

## Features

- **Broadband Powerline Access Gateway**
  - Up to 100Mbps data communication
  - Powerfull data error correction
  - Voice, video and real time applications
  - Industrial Keyed Connectors
- **Embedded Industrial Microcontroller**
  - Motorola Coldfire
  - Integral Flash / RAM
  - Site Programmable
- **Interfaces**
  - 10/100BaseT Fast Ethernet
  - RS422
  - RS232
  - CAN 2.0B
- **Operates -10°C to +60°C**
- **Heavy Duty Enclosure**
  - Electroless Nickel Plated
  - Rugged Construction

## Description

The LOSD Broadband Powerline Access Gateway is an industrial I/O module of the Obelix genus designed to connect devices over the powerline or coaxial network.

The OFDM technology and the powerful error correction allow for robust performance and extreme data rates under harsh conditions.

The LOSD will typically be used for data logging applications, real time control of industrial equipment, voice and telephony application, video communication and monitoring.



## Obelix

Broadband Powerline Access Gateway

Type LOSD



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## Typical Applications

- Continuous Bolter/Miners
- Continuous Haulage
- Long Wall Shearers
- Mobile Bolters
- Mobile Roof Supports
- Remote Control Scoops
- Remote Control Loaders

## Ordering Information

Part Number	Description
L0SD0101	Broadband Powerline Access Gateway
H0SD0101	A82 coaxial BNC cable assembly
H0SD0201	A83 cable assembly
H0S50201	A76 cable assembly
CMS13697	Inductive coupler 360A, 36kV
CWR02163	RJ45 crossover patch cable 0.5m
CWR02163	RJ45 straight through cable 3m
CWR02164	RJ45 straight through cable 5m

## Interface Description

The Type L0SD Broadband powerline access gateway utilizes industrial connectors that are unique when configured for use with the Obelix Control System via type, gender or keying physically preventing improper installation.



## Wiring Assignments

Connector A2 Burndy Female 8 Way		
PIN	Description	Signal
A2-A	Supply 1 Input	24VDC Supply Input
A2-B	Supply 1 Input	0VDC Supply Input
A2-C	CAN (Positive)	Communications
A2-D	CAN (Positive)	Communications
A2-E	CAN (Negative)	Communications
A2-F	CAN (Negative)	Communications
A2-G	Termination Link 1 – 1	Termination Link Input
A2-H	Termination Link 1 – 2	Termination Link Input

Connector A67 RJ45 Ethernet		
PIN	Description	Signal
A67-1	TX+	Communications
A67-2	TX-	Communications
A67-3	RX+	Communications
A67-4	-	-
A67-5	-	-
A67-6	RX-	Communications
A67-7	-	-
A67-8	-	-

Connector A83 Burndy Female 23 Way		
PIN	Description	Signal
A83-A	DGI-1	24VDC Input
A83-B	DGI-2	24VDC Input
A83-C	DGI-3	24VDC Input
A83-D	DGI-4	24VDC Input
A83-E	RELAY IN	250VAC Input
A83-F	RELAY NC	250VAC NC Output
A83-G	RELAY NO	250VAC NO Output
A83-H	COLDFIRE UART RX-	Communications
A83-J	COLDFIRE UART RX+	Communications
A83-K	COLDFIRE UART TX-	Communications
A83-L	COLDFIRE UART TX+	Communications
A83-M	RXB- / CTSB	Communications
A83-N	RXB+ / RXB	Communications
A83-P	TXB- / TXB	Communications
A83-R	TXB+/RTSB	Communications
A83-S	0VDC	0VDC Reference
A83-T	RXC-	Communications
A83-U	RXC+	Communications
A83-V	TXC-	Communications
A83-W	TXC+	Communications
A83-X	RXD	Communications
A83-Y	TXD	Communications
A83-Z	0VDC	0VDC Reference



## Wiring Assignments Continued

Connector A82 BNC		
PIN	Description	Signal
A82-A	Coaxial Input	PLC Signal
A82-B	0VDC	0VDC Reference

Connector A76 Burndy Female 4 Way		
PIN	Description	Signal
A76-A	-	-
A76-B	-	-
A76-C	Supply 2 Input	65-265VAC Supply Input
A76-D	Supply 2 Input	65-265VAC Supply Input

Connector B67 RJ45 Ethernet		
PIN	Description	Signal
B67-1	TX+	Communications
B67-2	TX-	Communications
B67-3	RX+	Communications
B67-4	-	-
B67-5	-	-
B67-6	RX-	Communications
B67-7	-	-
B67-8	-	-



## Diagnostics

The internal 3 LED's provides the end user with some basic diagnostics as to the operation of the module. These statuses are as follows:

Status LED	Explanation
RED	Red LED indicates that power has been applied to the unit.
Yellow	Yellow LED indicates PLC link/activity.
Green	Green LED indicates Ethernet link/activity.

## Gateway Setup

Broadband powerline access gateway can be setup in 3 different predefined communication modes as follows:

Operating Mode	Explanation		Explanation
	DI-1	DI-2	
Master	On	Off	Communication via RS232
Slave	Off	Off	Communication via RS422
Repeater	Off	On	Forwards packets on the powerline and acts as slave for the master and as master for the slave
Configuration Reset/Slave	On	On	Resets all modified configurations to default settings



## Electrical Characteristics

Supply 1	
Supply	24VDC Nominal
Wattage <sup>MIN</sup>	7W
Wattage <sup>MAX</sup>	14.0W

Supply 2	
Supply	65-265VAC
Wattage <sup>MIN</sup>	7W
Wattage <sup>MAX</sup>	14.0W

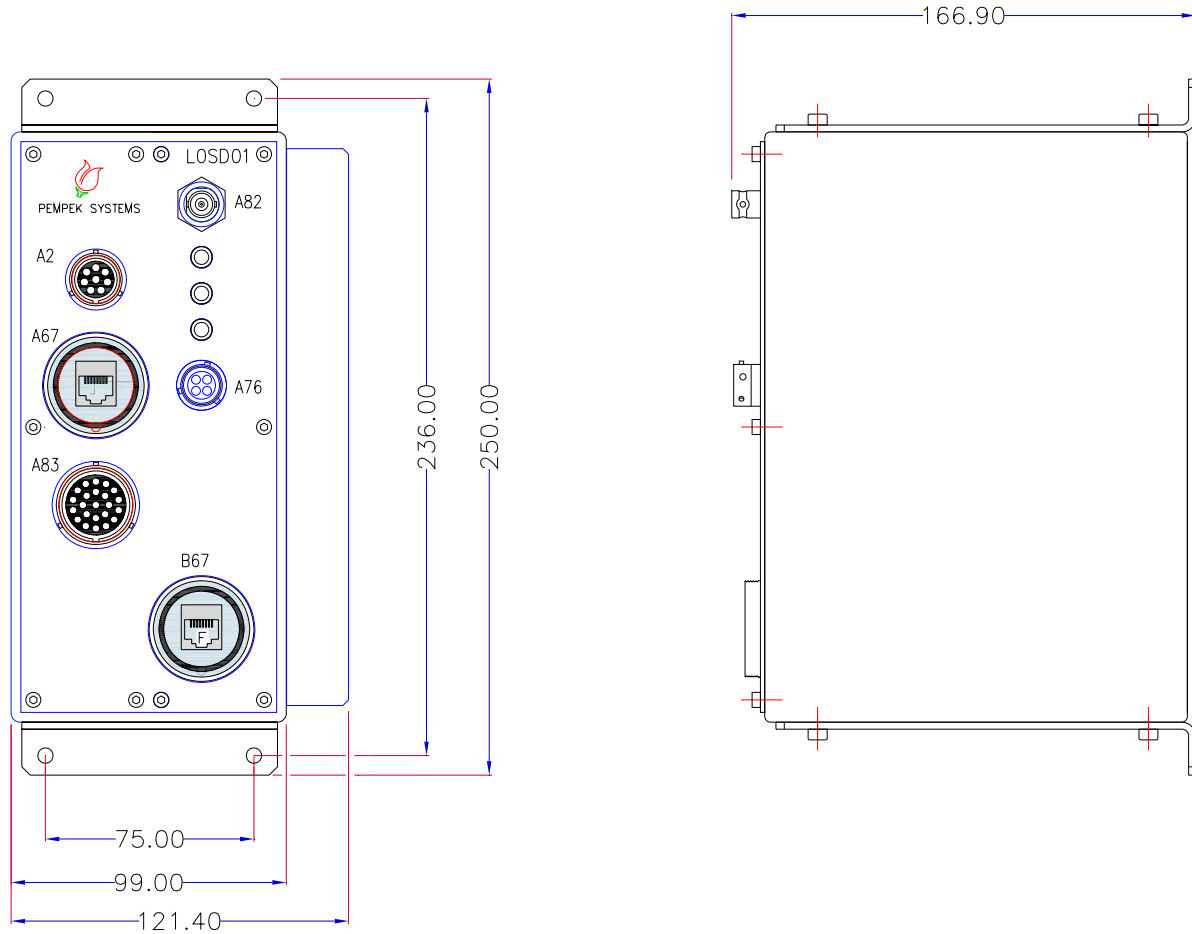
Communications	
Interface	10/100BaseT Fast Ethernet, RS422, RS232, CAN2.0B
Data Rate	Up to 200Mbps on physical layer, up to 100Mbps on Ethernet, 115200bps on RS422, 115200bps on RS232, 500kbs on CAN2.0B
Physical Layer	
Modulation	OFDM with 1536 carriers uplink/downlink, symmetrical, up to 10bit per symbol adaptive per carrier
Tx Power Step	1 dB
Power Spectral Density	≤ -50dBm/Hz
Transmission Gain	33dB
Automatic Rx Gain	-12dB down to +30dB in 6dB steps
Dynamic Range	90dB min
Protocols	Ethernet RS422, RS232, CAN - Message Oriented
Ethernet Protocols Layer 2	
MAC	Access for large LAN networks, master slave mechanism
Dynamic QoS	Configuration using service classifier
Spanning tree protocol	IEEE 802.1D
VLAN	IEEE 802.1Q, up to 4094 VLAN_ID, up to 256 active VLANs
Traffic Prioritisation	IEEE 802.1p
Clock Synchronisation	NTP
Voice-over-IP	ITU-T H323 Version 4 and SIP RFC3261 compliant

Security	
Authentication	Slave MAC addresses are registered at the master to prevent against unauthorised intrusion. RADIUS protocol support.
Layer 2 Separation	VLAN support based on the IEEE 802.1Q standard protocol.
Physical Layer Separation	The communication between one slave device and the master relies on specific coding techniques preventing other slave from decoding the signal.

Environmental	
Operating Temperature	Minus -10°C to +60°C
Humidity	5% to 85% non-condensing
MTBF	12,000 hours



# Mechanical Characteristics



Dimension	Measurement	Description
A	250	Height
B	236	Height Mounting Centre
C	75	Width Mounting Centre
D	121.4	Width
E	166.9	Depth

## Notes

- All dimensions are in millimetres.

## Material

- Enclosure is Electroless nickel plated mild steel.
- Facia is stainless steel.
- Mounting brackets are stainless steel.

## Fasteners

- M5 x 10mm x 4
- M4 x 10mm x 8
- M3 x 10mm x 10

## Mass

- 6.5kg (14.33lb)