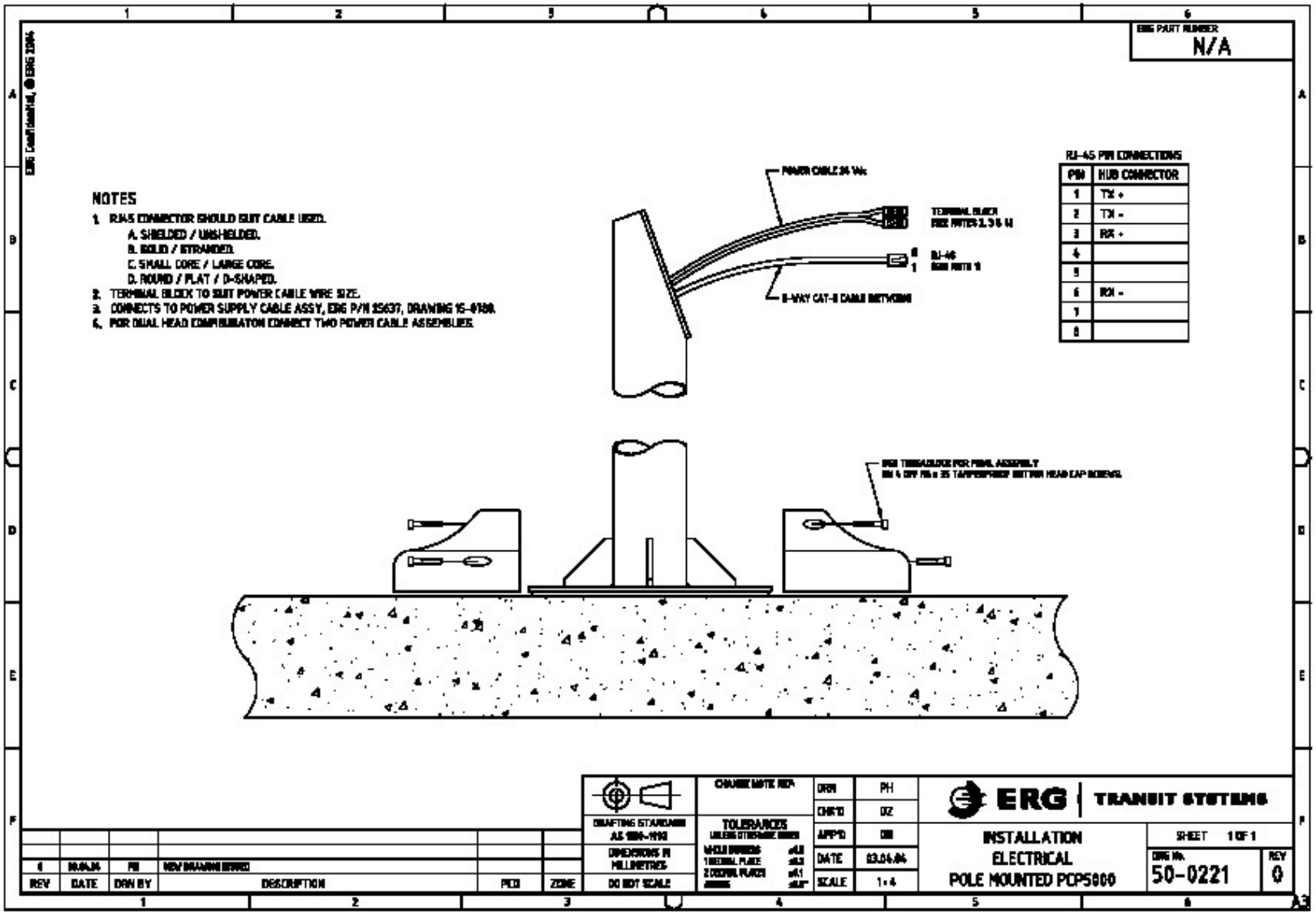
A.1.1 Single Head Pole Mounted PCP6100



A.1.2 Pole Mounting Details



A.1.3 Installation Pole Electrical

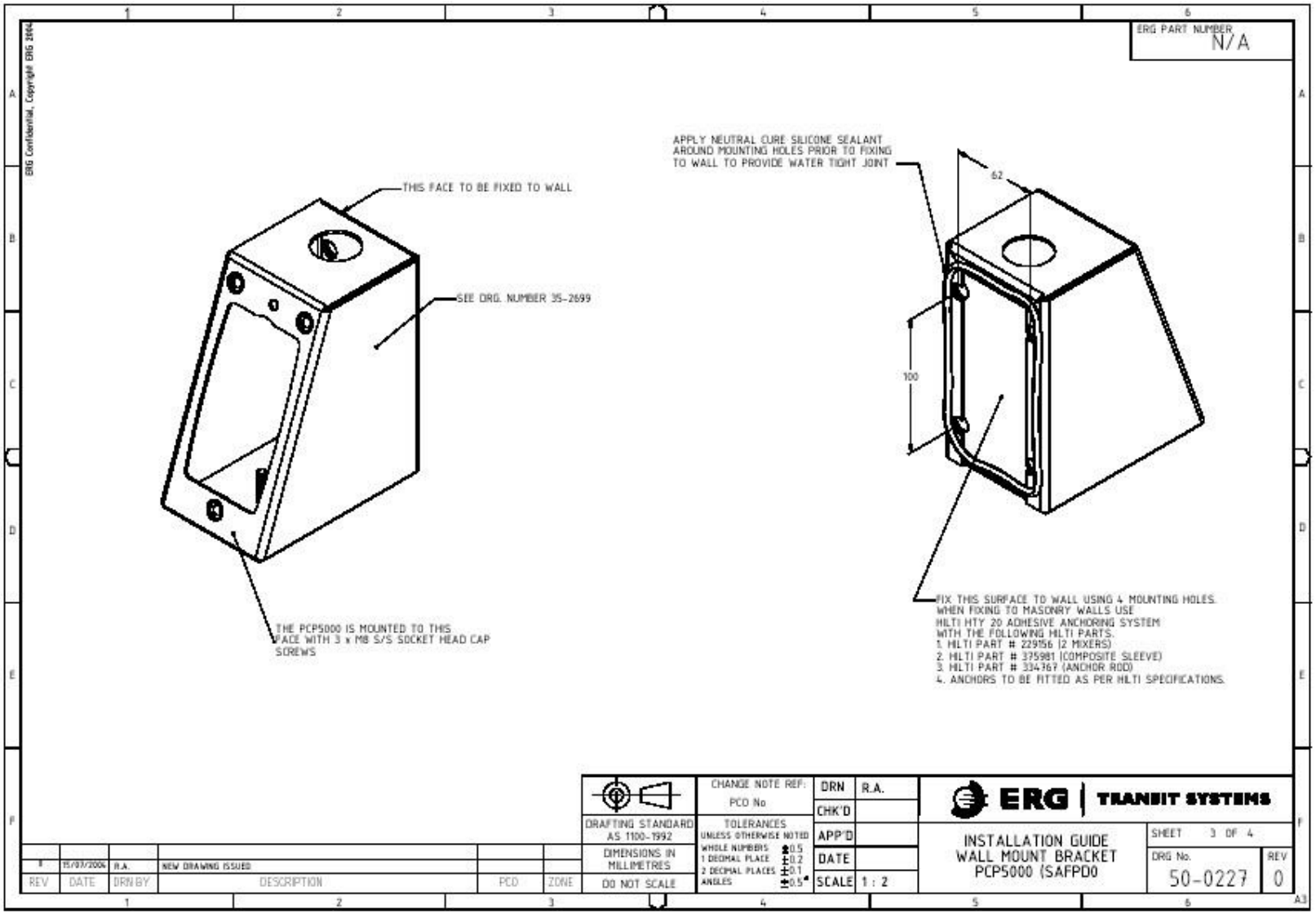


A.2 Installation Guides for Wall Cradled PCP6100

Installation Guide Wall Mount 90°- Drg No: 50-0227 Pg3

Special Installation Tools Required – Drg No: 50-0227 Pg4

A.2.1 Wall Mount Bracket 90°



A.3 Special Installation Tools

Appendix B External Connector Descriptions

Details of connector pin outs are shown below.

B.1 24Vdc Power

Table 3: DC Power

Pin	Circular Door Connector
1	+24Vdc
2	+24Vdc
3	GND
4	GND

B.2 100BaseT Network

Table 4: Network LAN

Pin	RJ45 Door Connector
1	TXD+
2	TXD-
3	RXD+
4	
5	
6	RXD-
7	
8	

B.3 Auxiliary Communications

Table 5: Auxiliary Communications and 1-Wire

Pin	RJ45 Door Connector
1	RS-232 Tx
2	RS-232 Rx
3	RS-232 GND
4	RS-485 -
5	RS-485 +
6	RS-485 GND
7	1-Wire I/O
8	1-Wire GND