



Innovative Electronics for a changing world

Manual

DC UPS 19 inch



DC UPS 19inch – 24V DC UPS system for Telecommunication systems with Ethernet and SNMP

1. General system description
2. Wiring and connection examples
3. Web pages
4. SNMP table
5. Physical dimensions

GENERAL DESCRIPTION:

The **DC UPS 19 inch** is a 24V DC UPS backup system for telecommunication sites

The load output terminal feeding the user equipment is driven by an internal 27VDC @ 13Amps switch mode power supply while AC mains power is present, the 24V battery bank is charged in isolation from the load via 2 x 12V @ 10Amp internal chargers.

Two batteries in series connection to obtain 24V is each charged by its own 12V charger to overcome the voltage imbalance problems between two batteries as when charged via a normal 28V battery charger.

Due to the difference between the batteries internal resistance and characteristics batteries in series always tend to differ in voltage and this also decreases the life of the series connected batteries.

The DC UPS 19inch overcome this problem by charging each 12V battery in the 24V series connected pack with its own 12V @ 10 Amp charger thus expanding the lifetime on the batteries.

Charging the batteries in isolation from the load also extends the battery life as there is no continuous current flow in and out the battery like when connected to a normal charger and to the load as the load is driven by a separate 27V @ 13 Amp power supply .

When AC power fails the system switch uninterruptable to battery power keeping equipment powered , when AC power returns the system switch back to driving the load from the internal 27VDC power supply and start charging the batteries again via the 2 x internal 12V chargers.

Local LCD display to indicate power related information makes it easy on site.

The LCD on the DC UPS indicates the physical AC input voltage level present, the battery voltage, Load current to equipment and if the system is running the load from **Batteries** or from the **Mains** internal PSU.

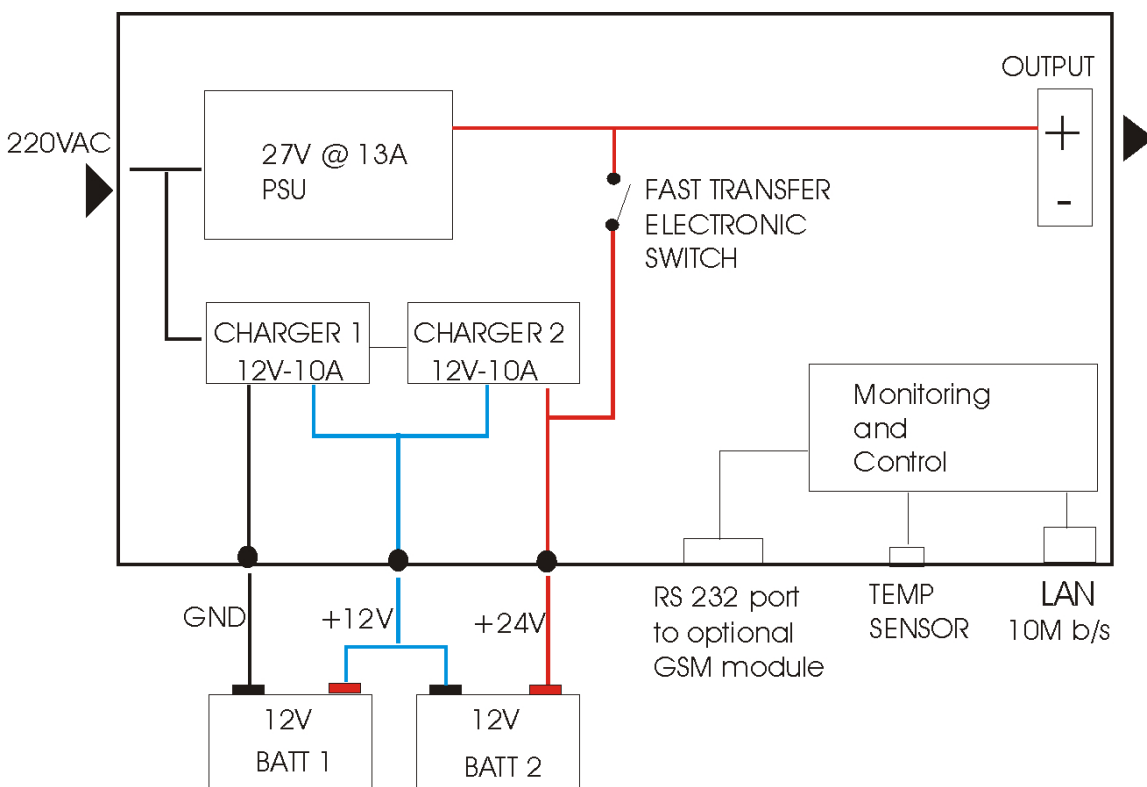
The DC UPS also measures the ambient temperature, all the parameters are available via SNMP and from the embedded web pages.

Two potential free relay outputs are available to the user to reboot equipment from the DC UPS if necessary. This is isolated relay outputs so DC or AC can be switched through the relay contacts

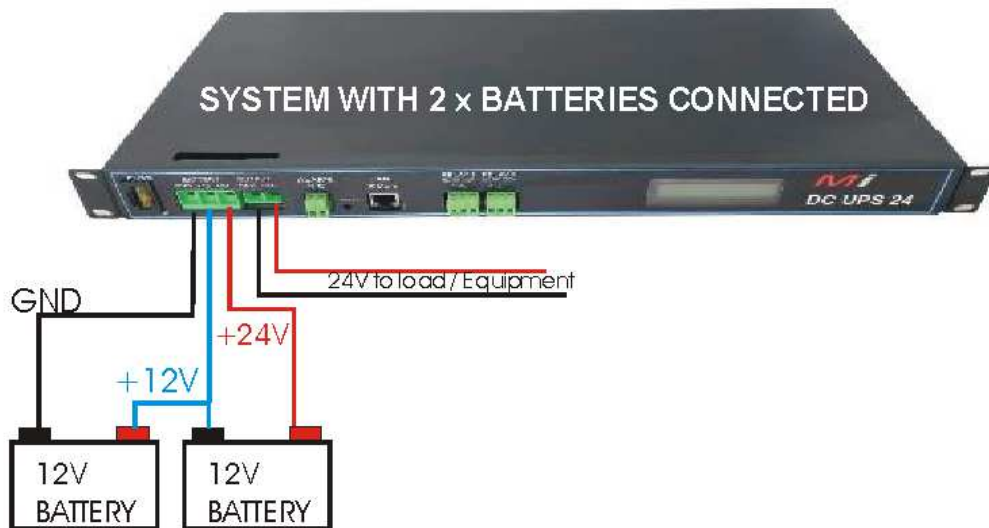
Main output power port is protected via a **20Amp** ATO (automotive type blade fuse) for possible short circuits.

Alarm input on the unit is a potential free input and only a contact should be made here, alarm will be active in SNMP and web pages as soon as the contact is opened.

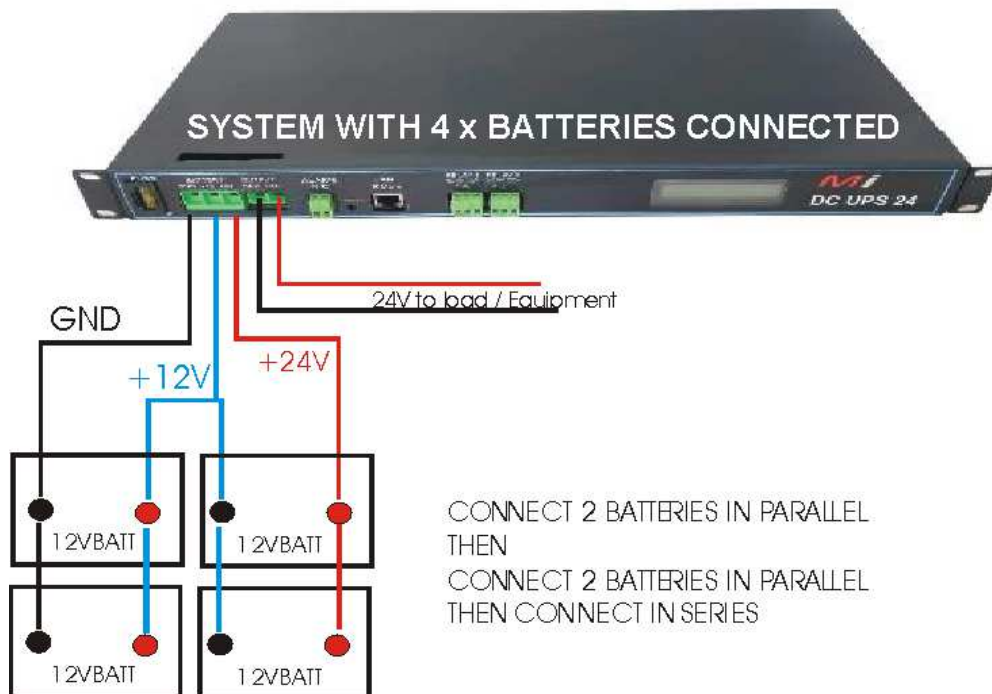
Block diagram:



Wiring and connections:



ALL 3 WIRES FROM BATTERIES MUST BE CONNECTED !!



ALL 3 WIRES FROM BATTERIES MUST BE CONNECTED !!

24V BATTERY BANKS WITH MULTIPLE BATTERIES MUST BE CONNECTED IN THIS CONFIGURATION AS ABOVE - FIRST CONNECT BATTERIES IN PARRALEL AND THEN IN SERIES.

DC UPS 24 RM -19 inch rack mount

Mi

Rear connections:



C14 power socket cable supplied with unit - 220VAC feed to unit

GSM 232 – DB9 data socket – connects to the optional extra GSM unit

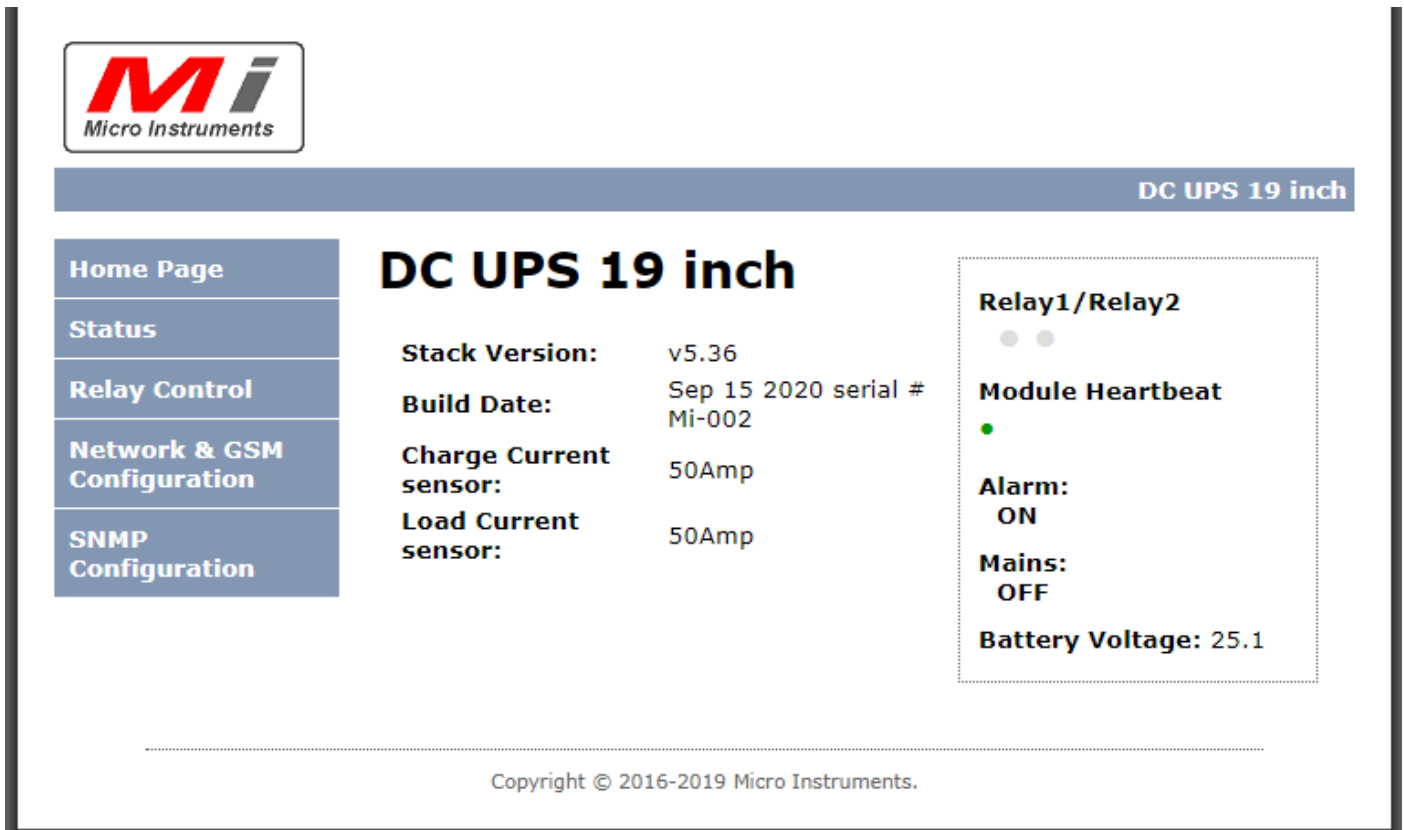
Reset switch – disconnect battery power – keep switch pressed – connect battery – hold until unit LCD indicates “Reset complete” – unit factory defaults loaded

Default IP : 192.168.1.2



Web pages:

Home page :



The screenshot shows the web interface for a DC UPS 19 inch. It features a navigation menu on the left with options: Home Page, Status, Relay Control, Network & GSM Configuration, and SNMP Configuration. The main content area displays the title 'DC UPS 19 inch' and a list of system parameters: Stack Version (v5.36), Build Date (Sep 15 2020 serial # Mi-002), Charge Current sensor (50Amp), and Load Current sensor (50Amp). On the right, a status panel shows Relay1/Relay2 (two white dots), Module Heartbeat (one green dot), Alarm (ON), Mains (OFF), and Battery Voltage (25.1). The footer contains the copyright notice: Copyright © 2016-2019 Micro Instruments.

The output status of Relay 1 and Relay 2 is indicated on home page by green bullet dots


Green if Relay is active – white if relay is inactive

Alarm status : ON or OFF

Mains status : ON or OFF

Total Battery bank voltage

STATUS PAGE:



DC UPS 19 inch

- Home Page
- Status
- Relay Control
- Network & GSM Configuration
- SNMP Configuration

STATUS

build date of the HEX file programmed and serial number:.

Sep 15 2020 serial # Mi-002

Temperature sensor in Degrees Celcius:.

+18.3 D

Mains AC supply voltage level:.

000 V

Battery 1 Volts(12V)/(Charger 1 AMPS):.

12.55 V , 00.0A

Battery 2 Volts(24V)/(Charger 2 AMPS):.

12.62 V , 00.0A

Current output volts to equipment:.

25.2V

Current LCD Display image:.

B: = Total Battery Voltage
Out: = PSU or Battery
i: = Load Current to Equipment
Mains: = AC input voltage level
Load current reading will be replaced with "ALARM !" if active

B:25.2 V Out:BAT
AC:000 V AL00.0A

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Indicates the ambient temperature

Mains AC supply voltage level

Battery 1 volts and charge current

Battery 2 volts and charge current

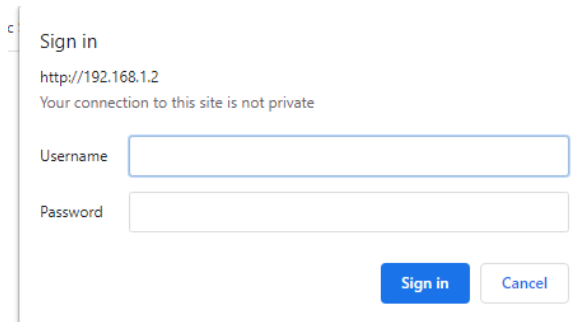
OUT : BATT – equipment is powered from battery power – mains off

OUT: Mains – equipment is powered from the mains power supply - mains on

Password protection:

All web pages with user setting functions is password protected

Default = admin admin

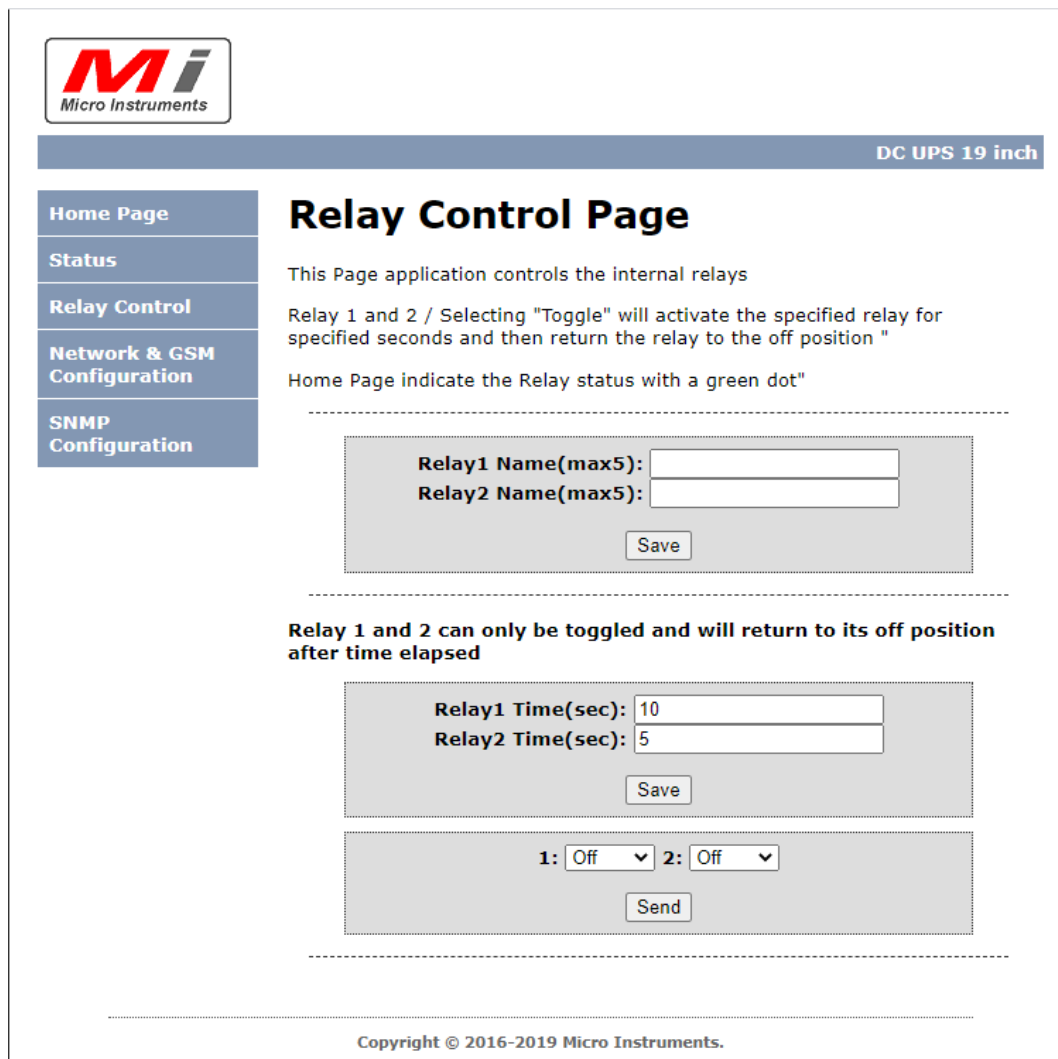


Sign in
http://192.168.1.2
Your connection to this site is not private

Username

Password

Relay Page:



Mi
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DC UPS 19 inch

Home Page
Status
Relay Control
Network & GSM Configuration
SNMP Configuration

Relay Control Page

This Page application controls the internal relays

Relay 1 and 2 / Selecting "Toggle" will activate the specified relay for specified seconds and then return the relay to the off position "

Home Page indicate the Relay status with a green dot"

Relay1 Name(max5):

Relay2 Name(max5):

Relay 1 and 2 can only be toggled and will return to its off position after time elapsed

Relay1 Time(sec):

Relay2 Time(sec):

1: 2:

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Relays 1 and 2 can be named by the user

Relay 1 and 2 "toggle" time can be set by the user

Network settings page:



DC UPS 19 inch

Home Page

Status

Relay Control

Network & GSM
ConfigurationSNMP
Configuration

Network Configuration

This page allows the configuration of the network and GSM settings.

CAUTION: Incorrect settings may cause the unit to lose network connectivity.

Enter the new Network/GSM settings below:

Cell 1: [08xx]	<input type="text"/>
Cell 2: [08xx]	<input type="text"/>
Low Batt: [Sms@Vdc]	<input type="text"/>

Uncheck box below-user can still send SMS to unit for control with reply SMS, but SMS(Alarm,Mains and Battery low)send from unit will be disabled

Enable SMS send from NPM-R10

MAC Address:	<input type="text" value="00:19:F6:00:24:BA"/>
Host Name:	<input type="text" value="DC-UPS"/>
Password: [max 9]	<input type="text" value="admin"/>
IP Address:	<input type="text" value="192.168.1.2"/>
Gateway:	<input type="text" value="192.168.1.1"/>
Subnet Mask:	<input type="text" value="255.255.255.0"/>

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Cell 1 and Cell 2 numbers can be filled in if the optional extra GSM module is used

A low battery voltage level can be entered at where a low battery voltage sms will be send to the cell number(s).

Password can be changed – no back door - if password is forgotten the units will need to be factory reset by means of the reset switch at the back of unit

Default IP : 192.168.1.2

IP address , gateway and subnet mask can be configured on this page .

SNMP Page:



DC UPS 19 inch

Home Page

Status

Relay Control

Network & GSM Configuration

SNMP Configuration

SNMP Community Configuration

Read/Write Community String configuration for SNMPv2c Agent.

Configure multiple community names if you want the SNMP agent to respond to the NMS/SNMP manager with different read and write community names. If less than three communities are needed, leave extra fields blank to disable them.

Read Comm1 :	<input type="text" value="public"/>
Read Comm2 :	<input type="text" value="read"/>
Read Comm3 :	<input type="text"/>
Write Comm1:	<input type="text" value="private"/>
Write Comm2:	<input type="text" value="write"/>
Write Comm3:	<input type="text" value="public"/>

Save Config

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Read and write communities can be changed here - usually can be left unaltered

SNMP TABLE:

Result Table		
Name/OID	Value	Type
.1.3.6.1.2.1.1.1.0	DC-UPS	OctetString
.1.3.6.1.2.1.1.2.0	.1.3.6.1.4.1.45501	OID
.1.3.6.1.2.1.1.3.0	12 minutes 20 seconds (74078)	TimeTicks
.1.3.6.1.2.1.1.4.0	admin	OctetString
.1.3.6.1.2.1.1.5.0	Micro Instruments	OctetString
.1.3.6.1.2.1.1.6.0	Remote	OctetString
.1.3.6.1.2.1.1.7.0	17	Integer
.1.3.6.1.4.1.45501.1.1.1.0	SNMPv1/2Agent	OctetString
.1.3.6.1.4.1.45501.1.1.2.0	V1	OctetString
.1.3.6.1.4.1.45501.1.1.3.0	August 20	OctetString
.1.3.6.1.4.1.45501.1.2.1.1.1.0	0	Integer
.1.3.6.1.4.1.45501.1.2.1.1.1.1	1	Integer
.1.3.6.1.4.1.45501.1.2.1.1.2.0	0	Integer
.1.3.6.1.4.1.45501.1.2.1.1.2.1	0	Integer
.1.3.6.1.4.1.45501.1.2.1.1.3.0	0.0.0.0	IpAddress
.1.3.6.1.4.1.45501.1.2.1.1.3.1	0.0.0.0	IpAddress
.1.3.6.1.4.1.45501.1.2.1.1.4.0		OctetString
.1.3.6.1.4.1.45501.1.2.1.1.4.1		OctetString
.1.3.6.1.4.1.45501.1.3.1.0	0	Integer
.1.3.6.1.4.1.45501.1.3.2.0	0	Integer
.1.3.6.1.4.1.45501.1.3.3.0	0	Integer
.1.3.6.1.4.1.45501.1.3.4.0	25.2	OctetString
.1.3.6.1.4.1.45501.1.3.5.0	00.0	OctetString
.1.3.6.1.4.1.45501.1.3.6.0	00.0	OctetString
.1.3.6.1.4.1.45501.1.3.7.0	000	OctetString
.1.3.6.1.4.1.45501.1.3.8.0	+19.8	OctetString
.1.3.6.1.4.1.45501.1.3.9.0	1	Integer
.1.3.6.1.4.1.45501.1.3.10.0	B:25.1 V Out:BATAC:000 V AL00.0A	OctetString
.1.3.6.1.4.1.45501.1.3.11.0	12.55	OctetString
.1.3.6.1.4.1.45501.1.3.12.0	12.71	OctetString
.1.3.6.1.4.1.45501.1.3.13.0	25.2	OctetString
.1.3.6.1.4.1.45501.1.3.14.0	00.0	OctetString

SNMP walk using **Ireasoning mib** browser

SNMP OID table :

1.3.6.1.4.1.45501.1.3.1.0 = Relay 1 status (integer) 0 off / 1 on

1.3.6.1.4.1.45501.1.3.2.0 = Relay 2 status (integer) 0 off/1 on

1.3.6.1.4.1.45501.1.3.3.0 =Mains status (integer) 0 off / 1 on

Calculated from AC voltage level – **1** if AC voltage > 150Vac and **0** if AC voltage <150Vac

1.3.6.1.4.1.45501.1.3.4.0 = Total Battery voltage of 24v bank (octet string)

1.3.6.1.4.1.45501.1.3.5.0 = Charge current charger 1 (1st battery from ground-12V batt) (octet string)

1.3.6.1.4.1.45501.1.3.6.0 = Charge current charger 2 (2nd t battery from ground-24V batt) (octet string)

1.3.6.1.4.1.45501.1.3.7.0 = Mains AC voltage level (octet string)

1.3.6.1.4.1.45501.1.3.8.0 = Temperature (octet string)

1.3.6.1.4.1.45501.1.3.9.0 = Alarm status 0 off / 1 on

1.3.6.1.4.1.45501.1.3.10.0 = LCD display string image

1.3.6.1.4.1.45501.1.3.11.0 = Battery 1 (12V) value

1.3.6.1.4.1.45501.1.3.12.0 = Battery 2 (24v) value

1.3.6.1.4.1.45501.1.3.13.0 = Output volts from UPS to equipment

1.3.6.1.4.1.45501.1.3.14.0 = Load current on UPS

PHYSICAL DIMENSIONS:

L: 440mm (without mounting ears) 480mm with mounting ears bolted to case

W: 220mm

H: 45mm

Weight : 3.80 Kg