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TOUGH TECHNOLOGY.

VOIP RELIABILITY STARTS WITH LINDSAY
Fiber to the MDU (FTTM) with 10 Hour Battery Back-up

Cable operators experience increased VOIP reliabilty and QoS for all advanced digital services in MDU's where traditional standby power is not an option. Traditional FTTM with UPS consisted of bulky, expensive outdoor equipment mounted indoors. Lindsay Broadband developed a low cost, high performance 1 GHz fiber node solution complete with a 10 hour battery back-up system with 0 ms power transfer time, all housed in a small lockable wall mount polycarbonate enclosure.

FEATURES

- Up to 1003MHz high output with GaAs technology
- High RF output 50dBmV
- Dimensions 14 x 10 x 4.25 (inches)
- 6KV surge protection for RF I/O ports
- I/O optical level test points
- -20dB directional coupler test points for forward and reverse
- Green LED- Normal AC power
- Red LED- Standby, battery power
- Power transfer time 0ms, AC > Battery > AC
- Battery over-discharge protection
- WDM technology options available for two-way services
- Low power consumption

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NODE SPECIFICATION

FORWARD		
Optical Performance		
Wavelength	1200-1600	nm
Input Power	-6 to +2	dBm
Optical Return Loss	45	dB min
LED Threshold	>-6	dBm
DC Test Point	1	V/mW
RF Performance		
Bandwidth	54-1002	MHz
Flatness	0.75	+/-dB
Return Loss	16	dB
Test Point	-20 +/-1	dB
Link Performance (15km fiber+attenuator, -1dBm optical input power, NTSC 79ch OMI=3.5%/ch + digital)		**Note 1**
Output Level	36/50	dBmV
CNR	51	dB
CSO	-60	dBc
CTB	-64	dBc
RETURN		
Optical Performance		
Wavelength	1310, 1550, CWDM	nm
Output Power	1,2	mW
Optical Return Loss	45	dB min
LED Indicator	>-3	dBm
DC Test Point	1	V/mW
RF Performance		
Bandwidth	5-42	MHz
Flatness	0.75	+/-dB
Return Loss	16	dB
Test Point	-20 +/-1	dB
Link Performance (6dB link loss, 10km fiber + attenuator, DFB laser)		**Note 2**
Noise Power Ratio (peak) / at input level	50 / 25	dB / dBmV
RF Input Level Range (38dB NPR min)	10-25	dBmV
Electrical / Physical / Environmental		
Power Pack	120Vac input, UL certified	
Supply Voltage (from external power pack)	10-30	Vdc
Total Power Consumption	<14 (standard)	W
Surge Withstand Capability	6kV 3kA, 8/20us Combo Wave IEEE 587 (C62.41-1991) Category B3 Standard	at power adapter AC input
	6kV 200A, 0.5-100KHz, Ring Wave IEEE 587 (C62.41-1991) Category A3 Standard	at RF+PWR port
Weight	1.2	kg
F-ports	must pass SCTE 01 dimensions and torque	
Dimensions	180 x 100 x 70	mm
Operating Temperature	-40 to +60	degC

Note 1: using 2-4dB attenuator and 15dB equalizer

Note 2: NPR measured using 5-42MHz noise loading and 0dB input attenuator.
Level specification is for total RF power from all sources

*All specifications are subject to change without prior notice

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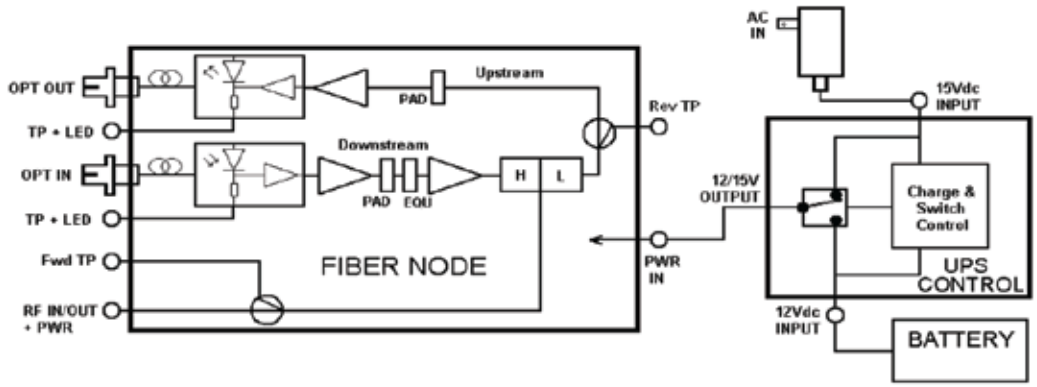
FTTM-UPS BLOCK DIAGRAM:



UPS SPECIFICATION

Standby Time	10 hr
Power Transfer Time: *AC to Battery/ Battery to AC*	0/0 ms
Indicators: *Green LED* *Red LED*	 Normal, AC Power Standby, Battery Power
Temperature	0 to +40 degC

Weight	20/9.1 lb/kg
Dimensions	14 x 10 x 4.25 inch 35.5 x 25.4 x 10.7 cm
Battery	12V AGM, 17 AH
Battery Overdischarge	Protected *
Power Pack: *Input* *Output*	C/UL certified 100-240Vac/ NEMA 5-15 plug 15Vdc, 2.7A / 2.1 x 5.5 mm plug

* the node will be automatically disconnected when the battery is discharged, but the battery should be disconnected if the UPS will be unpowered, shipped or in storage for more than 2 days

FTTM-UPS OPERATION

The FTTM-UPS is designed to power the internal Fiber Node for 10 hours from battery power in the event that the AC power is disabled. Under normal operation with AC power applied the UPS is trickle charging the battery and delivering power to the Fiber Node via the 15Vdc power module. A GREEN LED is illuminated on the UPS Control Module to indicate normal AC powering.

When AC power fails the UPS Control Module diverts battery power to the Fiber Node with zero transfer time and the RED LED is illuminated to indicate that the UPS is in Battery Backup mode. The Fiber Node will remain powered by the battery until the battery voltage has fallen to a specified value, and this will occur after 10 hours on a fully charged battery.

When AC power is restored the UPS diverts AC converted power to the Fiber Node with zero transfer time and the GREEN LED will again illuminate. A fully discharged battery will require 2-3 days for full recharge.

CAUTION

Please observe the following cautions before installing the FTTM-UPS and during it's operation

- DO NOT BLOCK THE VENTILATION PAORTS OF THE FTTM-UPS
- DO NOT USE THIS PRODUCT IN OR NEAR WET AREAS
- MOUNT POWER CORD SO IT CAN'T BE PINCHED OR WALKED UPON
- DO NOT INCINERATE THE BATTERY

INVISIBLE LASER RADIATION, AVOID DIRECT EXPOSURE TO BEAM

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FTTM-UPS SETUP, SHIPPING OR STORAGE

Mounting

- Choose a location that is well ventilated and dry, and offers a power outlet within reach of the FTTM-UPS power cord. The FTTM-UPS power module can be located inside or outside of the enclosure. Approximately 5' of power cord reach is available if inside, and 9' if the module is outside the enclosure. The mounting location should not block the ventilation ports of the FTTM-UPS.
- Mounting holes are located in each corner of the polycarbonate enclosure. #8 or #10 wood screws or sheet metal screws should be selected with suitable length for the wall material used. The bottom right mounting hole is located under the battery.
- The battery should be removed to reduce the weight for easier installation. To remove the battery, disconnect the black wire from the negative battery terminal (and disconnect the red or white wire from the positive terminal if it is connected). Lift out the battery. After mounting the box, and re-installing the battery make sure that the battery wires aren't pinched under the battery.

Connections

- The ground tab located beside the Fiber Node power entry can be used to connect the system ground.
- Connect the RF in/out and Optical in and Optical out ports before powering. The main RF in/out port is a standard F-type, and the optical connectors are SC/APC type. Clean the optical connectors before connecting them.
- The RF and fiber cables should be routed through the rubber membrane at the bottom of the enclosure.

Powering

- From the factory the FTTM-UPS will have the black wire connected to the battery negative terminal, and the red (or white) wire is left to be connected to the battery positive terminal by the installer.
- Connect the red wire (or white) to the battery positive terminal now. The red LED on the UPS control box should be on and the Fiber Node's "DC Power ON" and "Laser ON" LEDs should be on too. If there is light on the downstream optical cable then the receiver "O.P. ON" LED should also be on.
- Place the 15Vdc power module inside or outside the enclosure as desired then plug the 15V output connector into the UPS control box (upper left corner) and the AC connector into the wall outlet. After a short delay the 15V power should be on and the green LED on the UPS control box should turn on (red LED goes off) indicating normal powering. Observe that power to the Fiber Node was not interrupted.
- Pull the AC connector from the wall outlet and observe again that power to the Fiber Node is not interrupted. Plug the AC connector back into the wall outlet.

Set-up

- Use a DC volt meter on the Opt In TP to measure the downstream optical received power. The voltage to optical power conversion is indicated on the coverplate.
- Use a signal level meter on the -20dB Fwd TP and confirm that the output signal is as expected. For 3.5% OMI /channel and -1dBm (0.8mW) optical input power the typical output RF level is 36/50dBmV (54-1000MHz) with the factory installed pad and equalizer.
- Use a DC volt meter on the Opt Out TP to measure the upstream optical transmit power. The voltage to optical power conversion is indicated on the coverplate.
- Use a signal level meter on the -20dB Rev TP. The recommended input signal level is 15-20dBmV total RF for optimum performance.

Shipping or Storage

Please note that if the FTTM-UPS is to be shipped or placed in storage for more than 2 days then the battery should be disconnected. Although the FTTM-UPS disconnects the node from battery power when the battery has discharged, there is still a small maintenance current flowing that will eventually discharge the battery if left connected.

FOR MORE INFORMATION ON OUR WIRELESS,OPTICAL AND RF PRODUCTS
CALL 1-800-465-7046 OR
U.S. Sales Toll free: 877-672-4340

www.lindsaybroadbandinc.com