ViaLiteHD
Development Programming Kit

User Guide

HRx-HD-DEV103-HB-7

CR3999 11-1-2019

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Instrument Care and Safety Information

*Please read the whole of this section before using your **ViaLiteHD** product. It contains important safety information and will enable you to get the most out of your Fibre Optic Link.*

Electrical Safety

The ***ViaLiteHD*** development kit power supply is a class 2 product (double isolated).

When operating the equipment note the following precautions:

- Hazardous voltages exist within the equipment. There are no user serviceable parts inside; the covers should only be removed by a qualified technician.
- There are no user replaceable fuses.

The ***ViaLiteHD*** development board is a safety extra-low voltage (SELV) device.

ESD Precautions

The ***ViaLiteHD*** systems are equipped with high frequency active electronics, without the correct handing they will be susceptible to damage.

Precautions for handling electro-static sensitive devices should be observed when handling all ***ViaLiteHD*** modules. Technicians should ensure that they use effective personal grounding (i.e. ESD wrist strap etc.) when servicing the equipment. Any equipment or tools used should be grounded to prevent static charge build-up. Good practice should be observed at all times for reference see relevant standards.
EN 61340-5-1, “Protection of Electronic Devices from Electrostatic Phenomena – General Requirements”

Optical Safety

The ***ViaLiteHD*** RF Fibre Optic Transmitters, Dual Transmitters and Transceivers contain optical sources (usually laser diodes) operating at nominal wavelengths of 1270nm to 1610nm.

These devices are rated as EN60825-1:2007 as CLASS 1 radiation emitting devices. A class 1 laser is safe under all conditions of normal use.

When operating the equipment note the following precautions:

- Never look into the end of an optical fibre directly or by reflection either with the naked eye or through an optical instrument.
- Never leave equipment with radiating bare fibres – always cap the connectors.
- Do not remove equipment external covers when operating.

Table of contents

1 Introduction

The ***ViaLiteHD*** RF Fibre Optic Links (FOLs) are a family of fibre optically coupled link systems designed for the transmission of RF analogue signals over long distances for the communications market. ***ViaLiteHD*** is a product brand manufactured by Pulse Power and Measurement Ltd (PPM). ***ViaLite Communications*** is a division of Pulse Power and Measurement Ltd (PPM).

This handbook covers the ***ViaLiteHD*** development programming kit, part number **HRX-HD-DEV103**. This allows users to monitor, control and program a wide range of modules from the ***ViaLiteHD*** product family. The hardware is designed to support all known module types at the time of release.

- The software release described in this manual is: Version 3.01

The software release provides monitor, control and programming of the following modules

- HRB – Serial Digital module (Optical data In/out, Electrical data Out/In)
- HRD – Splitter module (1 * RF Electrical In, 2 * RF Electrical Out)
- HRR - Receiver (Optical In, RF Electrical Out)
- HRS – Switch module (2 * RF Electrical In, 1 * RF Electrical Out)
- HRT - Transmitter (RF Electrical In, Optical out)
- HRT – DWDM Transmitter (RF Electrical In, Optical out)
- HRU - Dual Transmitter (RF Electrical In, Optical out)
- HRV - Dual Receiver (Optical In, RF Electrical Out)
- HRX - Transceiver (Optical In/out, RF Electrical Out/In)

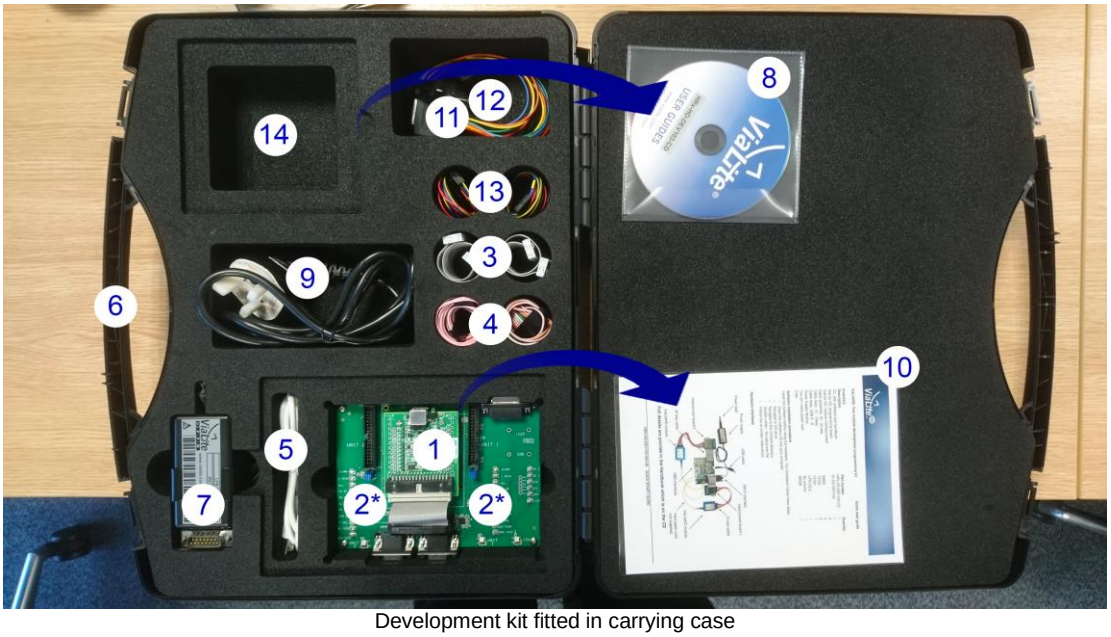
The following package types are supported

- D - Chassis Blind mate*
- R - Chassis Plug
- M - OEM Module
- N - OEM edge plug-in
- P,Q,W OEM within Blue2 Link

  * Does not offer the connection of RF and optical interface for Blind mate modules.

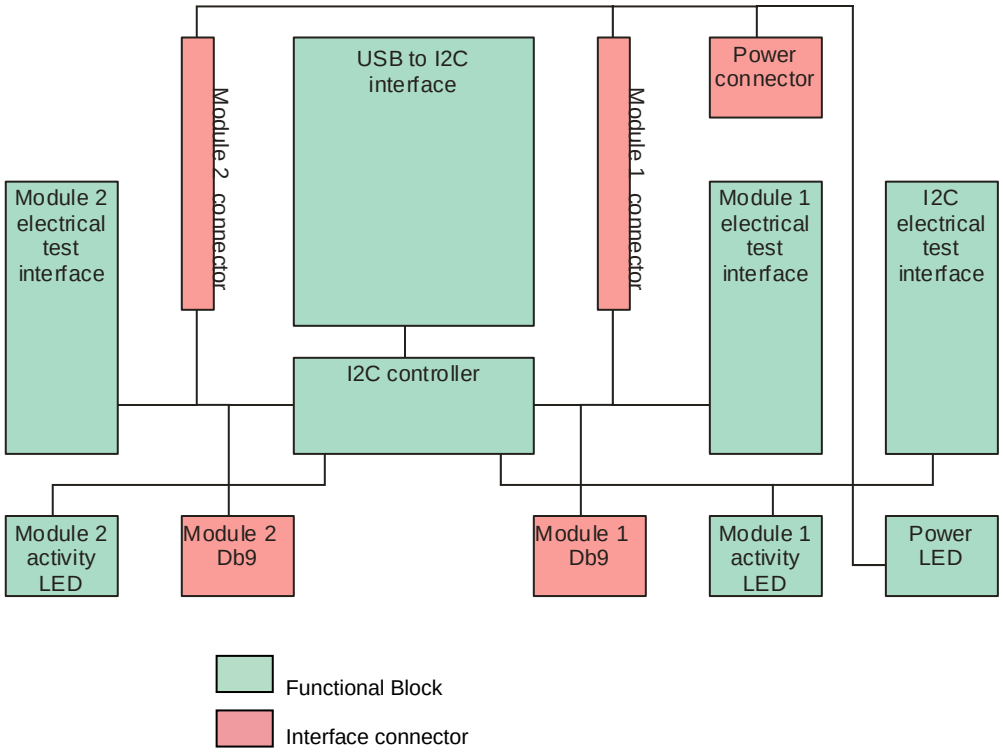
1.1 Development kit, inventory

#	Description HRX-HD-DEV103.	Part number	Quantity
1	***ViaLiteHD***, two module, programming board, main + 53901 daughter board	81-HD-DEV103	1
2	***ViaLiteHD***, module interface board, module interface		2
3	Cable assembly, IDC socket, 34 way, key, strain relief, 150mm	59822	2
4	Cable Assy, ***ViaLiteHD*** programming cable, 15way-15way, 0.25m	73724	2
5	Cable Assy, USB2.0 Type A to Type B, 1m long	73727	1
6	Case, for ***ViaLiteHD*** development kit, HRx-HD-DEV103	96028	1
7	Power Supply Module for ViaLite Converter Sleeve, AC i/p	LPS-CS-2	1
8	CD, ***ViaLiteHD*** development programming	HRx-HD-DEV103-CD	1
9	Two pin mains power lead	Country specific	1
10	One page, Quick start guide	HRx-HD-DEV103-QS	1
*	any number marked with a star has this part beneath another part		
11	Blue2link Development Loom	73936	1
12	Blue2link 'Y' Split Cable	73940	1
13	Green OEM Development Cable	73944	2
14	Blue2 Link 'Y' split power supply	LPS-B2-1	1



Development kit fitted in carrying case

1.2 Internal architecture, block diagram



Main board, block diagram

Key features are:

- Supports 2 modules
- Test clips for all major electrical interfaces on each module, allowing easy connection of scope probes.
- One DB9 connector per module as provided by ***ViaLiteHD*** chassis

2 *Software installation*

Before the development kit is used the software needs to be installed.

2.1 Computer requirement

It is necessary to ensure that your connected computer is correctly configured.

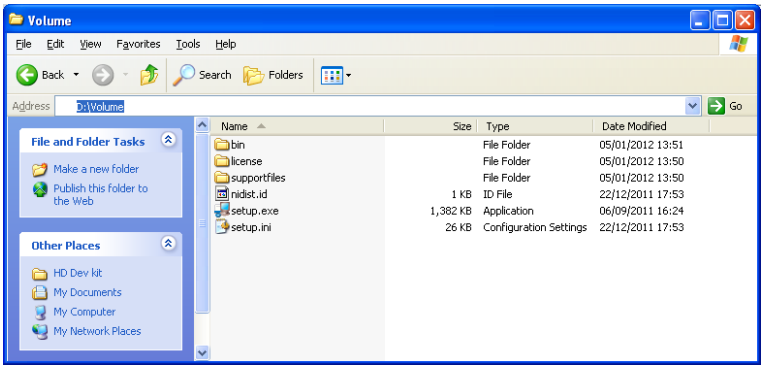
Firstly ensure that your PC meets the minimum requirements, it must have:

1. Windows XP, service pack 2 or later (functionality confirmed on Windows Vista, Windows 7 and 8)
2. Microsoft Internet Explorer 8.0 or later
3. One USB port

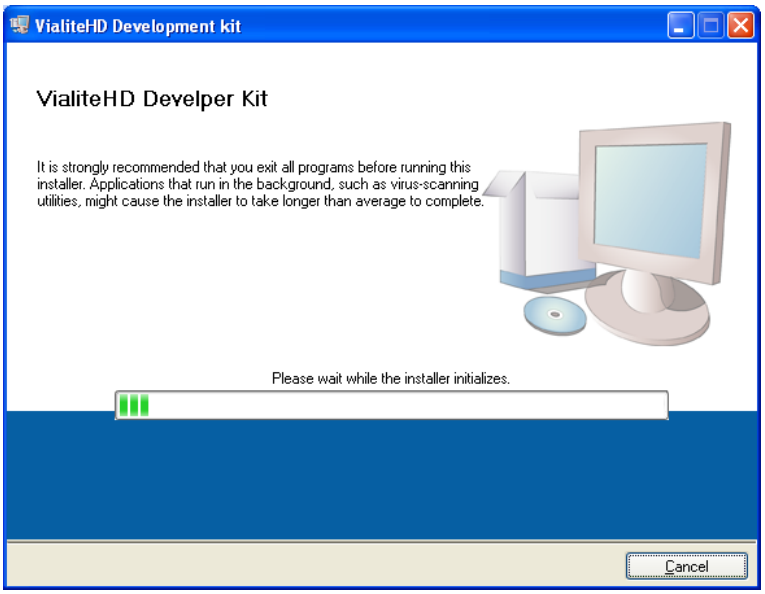
2.2 Software installation procedure

To install the software follow these steps. Software should be installed before connecting to the board.

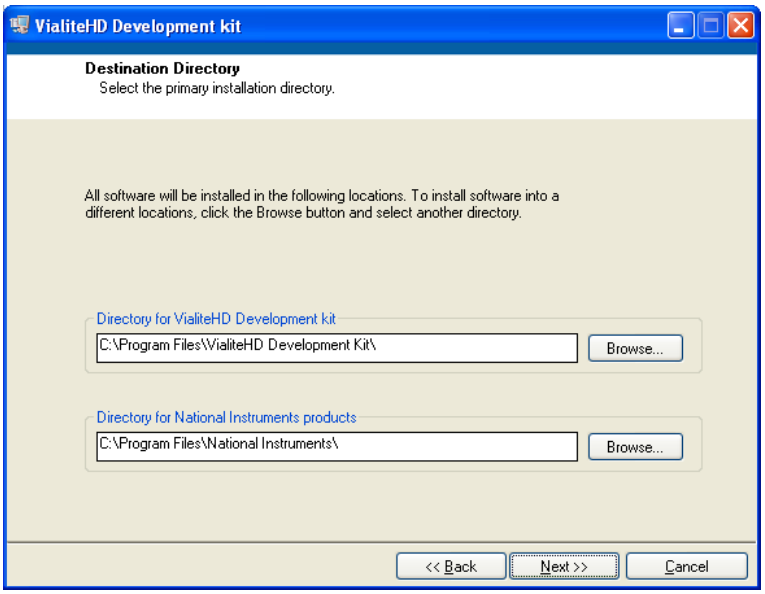
- Insert the software CD into your computer
  - The software will also be available on the ViaLite web site www.vialite.com
- Navigate to CD drive
  - Alternatively you may wish to copy the data to your local hard drive.
- Navigate to the \Volume directory
- Double <click> the setup.exe file



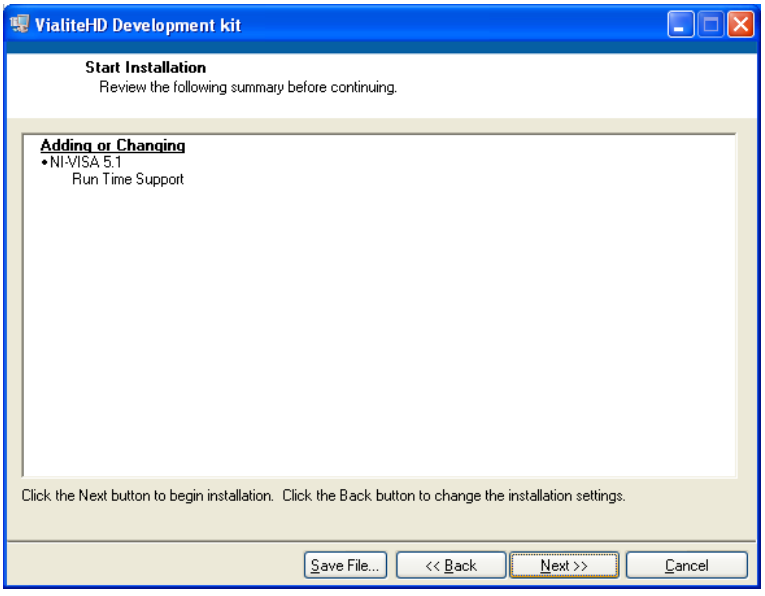
- When running the following screen will display
  - Initial installation may take a few minutes, dependent on your machine



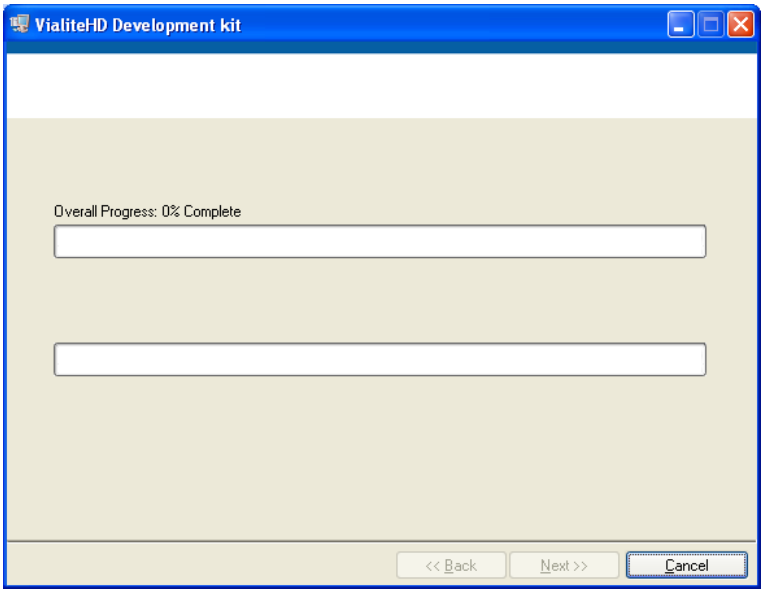
- You will now be prompted to enter the installation paths
- Enter these details or use the defaults and <click> NEXT



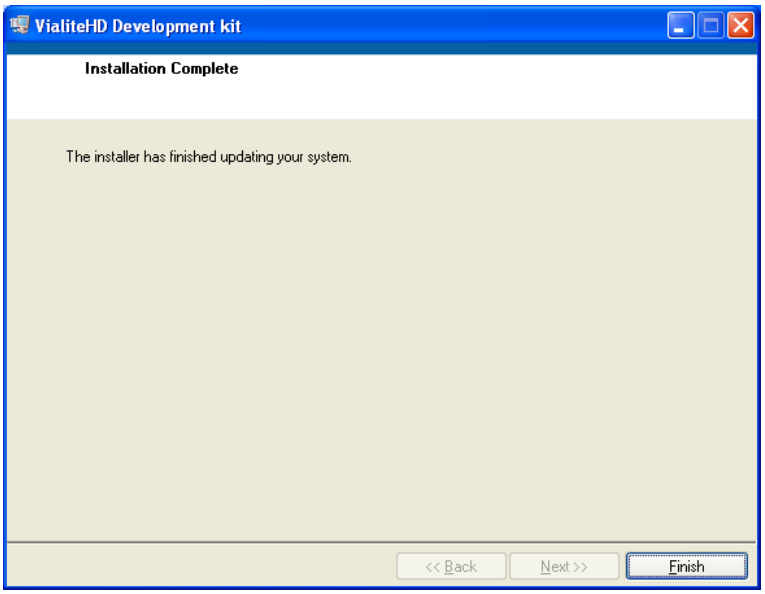
- You will now be prompted to start the installation
- Check the details on the Screen
- <click> NEXT



- When running the following screen will display
  - Initial installation may take up to 10 minutes, dependent on your machine
  - Updates will be much quicker



- The installation is now complete
- <click> Finish
- After the installation has completed the START menu will be modified with a new folder and program
- The program can now be accessed via windows menus
  - Start > All programs > PPM > HD dev kit
- You may wish to place this as a shortcut on your desktop



- As part of the standard set up you will also have a National instruments folder set up in you start menu under ALL PROGRAMS.
- If you experience configuration problems this can be a useful debugging tool

3 Development board physical

3.1 Setting up the hardware interfaces

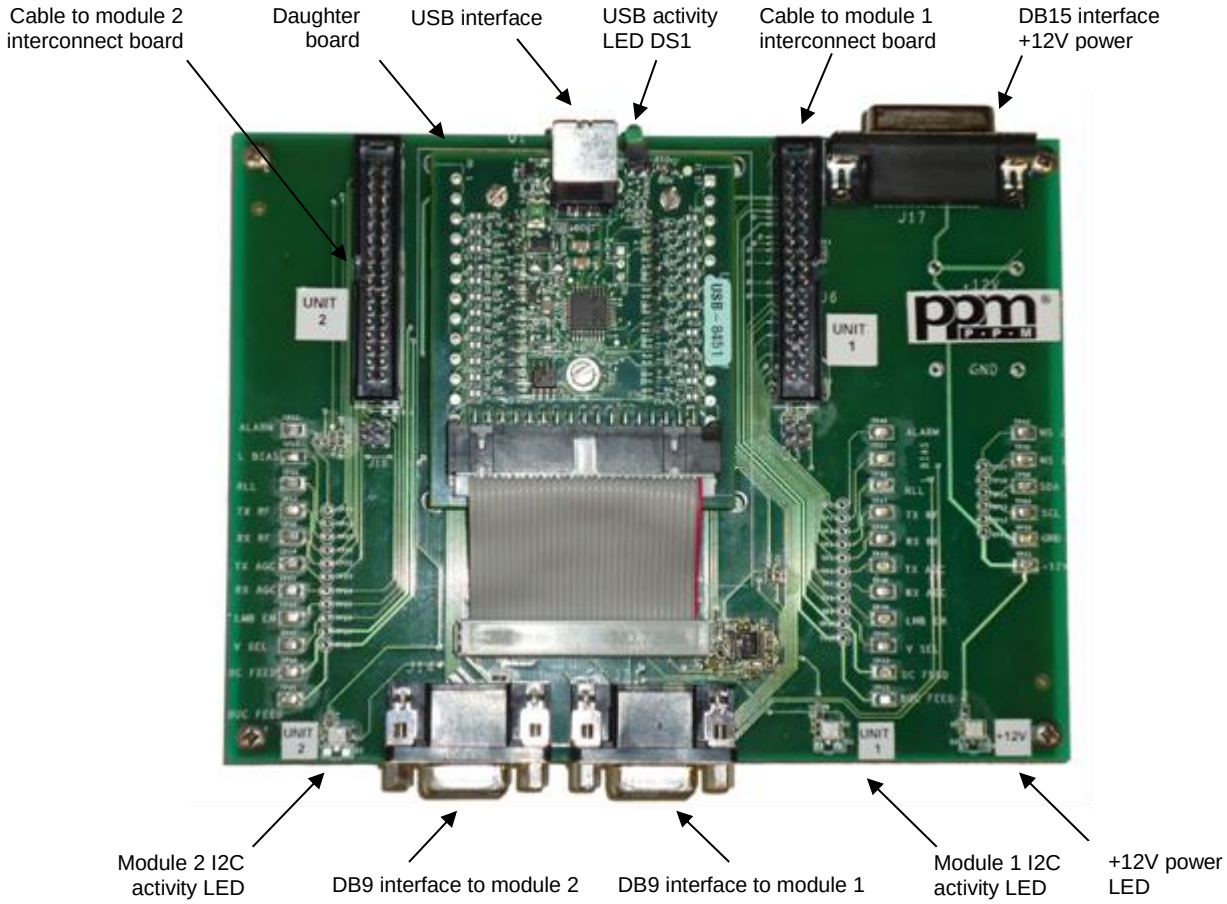
The development kit must be correctly connected for it to operate. The following connections must be made, in this order.

- Connect the supplied USB cable type A end to your PC.
- Connect the USB cable type B end to Daughter board connector J2.
  - You should observe the daughter board LED DS1 flashing.
    - It may take up to 10 second to establish communication
  - This shows USB communication has been established.
- Turn the mains power OFF.
- Connect the LPS-CS-2 power supply to the main board, via the 15 way D type J17.
- Connect the LPS-CS-2 to its AC power source via the supplied mains cable.
- Turn ON the mains power.
  - The +12V LED should illuminate.
- Connect the supplied ribbon cable 59822 to position J6 for module 1 on the motherboard.
- Connect the supplied ribbon cable 59822 to position J13 for module 2 on the motherboard.
  - Note this connector has a keyway which must be aligned.
- Connect the other end of the ribbon cable to module interface board J5 (or J12).
- Connect the module interface boards to your ***ViaLiteHD*** device under test.
  - **ONLY 1** device maybe connected to **each** module interface board.
    - **WARNING**, connection of more than 1 device may cause damage.
  - Use J1 (or J8) for OEM units.
  - Use J2 (or J16) for EDGE unit (NOTE the edge connector can only be inserted one way).
  - Use J4 (or J11) for Plug in units.
  - The IDs in brackets are for the second module interface board.

3.2 *ViaLiteHD* and *ViaLite* Classic compatibility

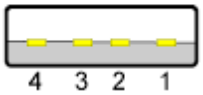
This development kit will only work with ***ViaLiteHD*** equipment; it does not support ***ViaLite*** Classic equipment.

3.3 Main board, external connections

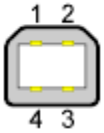


3.4 Main board, USB connection

The connection to your PC is provided via a USB type B socket on the motherboard. An interface cable is provided with a Type A connector which will connect with your PC's USB socket.



USB Type A

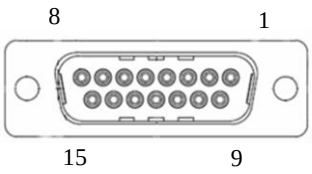


USB Type B

3.5 Main board, power 15 way D type

The power supply has a 15 way D type connector that mounts to the board to provide power for the modules. The connector on the motherboard is a D-Type 15 way female, the connector on the power supply module is a D-Type 15 way male.

Pin	Function	Type	Level
1	Do Not Connect	-	-
2	Do Not Connect	-	-
3	Do Not Connect	-	-
4	Do Not Connect	-	-
5	Do Not Connect	-	-
6	+12V	Power	+12V typ
7	Do Not Connect	-	-
8	Ground	Ground	0V
9	Do Not Connect	-	-
10	Do Not Connect	-	-
11	Do Not Connect	-	-
12	Do Not Connect	-	-
13	Do Not Connect	-	-
14	Do Not Connect	-	-
15	Do Not Connect	-	-



3.6 Power supply module connections

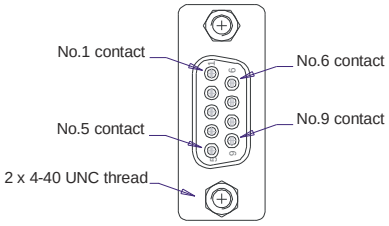
The power supply will provide up to 16 watts of DC power. It has a wide range AC input (90-264Vac, 50/60Hz, 0.75A max) and it uses an IEC-60320 2 pin input socket type C8. You will be provided with a mating power cable with plug suitable for your country.

IEC-60320 type C8

3.7 Main board, signal 9 way D type

Each connected module is provided with a connector that allows access to its digital interfaces, this connector is identical to those fitted on the ***ViaLiteHD*** chassis. If connected to a module with digital interfaces the following pins can be accessed. These interfaces are not available on all module types. The connector on the motherboard is a D-Type 9 way female, more details are given in module handbooks.

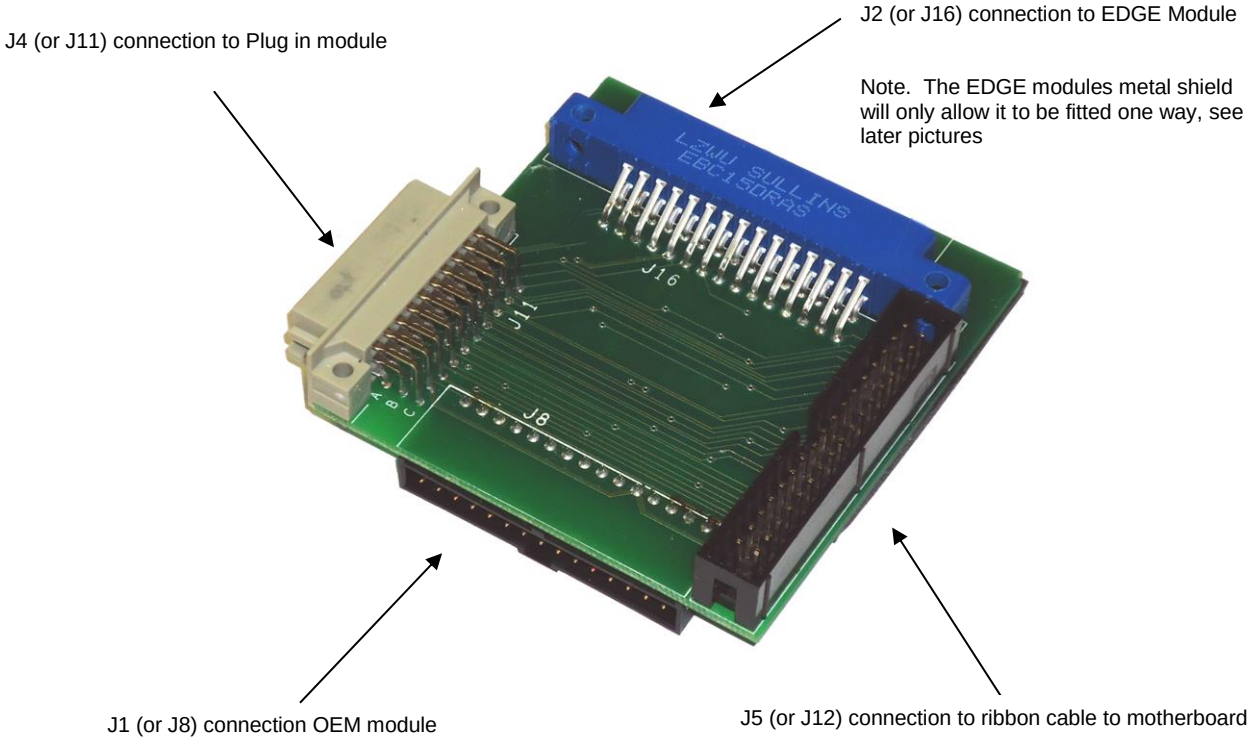
Pin	Function	Type	Level
1	GND	Ground	0V
2	TX_422_IN+	Input digital	RS422, 0 / +5V typ
3	TX_422_IN-	Input digital	RS422, 0 / +5V typ
4	TX_232_IN	Input digital	RS232, -12 / +12V typ
5	GND	Ground	0V
6	RX_422_OUT+	Output digital	RS422, 0 / +5V typ
7	RX_422_OUT-	Output digital	RS422, 0 / +5V typ
8	RX_232_OUT	Output digital	RS232, -5 / +5V typ
9	RST_485	Input digital	5V TTL, 0 / +5V typ



3.8 Physical interfaces, module interface board

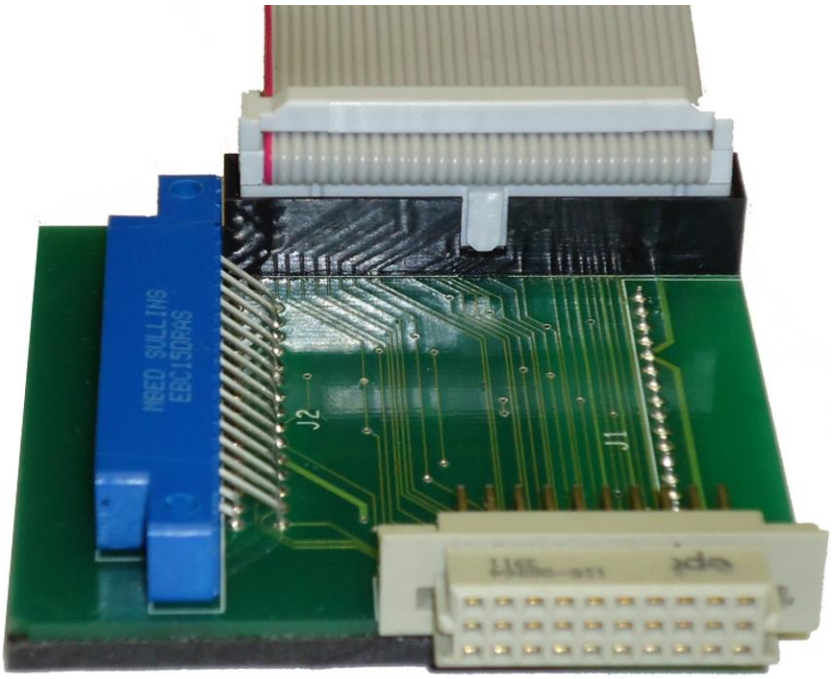
The module interface board provides power and communications to a single ***ViaLiteHD*** module.

Note: Each board is fitted with an insulating pad on the rear side to avoid shorting any connections, if placed on a conductive surface.



WARNING, connection of more than 1 ***ViaLiteHD*** module to this board may cause damage

3.8.1 Physical interfaces, module interface board, connection to the main board



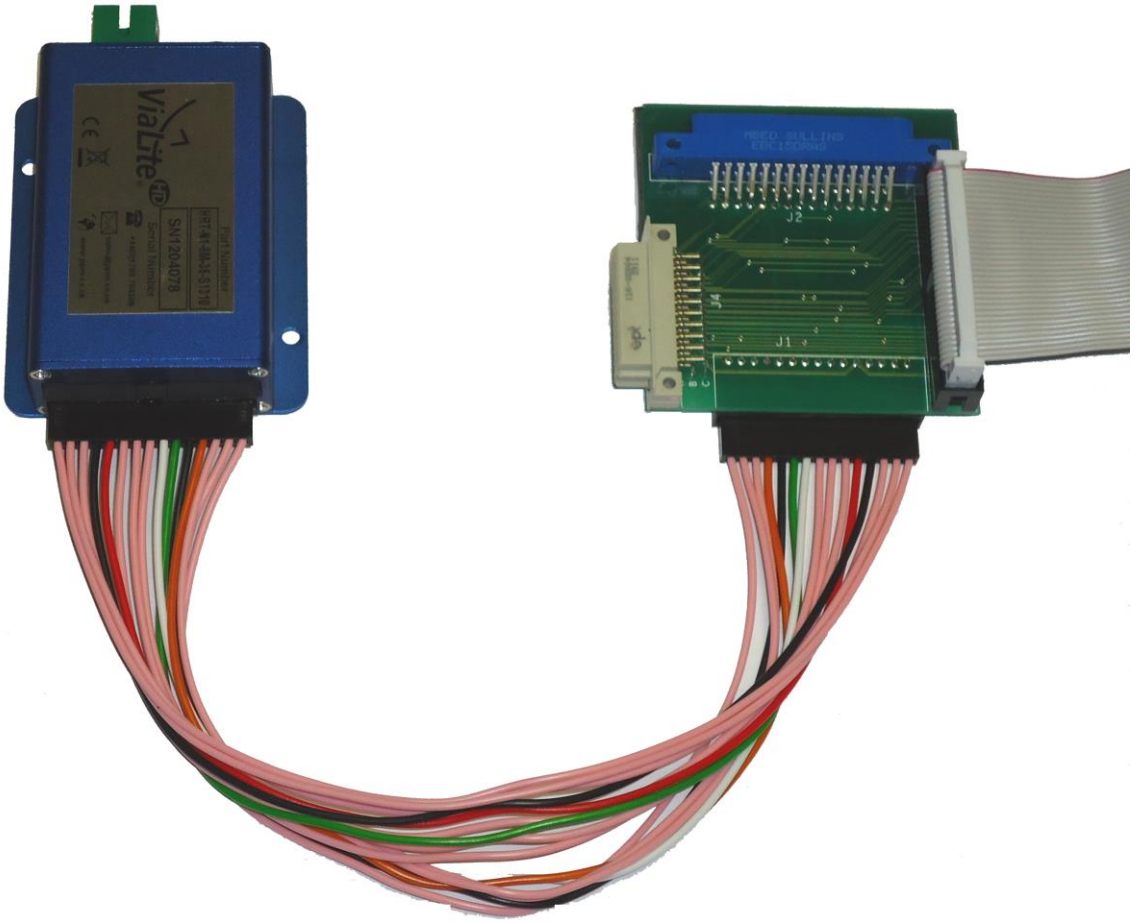
Connection of module interface board to the main board

Note: The position of the key way on the 34 way ribbon cable, the cable has a key way at both ends

3.8.2 Physical interfaces, module interface board, connection to a plug in module

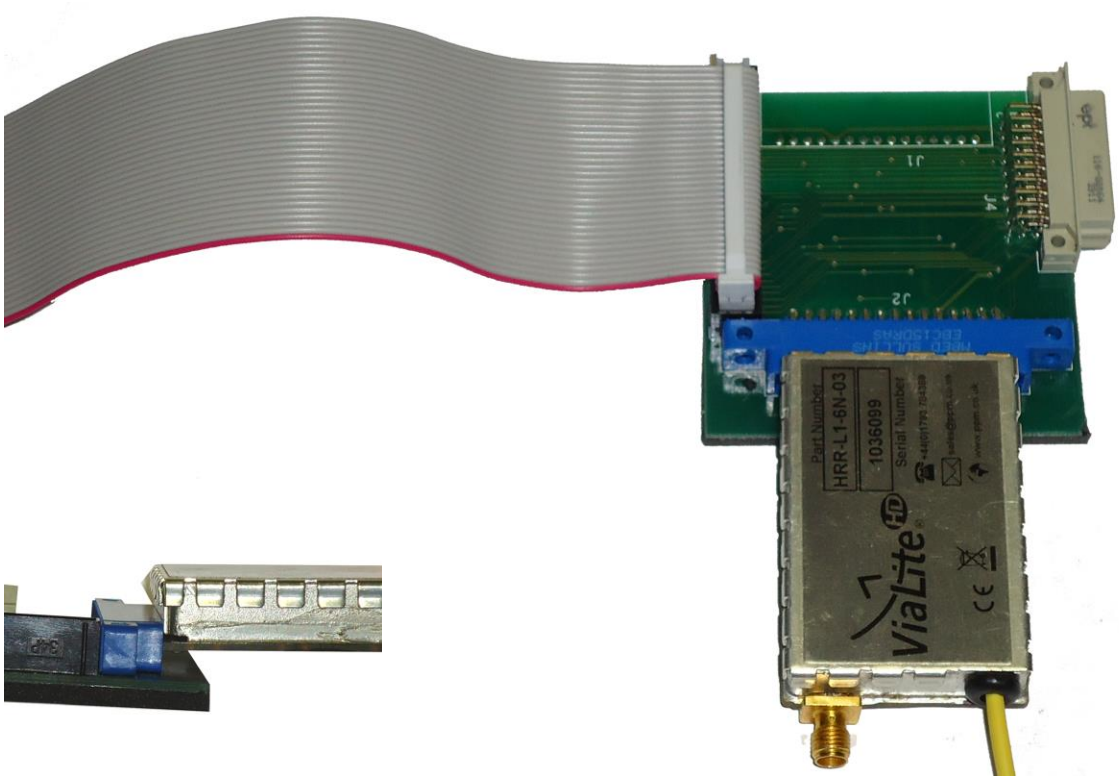
Connection of module interface board to a Plug in module

3.8.3 Physical interfaces, module interface board, connection to an OEM module



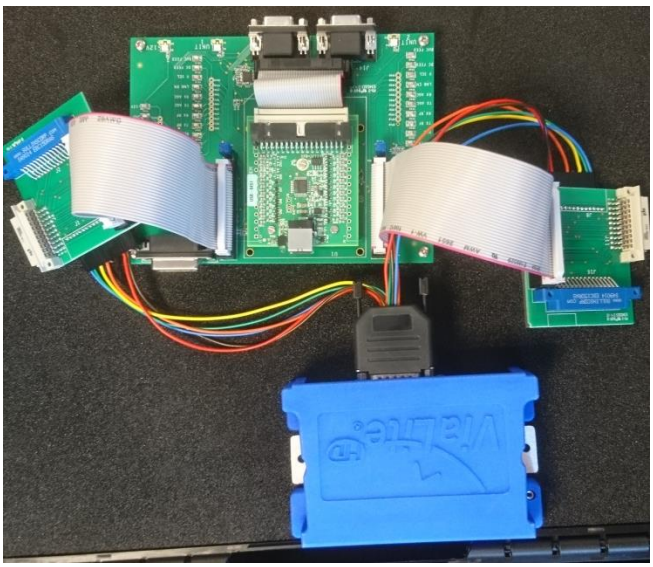
Connection of module interface board to an OEM module

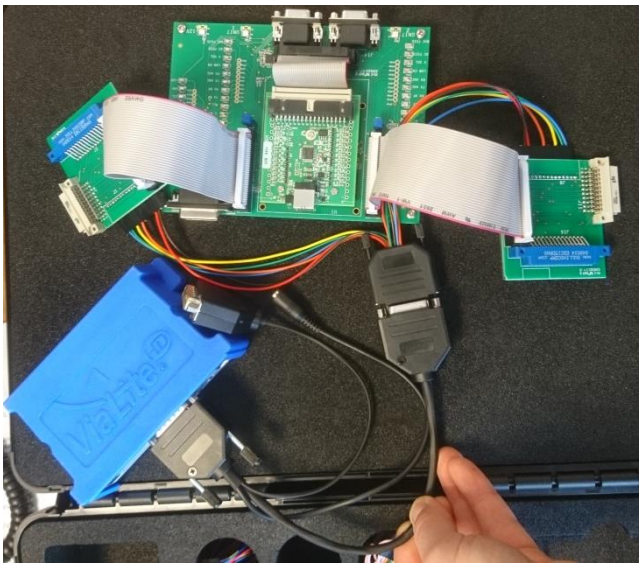
3.8.4 Physical interfaces, module interface board, connection to an EDGE module



Connection of module interface board to an EDGE module, with side view

3.8.5 Physical interfaces, module interface board, connection to Blue2 Link





The Blue2 Link dev loom allows comms and power on the same connection. (Left image)

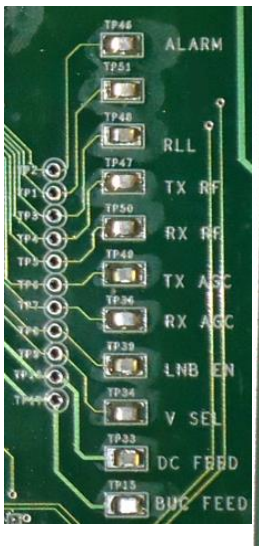
The inclusion of the 'Y' split cables provides two options for separate power feed, 15 d-sub for the modules or 2.5A socket for the antenna feed in conjunction with supplied mains power supply. (Right image)

3.9 Physical interface, test signals

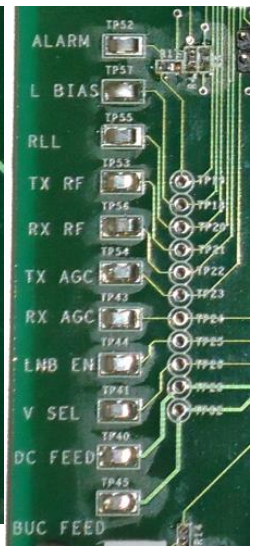
3.9.1 Physical interface, test signals, to modules

The following test signals are provided for each module on the main board, see module handbooks for full details.

Name	Function	Type	Typical Level
ALARM	Module summary ALARM	Output digital	Open drain
L BIAS	Laser Bias	Output analogue	0 to 2V
RLL	Received light level	Output analogue	1 to 4V
TX RF	TX RF monitor	Output analogue	0 to 5V
RX RF	RX RF monitor	Output analogue	0 to 5V
TX AGC	TX automatic gain control	Input digital	0 / 5V
RX AGC	RX automatic gain control	Output digital	0 / 5V
LNA EN	LNB enable	Output digital	0 / 5V
V SEL	Voltage select	Output digital	0 / 5V
DC FEED	DC feed	Output analogue	0 to 28V
BUC FEED	BUC feed	Output analogue	-36 to +36V



Test points for Module 1



Test points for Module 2

3.9.2 Physical interface, test signals, common

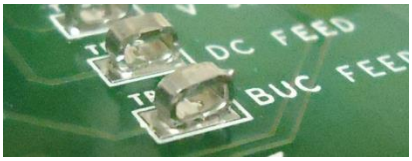
This development board provides access to all the major interface signals. The following test signals are provided for each module on the main board

Name	Function	Type	Level
MS2	Master select 2	Output digital	0 / 5V typ
MS1	Master select 1	Output digital	0 / 5V typ
SDA	Serial Data	Output digital	0 / 5V typ
SCL	Serial Clock	Output digital	0 / 5V typ
GND	Ground	Ground	0V typ
+12V	+12V	Output digital	12V typ

Common Test points

3.9.3 Physical interface, test hooks

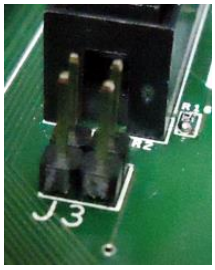
This development board provides access to all the major interface signals, a loop is provided on each test point that allows simple attachment of a scope probe or similar. Test vias are also provided for pointed probes.



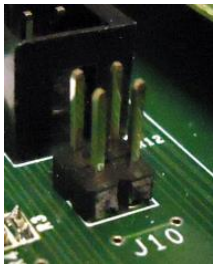
Test point loop

3.9.4 Physical interface, alarm simulation connectors

These connectors are provided to simulate alarms from adjacent modules. With no jumpers fitted, it simulates both adjacent modules alarming as both adjacent slot lines are pulled high when unconnected.

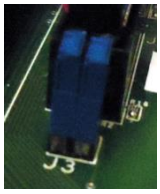


Connector for Module 1

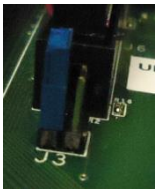


Connector for Module 2

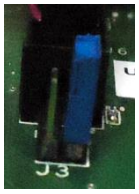
Examples below of jumper positions and associated alarm states



Left: NO ALARM
Right: NOALARM
DEFAULT As shipped



Left: NO ALARM
Right: ALARM



Left: ALARM
Right: NOALARM

Left: ALARM
Right: ALARM

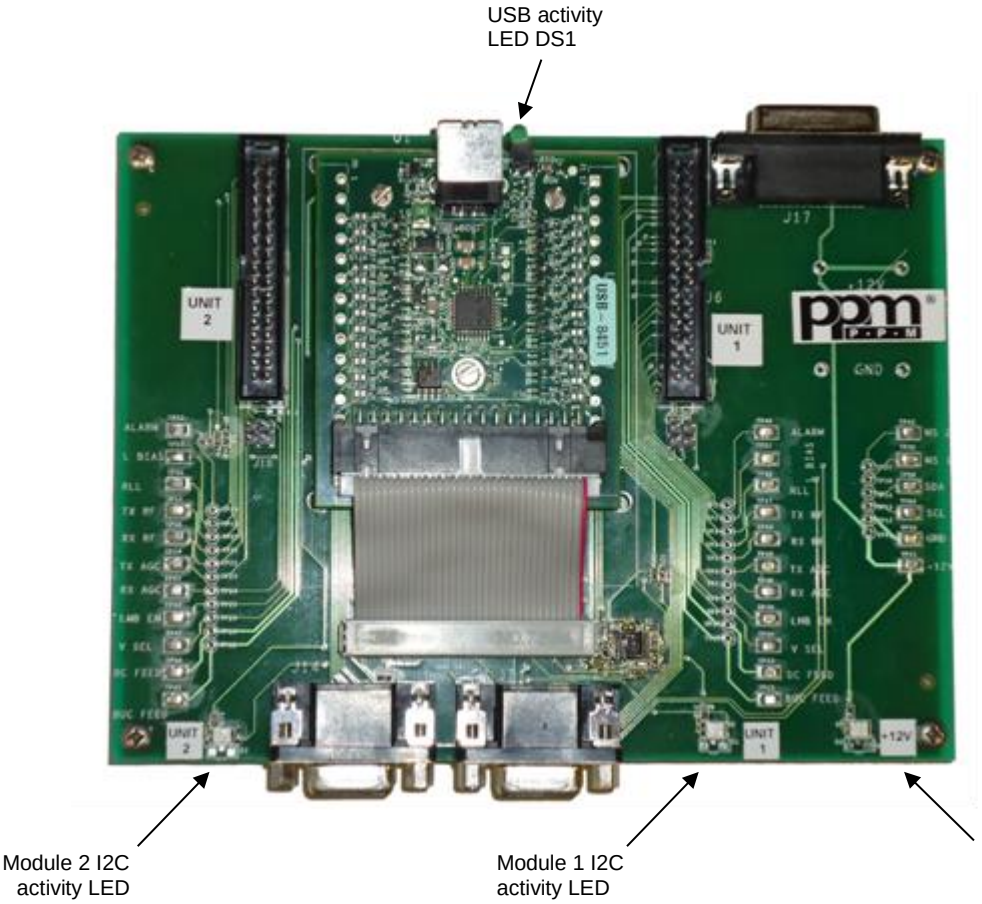
Left: ALARM
Right: ALARM

3.10 Activity LEDs

The main board is fitted with a number of green status LEDs.

- +12V - Shows input power applied to main board, GREEN = 12V applied, OFF = no DC power
- USB activity LED – shows that the USB interface is active, FLASHING GREEN = Data I/O, OFF = Not connected
- Module 1 I2C activity LED* – Shows that Module 1 is selected, GREEN= Module 1 selected, OFF= Module 1 not selected
- Module 2 I2C activity LED* – Shows that Module 2 is selected, GREEN= Module 2 selected, OFF= Module 2 not selected
-

* By default module 1 will be selected



3.11 More information on connected hardware

This handbook only gives an overview of the operation of modules. Full details on the modules can be found in their respective handbooks. Copies of these handbooks will be supplied on a CD shipped with your equipment. They are also available from www.vialite.com.

Useful associated handbooks are:

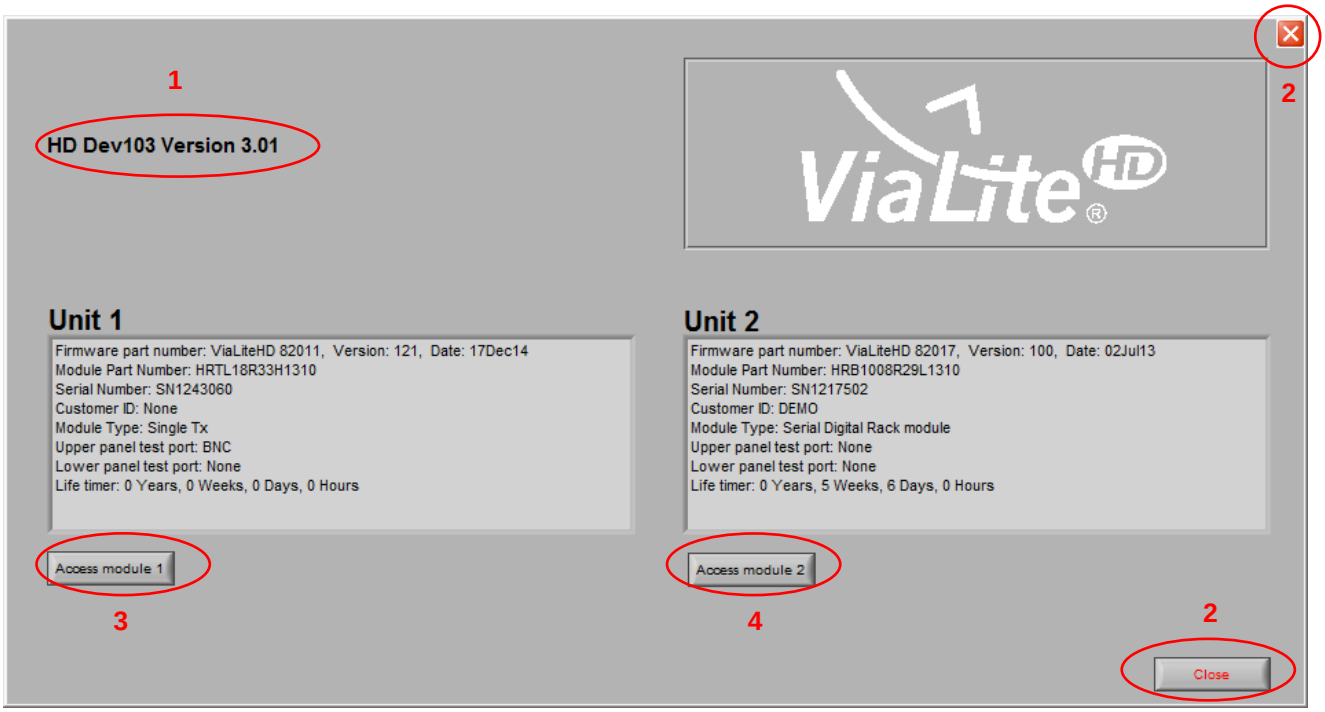
Hxx-QS-HB	***ViaLiteHD*** Quick Start Guide
HRX-HB	***ViaLiteHD*** RF Link Handbook
HRS-HB	***ViaLiteHD*** RF support module Handbook
HRC-1-HB	***ViaLiteHD***, SNMP and web controller module Handbook
HRC-2-HB	***ViaLiteHD*** Summary Alarm Handbook
HRK-HB	***ViaLiteHD*** Chassis Handbook
HRx-HD-DEV103-QS-HB	***ViaLiteHD*** Development Board quick start guide

4 Software

4.1 Starting the program

To start the software, simply navigate to the “HD Dev kit” icon and <double click>.
The default path is START> ALL PROGRAMS > PPM > HD DEV KIT
You can also <click> the program ICON

4.2 Start-up screen



4.2.1 Start-up screen, general information

The start-up screen shows general information and the units that are connected.

The version number of the software is shown on the start-up screen, number 1 highlighted above.

Software may be closed by either <CLICKING> the “stop” button or the windows CLOSE icon in the top left corner, both highlighted as number 2 above. Other methods of closing the software may cause issues with your PC. You cannot close the program directly from the task bar.

4.2.2 Start-up screen, module information window

The start-up screen shows the modules that are connected. The basic ID information for these modules will be displayed in the Unit 1 and Unit 2 windows. If no module is present the window will display “Module not found”. The information shown in this screen is the same as the information shown on the “part number and serial number window”. Full details of these are in section 4.4.

Unit 1 is the module that is connected to the mother board connector J6
Unit 2 is the module that is connected to the mother board connector J13

4.2.3 Start-up screen, accessing module control screen

The module control screen can be accessed either by clicking the “module access” buttons highlighted above, numbers 3 and 4. You may also do this by clicking the module information windows.

4.3 Control screen, general

4.3.1 Control screen, general, information panel

Information panels are shown for each module that provides information on the COMMON part and serial number data, configuration, monitor and alarm for each functional block

4.3.2 Control screen, general, panel LED colours

All ALARM lights are VERY DARK RED (unlit) for INACTIVE or RED (lit) for active
All STATUS lights are VERY DARK GREEN (unlit) for INACTIVE or GREEN (lit) for active

4.3.3 Control screen, general, configuration control buttons

The configuration control buttons can be used to toggle the status of various lines.

The buttons should be clicked only once, the button will flash to give the USER visual feedback. As the commands are buffered and fed to the modules clicking them twice will have no net effect. The modules status is updated approximately once a second.

The FSK DIS and GPS MODE will only work for modules that have these functions. Modules without these functions do not care what their status is.

4.3.4 Control screen, general, gain adjustment

4.3.4.1 Control screen, general, gain adjustment, gain control priorities

There are a number of methods by which the gain may be controlled depending on module type. It is possible to make a number of them active simultaneously. In this case the module firmware will discriminate by order of priority.

Highest Priority	MGC, manual gain control set using module hardware switches, available on chassis modules
	SGC, soft gain control, set via controller
	AGC, Automatic gain control, set via controller
Lowest Priority	Default gain, Factory pre-set gain

The gain set by MGC is not reported through the control interface

4.3.4.2 Control screen, general, gain adjustment, AGC mode for RX functions

The AGC MODE is used on the receiver function to select AGC controlled by either RLL (received light level) or RF power. The LED is used to indicate which of these is selected

AGC MODE, LED status

GREEN	RLL mode selected
OFF	RF mode selected

4.3.4.3 Control screen, general, gain adjustment, soft gain control

The module can be soft gain controlled using the following steps.

- Ensure that the SGC status LED in the status panel is illuminated
  - If not <CLICK> the <SGC> button in the configuration control panel ONCE
  - The SGC status LED should illuminate after approximately 1 second
  - You may now use SGC on this module
  - It is good practice to toggle the AGC OFF
- In the gain adjustment screen <TYPE> in the desired gain
  - Hovering over the window will show the valid gain range
- <CLICK> the <Apply Soft gain> button
- The gain will be updated in approximately 2 seconds
  - This can be verified by checking the RF gain in the Monitor and alarm window

Note: Check that the modules DIP switches are not set to MGC ON

4.3.4.4 Control screen, general, gain adjustment, automatic gain control

AGC gain control can be set using the following steps.

- Ensure that the SGC LED is NOT illuminated (as SGC has higher priority)
  - If not <CLICK> the <SGC> button in the configuration control panel ONCE
  - The SGC status LED should extinguish after approximately 1 second
  - You may now AGC control the module
- Ensure that the AGC status LED in the status panel is illuminated
  - If not <CLICK> the <AGC> button in the configuration control panel ONCE
  - The SGC status LED should illuminate after approximately 1 second
  - You may now use AGC on this module

- For RX module ensure that the correct AGC MODE is selected
  - This mode may be toggled by clicking the <AGC mode> button in the configuration control panel ONCE
- In the gain adjustment screen <TYPE> in the desired gain
  - Hovering over the window will show the valid gain range
  - The software will not allow you to enter an invalid gain
  - The module firmware will round the gain to the nearest 0.5dB
- <CLICK> the <Apply Soft gain> button
- The gain will be updated in approximately 2 seconds
  - This can be verified by checking the RF gain in the Monitor and alarm window

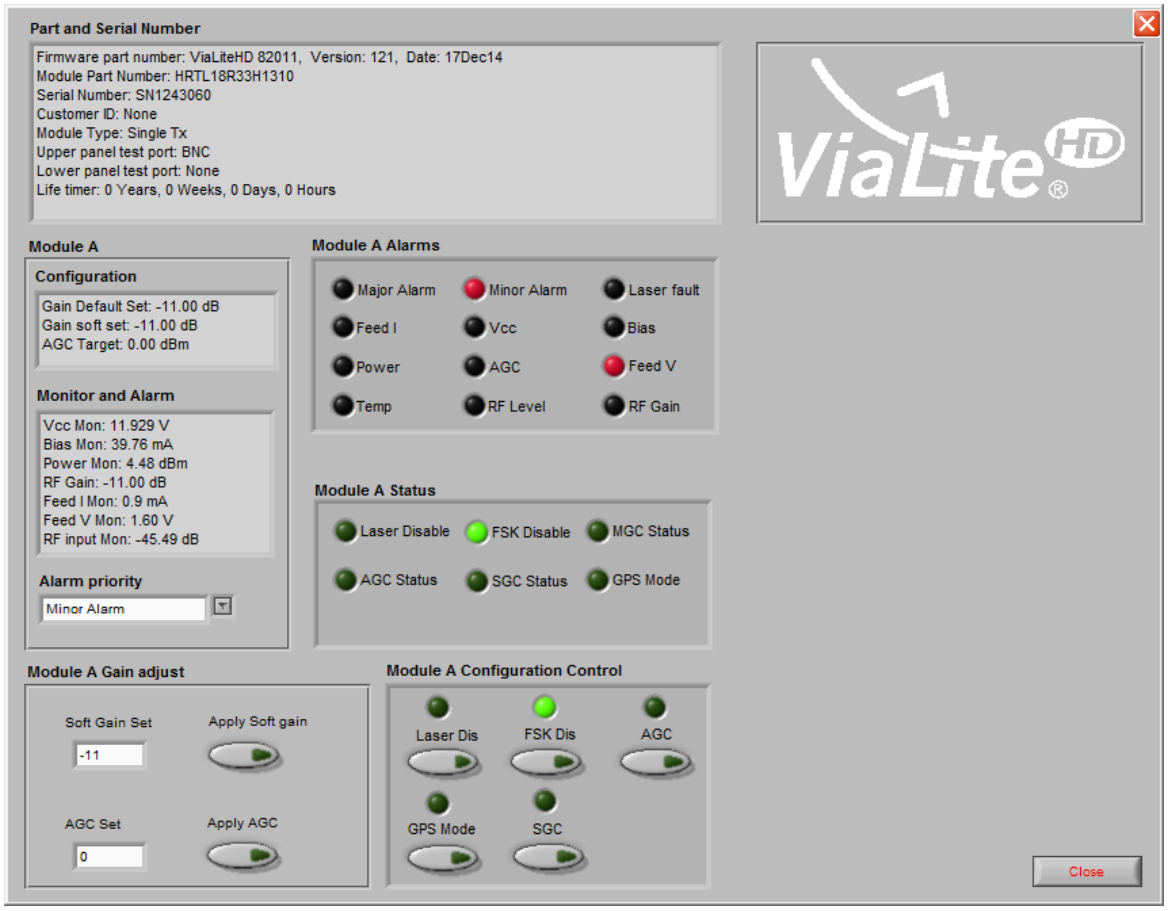
Note: Check that the module's DIP switches are not set to MGC ON
Check that the module's SGC is OFF

4.3.4.5 Control screen, general, gain adjustment, default gain

If neither MGC, SGC nor AGC mode is enabled the unit will have its default gain.
  - This can be verified by checking the RF gain in the Monitor and alarm window

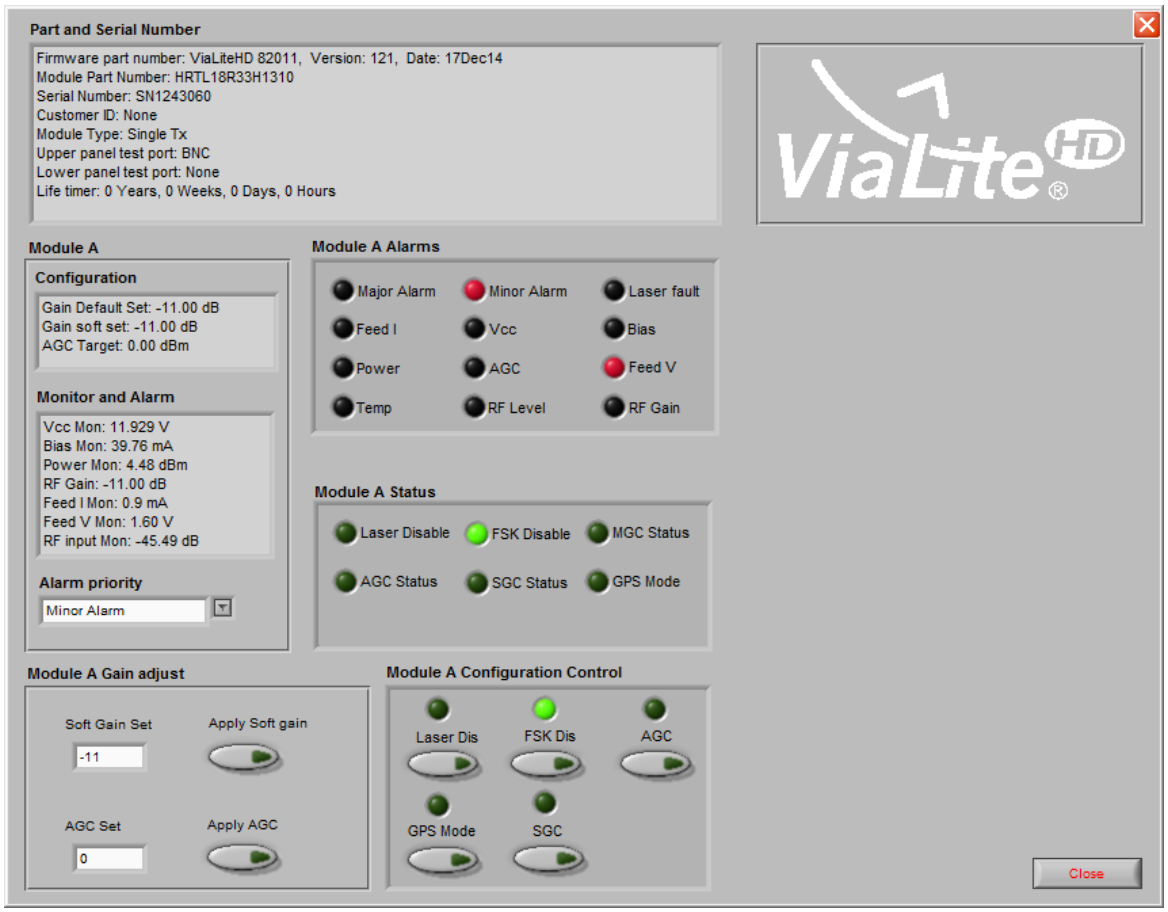
4.4 Control screen, general, Part number and serial number window

This screen is displayed for all module types and gives generic information on that module
The same information is displayed in both the start-up screen and the individual module screens.



Firmware part number – This give the part number, version and date of the firmware in the module.
Module part number – This gives the part number of the module (note no dashes are displayed).
Serial number – This gives the serial number of the module, note dashes are not shown.
Customer ID – This gives the customer ID where appropriate.
Module Type – This give the type of the module (i.e. single TX, single RX etc...).
Upper panel test port – This gives the type of connector used on the front panel upper test port (or NONE).
Lower panel test port – This gives the type of connector used on the front panel upper test port (or NONE).
Life timer – This shows how long the unit has been powered.

4.5 TX module control screen



4.5.1 TX module control screen, Module A configuration

Gain default set- This is the default value of the set electro optic gain, measured in decibels.
Gain soft set – This is the gain value set for the module, measured in decibels
AGC target – This is the target value for the AGC control loop module, measured in decibel milliwatts.
RF Gain Cal – This is a factory setting that can be used to calculating AGC thresholds, see handbook.
RF Mon Cal – This is the RF detector calibration, the ratio of internal measured to rear port power, measured in decibels
Laser Temp set – This is the set operating temperature of the laser in degree centigrade, this is ONLY used with cooled lasers.*

4.5.2 TX module control screen, Module A monitor and alarm

Vcc Mon – This is the voltage level measured at the modules Vcc input
Bias Mon – This is the bias current of the laser diode, measured in milli amps
Power Mon – This is the average optical power output of the laser, measured in decibel milli watts
RF gain – This is the operating value of the set electro optic gain
Feed I Mon – This is the average DC current flowing out of the RF input, measured in milli amps
Feed V Mon – This is the average DC voltage at the RF input, measured in milli amps
RF input mon – This is the expected RF power level at the module input. *
* These features are not available on all modules.

4.5.3 TX module control screen, Module A alarms

All LEDs on this part of the panel are RED when ON (alarm active) and VERY DARK RED (unlit) when OFF (good).

Major alarm –This is the major alarm status, it can be ON or OFF.
Minor alarm –This is the minor alarm status, it can be ON or OFF.
Laser fault - This is the laser fault status, it can be ON or OFF
Feed I - This is the external feed current alarm status, it can be ON or OFF.*
Vcc –This is the (input) voltage alarm status, it can be ON or OFF.
Bias - This is the laser bias current alarm status, it can be ON or OFF.
Power - This is the laser output power alarm status, it can be ON or OFF.
AGC –This is the automatic gain control alarm status, it can be ON or OFF.
Feed V - This is the external feed voltage alarm status, it can be ON or OFF.*

Temp – This is the laser temperature alarm. It is triggered by the TEC control loop status; it can be ON or OFF.*
RF Level –This is the RF power level alarm status, it can be ON or OFF.*
RF Gain – This is the RF gain alarm status; it can be ON or OFF.
* These features are not available on all modules

4.5.4 TX module control screen, Module A status

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF.

Laser Disable – This is the laser status, the LED indicator is ON (disabled) or OFF (enabled)
FSK Disable - This shows if an FSK low speed digital carrier status, the LED indicator is ON (disabled) or OFF (enabled)
MGC status – This is the manual gain control status, it can ON or OFF.
AGC status – This is the automatic gain control status, it can be ON (enabled) or OFF (disabled).
SGC status – This is the software gain control status, it can ON or OFF.
GPS mode - This shows the status of the GPS mode, it can be ON (enabled) or OFF (disabled).*
* These features are not available on all modules

4.5.5 TX module control screen, Configuration control, buttons

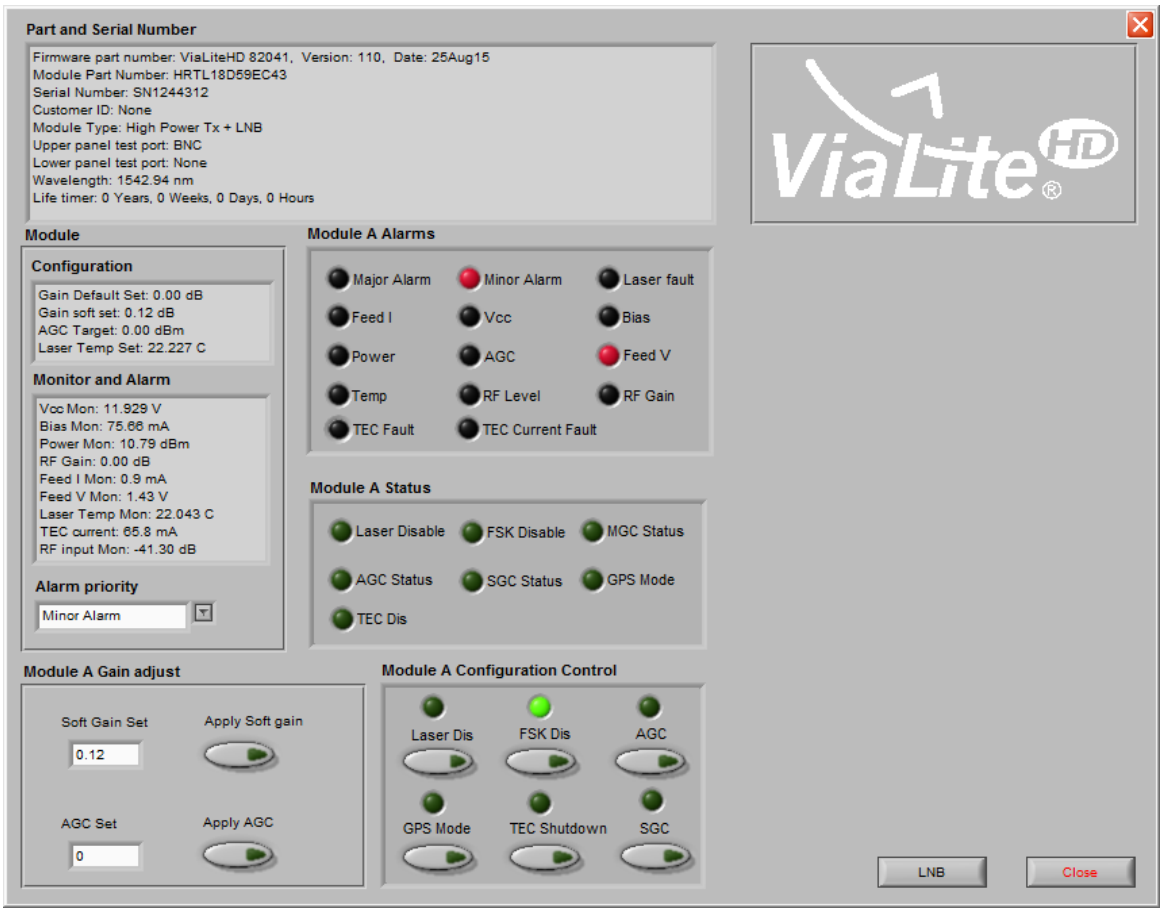
All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF. The LEDs on the buttons flash as the buttons are actuated, please see noted in section 4.3.3.

Laser Dis –This is the laser disable button and is used to toggle the status between ON (disabled) and OFF (enabled).
FSK Dis –This is the FSK disable button and is used to toggle the FSK modulator status between ON (disabled) and OFF (enabled).
AGC – This is the automatic gain control button and is used to toggle the status between ON (enabled) or OFF (disabled).
GPS mode - This is the GPS mode button and is used to toggle the status between ON or OFF. ONLY available for GPS modules.*
SGC – This is the software gain control status and is used to toggle the status between ON or OFF.
* These features are not available on all modules.

4.5.6 TX module control screen, closing the screen

This window may be closed by either the <CLICKING> “stop” button or the windows CLOSE icon in the top right corner. This will return you to the start-up screen.

4.6 DWDM TX module control screen



4.6.1 DWDM TX module control screen, Module A configuration

Gain default set- This is the default value of the set electro optic gain, measured in decibels.
Gain soft set – This is the gain value set for the module, measured in decibels
AGC target – This is the target value for the AGC control loop module, measured in decibel milliwatts.
Laser Temp set – This is the set operating temperature of the laser in degree centigrade.

4.6.2 DWDM TX module control screen, Module A monitor and alarm

Vcc Mon – This is the voltage level measured at the modules Vcc input
Bias Mon – This is the bias current of the laser diode, measured in milli amps
Power Mon – This is the average optical power output of the laser, measured in decibel milli watts
RF gain – This is the operating value of the set electro optic gain
Feed I Mon – This is the average DC current flowing out of the RF input, measured in milli amps
Feed V Mon – This is the average DC voltage at the RF input, measured in milli amps
Laser Temp Mon– This is the laser temperature in degree centigrade.
TEC current – This is the current flowing through the thermo electric cooler.
RF input mon – This is the expected RF power level at the module input.

4.6.3 DWDM TX module control screen, Module A alarms

All LEDs on this part of the panel are RED when ON (alarm active) and VERY DARK RED (unlit) when OFF (good).

Major alarm –This is the major alarm status, it can be ON or OFF.
Minor alarm –This is the minor alarm status, it can be ON or OFF.
Laser fault - This is the laser fault status, it can be ON or OFF
Feed I - This is the external feed current alarm status, it can be ON or OFF.*
Vcc –This is the (input) voltage alarm status, it can be ON or OFF.
Bias - This is the laser bias current alarm status, it can be ON or OFF.
Power - This is the laser output power alarm status, it can be ON or OFF.
AGC alarm –This is the automatic gain control alarm status, it can be ON or OFF.
Feed V - This is the external feed voltage alarm status, it can be ON or OFF.*
Temp – This is the laser temperature alarm. It is triggered by the TEC control loop status; it can be ON or OFF.*

RF Level –This is the RF power level alarm status, it can be ON or OFF.*
RF Gain – This is the RF gain alarm status; it can be ON or OFF.
TEC fault – This is the TEC control loop fault status; it can be ON or OFF.*
TEC current fault – This is the TEC current fault status trigger by the current being outside of threshold; it can be ON or OFF.*
* These features are not available on all modules

4.6.4 DWDM TX module control screen, Module A status

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF.

Laser disable – This is the laser status, the LED indicator is ON (disabled) or OFF (enabled)
FSK disable - This shows if an FSK low speed digital carrier status, the LED indicator is ON (disabled) or OFF (enabled)
MGC status – This is the manual gain control status, it can ON or OFF.
AGC status – This is the automatic gain control status, it can be ON (enabled) or OFF (disabled).
SGC status – This is the software gain control status, it can ON or OFF.
GPS mode - This shows the status of the GPS mode, it can be ON (enabled) or OFF (disabled).*
TEC dis - This shows the status of the TEC controller, the LED indicator is ON (disabled) or OFF (enabled)
* These features are not available on all modules

4.6.5 DWDM TX module control screen, Configuration control, buttons

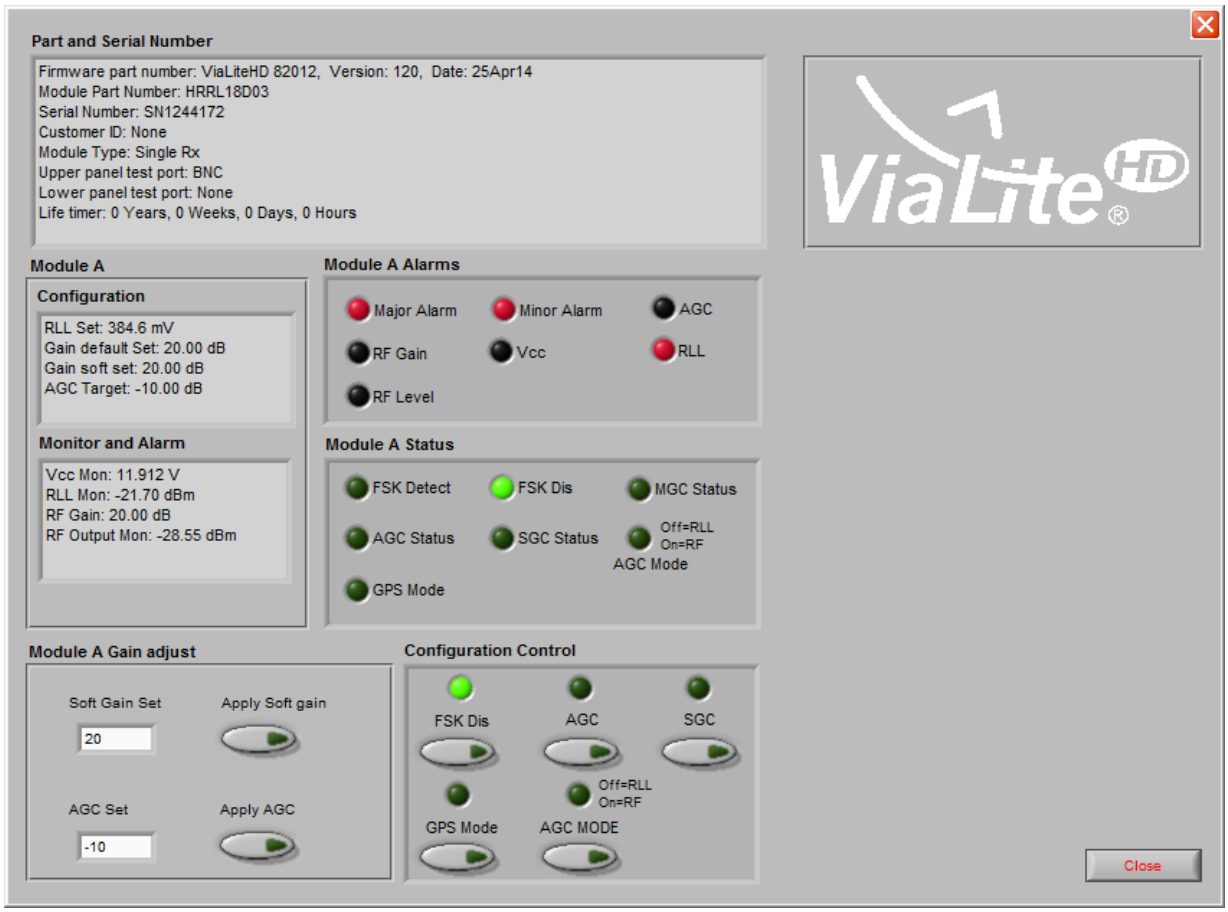
All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF. The LEDs on the buttons flash as the buttons are actuated, please see noted in section 4.3.3.

Laser Dis –This is the laser disable button and is used to toggle the status between ON (disabled) and OFF (enabled).
FSK Dis –This is the FSK disable button and is used to toggle the FSK modulator status between ON (disabled) and OFF (enabled).
AGC – This is the automatic gain control button and is used to toggle the status between ON (enabled) or OFF (disabled).
GPS mode - This is the GPS mode button and is used to toggle the status between ON or OFF. ONLY available for GPS modules.*
TEC shutdown –This TEC shutdown button is used to toggle the status between ON (TEC off) and OFF (TEC on).
SGC – This is the software gain control status and is used to toggle the status between ON or OFF.

4.6.6 DWDM TX module control screen, closing the screen

This window may be closed by either the <CLICKING> “stop” button or the windows CLOSE icon in the top right corner. This will return you to the start-up screen.

4.7 RX module control screen



4.7.1 RX module control screen, Module A configuration

RLL set – This is the set receive light monitor, the voltage level corresponding to 3mW of laser power.
Gain default set- This is the default value of the set electro optic gain, measured in decibels.
Gain soft set – This is the gain value set for the module, measured in decibels
AGC target – This is the target value for the AGC control loop module, measured in decibel milliwatts.

4.7.2 RX module control screen, Module A monitor and alarm

Vcc Mon – This is the voltage level measured at the modules Vcc input
RLL Mon – This is the received light level measured at the modules optical input
RF gain – This is the operating value of the set electro optic gain
RF output mon – This is the expected RF power level at the module output.*
* These features are not available on all modules.

4.7.3 RX module control screen, Module A alarms

All LEDs on this part of the panel are RED when ON (alarm active) and VERY DARK RED (unlit) when OFF (good).

Major alarm –This is the major alarm status, it can be ON or OFF.
Minor alarm –This is the minor alarm status, it can be ON or OFF.
AGC –This is the automatic gain control alarm status, it can be ON or OFF.
RF Gain – This is the RF gain alarm status; it can be ON or OFF.
Vcc –This is the (input) voltage alarm status, it can be ON or OFF.
RLL – This is the received light level alarm status, it can be ON (alarm active) or OFF (good).
RF Level –This is the RF power level alarm status, it can be ON or OFF.

4.7.4 RX module control screen, Module A status

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF.

FSK detect - This shows if an FSK low speed digital carrier has been detected, it can ON (carrier present) or OFF (no carrier).
FSK Dis –This is the frequency shift key digital communications channel status, it can be ON (disabled) or OFF (enabled).
MGC status – This is the manual gain control status, it can ON or OFF.
AGC status – This is the automatic gain control status, it can be ON (enabled) or OFF (disabled).
SGC status – This is the software gain control status, it can ON or OFF.
AGC mode - This is the automatic gain control mode, it can be OFF (RLL) or ON (RF)
GPS mode - This shows the status of the GPS mode, it can be ON (enabled) or OFF (disabled), ONLY available for GPS modules.*
* These features are not available on all modules.

4.7.5 RX module control screen, Configuration control, buttons

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF. The LEDs on the buttons flash as the buttons are actuated, please see noted in paragraph 4.3.3.

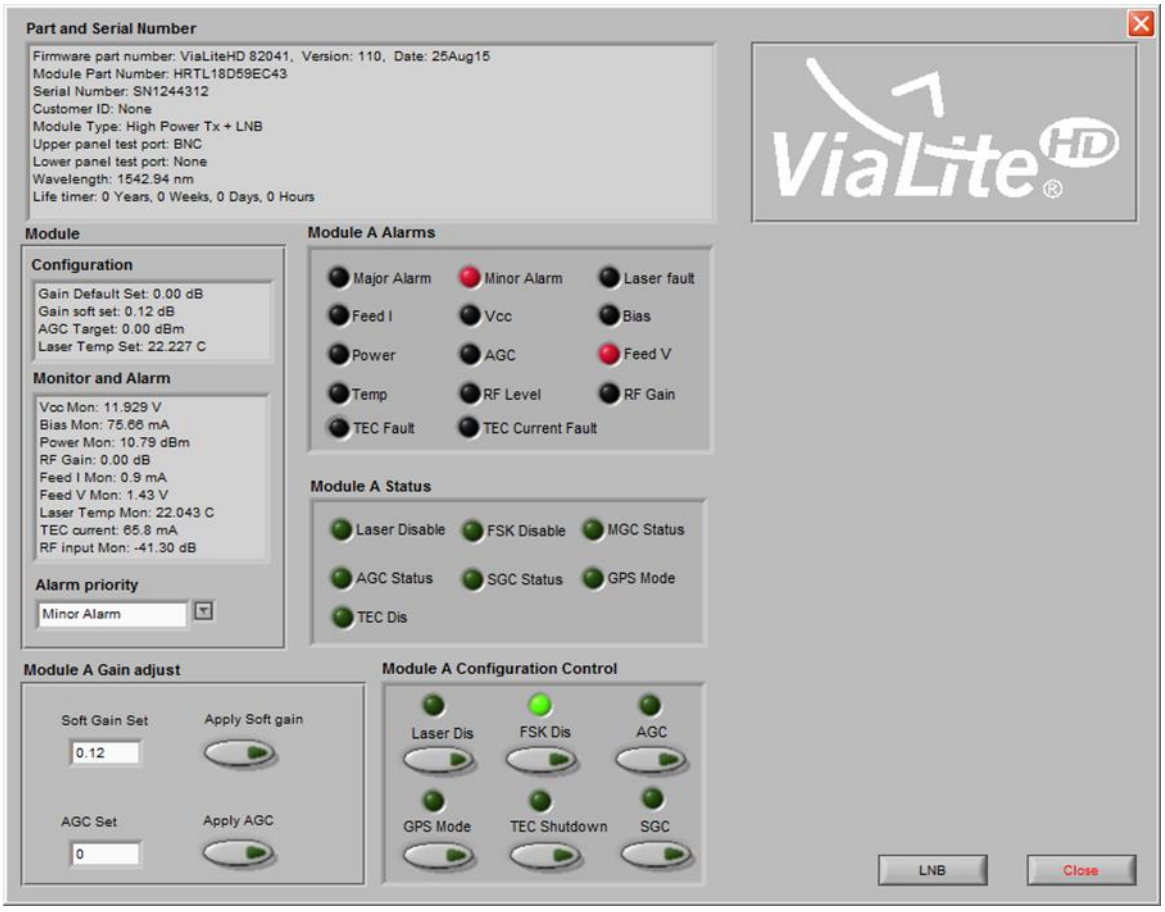
FSK Dis –This is the FSK disable button and is used to toggle the status between ON (disabled) and OFF (enabled).
AGC – This is the automatic gain control button and is used to toggle the status between ON (enabled) or OFF (disabled).
SGC – This is the software gain control status and is used to toggle the status between ON or OFF.
GPS mode - This is the GPS mode button and is used to toggle the status between ON or OFF. ONLY available for GPS modules.*
AGC mode - This is the automatic gain control mode, it can be ON (RF) or OFF (RLL).
* These features are not available on all modules.

4.7.6 RX module control screen, closing the screen

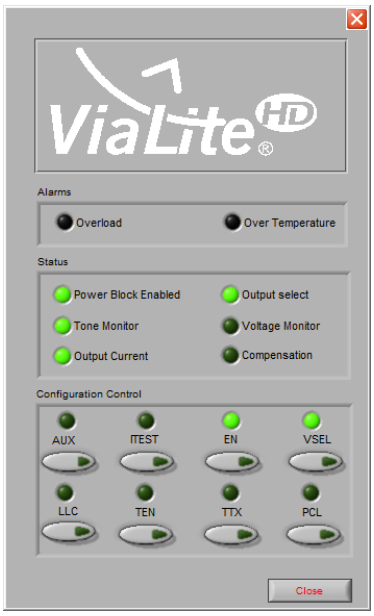
This window may be closed by either the <CLICKING> “stop” button or the windows CLOSE icon in the top right corner. This will return you to the start-up screen.

4.8 LNB control screen, accessing

The LNA control screen can be accessed by <CLICKING> the “LNB” button on any transmit module equipped with an internal 13/18V power supply. This is shown in the right of the control screen, see below. This feature is not available on all modules.



4.8.1 LNB control screen



4.8.2 LNB control screen, alarms

All LEDs on this part of the panel are RED when ON (alarm active) and VERY DARK RED (unlit) when OFF (good).

Overload – This is the maximum output current status, it can be ON (alarm active) or OFF (good).
Over temperature – This is the over temperature alarm status (of the PSU chip), it can be ON (alarm active) or OFF (good).

4.8.3 LNB control screen, status

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF.

Power Block Enabled – This shows the power block status, it can be ON (enabled) or OFF (disabled).
Output Select – This shows the output voltage selection, it can be OFF (13V nominal) or HIGH (18V nominal).
Tone Monitor - This shows the output tone status, it can be ON (22kHz tone) or OFF (no tone).
Voltage Monitor – This shows the voltage status, it can be ON (alarm) or OFF (good)
Output Current – This shows the output current status, it can be ON (alarm) or OFF (good)
Compensation – This shows the cable loss compensation, it can be ON (+1 Volt) or OFF (no extra voltage)

4.8.4 LNB control screen, Configuration control, buttons

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF. The LEDs on the buttons flash as the buttons are actuated, please see noted in paragraph 4.3.3.

AUX – This toggle auxiliary modes and boost the output voltage, it can be ON (Vout = 22V) or OFF (normal).
ITEST – This is the low current threshold, it can be ON (12mA) or OFF (6mA).
EN – This is power block enable, it can be ON (power block on) or OFF (power block off).
VSEL – This is the output voltage select, it can be ON (18V) or OFF (13V).,
LLC – This is the cable loss compensation, it can be ON (voltage output +1V) or OFF (no boost).
TEN – This is the tone mode, it can be ON (tone active) or OFF (DSQIN).
TTX – This is the tone generator enable, it can be ON (22kHz tone present) or OFF (no tone).
PCL – This sets the current limit mode, it can be ON (static) or OFF (pulse)

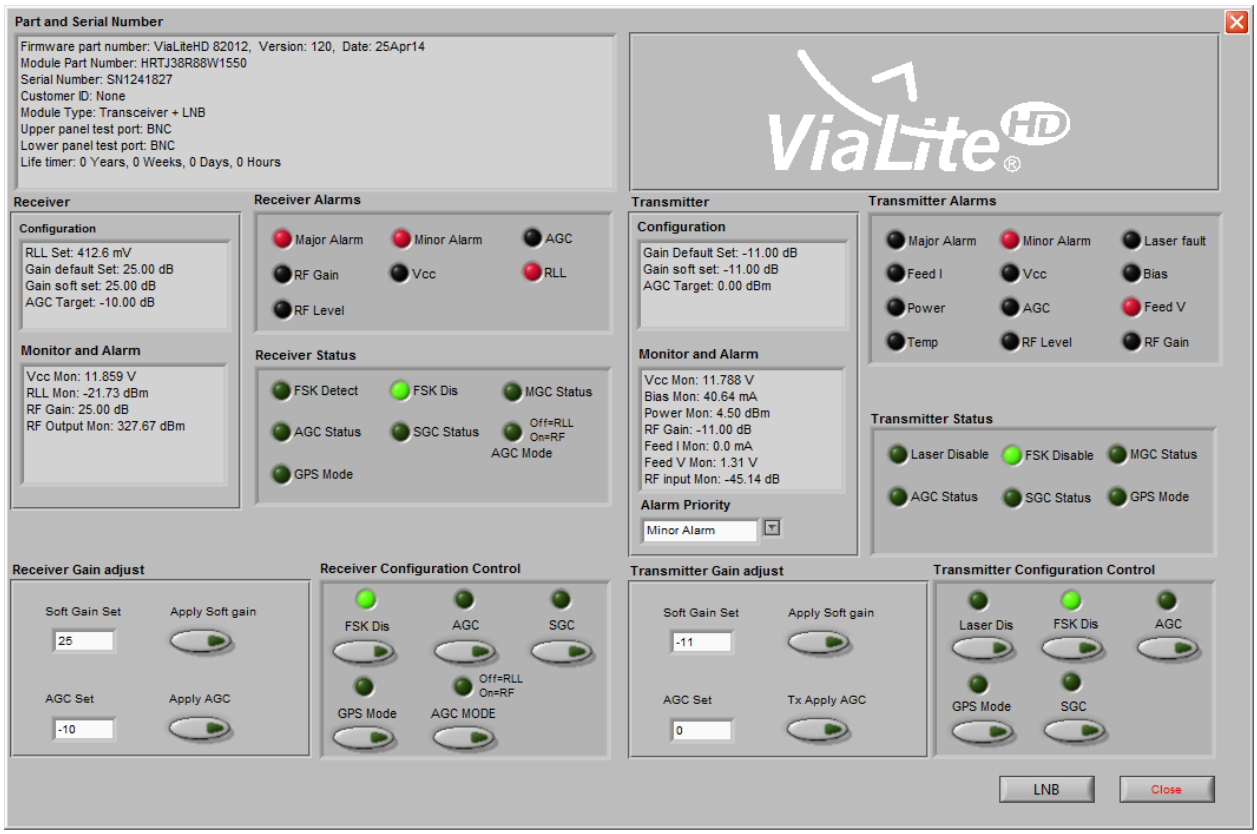
* These features are not available on all modules.

4.8.5 LNA control screen, closing the screen

This window may be closed by either the <CLICKING> “stop” button or the windows CLOSE icon in the top right corner. This will return you to the start-up screen.

4.9 TRX control screen

This includes all modules starting with HRX and RF + reference modules HRT-J and HRR-J.

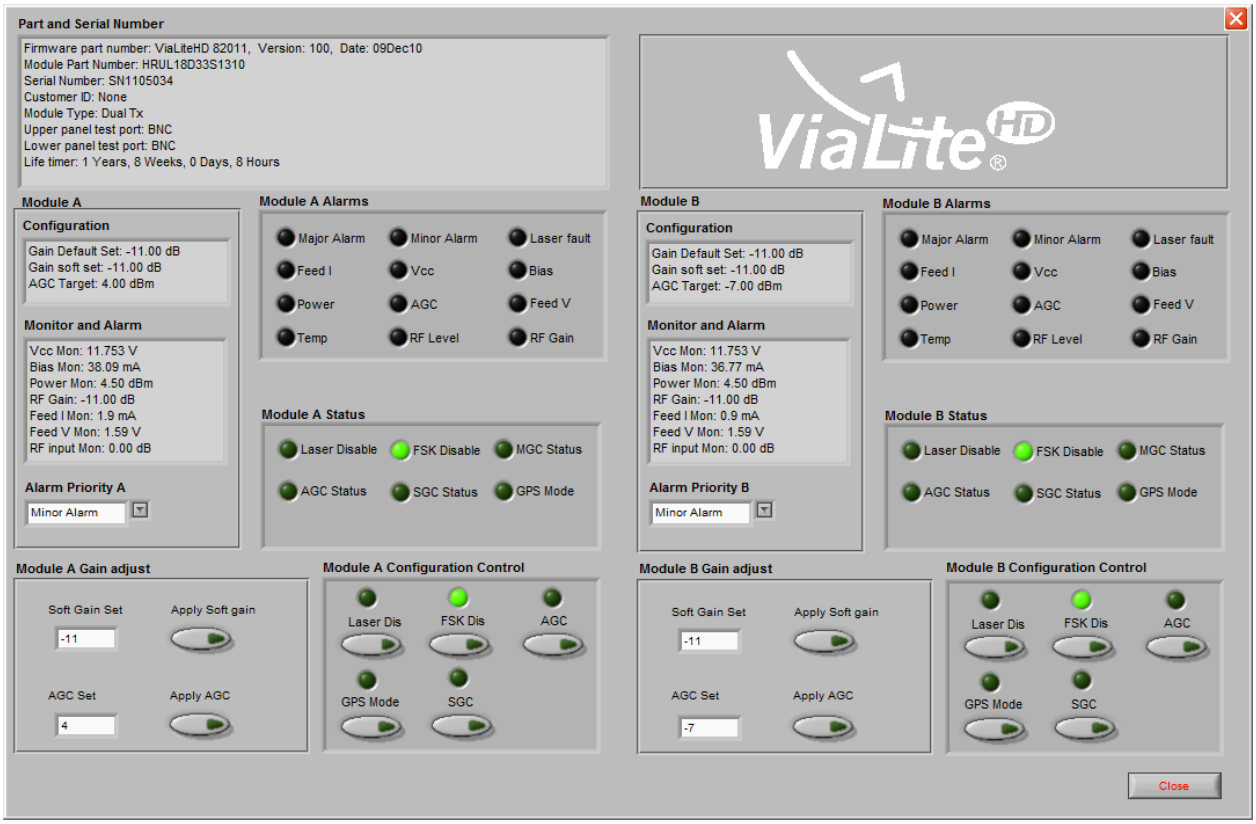


The transceiver control screen gives details of both the transmitter and receiver sections of the module. The common data being in the top left hand corner; the module A (receiver) data being on the left and module B (transmitter) data on the right.

For detail of transmitter alarms, status and configuration see section 4.5
For detail of receiver alarms, status and configuration see section 4.7
For details of LNA alarms, status and configuration see section 4.8

4.10 Dual TX control screen

This includes all modules starting with HRU and RF + reference modules HRT-K.

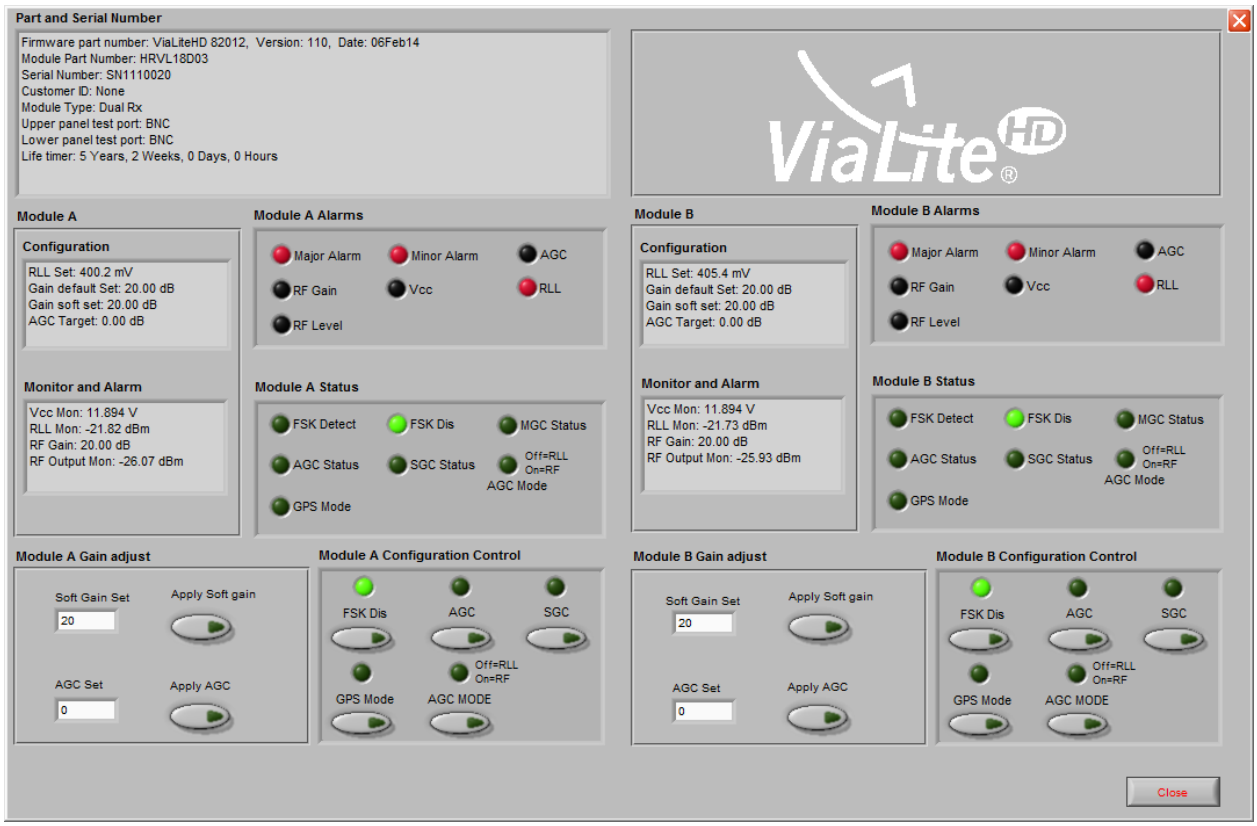


The dual transmitter control screen gives details of both the transmitters. The common data being in the top left hand corner; the module A being on the left and module B on the right.

For detail of transmitter alarms, status and configuration see section 4.5
For details of LNA alarms, status and configuration see section 4.8

4.11 Dual RX control screen

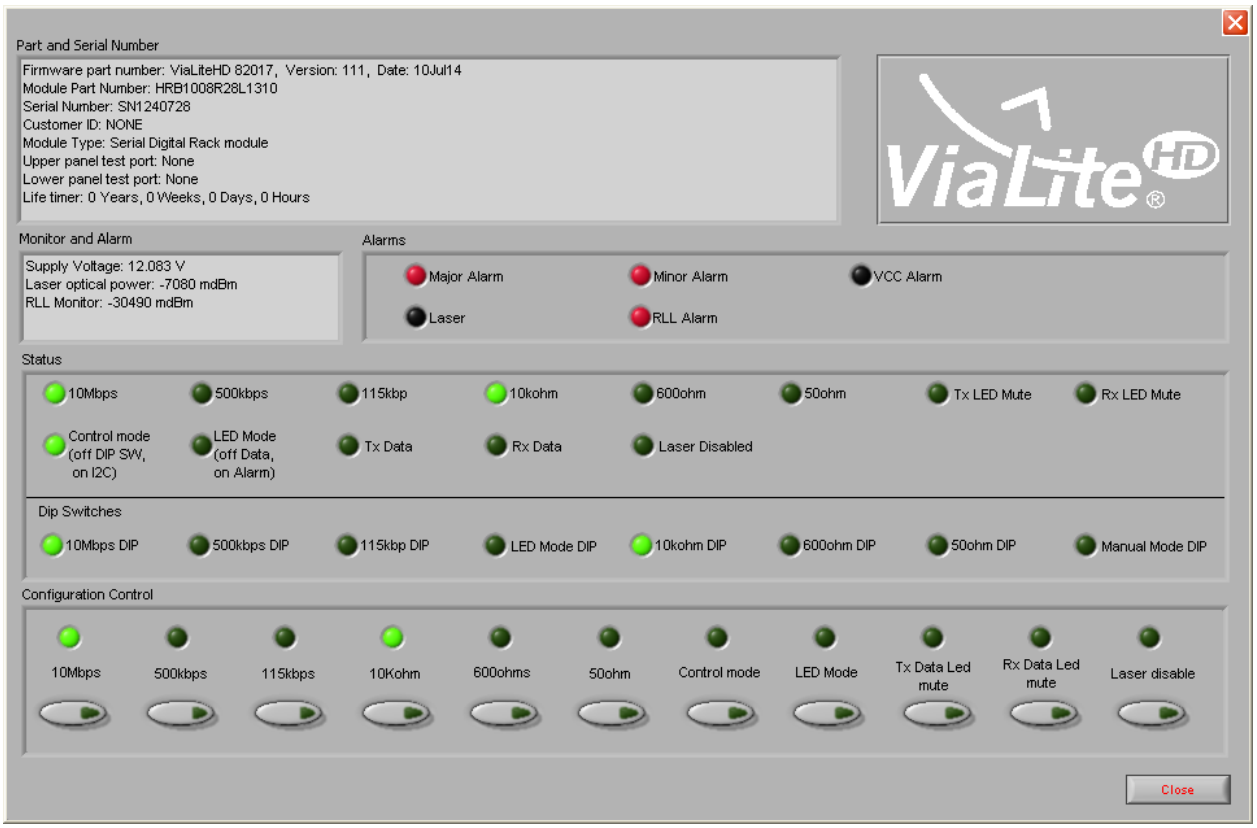
This includes all modules starting with HRV and RF + reference modules HRR-K.



The dual receiver control screen gives details of both the receivers. The common data being in the top left hand corner; the module A being on the left and module B on the right.

For detail of receiver alarms, status and configuration see section 4.7

4.12 Serial Digital control screen, accessing



4.12.1 Serial Digital module control screen, monitor and alarm

Supply Voltage – This is the voltage level measured at the modules Vcc input
Laser optical power – This is the average optical power output of the laser, measured in decibel milli watts
RLL Monitor – This is the received light level measured at the modules optical input

4.12.2 Serial Digital module control screen, alarms

All LEDs on this part of the panel are RED when ON (alarm active) and VERY DARK RED (unlit) when OFF (good).

Major Alarm –This is the major alarm status, it can be ON or OFF.
Minor Alarm –This is the minor alarm status, it can be ON or OFF.
Vcc alarm –This is the (input) voltage alarm status, it can be ON or OFF.
Laser - This is the laser fault status, it can be ON or OFF
RLL Alarm – This is the received light level alarm status, it can be ON (alarm active) or OFF (good).

4.12.3 Serial Digital module control screen, status

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF.

10Mbps – This shows the 10MB/s status, it can be ON (10MB/s) or OFF (other data rate).
500kbps - This shows the 500kB/s status, it can be ON (500kB/s) or OFF (other data rate).
115kbps – This shows the 115kB/s status, it can be ON (115kB/s) or OFF (other data rate).
10Kohms – This shows the 10 Kohms status, it can be ON (10kohms) or OFF (other impedance).
600ohms – This shows the 600 ohms status, it can be ON (600 ohms) or OFF (other impedance).
50ohms – This shows the 50 ohms status, it can be ON (50 ohms) or OFF (other impedance).
TX data LED mute – This shows the TX data LED mute status, it can be ON (TX data muted) or OFF (normal)
RX data LED mute – This shows the RX data LED mute status, it can be ON (RX data muted) or OFF (normal)
Control mode – This shows the control mode, it can be ON (I2C) or OFF (DIP switch)
LED mode – This shows the LED display mode, it can be ON (ALARM) or OFF (DATA).
TX data – This shows the TX data status, it can be ON (TX data present) or OFF (No TX data)
RX data - This shows the RX data status, it can be ON (RX data present) or OFF (No TX data)
Laser disable –This shows the laser disable status, it can be ON (disabled) and OFF (enabled).

The lower section shows the setting set by the DIP switches, these will be displayed irrespective of the control mode setting (manual/ I2C). There are no DIP switches for either 10Mbps or 10 kohm, these settings are selected if either no other rate/impedance switch is set or if an illegal setting (i.e. DIP switches both selecting 500kBps and 115kBps or both 600 ohms and 50 ohms) is selected.

10Mbps DIP– This shows the 10MB/s DIP switch setting, it can be ON (10MB/s) or OFF (other data rate); no hardware switch
500kbps DIP- This shows the 500kB/s DIP switch setting, it can be ON (500kB/s) or OFF (other data rate).
115kbps DIP – This shows the 115kB/s DIP switch setting, it can be ON (115kB/s) or OFF (other data rate).
LED mode DIP – This shows the LED display mode switch setting, it can be ON (ALARM) or OFF (DATA).
10Kohms DIP – This shows the 10 Kohms DIP switch setting, it can be ON (10kohms) or OFF (other impedance); no hardware switch
600ohms DIP – This shows the 600 ohms DIP switch setting, it can be ON (600 ohms) or OFF (other impedance).
50ohms DIP – This shows the 50 ohms DIP switch setting, it can be ON (50 ohms) or OFF (other impedance).
Manual Mode – This shows the Manual mode DIP switch setting, it can be ON (DIP switch control) or OFF (I2C/software)

4.12.4 Serial Digital module control screen, Configuration control, buttons

All LEDs on this part of the panel are GREEN when ON and VERY DARK GREEN (unlit) when OFF. The LEDs on the buttons flash as the buttons are actuated, please see noted in section 4.3.3.

10Mbps – This sets the data rate of the module to 10MB/s it can be ON (10MB/s) or OFF (other data rate).
500kbps - This sets the data rate of the module to 500kB/s it can be ON (500kB/s) or OFF (other data rate).
115kbps – This sets the data rate of the module to 115kB/s it can be ON (115kB/s) or OFF (other data rate).
Note: ENABLING any data rate button will disable the other data rates

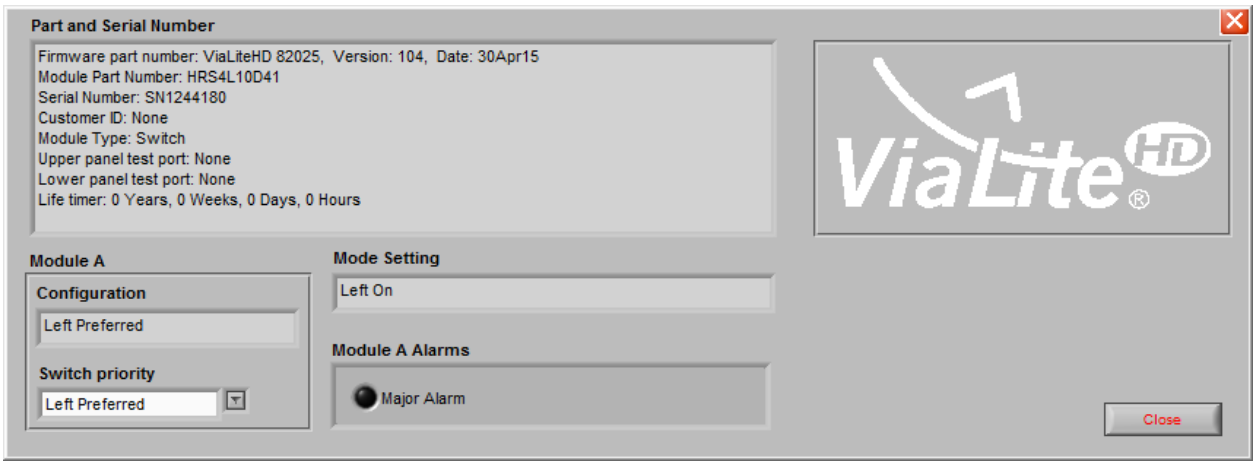
10Kohms – This sets the impedance of the module to 10 Kohms it can be ON (10kohms) or OFF (other impedance).
600ohms - This sets the impedance of the module to 600 ohms it can be ON (600 ohms) or OFF (other impedance).
50ohms – This sets the impedance of the module to 50 ohms it can be ON (50 ohms) or OFF (other impedance).
Note: ENABLING any impedance button will disable the other data rates

Control mode – This toggles the control mode between I2C software and DIP switch, it can be ON (I2C) or OFF (DIP switch)
LED mode – This toggles the LED mode between DATA and ALARM, it can be ON (ALARM) or OFF (DATA).
TX data Led mute – This toggles the TX data mute input to the data LED, it can be ON (TX data muted) or OFF (normal)
RX data Led mute – This toggles the RX data mute input to the data LED, it can be ON (RX data muted) or OFF (normal)
Laser disable – This is the laser disable button and is used to toggle the status between ON (disabled) and OFF (enabled).

4.12.5 Serial Digital module control screen, closing the screen

This window may be closed by either the <CLICKING> “stop” button or the windows CLOSE icon in the top right corner. This will return you to the start-up screen.

4.13 Switch control screen, accessing



4.13.1 Switch module control screen, Configuration

Configuration – This is the active configuration of the switch; it can be any of the following.

- Left Preferred
- Right Preferred
- Force Left
- Force Right

4.13.2 Switch module control screen, switch priority

Switch priority – This is a pull down menu, that allows the switch configuration to be set; it can be any of the following.

- Left Preferred
- Right Preferred
- Force Left
- Force Right

4.13.3 Switch module control screen, Mode setting

Mode setting – This is the position of the switch, it may be any of the following

- Left On
- Right On

4.13.4 Switch module control screen, alarms

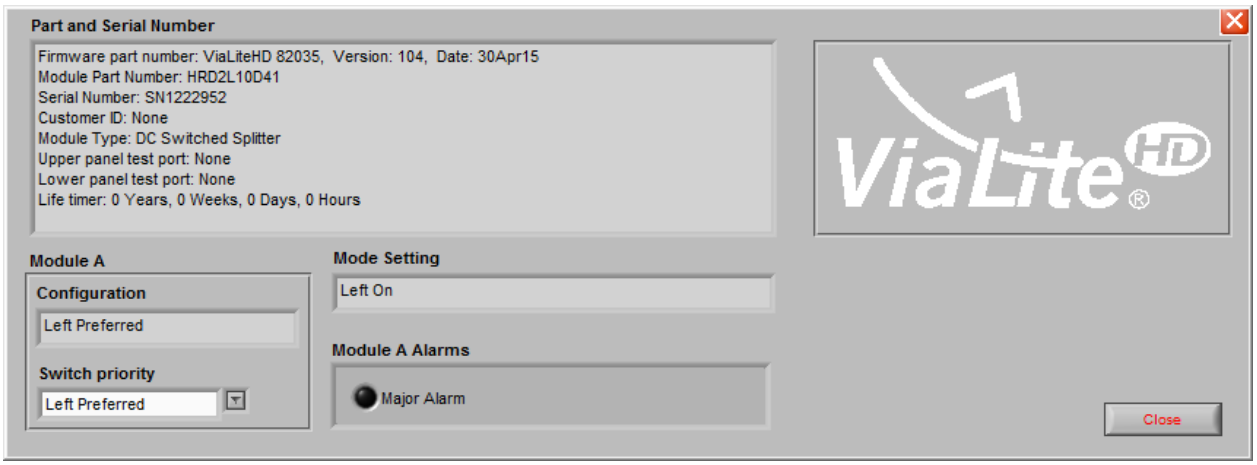
All LEDs on this part of the panel are RED when ON (alarm active) and VERY DARK RED (unlit) when OFF (good).

Major Alarm –This is the major alarm status, it can be ON or OFF.

4.13.5 Switch module control screen, closing the screen

This window may be closed by either the <CLICKING> “stop” button or the windows CLOSE icon in the top right corner. This will return you to the start-up screen.

4.14 Switched splitter, control screen, accessing



4.14.1 Switched splitter module control screen, Configuration

Configuration – This is the active configuration of the switch; it can be any of the following.

- Left Preferred
- Right Preferred
- Force Left
- Force Right

4.14.2 Switched splitter module control screen, switch priority

Switch priority – This is a pull down menu that allow the switch configuration to be set; it can be any of the following.

- Left Preferred
- Right Preferred
- Force Left
- Force Right

4.14.3 Switched splitter module control screen, Monitor

Monitor – This is the position of the switch it may be any of the following

- Left On
- Right On

4.14.4 Switched splitter module control screen, alarms

All LEDs on this part of the panel are RED when ON (alarm active) and VERY DARK RED (unlit) when OFF (good).

Major Alarm –This is the major alarm status, it can be ON or OFF.

4.14.5 Switched splitter module control screen, closing the screen

This window may be closed by either the <CLICKING> “stop” button or the windows CLOSE icon in the top right corner. This will return you to the start-up screen.

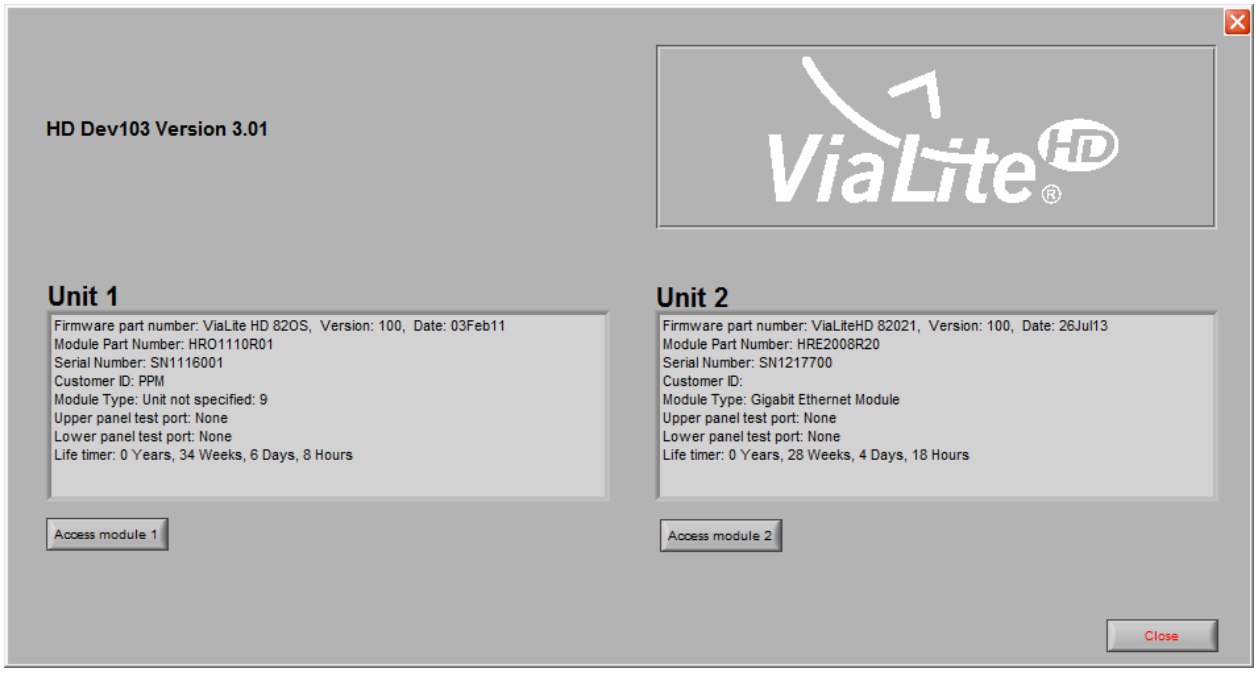
4.15 Modules with limited functionality

The ***ViaLiteHD*** development board supports modules types in addition to those listed in section 1, but with a lower level of functionality. These types of ***ViaLiteHD*** module generally have very limited programming and control requirements.

In this case the software and hardware should recognise all module types and report their basic details in the module information screen, see section 4.2.2, however they do not have any module control screen <CLICKING> the “Access module” button will have no effect.

Modules with this limited functionality are:

- HRA - Amplifier module
- HRD - Splitter module (all unswitched version)
- HRE - Ethernet
- HRF - Diplexer module
- HRO - Oscillator



Any new module released that complies with the ***ViaLiteHD*** interface standard should also have this level of support.

4.16 Unsupported Modules

The ***ViaLiteHD*** development board does not support the following module types.

- HRC – Controller module
- HRP - LNB power supply
- Lxx – All types of ***ViaLite*** classic modules
- HRT-xx-xB-xx-xxxxx – ***ViaLiteHD*** broadcast TX module, standard
- HRT-xx-xC-xx-xxxxx – ***ViaLiteHD*** broadcast TX module, classic footprint
- HRR-xx-xB-xx – ***ViaLiteHD*** broadcast RX module, standard
- HRR-xx-xC-xx – ***ViaLiteHD*** broadcast RX module, classic footprint

4.17 Closing the program

The program should be closed by clicking the close button, ***incorrect termination of the program may result in memory leak that will affect your PC’s performance and may cause it to crash.***

5 Controlling *ViaLiteHD* module using I2C

When ***ViaLiteHD*** modules are configured they will continue operating in their current configuration, even after power cycling. Hence the development board may be used to set up a module.

For users who wish to address the modules directly or read memory locations within their own system, the following paragraphs contain all the required details.

The OEM and EDGE modules may be addressed directly. The chassis mount and blind mate modules require that their module select line are high to address them, details of the pin outs can be found in the appropriate module handbooks

Great care should be taken when controlling the module. All factory calibration and operational code areas are password protected to guard them against accidental erasure.

5.1 Example of setting module gain

For this example we will set the gain of a receiver, using SGC mode. Terms used below relate to I2C maps shown on the following pages.

1. The module in use is an OEM module so it has I2C address of A4
2. Read the value of "Gain soft set min" to determine minimum allowable gain, memory address given in following table
3. Read the value of "Gain soft set max" to determine maximum allowable gain, memory address given in following table

   You now have the valid range over which you can control the gain.
   Any values outside of this range will be trapped by the modules firmware and assigned the nearest valid value.
   Note: The table the gain is a signed value (i.e. positive or negative) of two bytes, with each unit being 10mdB (0.01dB).

The value of "Gain soft set max" from memory address 0x80 – 0x81 is	0xFF06	is -2.5dB
The value of "Gain soft set min" from memory address 0x82 – 0x83 is	0x0514	is +13.0dB

4. Read value of "Gain soft set", to establish the current gain

The value of "Gain soft set" from memory address 0xA4 – 0xA5 is	0x01F4	is +5.0dB

   Note: This value will only be valid if the module is operating in SGC mode
   If none of the gain modes is set the unit will have the "Gain default set" value from address 0xA2 – 0xA3

5. Read value of "FSK Dis status", this will be needed to construct the control byte
6. Read value of "AGC Status" , this will be needed to construct the control byte
7. Read value of "SGC Status" , this will be needed to construct the control byte
8. Read value of "AGC Mode" , this will be needed to construct the control byte
9. Read value of "GPS Mode" , this will be needed to construct the control byte
   All the status bits above share a status byte.

   The value of the status bit from memory address 0xFD read was 0x40, 01000000
   This indicates that

FSK detect = 0,	No signal	bit 0
FSK Dis Status= 1,	Disabled	bit 1
MGC Status = 0,	Disabled	bit 2
AGC Status = 0,	Disabled	bit 3
SGC Status = 0,	Disabled	bit 4
AGC Mode Sel = 0,	Disabled	bit 5
GPS Mode Sel = 1,	Enabled	bit 6
Not used		bit 7

   You now know the current set value of all the other bits required by the control word. This will allow you to write the control word that set the mode of operation and preserve any current set value if desired. The memory address given in following table

10. If the units is not already set into SGC mode write to the memory map to set the module into SGC mode

    Assuming you wish to change the unit to SGC mode and leave all other parameters as previously:

Rx Ctrl: FSK Dis= 1, Disabled	bit 0
Rx Ctrl: AGC = 0, Disabled	bit 1
Rx Ctrl: SGC = 1 Enabled	bit 2
Rx Ctrl: AGC Mode Sel = 0, Disabled	bit 3
Rx Ctrl: GPS Mode Sel = 1, Enabled	bit 4
Not use	bit 5-15

    Write the control word to memory address 0xCC – 0xCD this is 00000000 00010100 = 0x0014
    See the memory map for the appropriate address

11. Write the new SGC value to "Gain soft set"

    Assume that you wish to increase the gain by 1dB, from +5dB (read previously) to +6dB
    Write the control word to "Gain soft set" memory address 0xA4 – 0xA5 with value of 0x0258

12. You have now increased the gain and set the unit into SGC mode

5.2 I2C map for the TX function

I2C address of function:

All OEM and EDGE set to address	A4
Single Plug-in TX module set to	A4
Dual Plug-in TX modules set to	A4 and A6
Transceiver TX branch set to	A6

I2C Map (10Jul15)							
Index	**Address**	**Size**	**Field Name**	**Description**	**Unit**	**Signed**	**SNMP R/W**
Serial ID (80 bytes)							
0-28	0x00-0x1C	29					
29-47	0x1D-0x2F	19	Module Part Number	PPM module type	ASCII	NA	R
48-49	0x30-0x31	2					
50-58	0x32-0x3A	9	Serial number	SNXXXXXXX, build date info	ASCII	NA	R
59-66	0x3B-0x42	8					
67	0x43	1	Module Type	0x01=TRx, 0x02=Tx, 0x03=Rx, 0x04=DTx, 0x05=DRx, 0x0F=OEM, 0xC1=TRx+LNB, 0xC2=Tx+LNB, 0xC4=DTx+LNB	HEX	NA	R
68-79	0x44-4F	12					
	Total	**80**					
User EEPROM (32 bytes)							
80-111	0X50-0x6F	32	User EEPROM	Customer to use	ASCII	NA	R/W
	Total	**32**					
112-113	0x70-0x8F	32					
144-145	0x90-0x91	2	Gain Soft Set Max	MSB at low address	10mdB	Yes	R
146-147	0x92-0x93	2	Gain Soft Set Min	MSB at low address	10mdB	Yes	R
148-149	0x94-0x95	2	AGC Target Max	MSB at low address	10mdBm	Yes	R
150-151	0x96-0x97	2	AGC Target Min	MSB at low address	10mdBm	Yes	R
152-159	0x98-0x9F	8					
	Total	**48**					
Configuration (48 bytes)							
160-161	0xA0-0xA5	6					
166-167	0xA6-0xA7	2	Gain Default Set	Default setpoint by PPM	10mdB	Yes	R
168-169	0xA8-0xA9	2	Gain Soft Set	Customer gain set via I2C (when SGC=ON)	10mdB	Yes	R/W
170-171	0xAA-0xAB	2	AGC Target	RF level target (laser modulation power)	10mdBm	Yes	R/W
172-173	0xAC-0xAD	2					
174-199	0xAE-0xC7	26					
200-201	0xC8-0xC9	2					
202-203	0xCA-0xCB	2					
204-205	0xCC-0xCD	2	Tx Ctrl: Laser Dis	Soft laser shut down, bit 0	Bit	NA	R/W
			Tx Ctrl: FSK Dis	FSK circuit supply shut down, bit 1	Bit	NA	R/W
			Tx Ctrl: AGC	Auto gain control enable, overridden by MGC, bit 2	Bit	NA	R/W
			Tx Ctrl: SGC	I2C soft gain set enable, overridden by MGC and AGC, bit 3	Bit	NA	R/W
			Tx Ctrl: GPS Mode Sel	Laser disable if low feed current detected, bit 4	Bit	NA	R/W
206-207	0xCE-0xCF	2		Reserved	x	x	x
	Total	**48**					
Monitor and Alarm (48 bytes)							
208-209	0xD0-0xD1	2	Life Timer	Elapsed-time recorder, 2 hour step, max ~15 years	2Hr	No	R
210-211	0xD2-0xD3	2	Vcc Mon	Supply voltage	1mV	No	R
212-213	0xD4-0xD5	2	Bias Mon	Laser bias	2uA	No	R
214-215	0xD6-0xD7	2	Power Mon	Laser optical power	10mdBm	Yes	R
216-217	0xD8-0xD9	2					
218-219	0xDA-0xDB	2	RF Mon	RF level, no alarm generated	10mdBm	Yes	R
220-221	0xDC-0xDD	2	RF Gain	Module RF gain	10mdB	Yes	R
222-231	0xDE-0xE7	10					
232-233	0xE8-0xE9	2	Module Temp	Module Temperature	C/256	Yes	R
234-235	0xEA-0xEB	2					
235-249	0xEC-0xF9	14					
250	0xFA	1	Tx Alarm: Major Alarm	Alarm bit field, bit 0	Bit	NA	R
			Tx Alarm: Minor Alarm	Alarm bit field, bit 1	Bit	NA	R
			Laser Fault Alarm	Alarm bit field, bit 2	Bit	NA	R
			AGC Fault Alarm	Alarm bit field, bit 3	Bit	NA	R
			TEC Fault Alarm	Alarm bit field, bit 4	Bit	NA	R
251	0xFB	1	Tx Alarm: Vcc Alarm	Alarm bit field, bit 0	Bit	NA	R
			Tx Alarm: Bias Alarm	Alarm bit field, bit 1	Bit	NA	R
			Tx Alarm: Power Alarm	Alarm bit field, bit 2	Bit	NA	R
			Tx Alarm: Feed I Alarm	Alarm bit field, bit 3	Bit	NA	R
			Tx Alarm: Feed V Alarm	Alarm bit field, bit 4	Bit	NA	R
			Tx Alarm: Temp Alarm	Alarm bit field, bit 5	Bit	NA	R
			RF Alarm: Level Alarm	Alarm bit field, bit 6	Bit	NA	R
			RF Alarm: Gain Alarm	Alarm bit field, bit 7	Bit	NA	R
252	0xFC	1	Tx Alarm: TEC I Alarm	Alarm bit field, bit 0	Bit	NA	R
			Moduel Temp Alarm	Alarm bit field, bit 1	Bit	NA	R
253	0xFD	1	Laser Dis Status	Status bit field, bit 0, ENABLE=0, DISABLE=1	Bit	NA	R
			FSK Dis Status	Status bit field, bit 1, ENABLE= 0, DISABLE=1	Bit	NA	R
			MGC Status	Status bit field, bit 2, OFF=0, ON=1	Bit	NA	R
			AGC Status	Status bit field, bit 3, OFF=0, ON=1	Bit	NA	R
			SGC Status	Status bit field, bit 4, OFF=0, ON=1	Bit	NA	R
			GPS Mode	Status bit field, bit 5, OFF=0, ON=1	Bit	NA	R
			TEC Dis Status	Status bit field, bit 6, ENABLE=0, DISABLE=1	Bit	NA	R
			LNB Main Alarm Status	Status bit field, bit 7, OFF=0, ON=1	Bit	NA	R
254-255	0xFE-0xFF	2		Reserved	x	x	x
	Total	**48**					

6 I2C map for the RX function

I2C address of function:

All OEM and EDGE set to address	A4
Single Plug-in RX module set to	A4
Dual Plug-in RX modules set to	A4 and A6
Transceiver RX branch set to	A4

Index	Address	Size	Field Name	Description	Unit	Signed	R/W
Seiral ID (80 bytes)							
0-28	0x00-0x1C	29					
29-47	0x1D-0x2F	19	Module Part Number	PPM module type	ASCII	NA	R
48-49	0x30-0x31	2					
50-58	0x32-0x3A	9	Serial number	SNXXXXXXX, build date info	ASCII	NA	R
59-66	0x3B-0x42	8					
67	0x43	1	Module Type	0x01=TRx, 0x03=Rx, 0x05=DRx, 0x0F=OEM	HEX	NA	R
68	0x44	1					
69-79	0x45-0x4F	11					
	Total	**80**					
User EEPROM (32 bytes)							
80-111	0X50-0x6F	32	User EEPROM	Customer to use	ASCII	NA	R/W
	Total	**32**					
Threshold (48 bytes)							
112-127	0x70-0x7F	16					
128-129	0x80-0x81	2	Gain Soft Set Max	MSB at low address	10mdB	Yes	R
130-131	0x82-0x83	2	Gain Soft Set Min	MSB at low address	10mdB	Yes	R
132-133	0x84-0x85	2	AGC Target Max	MSB at low address	10mdBm	Yes	R
134-135	0x86-0x87	2	AGC Target Min	MSB at low address	10mdBm	Yes	R
136-159	0x88-0x9F	24					
	Total	**48**					
Configuration (48 bytes)							
160-161	0xA0-0xA1	2	RLL Set		0.1mV	No	R
162-163	0xA2-0xA3	2	Gain Default Set	Default setpoint by PPM	10mdB	Yes	R
164-165	0xA4-0xA5	2	Gain Soft Set	Customer gain set via I2C (when SGC=ON)	10mdB	Yes	R/W
166-167	0xA6-0xA7	2	AGC Target	RF level target (output RF power)	10mdBm	Yes	R/W
168-203	0xA8-0xCB	36					
204-205	0xCC-0xCD	2	Rx Ctrl: FSK Dis	FSK circuit supply shut down, bit 0	Bit	NA	R/W
			Rx Ctrl: AGC	Auto gain control enable, overridden by MGC, bit 1	Bit	NA	R/W
			Rx Ctrl: SGC	I2C soft gain set enable, overridden by MGC and AGC, bit 2	Bit	NA	R/W
			Rx Ctrl: AGC Mode Sel	Select 1=AGC_RF or 0=AGC_RLL, bit 3	Bit	NA	R/W
			Rx Ctrl: GPS Mode Sel	Dummy load off on alarm, bit 4	Bit	NA	R/W
206-207	0xCE-0xCF	2					
	Total	**48**					
Monitor and Alarm (48 bytes)							
208-209	0xD0-0xD1	2	Life Timer	Elapsed-time recorder, 2 hour step, max ~15 years	2Hr	No	R
210-211	0xD2-0xD3	2	Vcc Mon	Supply voltage	1mV	No	R
212-213	0xD4-0xD5	2	RLL Mon	RLL level	10mdBm	Yes	R
214-215	0xD6-0xD7	2	RF Mon	RF level, no alarm generated	10mdBm	Yes	R
216-217	0xD8-0xD9	2	RF Gain	Module RF gain	10mdB	Yes	R
218-219	0xDA-0xDB	2	RF Output Mon	Predicted RF level at module output, alarm generated	10mdBm	Yes	R
220-221	0xDC-0xDD	2					
222-223	0xDE-0xDF	2	Module Temp	Module Temperature	C/256	Yes	R
228-249	0xE0-0xF9	26					
250	0xFA	1	Rx Alarm: Major Alarm	Alarm bit field, bit 0	Bit	NA	R
			Rx Alarm: Minor Alarm	Alarm bit field, bit 1	Bit	NA	R
251-252	0xFB-FC	2					
253	0xFD	1	FSK Detect	Status bit field, bit 0, OFF=0, ON=1	Bit	NA	R
			FSK Dis Status	Status bit field, bit 1, ENABLE=0, DISABLE=1	Bit	NA	R
			MGC Status	Status bit field, bit 2, OFF=0, ON=1	Bit	NA	R
			AGC Status	Status bit field, bit 3**, OFF=0, ON=1**	Bit	NA	R
			SGC Status	Status bit field, bit 4, OFF=0, ON=1	Bit	NA	R
			AGC Mode	Status bit field, bit 5, OFF=0, ON=1	Bit	NA	R
			GPS Mode	Status bit field, bit 6, OFF=0, ON=1	Bit		
254-255	0xFE-0xFF	2		Reserved			

6.1 I2C map for the on board LNB power supply function

I2C address of function: Not available on OEMs
All chassis mount modules set to A8

Index	Address	Size	Field Name	Description	Unit	Signed	Read/Write
Serial ID (80 bytes)							
0-14	0x00-0x0E	15	-	-	-	-	-
15-17	0x0F-0x11	3	-	-	-	-	-
18-24	0x12-0x18	7	-	-	-	-	-
25-28	0x19-0x1C	4	-	-	-	-	-
29-47	0x1D-0x2F	19	-	-	-	-	-
48-49	0x30-0x31	2	-	-	-	-	-
50-58	0x32-0x3A	9	-	-	-	-	-
59-66	0x3B-0x42	8	-	-	-	-	-
67	0x43	1	-	-	-	-	-
68	0x44	1	-	-	-	-	-
69-79	0x45-0x4F	11	-	-	-	-	-
User EEPROM (32 bytes)							
80-111	0X50-0x6F	32	User EEPROM	Customer to use	ASCII	NA	R/W
Threshold (48 bytes)							
112-159	0x70-0x9F	48	-	-	-	-	-
Configuration (48 bytes)							
160-199	0xA0-0xC7	40	-	-	-	-	-
200-201	0xC8-0xC9	2	-	-	-	-	-
202-203	0xCA-0xCB	2	-	-	-	-	-
204-205	0xCC-0xCD	2	AUX	Set Vout to 22V	Bit	NA	R/W
			ITEST	Set current threshold, 1=12mA and 0=6mA	Bit	NA	R/W
			EN	Power block enable	Bit	NA	R/W
			VSEL	Output voltage select, 1=high 0=low	Bit	NA	R/W
			LLC	Cable voltage loss compensation, 1=+1V	Bit	NA	R/W
			TEN	22kHz tone enable	Bit	NA	R/W
			TTX	Tone function switch	Bit	NA	R/W
			PCL	Current limiting mode, 0=pulse, 1=static	Bit	NA	R/W
206-207	0xCE-0xCF	2	-	-	-	-	-
Monitor and Alarm (48 bytes)							
208-252	0xD0-0xFC	42	-	-	-	-	-
250	0xFA	1	OLF	Overload flag, 1= triggered	Bit	NA	R
			OTF	Over temperature flag, 1= power block disabled	Bit	NA	R
251-252	0xFB-0xFC	2	-	-	-	-	-
253	0xFD	1	EN	Power block enable	Bit	NA	R
			VSEL	Output voltage select, 1=high 0=low	Bit	NA	R
			LLC	Cable voltage loss conpemsation, 1=+1V	Bit	NA	R
			TMON	Tone monitor	Bit	NA	R
			VMON	Voltage monitor	Bit	NA	R
			IMON	Output current presence	Bit	NA	R
254-255	0xFE-0xFF	2	-	-	-	-	-

6.2 I2C map for the Serial Digital function

I2C address of function: All OEM and EDGE set to address A4
All Plug-in module set to A4

Serial Digital Modem I2C Map (A4) (200913)								
Index	**Address**	**Size**	**Field Name**	**Bit**	**Description**	**Unit**	**Signed**	**Read/Write**
Seiral ID (80 bytes)								
0-14	0x00-0x0E	15	-		-	-	-	-
15-17	0x0F-0x11	3	-		-	-	-	-
18-24	0x12-0x18	7	-		-	-	-	-
25-28	0x19-0x1C	4	-		-	-	-	-
29-47	0x1D-0x2F	19	-		-	-	-	-
48-49	0x30-0x31	2	-		-	-	-	-
50-58	0x32-0x3A	9	-		-	-	-	-
59-66	0x3B-0x42	8	-		-	-	-	-
67	0x43	1	-		-	-	-	-
68	0x44	1	-		-	-	-	-
69-79	0x45-0x4F	11	-		-	-	-	-
	Total	**80**						
User EEPROM (32 bytes)								
80-111	0X50-0x6F	32	User EEPROM		Customer use	ASCII	NA	R/W
	Total	**32**						
Threshold (48 bytes)								
112-113	0x70-0x71	2	-		-	-	-	-
114-115	0x72-0x73	2	-		-	-	-	-
116-117	0x74-0x75	2	-		-	-	-	-
118-119	0x76-0x77	2	-		-	-	-	-
120-121	0x78-0x79	2	-		-	-	-	-
122-123	0x7A-0x7B	2	-		-	-	-	-
124-125	0c7C-0x7D	2	-		-	-	-	-
126-127	0x7E-0x7F	2	-		-	-	-	-
128-159	0x80-0x9F	32	-		-	-	-	-
	Total	**48**						
Configuration (48 bytes)								
160-161	0xA0-0xA1	2	-		-	-	-	-
162-163	0xA2-0xA3	2	-		-	-	-	-
164-165	0xA4-0xA5	2	-		-	-	-	-
166-167	0xA6-0xA7	2	-		-	-	-	-
168-169	0xA8-0xA9	2	-		-	-	-	-
170-171	0xAA-0xAB	2	-		-	-	-	-
172-173	0xAC-0xAD	2	-		-	-	-	-
174-199	0xAE-0xC7	26	-		-	-	-	-
200-201	0xC8-0xC9	2	-		-	-	-	-
202-203	0xCA-0xCB	2	-		-	-	-	-
204-205	0xCC-0XCD	2	500kbps Soft Set	0	0=Clear, 1=Set, data rate defualt to 10Mbps if no rates set	Bit	NA	R/W
			115bps Soft Set	1	0=Clear, 1=Set, data rate defualt to 10Mbps if no rates set	Bit	NA	R/W
			600ohm Soft Set	2	0=Clear, 1=Set, TTL input defualt to 10K if no set	Bit	NA	R/W
			50ohm Soft Set	3	0=Clear, 1=Set, TTL input defualt to 10K if no set	Bit	NA	R/W
			Control Mode Sel	4	0=I2C mode, overidden by MAN_MODE switch, 1=I2C mode, DIP switches have no effect	Bit	NA	R/W
			LED Mode Sel	5	0=Data, 1=Alarm	Bit	NA	R/W
			Data LED Tx Mute	6	0=Active, 1=Mute	Bit	NA	R/W
			Data LED Rx Mute	7	0=Active, 1=Mute	Bit	NA	R/W
			Laser Dis	8	0=Enabled, 1=Disabled	Bit	NA	R/W
			HF Set	9	NOT SUPPORTED, 0=Full Duplex, 1=Half Duplex	Bit	NA	R/W
206-207	0xCE-0xCF	2	-		-	-	-	-
	Total	**48**						
Monitor and Alarm (48 bytes)								
208-209	0xD0-0xD1	2	-		-	-	-	-
210-211	0xD2-0xD3	2	Vcc Mon		Supply voltage	1mV	No	R
212-213	0xD4-0xD5	2	Laser Power Mon		Laser optical power	10mdBm	Yes	R
214-215	0xD6-0xD7	2	-		-	-	-	-
216-217	0xD8-0xD9	2	RLL Mon		RLL level	10mdBm	Yes	R
218-219	0xDA-0xDB	2	-		-	-	-	-
220-221	0xDC-0xDD	2	-		-	-	-	-
222-223	0xDE-0xDF	2	-		-	-	-	-
224-225	0xE0-0xE1	2	-		-	-	-	-
226-227	0xE2-0xE3	2	-		-	-	-	-
228-229	0xE4-0xE5	2	-		-	-	-	-
230-231	0xE6-0xE7	2	-		-	-	-	-
232-233	0xE8-0xE9	2	-		-	-	-	-
234-246	0xEA-0xF6	13	-		-	-	-	-
247	0xF7	1	-		-	-	-	-
248	0xF8	1	-		-	-	-	-
249	0xF9	1	-		-	-	-	-
250	0xFA	1	Major Alarm	0	0=OFF, 1=ON	Bit	NA	R
			Minor Alarm	1	0=OFF, 1=ON	Bit	NA	R
251	0xFB	1	Vcc Alarm	0	0=OFF, 1=ON	Bit	NA	R
			Laser Power Alarm	1	0=OFF, 1=ON	Bit	NA	R
			RLL Alarm	2	0=OFF, 1=ON	Bit	NA	R
			-	3	-	-	-	-
252	0xFC	1	-		-	-	-	-
253	0xFD	1	115kbps Status	0	0=OFF, 1=ON	Bit	NA	R
			500kbps Status	1	0=OFF, 1=ON	Bit	NA	R
			10Mbps Status	2	0=OFF, 1=ON	Bit	NA	R
			50Ohm Status	3	0=OFF, 1=ON	Bit	NA	R
			600Ohm Status	4	0=OFF, 1=ON	Bit	NA	R
			10kOhm Status	5	0=OFF, 1=ON	Bit	NA	R
			Tx LED Mute	6	0=OFF, 1=ON	Bit	NA	R
			Rx LED Mute	7	0=OFF, 1=ON	Bit	NA	R
254	0xFE	1	Control Mode	0	0=DIP, 1=I2C	Bit	NA	R
			LED Mode	1	0=Data, 1=Alarm	Bit	NA	R
			Tx Data Detection	2	0=No, 1=Yes, Tx data traffic	Bit	NA	R
			Rx Data Detection	3	0=No, 1=Yes, Rx data traffic	Bit	NA	R
			Laser Dis Status	4	0=Enabled, 1=Disabled	Bit	NA	R
			HF Status, deleted	5	NOT SUPPORTED, 0=Full Duplex, only full duplex in this version	Bit	NA	R
255	0xFF	1	115kbps DIP	0	0=Clear, 1=Set	Bit	NA	R
			500kbps DIP	1	0=Clear, 1=Set	Bit	NA	R
			10Mbps DIP	2	0=Clear, 1=Set	Bit	NA	R
			50Ohm DIP	3	0=Clear, 1=Set	Bit	NA	R
			600Ohm DIP	4	0=Clear, 1=Set	Bit	NA	R
			10kOhm DIP	5	0=Clear, 1=Set	Bit	NA	R
			LED Mode DIP	6	0=Data, 1=Alarm, only valid in DIP mode if Tx Mute and Rx Mute not set, not valid in I2C mode	Bit	NA	R
			DIP Manual Mode	7	0=OFF, 1=ON, DIP manual control mode has priority over soft I2C control if Control Mode Sel=0	Bit	NA	R
	Total	**48**						

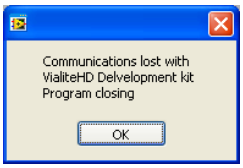
6.3 I2C map for the Switch function

I2C address of function: All OEM and EDGE set to address A4
All Plug-in module set to A4

Index	Address	Size	Field Name	Description	Unit	Signed	SNMP R/W
Serial ID (80 bytes)							
0-14	0x00-0x0E	15	-	-	-	-	-
15-17	0x0F-0x11	3	-	-	-	-	-
18-24	0x12-0x18	7	-	-	-	-	-
25-28	0x19-0x1C	4	-	-	-	-	-
29-47	0x1D-0x2F	19	Module Part Number	PPM module type	ASCII	NA	R
48-49	0x30-0x31	2	-	-	-	-	-
50-58	0x32-0x3A	9	Serial number	SNXXXXXXX, build date info	ASCII	NA	R
59-66	0x3B-0x42	8	-	-	-	-	-
67	0x43	1	-	-	-	-	-
68	0x44	1	-	-	-	-	-
67-79	0x45-0x4F	11	-	-	-	-	-
	Total	**80**					
User EEPROM (32 bytes)							
80-111	0X50-0x6F	32	User EEPROM	Customer to use	ASCII	NA	R/W
	Total	**32**					
Threshold (48 bytes)							
112-113	0x70-0x71	2	-	-	-	-	-
114-115	0x72-0x73	2	-	-	-	-	-
116-117	0x74-0x75	2	-	-	-	-	-
118-119	0x76-0x77	2	-	-	-	-	-
120-121	0x78-0x79	2	-	-	-	-	-
122-139	0x7A-0x8B	18	-	-	-	-	-
140-141	0x8C-0x8D	2	-	-	-	-	-
142-143	0x8E-0x8F	2	-	-	-	-	-
144-159	0x90-0x9F	16	-	-	-	-	-
	Total	**48**					
Configuration (48 bytes)							
160-203	0xA0-0xCB	44	-	-	-	-	-
204	0xCC	1	D7 to D4	Don't care bits	Bit	NA	R/W
			D3,D2 (00-forced right,01- forced left , 10-right preferred, 11-left preferred)	Switch mode setting	Bit	NA	R/W
			D1 to D0	Don't care bits	Bit	NA	R/W
205-207	0xCD-0xCF	3	-	-	-	-	-
	Total	**48**					
Monitor and Alarm (48 bytes)							
208-209	0xD0-0xD1	2	-	-	-	-	-
210-211	0xD2-0xD3	2	-	-	-	-	-
212-223	0xD4-0xDF	12	-	-	-	-	-
224-225	0xE0-0xE1	2	-	-	-	-	-
226-250	0xE2-0xFA	25	-	-	-	-	-
251	0xFB		D7 to D4	Don't care bits	Bit	NA	R
		1	D3: Switch: Major Alarm	Alarm Bit field	Bit	NA	R
			D2: Switch: Minor Alarm	Alarm Bit field	Bit	NA	R
			D1 to D0	Don't care bits	Bit	NA	R
252	0xFC	1	-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
253	0xFD	1	D7 to D5	Don't care bits	Bit	NA	R
			D4: Switch Status (1- LEFT ON, 0-RIGHT ON)	Status Bit field	Bit	NA	R
			D3 to D0	Don't care bits	Bit	NA	R
254	0xFE	1	-	-	-	-	-
			-	-	-	-	-
			-	-	-	-	-
255	0xFF	1		Reserved			
	Total	**48**					

7 Maintenance and Fault-Finding Guide

Refer to the following table that gives a list of commonly encountered problems and suggested solutions.

Fault	Possible Causes	Solution
The program gives the following error message. 	USB connection has not been established OR USB communication has halted	Check both ends of the USB cable are connected Check the LED next to the USB connector on the daughter board is flashing. If not disconnect and reconnect. When the LED flashes rerun the program. Run the following program and check that your PC can see the boards USB interface. National instruments > Measurement & Automation Check the “Devices and Interfaces” and check that you can see a “USB-8451”
+12V PWR LED does not light	Power source not connected.	Check AC power is supplied to LPS-CS Check 15 way connector of LPS-CS is connected to the mother board
Module not visible in start-up window	Module not connected	Check 34 way ribbon cable is connected to the motherboard Check 34 way ribbon cable is connected to the interface board
Module not responding to updates from the adjustment window	Value changes not applied	After entering the adjusted values always hit the appropriate apply button

The ***ViaLiteHD*** range is precision engineered and calibrated for optimum performance and accuracy before dispatch.

In the event of any problems or queries arising with the equipment, please contact ***ViaLite Communications*** or your local agent.

8 Glossary

A	Ampere
AGC	Automatic gain control
BUC	Block up converter
CNR	Carrier to noise ratio
COM	Common
dB	Decibel
dBc	Decibel relative to carrier
dBm	Decibel milli watt
DC	Direct current
DHCP	Dynamic host configuration Protocol
DVB	Digital video broadcast
DVB-T	Digital video broadcast terrestrial
FC/APC	Fibre connector angled polished contact
FC/PC	Fibre connector physical contact
FOL	Fibre optic link
FSK	Frequency shift keying
FTP	File transfer protocol
g	Gram
GHz	Giga hertz
GPS	Global positioning system
GRN	Goods Return Number
GUI	Graphical user interface
HRK3	***ViaLiteHD*** 3U chassis
HTML	Hypertext mark-up language
HP	Rack hole pitch measurement of width 5.08mm
Hz	Hertz
I2C	Inter-Integrated circuit bus
IMD	Intermodulation distortion ratio
IP	Internet protocol
IP3	Third order intercept point
kg	Kilo gram
kHz	Kilo hertz
LAN	Local area network
LASER	Light amplification by stimulated emission of radiation
LC/PC	Lucent connector physical contact
LED	Light emitting diode
LNA	Low noise amplifier
LNB	Low noise block
m	Metre
mA	Milli ampere
Max	Maximum
MGC	Manual Gain control
MHz	Mega hertz
Min	Minimum
mm	Milli metre
mV	Milli volt
NC	Normally closed
NF	Noise figure
nm	Nano meter
NO	Normally open
P1dB	Power at one decibel gain compression
PC	Personal computer
PPM	Pulse Power and Measurement Ltd
PWR	Power
RF	Radio frequency
RLL	Received light level
RST	Reset
RX	Receiver
SC/APC	Subscriber connector angled polished contact
SC/PC	Subscriber connector physical contact
SFDR	Spurious free dynamic range
SGC	Software gain control
SINAD	Signal to noise and distortion ratio
SNMP	Simple network management protocol
TEC	Thermo electric cooler
TCP/IP	Transmission Control Protocol
TRX	Transceiver
TX	Transmitter
Typ	Typical
VSEL	Voltage select
VSWR	Voltage standing wave ratio
W	Watt

9 Product Warranty

ViaLite Communications guarantees its products, and will maintain them for a period of three years from the date of shipment and at no cost to the customer. Extended warranty options are available at the time of purchase.

Please note that the customer is responsible for shipping costs to return the module to ***ViaLite Communications***.

ViaLite Communications or its agents will maintain its products in full working order and make all necessary adjustments and parts replacements during the Company's normal working hours provided that the Customer will pay at the rates currently charged by the Company for any replacements made necessary by accident, misuse, neglect, wilful act or default or any cause other than normal use.

Claims must be made promptly, and during the guarantee period.

IMPORTANT: -

Please contact both your selling agent and *ViaLite Communications* prior to returning any goods for Warranty or Non-Warranty repairs. Goods will not be accepted without a valid returned merchandise authorisation (RMA) number.

10 FCC Approval

Information to the user of ***ViaLiteHD*** products.
For a Class A digital device or peripheral, the following instructions are furnished to the user. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense**.**

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