Out 10V..7V

Switch

In 12V

Power
Failure

Low
Battery

Standard EIA
RS-232

Battery Switch

3V TTL RS-232 (ALIX COM2)

iUPS!Din v1.4 Features
- **General**
  - PC power down and automatic PC power on when battery is recharged.
  - 1 x 9V NiMH (>=200mAh) Battery.
  - Battery backup up to 8 minutes (depending on battery type and PC-Board consumption).
  - *Battery Switch* for battery disable.
  - Parameter programming.
  - Standard DIN Rail case.
  - ALIX (1d, 2d*, 3d*, 6f*) COM1 (Standard RS-232) serial port interface.
  - Simple wiring to ALIX 2d13 board COM2 J12 using standard Ethernet cable. In order to use GPIO on ALIX 2d13, the header J13 must be soldered and to use COM2 on any other ALIX board, the header J12 must be also soldered.
- **Digital I/O**
  - *Power Failure* Output Signal.
  - *Low Battery* Output Signal.
  - ALIX MODESW switch can be used to force iUPS!Din power on and power down.
  - J13 header must be present to use ALIX GPIO.
  - Linux driver available (tested using Voyage Linux distribution).
  - Linux driver allows sending e-mails on any event (*Power Failure*, *Low Battery*, …).
- **Serial RS-232**
  - 3V TTL RS-232 serial port for direct connection to ALIX 2d13 COM2 J12.
  - Standard EIA RS-232 for communication with any ALIX COM1 or an external device.
  - Open protocol using simple comma-separated text string:

S,v1.4,0,9785,92.8,0,10000,7000,9300,8000,180,2,6000,0,E

Value	Meaning	R/W
S	Start of Frame	-
v1.4	Firmware Version	R
0	Power Failure (0/1)	R
9785	Current Battery Voltage (mV)	R
92.8	Current Battery Load (%)	R
0	Shutdown Counter (s)	R
10000	Maximum Battery Voltage (mV)	R
7000	Minimum Battery Voltage (mV)	R
9300	Start Threshold (mV)	R/W
8000	Stop Threshold (mV)	R/W
180	Shutdown Seconds (s)	R/W
2	Integer Voltage Scaler	*R/W**
6000	Decimal Voltage Scaler	*R/W**
0	Voltage Offset (mV)	*R/W**
E	End of Frame	-

* Hardware dependent parameters. Should not be changed in production.

- Allow setting up basic parameters using an open and simple protocol:
  - *Start* and *Stop Thresholds*.
  - *Shutdown Seconds*.
  - Linux programming scripts available.
- Driver available for Linux (tested using Voyage Linux distribution).
- Linux driver allows sending e-mails on any event (*Power Failure*, *Low Battery*, …).

- **Basic operation**

The iUPS!Din has been designed not to allow ALIX board running for long time on battery but as a low cost system for preventing file system corruption and Compact Flash failure due to input power cuts. So it is very suitable for Compact Flash read/write applications in places where there is poor input power line stability.

The iUPS!Din is powered using a 12V power supply and it provides an battery-backuped 10V..7V output for the ALIX board.

If *Battery Switch* is closed and the input voltage level is above the *Start Threshold* (meaning that the battery is charged), the iUPS!Din powers up the 10V Output (to the ALIX board). If there is a power cut in the iUPS!Din 12V input, the *Power Failure* signal is activated and the ALIX board will still run on battery. When the battery level goes below the *Stop Threshold*, the *Low Battery* signal is activated and the *Shutdown Counter* starts counting seconds. In that case, the ALIX board driver will read from GPIO or any serial port interface these events and must operate in consequence, for instance, halting the operative system. When the *Shutdown Seconds* limit is reached the iUPS!Din cuts the 10V output power to the ALIX board.

When *Battery Voltage* reaches again the *Start Threshold* (because the 12V input has been recovered and the battery is enough charged) the 10V output is powered up again, thus booting the ALIX operative system again. Waiting for enough charge in the battery allows, in the case of another power cut, running at least a full boot and shutdown cycle preventing any undesired power cut to the ALIX board.

Therefore, the iUPS!Din operates on its own without the need of any human intervention keeping the ALIX board powered up as much time as possible. If configured, the available Linux drivers will send e-mails to the system administrator on any event such as *Power Failure*, *Low Battery*, *Shutdown*, ...