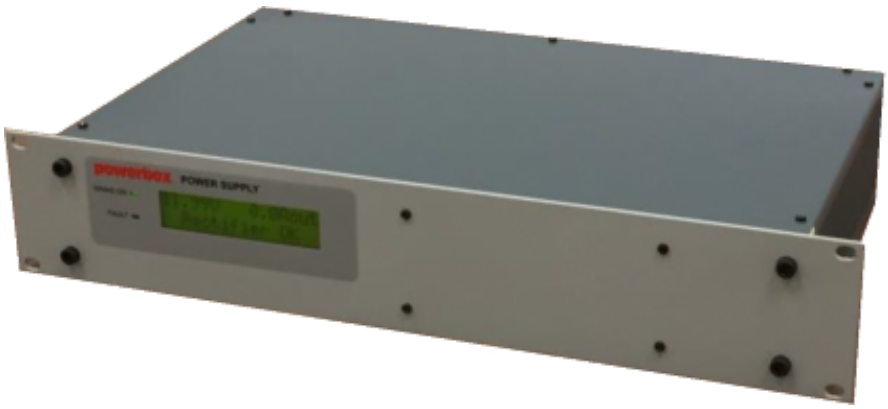
powerbox
Powering Progress

Operation and installation manual

PB362 series

AC/DC power supplies



362-1601 ISSUE X1

PB362 series AC / DC power supplies

The PB362 series is a family of 12.0Vdc, 24.0Vdc and 48.0Vdc off-line AC/DC power supplies which operate from 110/240Vac mains power.

The PB362 provides output current limiting and AC mains and rectifier alarms. It employs high efficiency switching technology, combined with very low output noise which makes it suitable for powering a broad range of loads such as communication equipment, control equipment and alarm systems.

The PB362 is available with a 10BaseT / 100BaseTX Ethernet interface (option –N). This interface supports SNMP V1, XML and an embedded webpage allowing the PB362 to be monitored remotely.

The PB362 is available in a 2RU 19" rack mount enclosure.

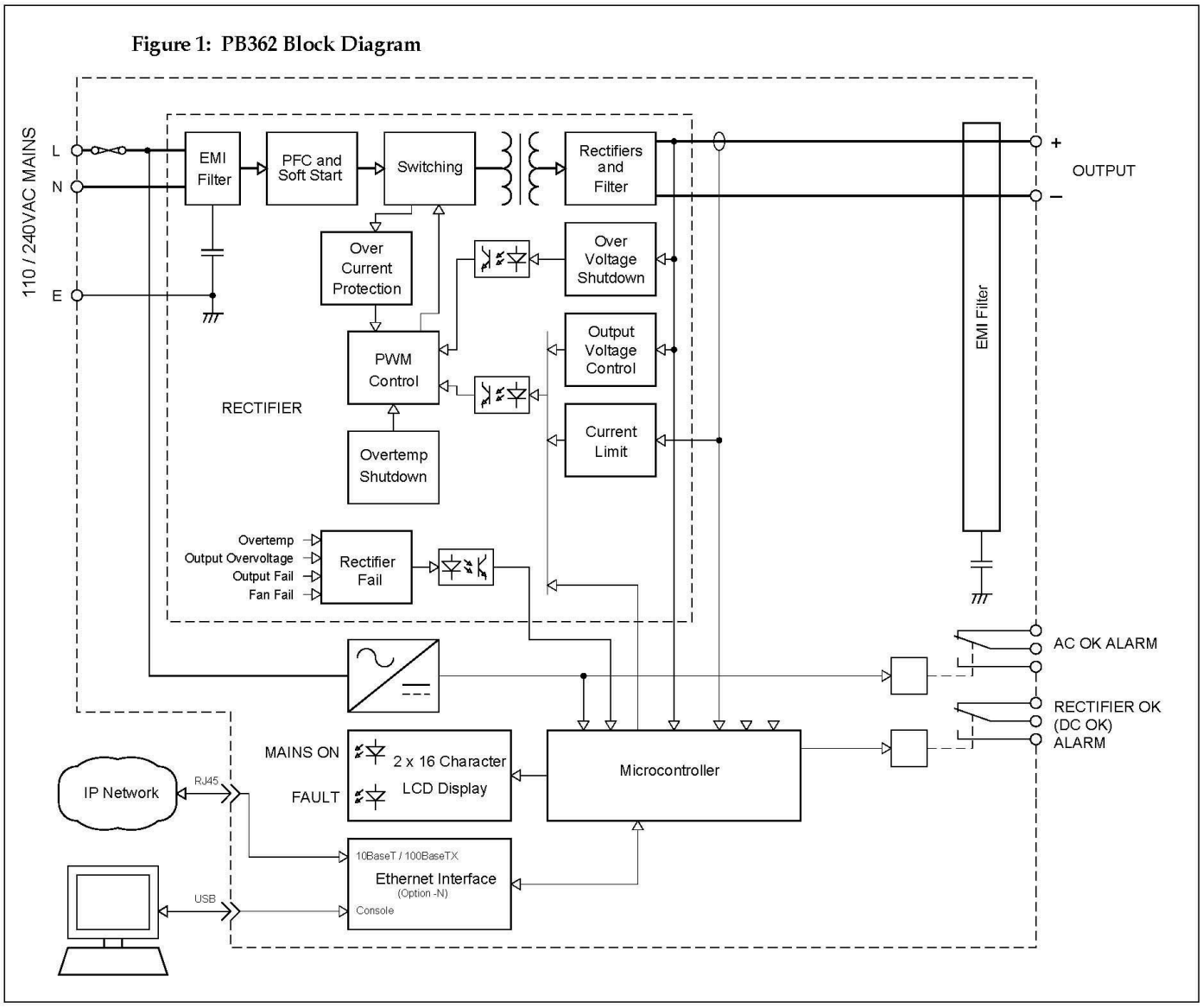
All models incorporate an alphanumeric LCD display as standard.

Features and operation

Figure 1 is a block diagram of the PB362 detailing its various functions as follows.

- A high efficiency switching AC/DC converter /rectifier provides 12.0Vdc @ 53A, or 12.0Vdc @ 88A, or 24.0Vdc @ 27A, or 24.0Vdc @ 44A, or 48.0Vdc @ 13A or 48.0Vdc @ 22A directly to the load. This rectifier provides a constant output voltage and a constant current limit. Output overvoltage shutdown is also included.
- In the event of continuous overload or high ambient temperature, autoresetting overtemperature protection turns off the rectifier to ensure that the maximum internal temperature rating is not exceeded.
- Advanced monitoring and control functions are provided by an embedded microcontroller.
- The microcontroller provides two alarms with voltage-free changeover contacts. The alarm terminal markings show the contact state in the normal (no alarm) condition.
  - Rectifier OK (DC OK) indicates failure of the off-line AC/DC converter / rectifier, operation of the rectifier overtemperature protection or rectifier cooling fan failure.
  - AC OK indicates AC mains failure.
- A 2 line, 16 character LCD display is provided on the front panel. This display shows the following.
  i. Output voltage,
  ii. Output current,
  iii. AC Mains status: OK / FAIL
  iv. Rectifier status: OK/FAIL
- Two status LEDs are provided on the front panel. MAINS ON (Green) and FAULT (Red). FAULT is asserted under any of the following conditions indicating an alarm: MAINS FAIL / RECTIFIER FAIL.
- An optional 10BaseT / 100BaseTX Ethernet interface for remote monitoring via the Internet is available on all models (Option –N). See "Ethernet Interface" for configuration and operating details of this interface.

Figure 1: PB362 Block Diagram



Model summary and ratings

PB362 Ordering Information

PB362	-12	-53	-C	- ☐	-P	-xxV
1	2	3	4	5	6	7

1 Series name

2 Output Voltage — 12: 12.0Vdc; 24: 24.0Vdc; 48: 48.0Vdc

3. Output Current — Max. output current: Adc

4. Output Terminals — C: Cage clamp terminals

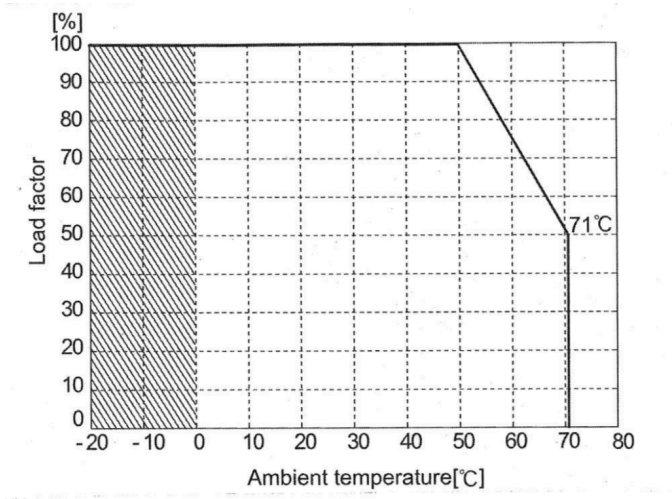
5. Options (must be specified at time of order).
-N: Ethernet interface

6. -P: Pluggable screw terminal alarm contacts supplied as standard on all models.

7. -xxA: Non-standard output voltage. Specify at time of order. (xx = Output voltage in Volts)

MODEL	PB362-12-53-C-P	PB362-12-88-C-P	PB362-24-27-C-P	PB362-24-44-C-P	PB362-48-13-C-P	PB362-48-22-C-P
Max Output Power	636W	1056W	648W	1056W	624W	1056W
DC Output	12.0V 53A	12.0V 88A	24.0V 27A	24.0V 44A	48.0V 13A	48.0V 22A
Size	19" x 2RU x 270mm 483 x 88.1 x 330mm (W x H x D)					

Derating Curve



Installation

Mounting

The unit occupies 2RU in a 19" rack and is attached by four M6 screws via the front panel. Other equipment can be installed above and below the PB362 provided that the ambient inlet air temperature on the right side of the unit complies with the derating curve. Areas to the left and right sides of the PB362 must be open to provide circulation of cooling air.

Terminals

Refer to mechanical outline drawing for terminal locations.

PB362 output and battery connections are via cage clamp connectors. The maximum recommended stranded wire cross sectional area for these connectors is 16mm^2 for all models except PB362-12-88C-P for which the maximum recommended cross sectional area is 25mm^2.

Ethernet interface (Option –N)

Configuration

Setup of the Ethernet interface requires the following:

- A PC running Windows XP, Vista, Windows 7 or Windows 10 with one free USB port
- A terminal emulator program such as Hyperterminal.
- The driver disk supplied with the unit (CD or USB thumbdrive).

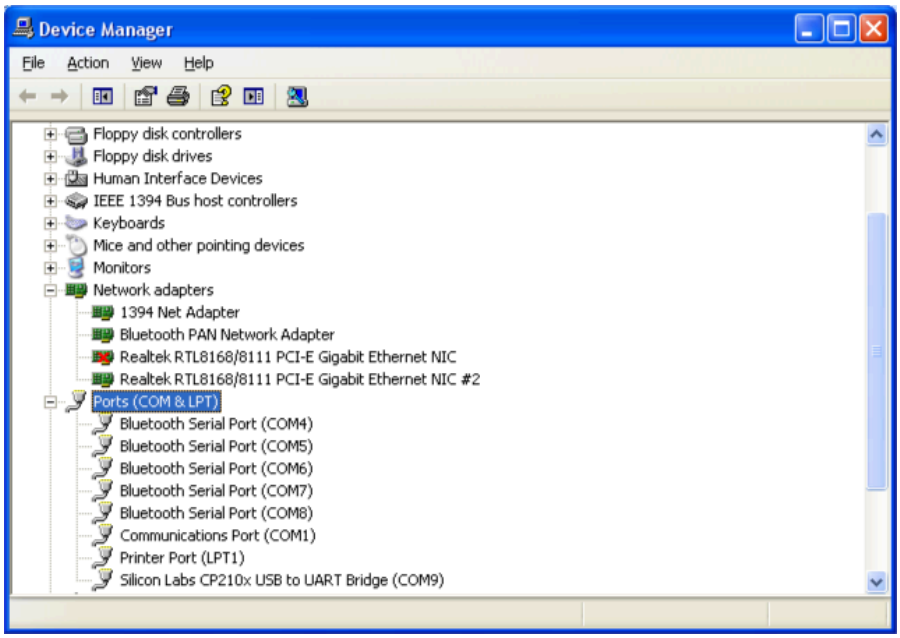
1. DO NOT connect the PB362 network port to an IP internet until it is configured.
2. DO NOT connect the PB362 USB port to the PC at this time.
3. Before configuring the Ethernet interface, you will need to define the following parameters:
   - IP address for the PB362: The PB362 supports static IP addresses only.
   - IP address for the Default Gateway
   - Subnet mask if different from 255.255.255.0
   - SNMP Target Address: If using SNMP, this is the IP address of the SNMP manager which will be receiving SNMP traps generated by the PB362.
   - SNMP Target Port: This is the port number for the trap receiver on the SNMP manager. It is usually set to 162.
   - SNMP Community Name: This is the community name which you wish to use on the PB362 for SNMP read and write operations being performed by the SNMP manager. This can be an alphanumeric string up to 20 characters long.
   - System information for SNMP V1 MIB-II: Contact, Name and Location. Each 64 characters maximum.
4. Install the Silicon Labs CP2102 USB to UART Bridge Virtual COM Port Driver on the PC. This driver can be found in the directory <X:\CP2102 USB to UART Bridge VCP Driver\> on the PB314A USB Flash Drive supplied with the PB362. Depending upon which operating system is being used, double click on the following file to install the VCP Driver.

OPERATING SYSTEM	DIRECTORY	FILENAME	VCP VERSION
Windows 10 (64-bit)	\CP210x_Universal_Windows_Driver\	CP210xVCPInstaller_x64.exe	10.1.8
Windows 10 (32-bit)	\CP210x_Universal_Windows_Driver\	CP210xVCPInstaller_x86.exe	10.1.8
Windows 8.1 (64 bit) Windows 8 (64 bit) Windows 7 (64 bit)	\CP210X_Windows_Drivers\	CP210xVCPInstaller_x64.exe	6.7.6
Windows 8.1 (32 bit) Windows 8 (32 bit) Windows 7 (32 bit)	\CP210X_Windows_Drivers\	CP210xVCPInstaller_X86.exe	6.7.6
Windows Vista (64 bit)	\CP210x_VCP_Windows\	CP210xVCPInstaller_x64.exe	6.7
Windows Vista (32 bit) Windows XP	\CP210x_VCP_Windows\	CP210xVCPInstaller_x86.exe	6.7

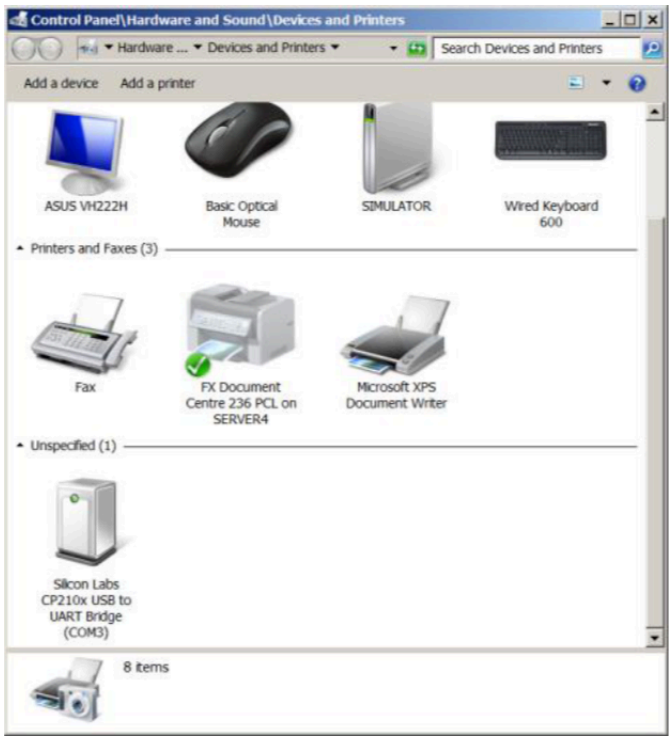
5. Connect the USB “CONSOLE” port on the PB362 to a spare USB port on the PC. The PC should recognize the CP2102 USB to UART Bridge and set up the driver automatically. This process opens a new COM port on the PC for communication with the PB362.

6. Note the COM port number for the PB362 by reviewing the following:

- Windows XP: <Start ><Control Panel><System><Hardware><Device Manager><Ports (COM & LPT)><+>



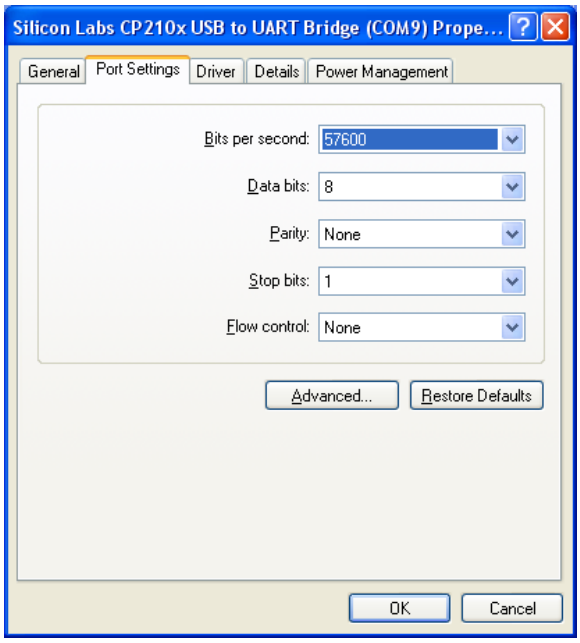
- Windows 7: <Start><Devices and Printers>



7. Configure this COM port to the following settings:

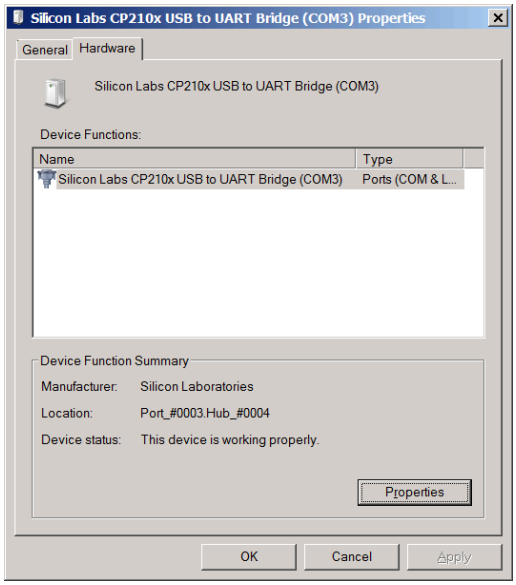
- Baud rate: 57,600
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

- Windows XP: Under <Ports (COM & LPT)> right mouse click on “Silicon Labs CP210x USB to UART Bridge (COMX)” and select <Properties>. Enter the above settings on the “Port Settings” tab.

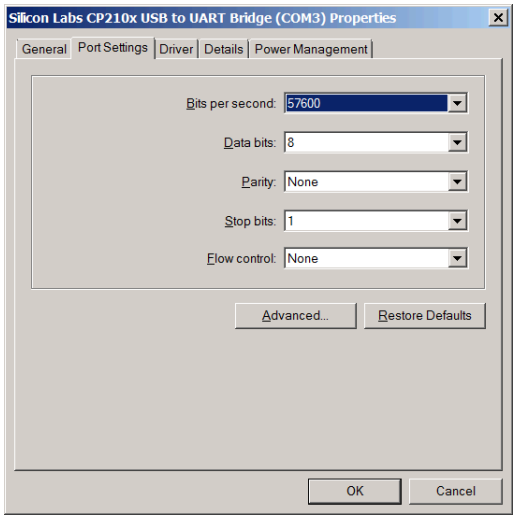


Click OK

- Windows 7: On <Devices and Printers> right mouse click on “Silicon Labs CP210x USB to UART Bridge (COMX)” and select <Properties>. Click on the “Hardware” tab.



Click “Properties”. Enter the above settings on the “Port Settings” tab.



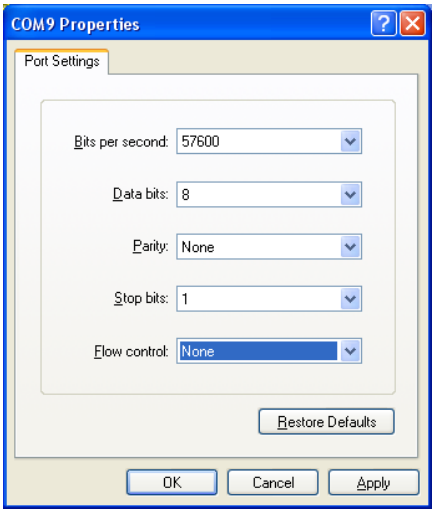
Click OK.

8. Start the terminal emulator program and set up a connection to the CP2102 USB to UART Bridge COM port.



Click OK

- Configure the COM port settings in Hyperterminal to the settings in 7 above. Note, Hyperterminal does not automatically use the COM port setting which you have set above.



Click “OK”.

- Save this Hyperterminal connection so that you can re-open it in the future without having to reload the port settings.

9. Push the reset switch on the PB362 network interface. This switch is accessed through the cutout next the USB “CONSOLE” port on the PB362. Put a small flat screwdriver into this cutout and push to the side.

10. After approximately five seconds, Hyperterminal should show a screen similar to the following.

```
....Unable to establish Ethernet Connection

Initializing network stack...

IP Address                192.168.3.3
Default Gateway           192.168.3.254
DHCP                      Disabled
Subnet Mask               255.255.255.0
MAC Address               4C:32:D9:0 :4 :D
System Name
     PB362 AC/DC Power Supply
System Location
     Powerbox Australia Pty. Ltd.
System Contact
     www.powerbox.com.au
SNMP Target Address       192.168.1.124
SNMP Target Port          162
SNMP Community Name       test
Model Number              PB362-48-12-C-N-P
Firmware Version          317-3041 V1.00 030621


HTTPD ready
Press 1 to change IP configuration.      9
```

11. Press “1” within ten seconds to access the IP configuration program.

- Hyperterminal should display the following screen:

```
                    Change IP Configuration

Enter new values in dotted decimal ("a.b.c.d") notation.
Press <enter> to retain existing value or to accept new value.
Press <esc> anytime to exit without changing.

IP Address:          192.168.3.3
Enter new IP Address:
```

- Enter the IP address for the PB362 followed by <enter>.

```
Enter new IP Address:        192.168.1.171<enter>    (for example)

Default Gateway:       192.168.3.254
Enter new Default Gateway:
```

- Enter the IP Address of the Default Gateway for the PB362 followed by <enter>.

```
Enter new Default Gateway:      192.168.1.240<enter>  (for example)

Subnet Mask:          255.255.255.0
Enter new Subnet Mask:
```

- Enter the Subnet Mask if different than 255.255.255.0 followed by <enter>. Otherwise press <enter>.

```
Enter new Subnet Mask:          <enter>  (for example)
Enter new Subnet Mask:          255.255.255.0

System Name:
     PB362 AC/DC Power Supply

Enter new System Name (Max 64 char):
```

- Enter the System Name followed by <enter>.

```
Enter new System Name (Max 64 char):
     PB362-48-13-C-N-P Engineering Test<enter>   (for example)

System Location:
     Powerbox Australia Pty. Ltd.

Enter new System Location (Max 64 char):
```

- Enter the System Location followed by <enter>.

```
Enter new System Location (Max 64 char):
     Powerbox Australia Engineering<enter>    (for example)

System Contact:
     www.powerbox.com.au

Enter new System Contact (Max 64 char):
```

- Enter the System Contact followed by <enter>.

```
Enter new System Contact (Max 64 char):
     P. Keeler<enter>     (for example)

SNMP Trap Target Address:      192.168.1.124
Enter new SNMP Trap Target Address:
```

- Enter the new SNMP Trap Target Address followed by <enter>.

```
Enter new SNMP Trap Target Address:      192.168.1.208<enter>     (for example)

SNMP Trap Target Port:        162
Enter new SNMP Trap Target Port (162):
```

- Enter the new SNMP Trap Target Port if different than 162 followed by <enter>. Otherwise press<enter>.

```
Enter new SNMP Trap Target Port (162):   <enter>        (for example)
Enter new SNMP Trap Target Port (162):   162

SNMP Community Name: test
Enter new SNMP Community Name (Max 20 char):
```

- Enter the SNMP Community Name for the PB251A followed by <enter>.

```
Enter new SNMP Community Name (Max 20 char):    Engineering<enter> (for example)

Do you wish to save changes (Y/N)?:
```

- Type Y <enter>.
- Hyperterminal will display the following or similar screen with the new configuration.

```
Saving changes.
Save successful.
Rebooting network interface.

.....Unable to establish Ethernet Connection

Initializing network stack...
```

```
IP Address                192.168.1.174
Default Gateway           192.168.1.240
DHCP                      Disabled
Subnet Mask               255.255.255.0
MAC Address               4C:32:D9:0 :4 :D
System Name
     PB362-48-13-C-N-P Engineering Test
System Location
     Powerbox Australia Engineering
System Contact
     P. Keeler
SNMP Target Address       192.168.1.208
SNMP Target Port          162
SNMP Community Name       Engineering
Model Number              PB362-48-13-C-N-P
Firmware Version          317-3041 V1.00 030621


HTTPD ready
Press 1 to change IP configuration.      0
IP configuration change program terminated.
Manually reset network interface card to change IP configuration.
```

13. Plug the an Ethernet cable into the network port on the PB362. Depending on the network, Hyperterminal should display a message similar to the following.

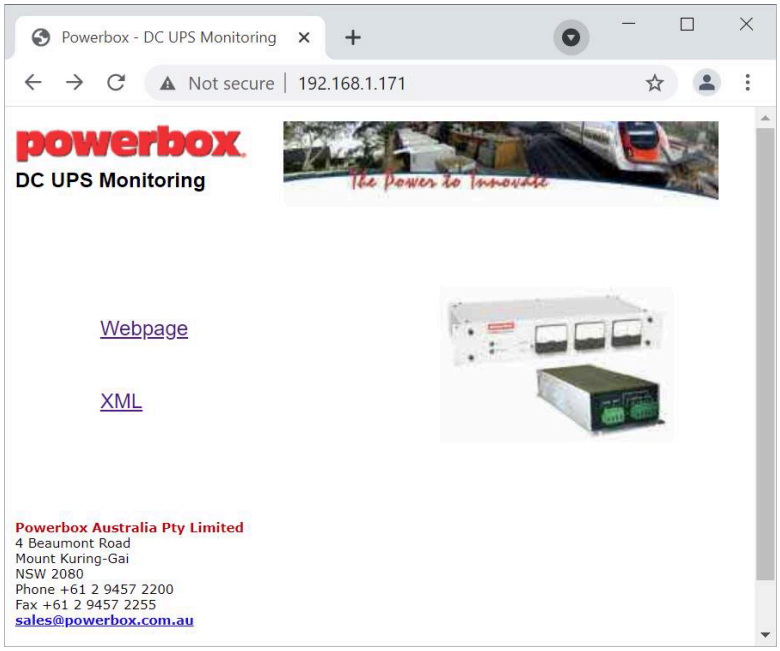
    ```
    100 Mbps Full-Duplex
    ```

14. To confirm that the PB362 Ethernet interface is working properly, perform a “ping” on the PB362’s IP address using the ping utility at the Windows command prompt or equivalent.

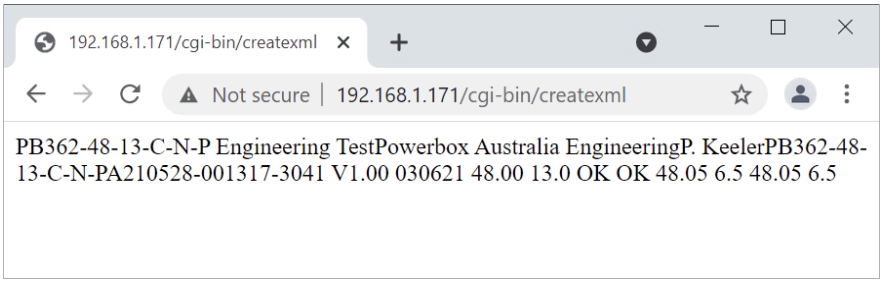
15. The PB362 Ethernet interface is now ready to be used. Hang up the Hyperterminal session. Close Hyperterminal and unplug the USB connection from the PB362. Note, if the USB cable is unplugged during any of the above configuration, you will need to close the Hyperterminal program and start from item 5 above.

Embedded Webpage

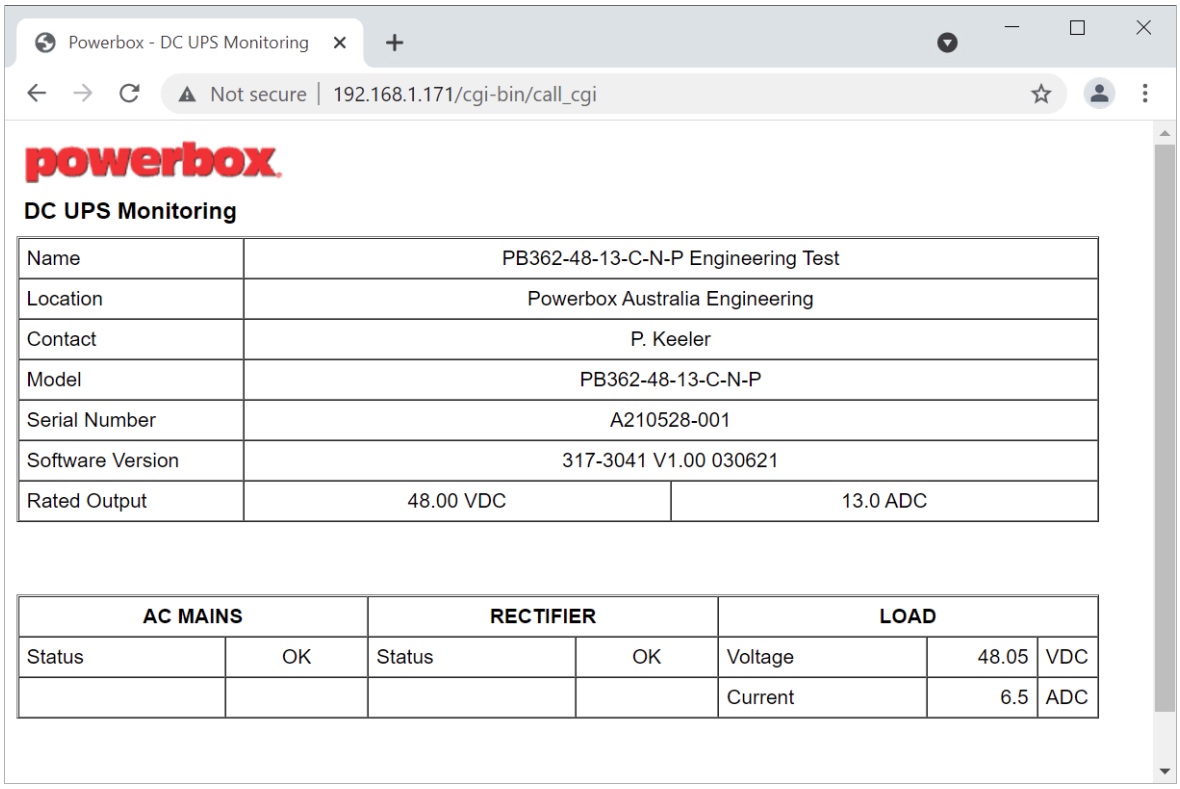
To access the embedded html webpage for the PB362, enter the IP address for the PB362 into the address bar on your web browser. This should display the following webpage.



Clicking on *XML* displays the current parameters for the PB314A in XML format as follows.



Clicking on *Webpage* displays the current status of the PB362. This webpage regenerates automatically approximately once every 8 seconds.



SNMP

The PB362 Ethernet interface supports SNMP V1 and operates as an SNMP agent. It supports the following MIB's

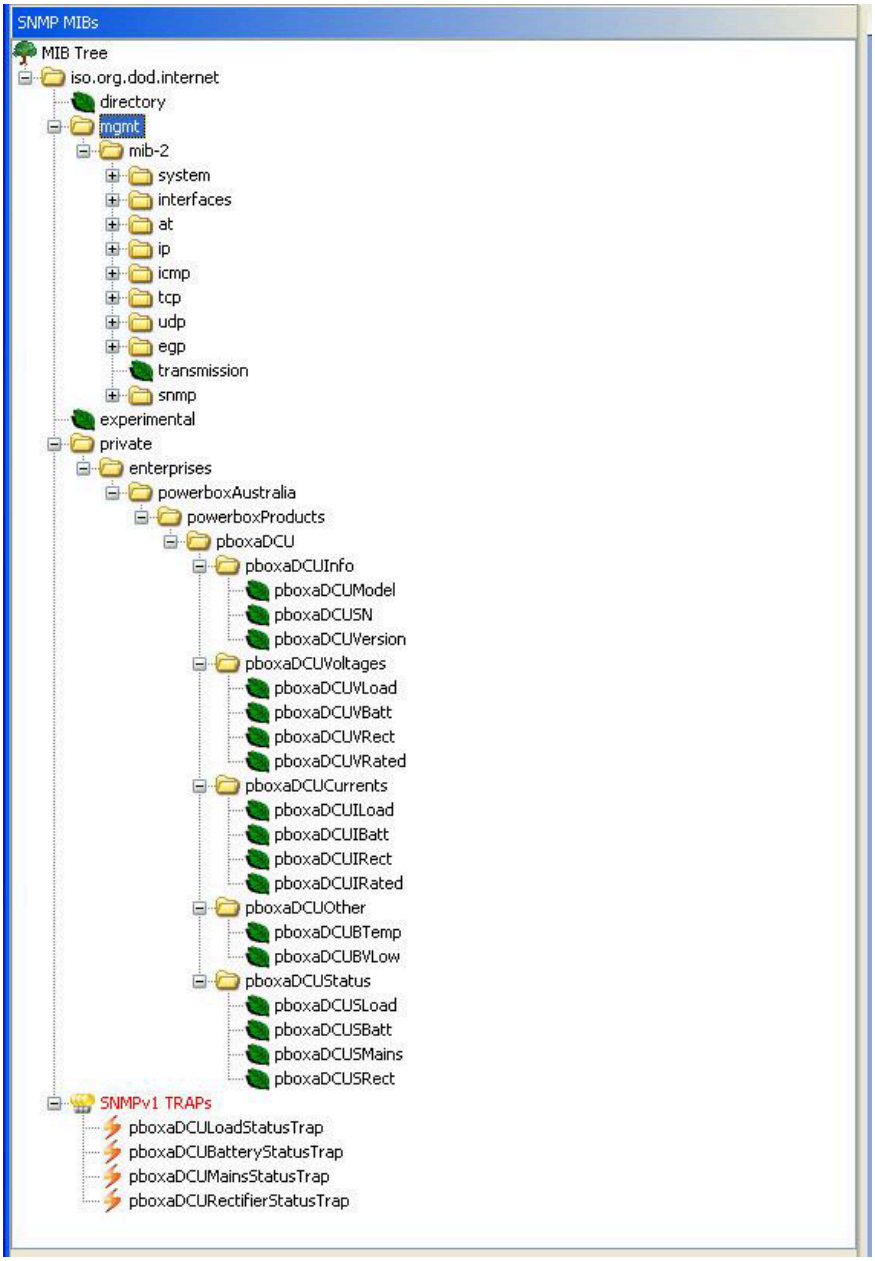
- MIB-II per RFC 1213
- POWERBOX-AUS-MIB: Top-level structure of the Powerbox Australia MIB.
- POWERBOX-AUS-DCU-MIB: DC Uninterruptible Power Supply (DCU) Group object definitions.

The Powerbox MIB's require the following additional MIB's to be loaded in the SNMP manager.

- RFC1155-SMI
- RFC-1212
- RFC1213-MIB
- RFC-1215

Copies of these MIB's are available in <X: \MIBs \> on the PB314A USB Flash Drive supplied with the PB362.

The following is a graphical representation of the MIB tree structure supported by the PB362 Ethernet interface.



MIB Leaf Objects and OID's

The SNMP leaf objects supported by the PB362 are as follows. All leaf objects are read only.

OBJECT IDENTIFIER	OID	DESCRIPTION	SYNTAX
pboxaDCUModel	.1.3.6.1.4.1.31933.1.1.1.1	Model number	Display String
pboxaDCUSN	.1.3.6.1.4.1.31933.1.1.1.2	Serial number	Display String
pboxaDCUVersion	.1.3.6.1.4.1.31933.1.1.1.3	Software version	Display String
pboxaDCUVLoad	.1.3.6.1.4.1.31933.1.1.2.1	Load voltage in millivolts	Integer
pboxaDCUVRect	.1.3.6.1.4.1.31933.1.1.2.4	Rectifier voltage in millivolts	Integer
pboxaDCUVRated	.1.3.6.1.4.1.31933.1.1.2.100	Rated voltage in millivolts	Integer
pboxaDCUILoad	.1.3.6.1.4.1.31933.1.1.3.1	Load current in milliamperes	Integer
pboxaDCUIRect	.1.3.6.1.4.1.31933.1.1.3.4	Rectifier current in milliamperes	Integer
pboxaDCUIRated	.1.3.6.1.4.1.31933.1.1.3.100	Rated current in milliamperes	Integer
pboxaDCUSMains	.1.3.6.1.4.1.31933.1.1.5.3	AC mains status	Integer mains-ok(1) mains-fail(2)
pboxaDCUSRect	.1.3.6.1.4.1.31933.1.1.5.4	Rectifier status	Integer rectifier-ok(1) rectifier-fail(2)

SNMP Traps

The following table summarizes the SNMP traps generated by the PB362.

pboxaDCUMainsStatusTrap	This trap is sent once whenever there is a change in pboxaDCUSMains (AC Mains Status). If pboxaDCUSMains is mains-fail(2), this trap is repeated every approximately 30 seconds to indicate an alarm condition. Note: The PB362 does not have battery backup, so on failure of AC mains, so the Ethernet interface stops operating. Consequently, this trap may or may not be sent on AC mains failure.
pboxaDCURectifierStatusTrap	This trap is sent once whenever there is a change in pboxaDCUSRect (Rectifier Status). If pboxaDCUSRect is rectifier-fail(2), this trap is repeated every approximately 30 seconds to indicate an alarm condition.

POWERBOX-AUS-MIB

The following is a copy of POWERBOX-AUS-MIB detailing the Powerbox Australia enterprise and group objects.

```
POWERBOX-AUS-MIB DEFINITIONS ::= BEGIN

--
-- Top-level structure of the Powerbox Australia MIB
--
-- Powerbox Australia Pty. Ltd.
-- Contact:          Peter R. Keeler
--                   P.O. Box 128
--                   Mount Kuring-Gai NSW 2080
--                   Australia
--       p:          +61-2-9457-2200
--       email:      design@powerbox.com.au
--
-- Version:          1.00
-- Description:      Origin
-- Author:           Peter R. Keeler
-- Date:             21/06/11
--

IMPORTS
        enterprises
                FROM RFC1155-SMI;

-- Powerbox Australia enterprise
powerboxAustralia   OBJECT IDENTIFIER ::= { enterprises 31933 }
```

```
-- Groups in powerbox-australia enterprise
powerboxProducts        OBJECT IDENTIFIER ::= { powerboxAustralia 1 }

-- powerboxProducts group management objects
pboxaDCU                OBJECT IDENTIFIER ::= { powerboxProducts 1 }

END
```

POWERBOX-AUS-DCU-MIB

The following is a copy of POWERBOX-AUS-DCU-MIB detailing group and leaf objects and SNMP traps generated by the PB314A Ethernet Interface.

```
POWERBOX-AUS-DCU-MIB DEFINITIONS ::= BEGIN

--
-- DC Uninterruptible Power Supply (DCU) Group object definitions
--
-- Powerbox Australia Pty. Ltd.
-- Contact:          Peter R. Keeler
--                   P.O. Box 128
--                   Mount Kuring-Gai NSW 2080
--                   Australia
--       p:          +61-2-9457-2200
--       email:      design@powerbox.com.au
--
-- Version:          1.02
-- Description:      Added support for PB314A family of DCUPS
--                   Objects added:
--                           pboxaDCUVRect
--                           pboxaDCUVRated
--                           pboxaDCUIRect
--                           pboxaDCUIRated
--                           pboxaDCUBVLow
--                           pboxaDCUSRect
--                   Traps added:
--                           pboxaDCURectifierStatusTrap
--                   pboxaDCUSLoad:
--                           on-mains(1) changed to load-on-mains(1)
--                           on-battery(2) changed to load-on-battery(2)
--                           load-low-voltage(3) added
-- Author:           Peter R. Keeler
-- Date:             15/03/12
--

IMPORTS
        OBJECT-TYPE
                FROM RFC-1212
        DisplayString
                FROM RFC1213-MIB
        TRAP-TYPE
                FROM RFC-1215
        pboxaDCU
                FROM POWERBOX-AUS-MIB;

-- pboxaDCU group management objects
pboxaDCUInfo      OBJECT IDENTIFIER ::= { pboxaDCU 1 }
pboxaDCUVoltages  OBJECT IDENTIFIER ::= { pboxaDCU 2 }
pboxaDCUCurrents  OBJECT IDENTIFIER ::= { pboxaDCU 3 }
pboxaDCUOther     OBJECT IDENTIFIER ::= { pboxaDCU 4 }
pboxaDCUStatus    OBJECT IDENTIFIER ::= { pboxaDCU 5 }

-- pboxaDCUInfo group objects

pboxaDCUModel OBJECT-TYPE
        SYNTAX DisplayString (SIZE (0..255))
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "DC UPS Model number"
        ::= { pboxaDCUInfo 1 }
```

```
pboxaDCUSN OBJECT-TYPE
        SYNTAX DisplayString (SIZE (0..255))
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "DC UPS Serial number"
        ::= { pboxaDCUInfo 2 }

pboxaDCUVersion OBJECT-TYPE
        SYNTAX DisplayString (SIZE (0..255))
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "DC UPS Software version"
        ::= { pboxaDCUInfo 3 }

-- pboxaDCUVoltages group objects

pboxaDCUVLoad OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Load voltage in millivolts"
        ::= { pboxaDCUVoltages 1 }

pboxaDCUVBatt OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Battery voltage in millivolts"
        ::= { pboxaDCUVoltages 2 }

pboxaDCUVRect OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Rectifier voltage in millivolts"
        ::= { pboxaDCUVoltages 4 }

pboxaDCUVRated OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Rated voltage in millivolts"
        ::= { pboxaDCUVoltages 100 }

-- pboxaDCUCurrents group objects

pboxaDCUILoad OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Load current in milliamperes."
        ::= { pboxaDCUCurrents 1 }

pboxaDCUIBatt OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Battery current in milliamperes. A positive value indicates
                charging current flowing into the battery. A negative value
                indicates that the battery is discharging at the measured
                current."
        ::= { pboxaDCUCurrents 2 }
```

```
pboxaDCUIRect OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Rectifier current in milliamperes."
        ::= { pboxaDCUCurrents 4 }

pboxaDCUIRated OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Rated current in milliamperes."
        ::= { pboxaDCUCurrents 100 }

-- pboxaDCUOther group objects

pboxaDCUBTemp OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Battery temperature in degrees C. This is used for battery
                float voltage temperature compensation.  If no temperature
                sensor is installed, this value is set to -20 and the
                temperature compensation is turned off"
        ::= { pboxaDCUOther 1 }

pboxaDCUBVLow OBJECT-TYPE
        SYNTAX INTEGER
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Battery low voltage alarm threshold in millivolts."
        ::= { pboxaDCUOther 2 }

-- pboxaDCUStatus group objects

pboxaDCUSLoad OBJECT-TYPE
        SYNTAX INTEGER {
                load-on-mains(1),
                load-on-battery(2),
                load-low-voltage(3)
        }
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Load status.
                This object indicates whether the load is being supplied from
                the AC mains power source via the rectifier (normal operation),
                or from the backup battery (AC mains or rectifier failure).
                This also displays if the load voltage is below the programmed
                battery low voltage threshold."
        ::= { pboxaDCUStatus 1 }
```

```
pboxaDCUSBatt OBJECT-TYPE
        SYNTAX INTEGER {
                battery-ok(1),
                battery-low-voltage(2),
                battery-disconnected(3),
                battery-discharging(4),
                battery-charging(5),
                battery-test(6)
        }
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Battery status.
                Battery Status = battery-low-voltage is given for battery
                voltage less than the battery low voltage alarm threshold
                (pboxaDCUBVLow).
                Battery Status = battery-disconnected indicates that no
                battery is connected to the DC UPS.  This indicates if there
                is a failed battery fuse or an open circuit in the battery
                wiring.  If all battery wiring is good, this indicates that
                the battery is defective and is not able to support the
                load for even a few seconds.
                Battery Status = battery-test is given when the DCU is
                checking if a battery is connected to it.
                Battery Status = battery-charging is given when the battery
                charging current is greater than Irated/80.
                Battery Status = battery-OK is given when the battery current
                is in the range -Irated/80 to Irated/80."
        ::= { pboxaDCUStatus 2 }

pboxaDCUSMains OBJECT-TYPE
        SYNTAX INTEGER {
                mains-ok(1),
                mains-fail(2)
        }
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "AC Mains status."
        ::= { pboxaDCUStatus 3 }

pboxaDCUSRect OBJECT-TYPE
        SYNTAX INTEGER {
                rectifier-ok(1),
                rectifier-fail(2)
        }
        ACCESS read-only
        STATUS optional
        DESCRIPTION
                "Rectifier status."
        ::= { pboxaDCUStatus 4 }

-- Trap definitions
```

```
pboxaDCULoadStatusTrap TRAP-TYPE
        ENTERPRISE pboxaDCU
        VARIABLES {
                pboxaDCUModel,
                pboxaDCUSN,
                pboxaDCUSLoad
        }
        DESCRIPTION
                "pboxaDCULoadStatusTrap:
                This trap is sent once whenever there is a change in
                pboxaDCUSLoad (Load Status) to indicate that the load has
                changed from being powered from AC mains to being powered from
                the battery, or vice versa.  If pboxaDCUSLoad is
                load-on-battery(2)or load-low-voltage(3), this trap is
                repeated every approximately 30 seconds to indicate an
                alarm condition."
        ::= 1

pboxaDCUBatteryStatusTrap TRAP-TYPE
        ENTERPRISE pboxaDCU
        VARIABLES {
                pboxaDCUModel,
                pboxaDCUSN,
                pboxaDCUSBatt,
                pboxaDCUVBatt,
                pboxaDCUIBatt
        }
        DESCRIPTION
                "pboxaDCUBatteryStatusTrap:
                This trap is sent once whenever there is a change in
                pboxaDCUSBatt (Battery Status).  If pboxaDCUSBatt is
                battery-low-voltage(2), battery-disconnected(3),
                battery-discharging(4), or battery-test(6), this trap is
                repeated every approximately 30 seconds to indicate an alarm
                condition.
                In a normally functioning system, a 6 second battery test
                is performed once every hour.  This will generate at least
                two battery status traps: one when the battery test starts,
                and one at the end of the test when pboxaDCUSBatt returns
                to either battery-charging(5) or battery-ok(1).  If no
                battery is connected to the system, or if the battery fuse
                has blown, pboxaDCUSBatt will be battery-disconnected(3) after
                this test.  In this case, a battery status trap will be
                repeated every approximately 30 seconds until the battery
                connections are repaired."
        ::= 2

pboxaDCUMainsStatusTrap TRAP-TYPE
        ENTERPRISE pboxaDCU
        VARIABLES {
                pboxaDCUModel,
                pboxaDCUSN,
                pboxaDCUSMains
        }
        DESCRIPTION
                "pboxaDCUMainsStatusTrap.
                This trap is sent once whenever there is a change in
                pboxaDCUSMains (AC Mains Status).  If pboxaDCUSMains
                is mains-fail(2), this trap is repeated every approximately
                30 seconds to indicate an alarm condition."
        ::= 3
```

```
pboxaDCURectifierStatusTrap TRAP-TYPE
        ENTERPRISE pboxaDCU
        VARIABLES {
                pboxaDCUModel,
                pboxaDCUSN,
                pboxaDCUSRect
        }
        DESCRIPTION
                "pboxaDCURectifierStatusTrap.
                This trap is sent once whenever there is a change in
                pboxaDCUSRect (Rectifier Status).  If pboxaDCUSRect
                is rectifier-fail(2), this trap is repeated every
                approximately 30 seconds to indicate an alarm condition."
        ::= 4

END
```

Specifications

MODEL	PB362-12-53-C-P	PB362-12-88-C-P	PB362-24-27-C-P	PB362-24-44-C-P	PB362-48-13-C-P	PB363-48-22-C-P
MAX OUTPUT [W]	636	1056	648	1056	624	1056
DC OUTPUT*1	12.0V 53A	12.0V 88A	24.0V 27A	24.0V 44A	48.0V 13A	48.0V 22A

SPECIFICATIONS

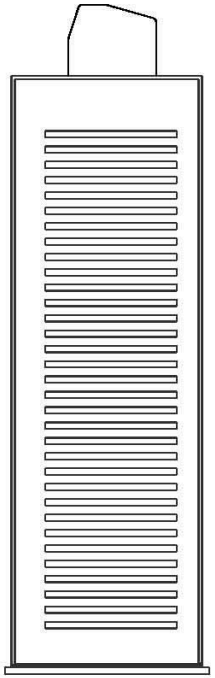
MODEL			PB362-12-53-C-P	PB362-12-88-C-P	PB362-24-27-C-P	PB362-24-44-C-P	PB362-48-13-C-P	PB362-48-22-C-P
INPUT	VOLTAGE [V]		AC85 - 264 1ø					
	CURRENT [A]	100V 200V	8.2 typ 4.1 typ	13 typ*2 7 typ	8.2 typ 4.1 typ	13 typ*2 7 typ	8.2 typ 4.1 typ	13 typ*2 7 typ
	FREQUENCY [Hz]		50/60 (47 - 63)					
	EFFICIENCY [%]	100V 200V	79 typ 82 typ	82 typ 84 typ	81 typ 84 typ	84 typ 86 typ	81 typ 83 typ	84 typ 86 typ
	INRUSH CURRENT [A]		40 typ (cold start)					
OUTPUT	OUTPUT VOLTAGE [VDC]		12.0	12.0	24.0	24.0	48.0	48.0
	Adjustment Range (factory)*3		12.0 – 13.8	12.0 - 13.8	24.0 - 27.6	24.0 - 27.6	48.0 - 55.2	48.0 - 55.2
	OUTPUT CURRENT [A]		53*3	88*3	27*3	44*3	13*3	22*3
	OUTPUT CURRENT LIMIT [A]		54.5	90	28	45.5	14	23
	Adjustment Range (factory)		5 – 54.5	10 – 90	2.5 – 28	5 – 45.5	2.5 – 14	2.5 – 23
	LINE REGULATION [mV]		60 max.	60 max.	96 max.	96 max.	192 max	192 max
	LOAD REGULATION [mV]		138 max.	276 max.	276 max.	276 max.	552 max	552 max
	RIPPLE [mVp-p]*1		160 max.	160 max.	160 max.	160 max.	400 max.	400 max.
	NOISE [mVp-p]*1		180 max.	180 max.	180 max.	180 max.	500 max.	500 max.
	OVERVOLTAGE SHUTDOWN		Vout + 2.4-4.8V	Vout + 2.4-4.8V	Vout + 4.8-9.6V	Vout + 4.8-9.6V	Vout + 4.8-12.0V	Vout + 4.8-12.0V
	OUTPUT SHORT CIRCUIT PROTECTION		Indefinite (Autoreseting)					
DISPLAYS AND ALARMS	RECTIFIER OK (DC OK)		Voltage-free Changeover Contact (32V,1A). Alarm on failure of rectifier, operation of rectifier overtemperature protection or rectifier cooling fan failure					
	AC OK		Voltage-free Changeover Contact (32V,1A). Alarm on AC mains failure.					
	LCD DISPLAY		2 Line x 16 character LCD Output Voltage, Output Current AC Mains Status, Rectifier Status					
	LEDs		MAINS ON, FAULT					
ISOLATION	INPUT - OUTPUT		3000 VAC, 1 minute					
	INPUT - GROUND		2000 VAC, 1 minute					
	OUTPUT - GROUND		500 VAC, 1 minute					
SAFETY AND EMC	SAFETY		AS/NZS 60950-1, Class I					
	EMC		AS/NZS CISPR22-B					
OTHERS	OPERATING TEMPERATURE		-20 - +50°C (-20 - +71°C with derating)					
	HUMIDITY		20-90% non-condensing					
	COOLING METHOD		Forced cooling (Internal fan) (R→L)					
	WEIGHT		7.2kg typ.					
	AC INPUT		IEC60320-1 C14 inlet, fused, ON/OFF switch					
	DC OUTPUT TERMINALS		72A Cage clamp terminals. 12V / 88A: 101A Cage clamp terminals					

*1 Using a 100MHz oscilloscope at the output terminals.

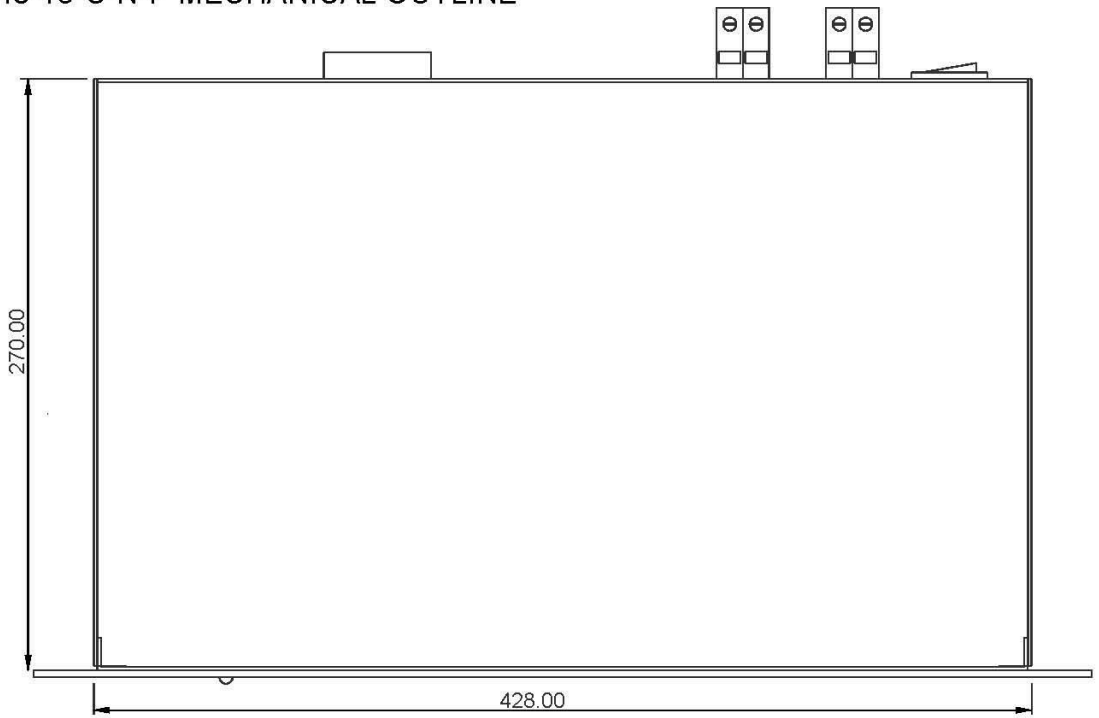
*2 The IEC60320-C14 inlet is rated and fused to 10A. If full rated output power is required at AC85 - 132V input, contact Powerbox.

*3 If the output voltage is adjusted to be higher than the rated output voltage, maximum rated output current is reduced to comply with the maximum output power.

PB362-48-13-C-N-P MECHANICAL OUTLINE



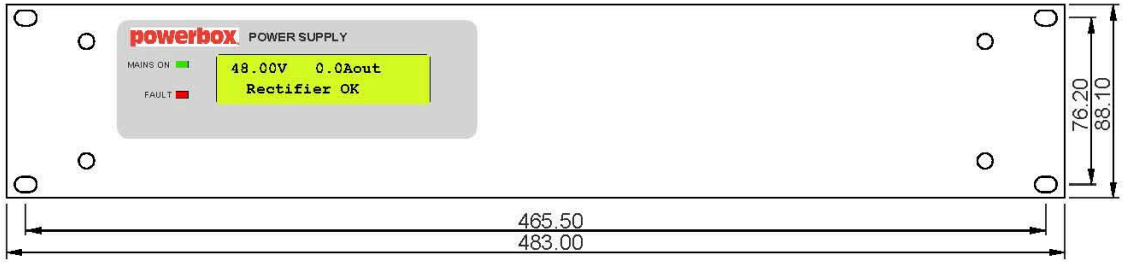
SIDE VIEW



TOP VIEW

NOTES:

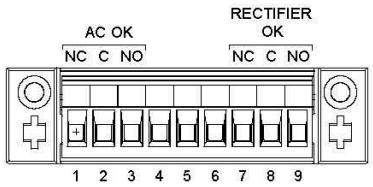
1. 2RU x 19" rack enclosure per IEC297.
2. Mounting slots are suitable for M6 hardware.
3. Input connector is a 10A Class 1 IEC60320 inlet.
4. 2 metre IEC mains cord with Australian plug is supplied with unit.

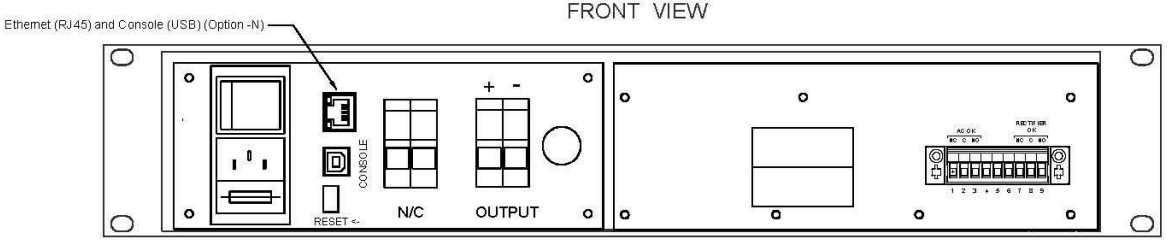


FRONT VIEW

ALARM CONNECTIONS

PHOENIX CONTACT MSTB 2,5/9-ST-5,08 or equivalent.





REAR VIEW

powerbox®
Powering Progress

Powerbox Australia Pty Ltd
HEAD OFFICE

4 Beaumont Road
Mount Kuring-Gai NSW 2080

Telephone: 1 800 251 380
Website: powerbox.com.au
Email: sales@powerbox.com.au

Powerbox Pacific Ltd
NEW ZEALAND

1a Henry Rose Place
Albany Auckland 0632

Telephone: +64 9 4158 320
Website: powerbox.co.nz
Email: sales@powerbox.co.nz