

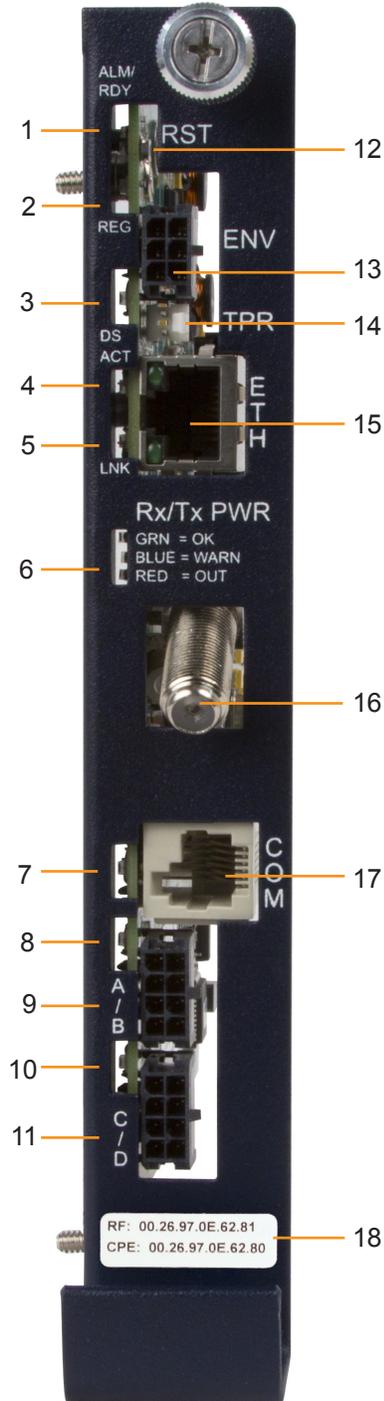
## Installation and Quick Start Guide

The AlphaNet IDH4 Series Embedded DOCSIS Transponder allows monitoring of Alpha power supplies through existing cable network infrastructure. Advanced networking services provide quick reporting and access to critical powering information.

The IDH4 Series utilizes Simple Network Management Protocol (SNMP) and Management Information Bases (MIBs) to provide network status monitoring and diagnostics. A Web interface enables authorized personnel direct access to advanced diagnostics using a common Web browser. No custom software is required.

This guide addresses the two models of the IDH4 Series.

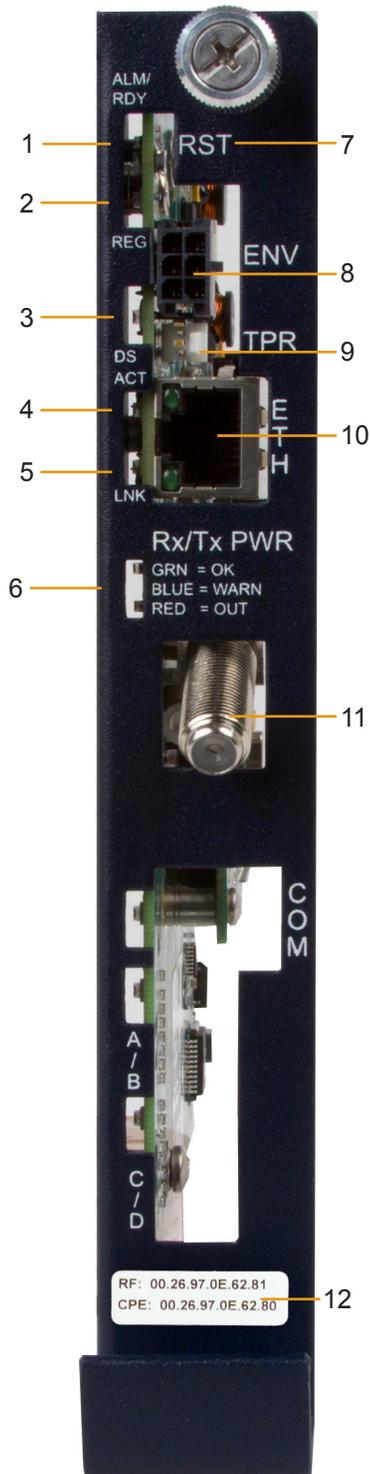
### IDH4X DOCSIS Transponder



Item	LED or Connector	Status	Behavior	Indication
1	ALM/RDY: Alarm and Ready	N/A	OFF	No power or malfunctioning IDH4 Series
		GRN	ON	Reset of the IDH4 Series is in process
			BLINKING	Normal operation
		RED	Blinking more OFF than ON	Minor Alarm
Blinking more ON than OFF	Major Alarm			
2	REG: Upstream ranging and registration lock	GRN	OFF	No power, upstream frequency undetermined
			BLINKING	Power on, downstream locked, upstream frequency ranging, DHCP request in progress
			ON	CMTS registration completed
3	DS: Downstream RF Carrier detection and lock	GRN	OFF	No power / downstream carrier
			BLINKING	Power on, downstream carrier frequency searching
			ON	Downstream carrier lock
4	ACT: CPE Activity status	GRN	OFF	No Ethernet communications activity
			BLINKING	Momentary flashes during CPE communications via the Ethernet Craft port
5	LNK: CPE Link status	GRN	OFF	No Ethernet link
			ON	Link on Ethernet Craft port
6	RF Rx/Tx Power Level Indicator	TRI	OFF	No RF detected
			Blue	Rx/Tx Power at a warning level as set within the SCTE-HMS Property Table
			Green	Rx/Tx RF Power level within tolerance
			Red	Rx/Tx Power at an alert level as set within the SCTE-HMS Property Table
7	COM: AlphaBus communications	GRN	OFF	No AlphaBus Communications
			BLINKING	Momentary flashes - AlphaBus Port communications active
8	BAT A/B	GRN	ON	Battery string(s) connected correctly
			OFF	Battery string(s) not connected correctly
9	BAT A/B Connector			
10	BAT C/D	GRN	ON	Battery string(s) connected correctly
			OFF	Battery string(s) not connected correctly
11	BAT C/D Connector			
12	RST: Reset button			
13	ENV: Environmental Control connector			
14	TPR: Tamper Switch connector			
15	ETH: Ethernet connection			
16	RF Connection			
17	COM: AlphaBus Communications connector			
18	CM, CPE MAC Address label			

Fig. 1, IDH4X Transponder Front Panel Indicators and Connectors

# IDH4L DOCSIS Transponder



Item	LED or Connector	Status	Behavior	Indication
1	ALM/RDY: Alarm and Ready	N/A	OFF	No power or malfunctioning transponder
		GRN	ON	Transponder reset in process
			Steady Blinking	Normal operation
2	REG: Upstream ranging and registration lock	GRN	Blinking more OFF than ON	Minor Alarm
			Blinking more ON than OFF	Major Alarm
3	DS: Downstream RF Carrier detection and lock.	GRN	OFF	No power / downstream carrier
			BLINKING	Power on, downstream carrier frequency searching
			ON	Downstream carrier lock
4	ACT: CPE Activity status	GRN	OFF	No Ethernet communications activity
			BLINKING	Momentary flashes during CPE communications via the Ethernet Craft port
5	LNK: CPE Link status	GRN	OFF	No link
			ON	Link on Ethernet Craft port
6	RF Rx/Tx Power Level Indicator	TRI	OFF	No RF detected
			Blue	Rx/Tx Power at a warning level as set within the SCTE-HMS Property Table
			Green	Rx/Tx RF Power level within tolerance
			Red	Rx/Tx Power at an alert level as set within the SCTE-HMS Property Table
7	RST: Reset button			
8	ENV: Environmental Control connector			
9	TPR: Tamper Switch connector			
10	ETH: Ethernet connection			
11	RF Connection			
12	CM, CPE MAC Address label			

Note: The IDH4L requires the XM3 Smart AlphaGuard (SAG) option for individual battery voltage measurements.

Fig. 2, IDH4X Transponder Front Panel Indicators and Connectors

# Overview



## CAUTION!

For units in service, backup battery power will not be available during this procedure.

IDH4 Series installation and setup is comprised of three basic steps:

1. **Configuring the Network:** Provisioning the DHCP Server with the transponder's MAC address and assigning it a DOCSIS Configuration File.
2. **Setting Options:** The IDH4 Series is designed for out of the box, "plug and play" operation, but non-default settings such as SNMP trap destination addresses may be required for the Network Management System (NMS). SNMP trap addresses can be set automatically via the DOCSIS Configuration File per RFC 4639, while IDH4 Series proprietary options may be set through type-11 TLV entries. The SCTE-HMS and Alpha MIBs may need to be compiled into a MIB browser before it can be used to monitor or set transponder and power supply parameters. *Refer to the IDH4 Series for XM3 Technical Manual (Alpha p/n 746-257-B5) for details.*
3. **Installation:** Field Installation of the IDH4 Series into the power supply, connecting the RF Cable, battery sense wire harnesses (IDH4X only), Environmental, Tamper switch, Ethernet, and verifying operation.

These steps can be performed independently of one another. However, configuring the network prior to field installation will allow the installation to be verified while personnel are still on-site. Performing field installation before network configuration might result in additional field service calls to correct mistakes.

## Installation / Replacement Procedure

1. Before removing the Inverter Module (IM), verify the power supply device address is correct.

The power supply device address must not be set to zero and no two power supplies monitored by a single IDH4 Series can have the same address. Power supplies must have 1, 2, 3, 4 or 5 as an address.

To verify the power supply's address, go to the LCD display on the inverter module and enter the "PWR CNFG" menu. Scroll to the "Device Address" menu item and verify the device address is set to something other than 0 (Zero).

2. Switch OFF the Inverter Module battery breaker.



## NOTE:

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With the battery breaker in the OFF position, the power supply will not go into inverter mode.

3. Unplug all Inverter Module connections (e.g. battery cable, remote temperature sensor).
4. Loosen the two Inverter Module thumbscrews.
5. Slide the Inverter Module out of the power supply.
6. If the Inverter Module is equipped with a communication module, remove it by loosening the two Phillips captive screws.

# Installation / Replacement Procedure, continued

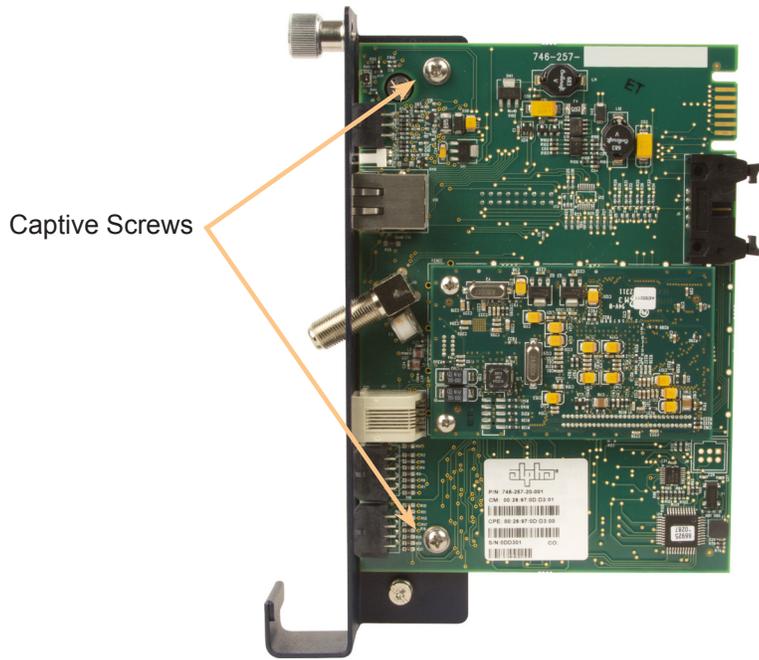


Fig. 3, Captive Screw Locations

7. Line up the 18-pin mating connectors on the IDH4 Series and the XM3-HP Inverter Module. Gently push the IDH4 Series into the Inverter Module until the 18 pin mating connector is properly seated.
8. Fasten the IDH4 Series to the Inverter Module by tightening the two captive screws. It is recommended that the screws be tightened alternately, a few turns at a time so the transponder aligns in parallel to the Inverter Module.



Fig. 4, The 18-pin Connector



Fig. 5, Connecting the Transponder to the Inverter Module

9. Reinstall the Inverter Module and tighten the two thumbscrews. Make front panel connections (tamper, temperature sensor, battery sense, RF, etc.).
10. If not yet done, record the cable modem MAC address from the front of the unit and report it to the network manager for network provisioning. For Dual IP applications, the CPE MAC address should also be recorded.

# Connecting the RF Drop

## CAUTION!

Install a grounded surge suppressor (Alpha P/N 162-028-10 or equivalent) to protect equipment from overvoltage.

Connect the RF drop according to the diagram below. The RF drop must have a properly installed ground block in the power supply enclosure. Recommended downstream RF level is 0 dBmV. Connect any other front panel connections at this time (e.g. battery strings, tamper switch).

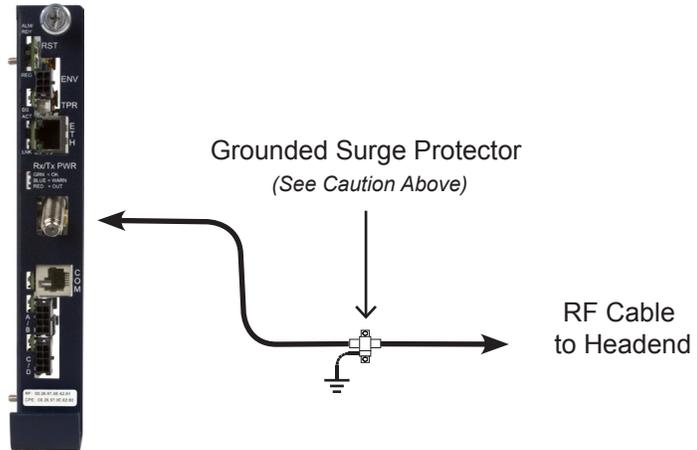


Fig. 6, Connecting the RF Drop

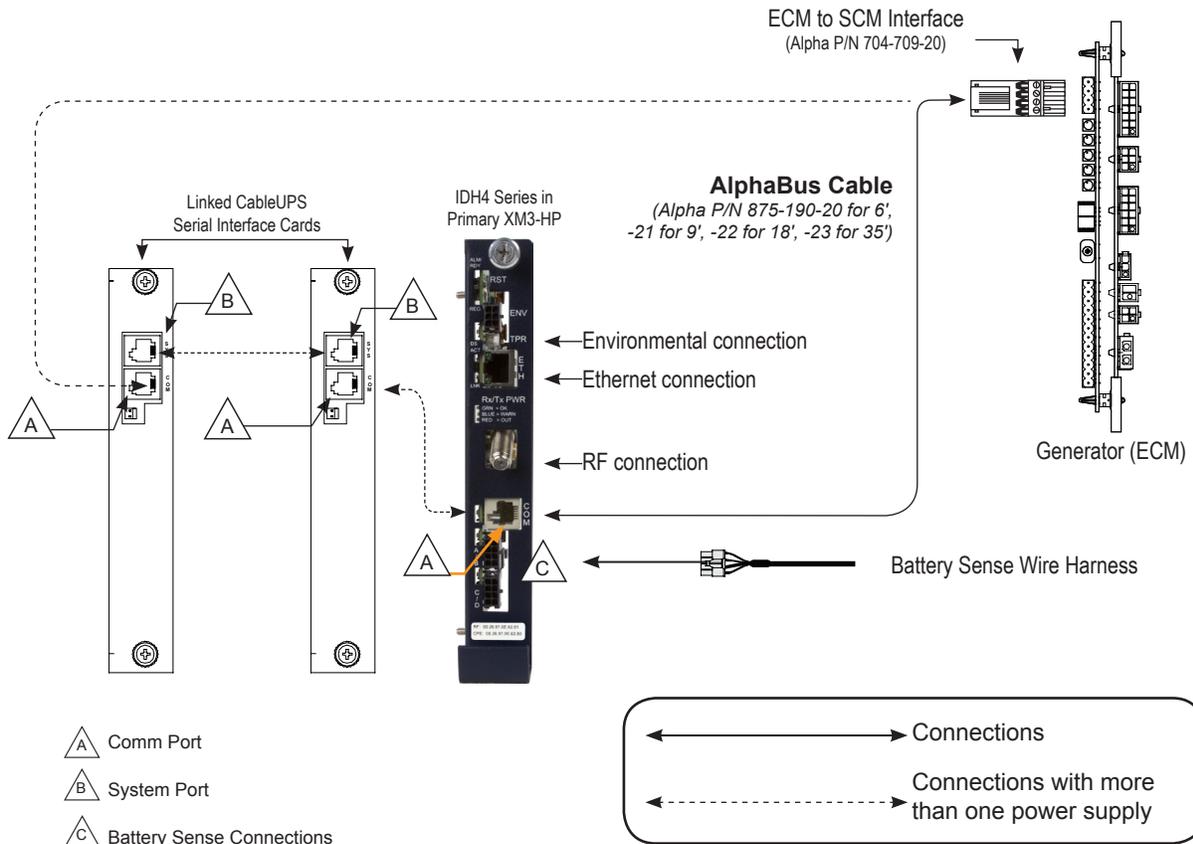


Fig. 7, System Interconnection Diagram

## Initial Startup and Test / Returning the Unit to Service

1. Verify the power supply AC plug is connected into the AC outlet.
2. Switch Inverter Module battery breaker ON.
3. The IDH4 Series Status LEDs will all blink in unison upon initial power up. The RDY LED will then begin blinking steadily indicating normal processor activity.
4. Verify the DS and REG LEDs are on solid. This verifies the Communications Module has registered an IP address on the network.
5. Verify the RF LED is solid Green, indicating Upstream and Downstream Power is within the default specified range and the Upstream RF Power is below the recommended +50 dBmV.
6. Verify no XM3 alarms are active.

RF Power Default Values		
LED Color	Rx Range (dBmV)	Tx Range dBmV)
Green	+10 to -10	0 to +50
Blue	+15 to +10 and -10 to -15	+50 to +55
Red	>+15 and <-15	>+55

Table 1, RF Power Default Values

## Test Connection

With the IDH4 Series used in conjunction with the XM3-HP power supply, network connectivity can be verified via the COMM menu on the XM3-HP Smart Display.

Connect a computer's network port to the transponder's Ethernet port using a standard network cable. Launch an Internet browser and enter 192.168.100.1 into the address. The transponder will return the Web page shown below. The General Configuration page shown below will appear and display connectivity, power levels, and power supply status information such as alarms, output voltage, output current, and individual battery voltages. System Name, System Location, System Contact and Common Logical ID may be edited on this page; when prompted for a User Name and Password, use "Alpha" and "AlphaGet".

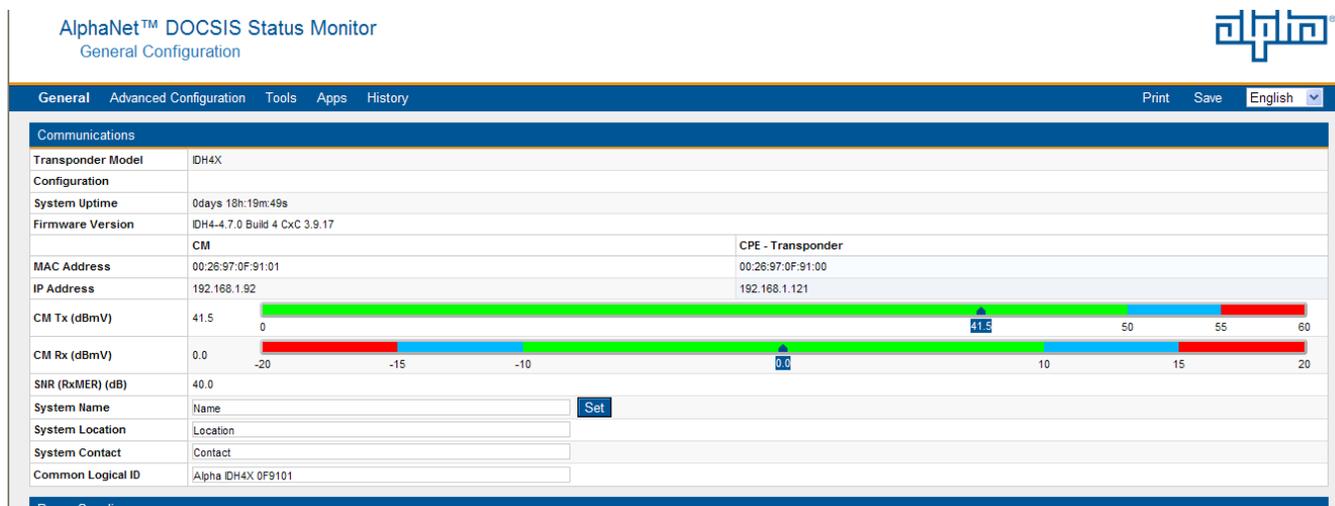


Fig. 8, General Screen

(data values shown for illustration purposes only)

Alpha Technologies Inc.  
3767 Alpha Way  
Bellingham WA 98226  
USA  
Tel: +1 360 647 2360  
Fax: +1 360 671 4936

Alpha Technologies Ltd.  
7700 Riverfront Gate  
Burnaby BC V5J 5M4  
Canada  
Tel: +1 604 436 5900  
Fax: +1 604 436 1233

Alpha Technologies Europe Ltd.  
Twyford House, Thorley  
Bishop's Stortford,  
Hertfordshire  
CM22 7PA  
United Kingdom  
Tel: +44 1279 501110  
Fax: +44 1279 659870

Alpha Technologies GmbH  
Hansastrasse 8  
D 91126 Schwabach  
Germany  
Tel: +49 9122 79889 0  
Fax: +49 9122 79889 21

AlphaTec Ltd.  
339 Saint Andrews Street  
Suite 101 Andrea Chambers  
3307 Limassol  
Cyprus  
Tel: +357 25 375675  
Fax: +357 25 359595

AlphaTEK ooo  
Khokhlovskiy Pereulok 16  
Stroenie 1 Office 403  
109028 Moscow  
Russia  
Tel: +7 495 916 1854  
Fax: +7 495 916 1349

Alpha Technologies  
Suite 1903, Tower 1  
33 Canton Road, Kowloon  
Hong Kong, China  
Tel: +852 2736 8663  
Fax: +852 2199 7988