

Quad 3G/HD/SD-SDI/ASI Fibre Optic Link



User Manual

[illegible]

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This instruction book applies to both units fitted with firmware version ≥ 1.1

WARNING


Operation of electronic equipment involves the use of voltages and currents that may be dangerous to human life. Note that under certain conditions dangerous potentials may exist in some circuits when power controls are in the **OFF** position. Maintenance personnel should observe all safety regulations.

Do not make any adjustments inside equipment with power **ON** unless proper precautions are observed. All internal adjustments should only be made by suitably qualified personnel. All operational adjustments are available externally without the need for removing covers or use of extender cards.

Optical Safety

The light emitted from the LASER diode used in this system is invisible and may be harmful to the human eye. Avoid looking directly into the fibre optic cable or connectors or into the collimated beam along their axis when the device is in operation. Operating the LASER diode outside of its maximum ratings may cause device failure or a safety hazard.

DANGER



Invisible LASER radiation-
Avoid direct exposure to beam

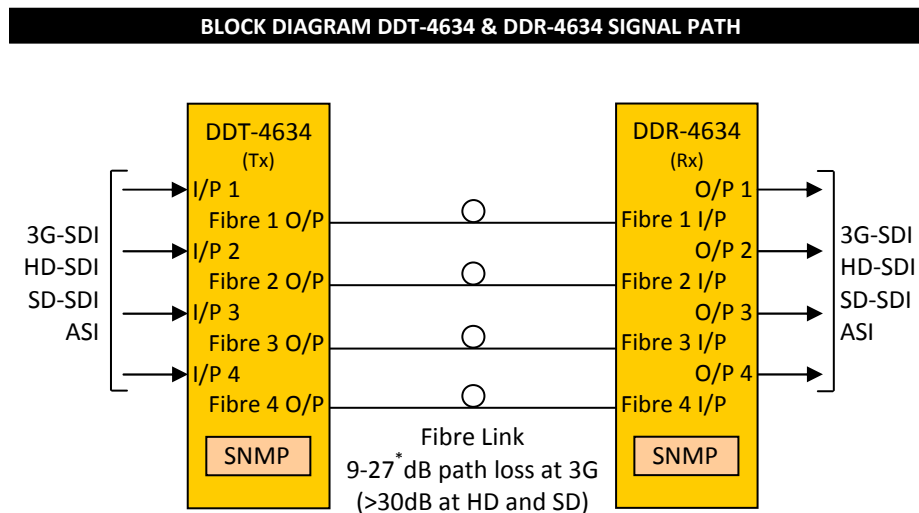
Peak power

2 mW

Wavelength

1270–1610nm

Class 1 LASER Product



NOTE: * Fitted with APD detector. 3-18dB when fitted with PIN detector.

The IRT DDT-4634 and DDR-4634 are quad transmit and receive modules designed principally for use as four independent serial data fibre optic transmission links for 3G-SDI, HD-SDI or SD-SDI applications conforming to SMPTE standards 424M, 292M and 259M-C using 9/125 μ m single mode fibre.

In addition, the link may be used for ASI transport streams for use with MPEG compressed video streams or other 270 Mb/s type data.

The transmitter features automatic input cable equalisation and comes standard with 1510nm, 1530nm, 1550nm and 1570nm lasers. Other wavelength combinations are available on request.

The receiver uses a choice of either a PIN photodiode or APD detectors with signal conditioning and reclocking circuits. The data rates are automatically set to match the 3G-SDI, HD-SDI or SD-SDI/ASI rates dependent on the actual input data rates to the transmitter.

The transmitter and receiver modules are compatible with IRT's single channel fibre cards for use as four independent fibre paths starting from or coming to a single location.

LED indicators are provided on both modules for digital signal presence and power.

Optionally a CWDM² optical combiner can be fitted to allow for combined use on a single fibre.

SNMP (Simple Network Management Protocol) is available for remote monitoring when used in conjunction with an IRT frame fitted with SNMP capability.

Standard features:

- 4 independent fibre links.
- Transports 3G-SDI, HD-SDI, SD-SDI or ASI signal rates.
- Path lengths up to 30 dB¹ optical path loss using 9/125 μ m single mode fibre.
- LED indicators and external alarm contacts.
- Transmitter (Tx) and receiver (Rx) can be used separately with 4 independent single channel fibre Rx and Tx cards.
- Remote monitoring via SNMP.
- Optional on-board CWDM² optical combiner for use on a single common fibre.

NOTE: 1 27dB path loss at 3G. Typically >30dB at HD and SD. Fitted with APD detector.

2 With CWDM option fitted for combined use on a single fibre, optical path loss is reduced by approximately 2.5dB.

TECHNICAL SPECIFICATIONS

DDT-4634:

Input serial data signal	2.97 Gb/s (3G-SDI) to SMPTE 424M; 1.485 Gb/s (HD-SDI) to SMPTE 292M; 270 Mb/s (SD-SDI) to SMPTE 259M-C and DVB-ASI.
Input impedance	75 Ω .
Input return loss	> 15 dB 5 MHz to 1.5 GHz, > 10 dB 1.5 GHz to 2.97 GHz.
Automatic cable compensation	> 100 m at 2.97 Gb/s (3G-SDI) with Belden 1694A (typ. 110m); > 100 m at 1.485 Gb/s (HD-SDI) with Belden 1694A (typ. 160m); > 250 m at 270 Mb/s (SD-SDI/ASI) with Belden 8281 (typ. > 300m).
Input connector	4 x BNC on rear panel, 1 per channel.

DDR-4634:

Number of outputs	1 per channel, data reclocked, AC coupled.
Output level	800 mV \pm 10%.
Output impedance	75 Ω .
Output return loss	> 15 dB 5 MHz to 1.5 GHz; > 10 dB 1.5 GHz to 2.97 GHz.
Output rise and fall time	< 135 ps at 2.97 Gb/s and 1.485 Gb/s; > 0.4 ns and < 1.5 ns at 270 Mb/s.
Intrinsic jitter	< 0.3 UI at 2.97 Gb/s reclocked; < 0.2 UI at 1.485 Gb/s reclocked; < 0.1 UI at 270 Mb/s reclocked.
Output connector	4 x BNC on rear assembly, 1 per channel.

Optical:

DDT-4634 optical output	0 dBm +4.5/-0 dB CWDM DFB laser.
DDR-4634 optical input ³	APD detector, -9 to -27 dBm input level at 3G-SDI, typically < -30 dBm at HD/SD-SDI. PIN detector, -3 to -18 dBm input level at 3G-SDI, typically < -20 dBm at HD/SD-SDI.
Available wavelengths	CWDM DFB laser – 1510nm, 1530nm, 1550nm & 1570nm (standard). Other wavelength combinations available on request.
Optical path loss ⁴	9 to 27 dB at 3G-SDI, typically > 30 dB at HD/SD-SDI, APD detector; 3 to 18 dB at 3G-SDI, typically > 20 dB at HD/SD-SDI, PIN detector. (Optical path loss = Laser O/P power – Detector I/P power)
Optical fibre	Designed for use with 9/125 μ m single mode fibre.
Optical connector	4 x LC/PC (standard) on rear – direct connection to main card, 1 per channel; 1 x SC/PC (standard) with CWDM option fitted.

Power Requirements:

Voltage	28 Vac CT (14-0-14) or \pm 16 Vdc.
Power consumption	DDT-4634 <6.0 VA, DDR-4634 <6.5 VA.

Other:

Temperature range	0 - 50° C ambient.
Mechanical	For mounting in IRT 19" rack chassis with input, output and power connections on the rear panel.
Finish	Front panel Rear assembly
	Grey background, black lettering & red IRT logo. Detachable silk-screened PCB with direct mount connectors to Eurocard and external signals.
Dimensions	6 HP x 3 U x 220 mm IRT Eurocard.
Optional accessories	On-board 1510/1530/1550/1570nm CWDM combiner - SC/PC optical connector (standard).
CWDM option order codes	DDT-4634/CWDM & DDR-4634/CWDM.

NOTE:	3	Optical attenuator required for DDR-4634 when detector input is greater than -3dBm for PIN detector and -9dBm for APD detector.
	4	With CWDM option fitted for combined use on a single fibre, optical path loss is reduced by approximately 2.5dB.

CONFIGURATION

User DIP switch settings:



DDT-4634:

Tx Input Rate	DIP Switch	
	SW1-1	SW1-2
3G/HD/SD (Auto detect)	OFF	OFF
SD only	ON	OFF
HD and SD only	OFF	ON
Bypass Reclocker	ON	ON

- SW1-3 OFF** Enable 'Keep Alive' signal on Channel 1. Laser is kept alive when no valid signal is present.
ON Disable 'Keep Alive' signal on Channel 1. Laser only active when a valid signal is present.
- SW1-4 OFF** Enable 'Keep Alive' signal on Channel 2. Laser is kept alive when no valid signal is present.
ON Disable 'Keep Alive' signal on Channel 2. Laser only active when a valid signal is present.
- SW1-5 OFF** Enable 'Keep Alive' signal on Channel 3. Laser is kept alive when no valid signal is present.
ON Disable 'Keep Alive' signal on Channel 3. Laser only active when a valid signal is present.
- SW1-6 OFF** Enable 'Keep Alive' signal on Channel 4. Laser is kept alive when no valid signal is present.
ON Disable 'Keep Alive' signal on Channel 4. Laser only active when a valid signal is present.
- SW1-7 OFF** DIP switch control.
ON SNMP control.
- SW1-8 OFF** Enable major and minor SNMP alarms to the frame Agent (CDM card)⁵.
ON Disable major and minor SNMP alarms to the frame Agent (CDM card)⁵.

DDR-4634:

Tx Input Rate	DIP Switch	
	SW1-1	SW1-2
3G/HD/SD (Auto detect)	OFF	OFF
SD only	ON	OFF
HD and SD only	OFF	ON
Bypass Reclocker	ON	ON

- SW1-3** Not Used.
- SW1-4** Not Used.
- SW1-5** Not Used.
- SW1-6** Not Used.
- SW1-7 OFF** DIP switch control.
ON SNMP control.
- SW1-8 OFF** Enable major and minor SNMP alarms to the frame Agent (CDM card)⁵.
ON Disable major and minor SNMP alarms to the frame Agent (CDM card)⁵.

NOTE: 5 When using TRAPS via SNMP, depending on how system is set up, in order to avoid double reporting of alarms via the DDT-4634 or DDR-4634 cards and the CDM card (SNMP Agent) of the frame, major and minor SNMP alarms that are reported to the CDM card of the frame can be disabled.

INSTALLATION

Pre-installation:

Handling:

This equipment may contain or be connected to static sensitive devices and proper static free handling precautions should be observed.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

Power:

AC mains supply: Ensure that operating voltage of unit and local supply voltage match and that correct rating fuse is installed for local supply.

DC supply: Ensure that the correct polarity is observed and that DC supply voltage is maintained within the operating range specified.

Earthing:

The earth path is dependent on the type of frame selected. In every case particular care should be taken to ensure that the frame is connected to earth for safety reasons. See frame manual for details.

Signal earth: For safety reasons a connection is made between signal earth and chassis earth.
No attempt should be made to break this connection.

Installation in frame or chassis:

See details in separate manual for selected frame type.

Signal Connections:

The default settings of the DDT-4634 and DDR-4634 are to automatically operate at either **2.97 Gb/s 3G-SDI**, **1.485 Gb/s HD-SDI** or **270 Mb/s SD-SDI / ASI** signals and do not require any adjustment prior to use, with the exception of the DIP switch options described in the *Configuration* section of this manual that also allow SD only, HD/SD only or reclocker bypass modes of operation.

The serial digital signal connections are made to the BNC connectors on the relevant rear assembly of the DDT-4634 and DDR-4634 labelled IN 1 to IN 4 and OUT 1 to OUT 4 respectively.

Optical Connections:

Optical connections are made to the quad optical adapter mounted on a bracket at the rear of the module. Care must be taken to provide a clean surface on the optical connectors and in inserting the plug on the external fibre to prevent damage to the alignment ferrule of the panel adapter. Type of fibre used must be single mode type.

The standard configuration for the DDT-4634 and DDR-4634 have four separate optical LC/PC type of connectors. The order of which corresponds to the same order from top to bottom of the signal connections.

If the DDT-4634 and DDR-4634 are fitted with the optional four channel coarse wave division multiplexer (CWDM), only one common optical connector is provided with all four transmit or receive functions occurring on a single fibre. The standard optical connector type is SC/PC.

Note that for path lengths ≤ 9 dB for APD detectors, or ≤ 3 dB for PIN detectors, an optical attenuator must be used to avoid over driving the DDR-4634 optical receivers.

DDT-4634 & DDR-4634

Alarm Connections:

External alarm contact connections are made to the 4 pin phoenix style connector on the rear assembly. On an alarm condition relay contacts go open circuit, that is switch open with respect to ground.

The connections being:

1		GND.
2		GND.
3		Major Alarm.
4		Minor Alarm.

The alarms reported are designated as either Major or Minor.

DDT-4634:

A Major alarm is designated as a laser fail alarm on any of the four fitted lasers.

A Minor alarm is designated as all four signal inputs are missing, invalid or not enabled⁶.

DDR-4634:

A Major alarm is designated as an optical input fail on any of the four fitted detectors.

A Minor alarm is designated as all four signal outputs are missing, invalid or not enabled⁶; OR
at least one optic input level has been deemed to be approaching, or has gone below, its threshold limit⁷.

- NOTE:**
- 6** It is possible, via SNMP, to disable individual channels on both the DDT-4634 and DDR-4634.
 - 7** This is reported as an 'opticalLow' condition via SNMP. Note that if a received electrical signal is present on this channel in this situation, it may be possible that the signal may contain errors if the optical signal level has actually gone below its minimum reliable input level before the output is muted, whence an 'opticalFail' situation would be reported. Therefore accuracy of the received electrical signal should be confirmed if a Minor alarm, or opticalLow, condition is reported by the DDR-4634.

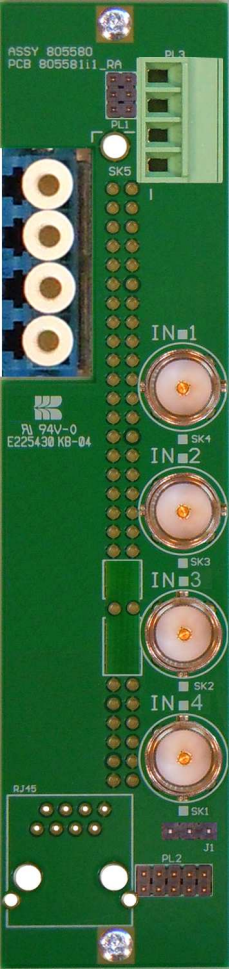
DDT-4634 & DDR-4634

Front & rear panel connector diagrams:

DDT-4634:

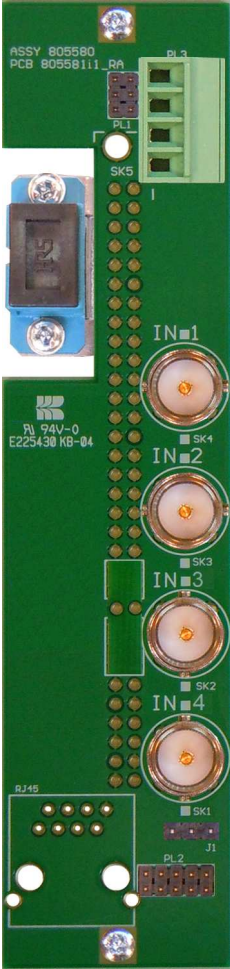


Fibre O/P 1
Fibre O/P 2
Fibre O/P 3
Fibre O/P 4



Quad
LC/PC Fibres
(Standard)

Optically
Muxed
Fibre O/P



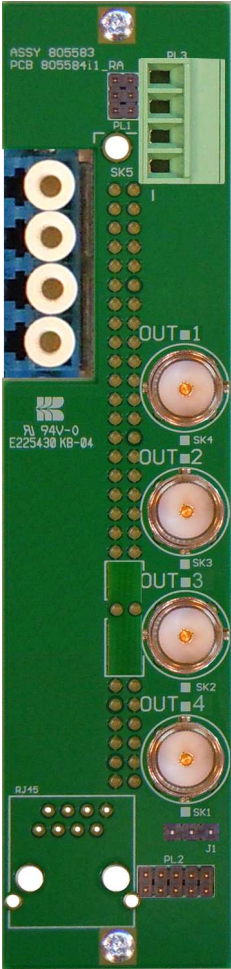
Single SC/PC Fibre
CWDM Version
(Option)

DDT-4634 & DDR-4634

DDR-4634:

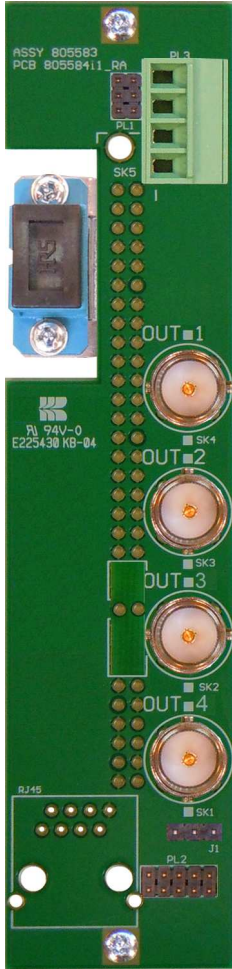


Fibre I/P 1
Fibre I/P 2
Fibre I/P 3
Fibre I/P 4



Quad
LC/PC Fibres
(Standard)

Optically
Muxed
Fibre I/P



Single SC/PC Fibre
CWDM Version
(Option)

OPERATION

The DDT-4634 is a quad electrical to optical transmitter with four separate laser drivers on the one card. Each laser driver is independent in its operation from the other three and is fed with its own independent single channel 3G-SDI, HD-SDI or SD-SDI (or ASI) electrical signal. The standard laser wavelengths are 1510 nm (corresponding to input 1), 1530 nm (corresponding to input 2), 1550 nm (corresponding to input 3), and 1570 nm (corresponding to input 4), which allow the outputs to be optically multiplexed through a coarse wave division multiplexer (CWDM), if required.

Likewise the DDR-4634 is a quad optical to electrical receiver with four separate optical detectors on the one card. Each optical detector is independent in its operation from the other three and outputs its own independent single channel 3G-SDI, HD-SDI or SD-SDI (or ASI) electrical signal. The detector types available are either APD (standard) or PIN. The APD detector allows a greater optical path loss, which allows a farther distance optical path, compared to PIN detectors. However, for optical path lengths less than 9dB for APD detectors, or 3dB for PIN detectors, optical attenuators are required so as to not overload the detectors, else damage to the detectors themselves may occur.

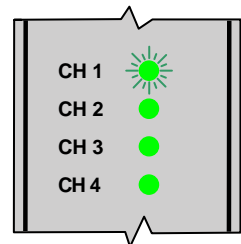
Both the DDT-4634 and DDR-4634 are fully operable with previous IRT single channel 3G, HD or SD fibre links.

Four optical LC/PC connectors (standard) are directly connected to the main card via the rear of the unit. The order of the optical connectors correspond to the same order as the electrical BNC connectors as labelled on the rear assembly.

Optionally a four channel coarse wave division multiplexer (CWDM) can be directly fitted to both the DDT-4634 and DDR-4634 to allow simultaneous transmission / reception of optical signals on a single fibre.

The default settings of the DDT-4634 and DDR-4634 are automatically set to operate at either 2.97 Gb/s 3G-SDI, 1.485 Gb/s HD-SDI or 270 Mb/s SD-SDI (or ASI) and do not require any adjustments prior to use. However, either DIP switch or SNMP settings allow the units to be set for SD only, SD/HD only or reclocker bypass modes.

Up to four 2.97 Gb/s 3G-SDI signal, 1.485 Gb/s HD-SDI signal or 270 Mb/s type of signals, such as ASI or SDI, are connected to 75 Ω BNC connectors (IN 1 to IN 4) on the rear assembly of the DDT-4634 fibre optic transmitter. Front panel LEDs indicates the presence of a valid input signal that corresponds to the channel's set data rate. If the input does not match that of the set data rate, for example if the channel's data rate has been set to SD only and it is being fed with another rated signal such as HD, then the corresponding LED will flash and the signal to the optical driver will be muted. This is also true of the DDR-4634 when it detects a channel signal on its optical input. In this example all four signals are present, but CH 1 does not match the channel's set data rate (or has been disabled via SNMP, see below).



With the data rate set for bypassed mode, the reclocker is bypassed allowing signals other than 3G-SDI, HD-SDI or SD-SDI to pass through.

If the laser is set for permanent operation, on loss of a valid input signal, a 54MHz oscillator is switched into the optical output so that the optical receiver still recognizes the optical link as being valid. This 54MHz signal does not affect the signal reclocking detector circuitry of the receiver, which is used in signal presence / alarm indication on detection or absence of a valid 3G, HD or SD signal.

Through the use of SNMP (see separate section of manual) it is possible to remotely monitor and control various functions not available via the local DIP switch control. Such as, for example, it is possible to individually disable the channels on either the DDT-4634 and DDR-4634 locking out an end user's functionality should this be desired. When a channel has been disabled, should an electrical signal be present, the corresponding channel LED will flash - not to be confused with situation where the data rate does not match the set data rate as described above.

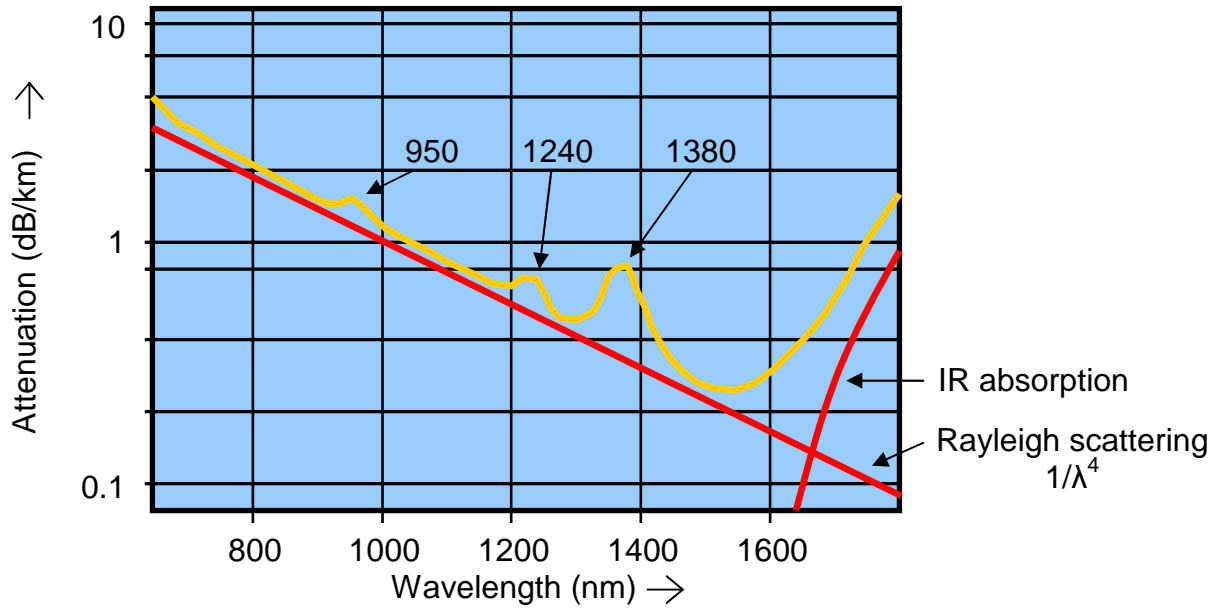


Figure 1: Attenuation versus wavelength.
Attenuation in the fibre is due to Absorption and Scattering.

SD only, HD/SD only modes:

Note that it is possible to set the units channels to operate as an SD rate only or HD/SD rate only mode by use of the DIP switch configuration controls. However in situations where it is desired that the end user does not have control over the intended setup, it is possible to set the unit to the desired rate via SNMP control and to lock it to SNMP only control so that the end user cannot override the setup parameters by use of the DIP switches. This is intended for situations where a link has been leased to a customer who is only paying for a certain data rate path such as SD only or HD/SD only as opposed to the full 3G rate. The same is true for disabling of channels.

Note that DIP switch control sets all channel data rates the same, whereas SNMP allows all four channels to be independently controlled.

SNMP

What Is It?

SNMP stands for Simple Network Management Protocol. It is an application layer protocol for managing IP (Internet Protocol) based systems. SNMP enables system administrators to manage system performance, and to find and solve system problems. SNMP runs over UDP (User Datagram Protocol), which in turn runs over IP.

Three types of SNMP exist: SNMP version 1 (SNMPv1), SNMP version 2 (SNMPv2) and SNMP version 3 (SNMPv3). It is not the intention here to discuss the differences between various versions, only to bring attention to the fact that IRT Electronics modules, fitted with SNMP capability, use SNMPv1.

An SNMP managed network consists of three key components: Network Management Systems (*NMS*), *agents*, and *managed devices*.

An *NMS* is the console through which the network administrator performs network management functions, such as monitoring status (e.g. alarm states) and remote controlling, of a set of managed devices. One or more *NMS*'s must exist on any managed network. Generally the *NMS* is a computer running third party SNMP control software. There are a number of third party SNMP software applications currently available on the market.

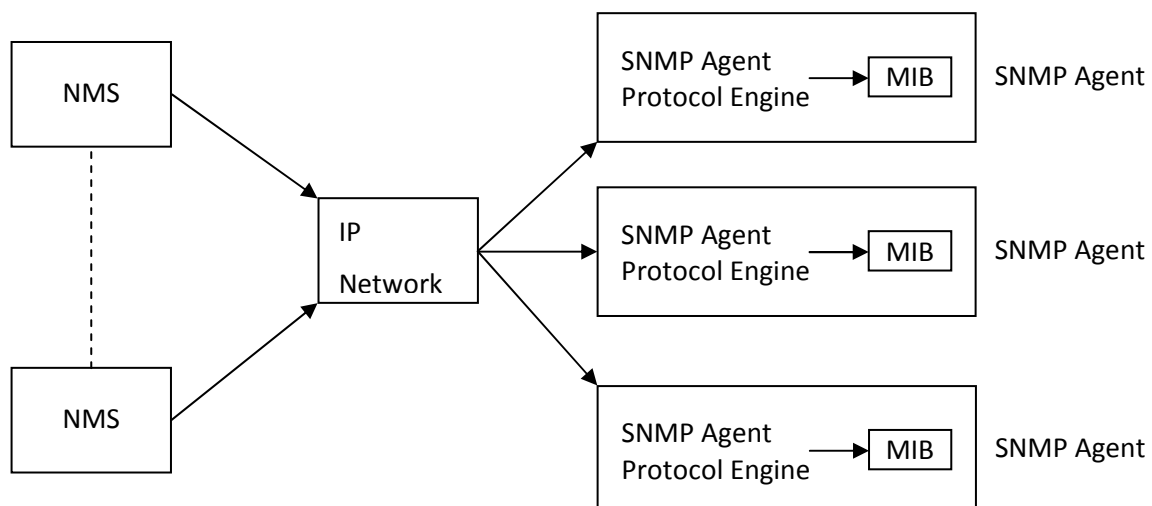
An *NMS* polls, or communicates with, an *agent*. An *agent* is a network management software module that resides in a *managed device*. An *agent* has local knowledge of management information and translates that information into a form compatible with SNMP. The *agent*, therefore, acts as an interface between the *NMS* and the managed devices. The *NMS* sends a request message, and control commands for the managed devices, to the *agent*, which in turn sends a response message, containing information about the *managed devices*, back to the *NMS*.

A *managed device* contains an SNMP *agent* and resides on a managed network. *Managed devices* collect and store management information and make this information available to *NMS*'s using SNMP.

Managed device agent variables are organised in a tree structure known as a Management Information Base (*MIB*). Within the *MIB* are parameters pertaining to the *managed device*. An Object Identifier (OID) number within the *MIB* defines the managed device type. This is a unique number specific to the model of *managed device*. Other information relating to the device is also stored, information such as alarm states, controllable settings, etc. The *MIB* tree is organised in such a way that there will be no two *MIB* files with conflicting placements.

Normally an *NMS* polls an *agent* for information relating to the *MIB* in a managed device to be sent back to the *NMS*. When certain conditions are met within the *MIB*, such as major alarm conditions, for example, the *agent* automatically sends what is known as a *trap* to the *NMS* without any prompting from the *NMS*. This allows automatic notification of a predetermined event.

SNMP Block Diagram



DDT-4634 & DDR-4634

SNMP with IRT Products:

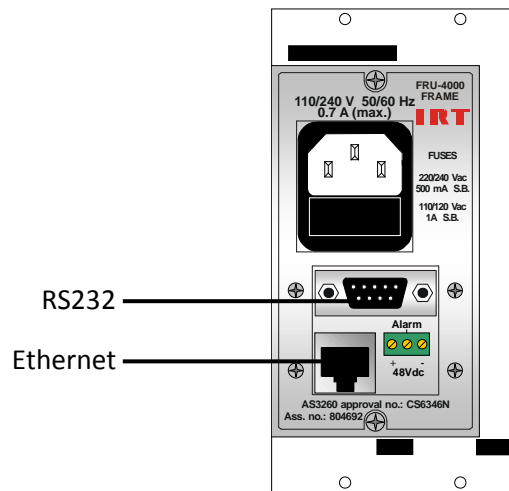
IRT Electronics currently employs SNMPv1 with its SNMP capable frames. The frame acts as an *agent* when fitted with a CDM-xxxx module. This module has its own designated slot next to the power supply so as to not affect the number of modules that the frame will take. Communication between the *NMS*, the frame and its loaded modules are via this CDM-xxxx module. Note that the *NMS* software is third party and not supplied by IRT Electronics.

Ethernet connection for SNMP operation is via an RJ45 connector on the rear of the frame, below the mains inlet. Ethernet rate runs at either 10 baseT or 100 baseT.

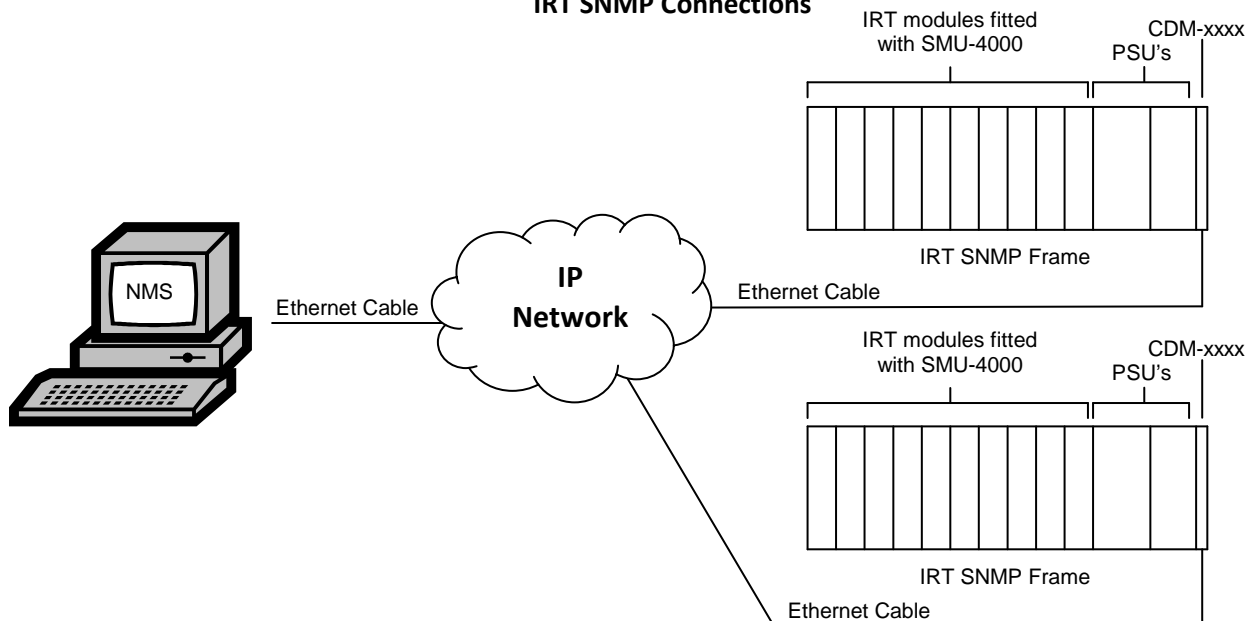
Frame parameters, such as Name, Address and Location, are set via an RS232 interface, a D9 connector on the rear of the frame below the mains inlet. A software terminal emulator, such as Tera Term or HyperTerminal, is used for setting and reading the parameters of the frame.

IRT modules that are SNMP compatible may need an optional plug-in SNMP module with a program relevant to the module that it is plugged into. Depending on the module, besides the module identification, parameters such as alarm states, inputs and controls etc. are communicated to the CDM-xxxx *agent* via a data bus on the rear of the frame. Thus the CDM-xxxx collects information on what is loaded within the frame, what positions they occupy, and their current status for communication to the *NMS* when the *NMS* sends a request for information.

In the event of a major alarm from any of the SNMP compatible modules, or power supplies, a *trap* is automatically sent by the CDM-xxxx *agent* to the *NMS* without any prompting by the *NMS*. This alerts the operator to any fault conditions that may exist that need immediate attention.



IRT SNMP Connections



IRT SNMP Setup

DDT-4634 & DDR-4634

DDT-4634 and DDR-4634 SNMP Functions:

With the DDT-4634 and DDR-4634 installed in an IRT frame fitted with SNMP capability, these can be interrogated by an SNMP Network Management System (NMS).

Due to the DDT-4634 and DDR-4634 sharing a common object identifier number (OID) within their respective firmwares, when doing an SNMP 'walk' via the NMS the reported identifier in the slot position list is reported as being **irtDDx4634** for both the DDT-4634 and DDR-4634 where the 'x' signifies either the 'T' or the 'R' in the DDT or DDR part of the product number. The specific product type and details are revealed when expanding this identifier.

As both the DDT-4634 and DDR-4634 SNMP functions are the same in structure, a combined explanation of the SNMP functions for both are given below. Note that for SNMP control DIP switch SW1-7 must be set to ON (on either the DDT-4634 or DDR-4634 being controlled).

sysDescr	- A description of the unit: DDT-4634 4 Channel Optical Transmitter DDR-4634 4 Channel Optical Receiver
sysObjectID	- irtDDT4634 irtDDR4634
sysUpTime	- A indication of how long the unit has been running since its last power on or reset in Days, Hours, Minutes and Seconds.
sysName	- A 16 character writable system name. Default set name: DDT-4634 DDR-4634
irt463xType	- An indication of the device type: (1) ddt4634-Transmitter (2) ddr-4634-Receiver
alarms	- An indication of the alarm type: (1) noAlarms: No alarms present. (2) nonUrgentAlarms: All four DDT-4634 signal inputs are missing, invalid or not enabled; All four DDR-4634 signal outputs are missing, invalid or not enabled, OR an at least one 'opticalLow' condition has been detected. (3) urgentAlarms: At least one optical laser of DDT-4634 is faulty; At least one optical detector of DDR-4634 has lost its optical input. (4) urgAndNonUrgentAlarms: Both urgent alarm conditions are present.
ctrlMode	- The current configuration setting's source as determined by DIP switch SW1-7 position: (1) pcbSwitches: Configuration set locally via on-board DIP switches (SW1-7 = OFF). (2) remoteSNMP: Configuration set remotely via SNMP (SW1-7 = ON). (3) lockToRemoteSNMP: Lock module to SNMP control – overrides SW1-7 position. Note that SW1-7 must be initially ON to be able to set to Lock to SNMP mode. To release send either a (1) or (2).
channelInfoTable	- Information and control of the DDT-4634 and DDR-4634 in table form.
channelInfoEntry	- Information and control of the individual channels in the table.
channelNumber	- An indication of the individual channel number corresponding to the inputs of the DDT-4634 and outputs of the DDR-4634: 1, 2, 3 and 4.
inputStatus	- An indication of the signal rate present: (1) unknownPresent: Signal rate is not one of the 3G/HD/SD-SDI/ASI rates. (2) sdiSD-ASI-Present: Signal is either an SD-SDI or ASI signal, or at 270 Mb/s rate. (3) sdiHD-Present: Signal is either an HD-SDI signal, or at 1.485 Gb/s rate. (4) sdi3G-Present: Signal is either a 3G-SDI signal, or at 2.97 Gb/s rate. (5) notPresent: No signal is present.

DDT-4634 & DDR-4634

dataRateSet	<ul style="list-style-type: none">- Control of the signal data rate setting:<ul style="list-style-type: none">(1) sdi3G-HD-SD-ASI: Reclocker set to 3G-SDI, HD-SDI or SD-SDI/ASI rates.(2) sdiHD-SD-ASI-only: Reclocker set to HD-SDI (1.485 Gb/s) and SD-SDI/ASI (270 Mb/s) rates only.(3) sdiSD-ASI-only: Reclocker set to SD-SDI/ASI (270 Mb/s) rate only.(4) bypassed: Reclocker bypassed to allow other signal rates through.
channelEnable	<ul style="list-style-type: none">- An indication of how and whether the channel is enabled. Relates to inputs of DDT-4634 and outputs of the DDR-4634:<ul style="list-style-type: none">(1) notEnabled: Disable the DDT-4634 input / DDR-4634 output electrical signal. To enable select either (2) or (3).(2) enabledActive: Input / output electrical signal is both Enabled and Active.(3) enabledMuted: Electrical signal is Enabled, but the input to the laser is Muted when no signal, or an invalid signal, is present to the DDT-4634; Electrical signal is Enabled, but the output is Muted when no signal, or an invalid signal is present within the received optical input to the DDR-4634.
channelAlias	<ul style="list-style-type: none">- A 16 character maximum Alias (name) for the signal can be read and set.
blankLine	<ul style="list-style-type: none">- A line spacing within the table to make reading the table easier.
channelKeepAlive	<ul style="list-style-type: none">- Relates to the DDT-4634 only. A substitution of a 54 MHz signal in place of no input, or invalid, signal to keep the optical link active at the receiver end:<ul style="list-style-type: none">(1) on: Keep Alive signal active.(2) off: Keep Alive signal not active.(3) na: Not Applicable, as reported by the DDR-4634.
chanPresTrapEnable	<ul style="list-style-type: none">- Enable or Disable Traps to be sent when the electrical signal condition changes:<ul style="list-style-type: none">(1) notEnabled: No Traps sent on change of electrical signal presence.(2) enabled: Traps automatically sent on change of electrical signal presence.
opticalStatus	<ul style="list-style-type: none">- An indication of how the SFP optical component is functioning:<ul style="list-style-type: none">(1) opticalGood: DDT-4634 channel laser is present; DDR-4634 channel optical input level is good.(2) opticalLow: Relates to DDR-4634 only. Channel optical input level is approaching or has gone below its minimum input threshold AND electrical signal presence is also reported (may or may not contain signal errors).(3) opticalFail: DDT-4634 channel laser has failed or is not present; DDR-4634 channel optical input level is approaching or has exceeded its limit AND no electrical signal is present.
waveLength	<ul style="list-style-type: none">- An indication of the DDT-4634 channel laser wavelength. DDR-4634 always reports 'wideband' indicating that it is a wideband receiver.
detectorType	<ul style="list-style-type: none">- Relates to the DDR-4634 only. An indication of the detector type:<ul style="list-style-type: none">(1) pin: PIN detector installed on DDR-4634 channel.(2) apd: APD detector installed on DDR-4634 channel.(3) na: Not Applicable, as reported by the DDT-4634.
opticalTrapEnable	<ul style="list-style-type: none">- Enable or Disable Traps to be sent when the optical signal condition changes:<ul style="list-style-type: none">(1) notEnabled: No Traps sent on change of optical signal presence.(2) enabled: Traps automatically sent on change of optical signal presence.
fpgaVersion	<ul style="list-style-type: none">- An indication of the firmware version of the microcontroller in the format 'x.y', where x is the major revision number and y the minor.
reset	<ul style="list-style-type: none">- Unit reset control:<ul style="list-style-type: none">(1) normal: when queried reset control returns a 'normal' state.(2) reset: system reset causes 'sysUpTime' counter to reset.

MAINTENANCE & STORAGE

Maintenance:

No regular maintenance is required.

Care however should be taken to ensure that all connectors are kept clean and free from contamination of any kind. This is especially important in fibre optic equipment where cleanliness of optical connections is critical to performance.

Storage:

If the equipment is not to be used for an extended period, it is recommended the whole unit be placed in a sealed plastic bag to prevent dust contamination. In areas of high humidity a suitably sized bag of silica gel should be included to deter corrosion.

Where individual circuit cards are stored, they should be placed in antistatic bags. Proper antistatic procedures should be followed when inserting or removing cards from these bags.

WARRANTY & SERVICE

Equipment is covered by a limited warranty period of three years from date of first delivery unless contrary conditions apply under a particular contract of supply. For situations when “**No Fault Found**” for repairs, a minimum charge of 1 hour’s labour, at IRT’s current labour charge rate, will apply, whether the equipment is within the warranty period or not.

Equipment warranty is limited to faults attributable to defects in original design or manufacture. Warranty on components shall be extended by IRT only to the extent obtainable from the component supplier.

Equipment return:

Before arranging service, ensure that the fault is in the unit to be serviced and not in associated equipment. If possible, confirm this by substitution.

Before returning equipment contact should be made with IRT or your local agent to determine whether the equipment can be serviced in the field or should be returned for repair.

The equipment should be properly packed for return observing antistatic procedures.

The following information should accompany the unit to be returned:

1. A fault report should be included indicating the nature of the fault
2. The operating conditions under which the fault initially occurred.
3. Any additional information, which may be of assistance in fault location and remedy.
4. A contact name and telephone and fax numbers.
5. Details of payment method for items not covered by warranty.
6. Full return address.
7. For situations when “**No Fault Found**” for repairs, a minimum charge of 1 hour’s labour will apply, whether the equipment is within the warranty period or not. Contact IRT for current hourly rate.

Please note that all freight charges are the responsibility of the customer.

The equipment should be returned **to the agent who originally supplied the equipment** or, where this is not possible, to IRT directly. Details of IRT’s direct address can be found at IRT Electronics’ website.

Web address: www.irtelectronics.com

Email: sales@irtelectronics.com