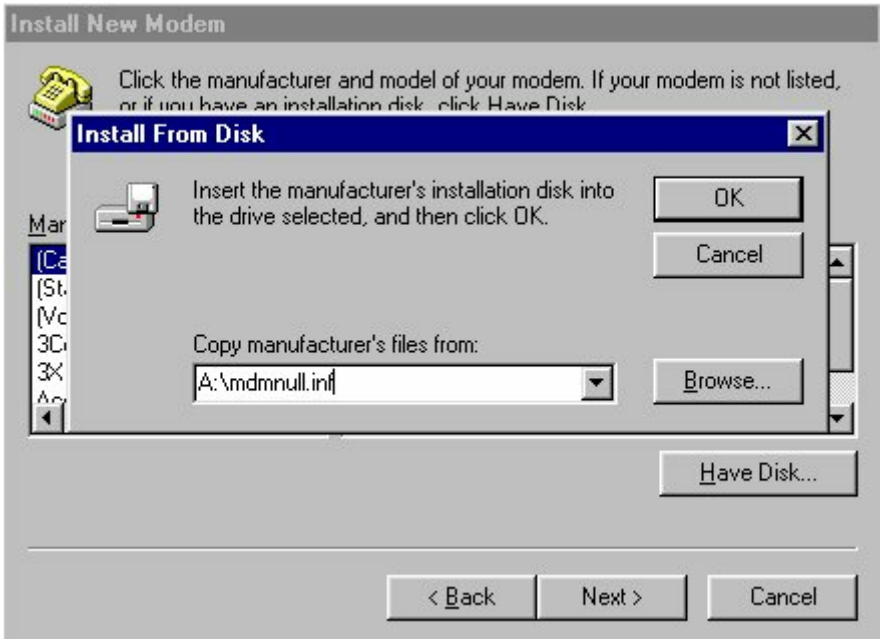
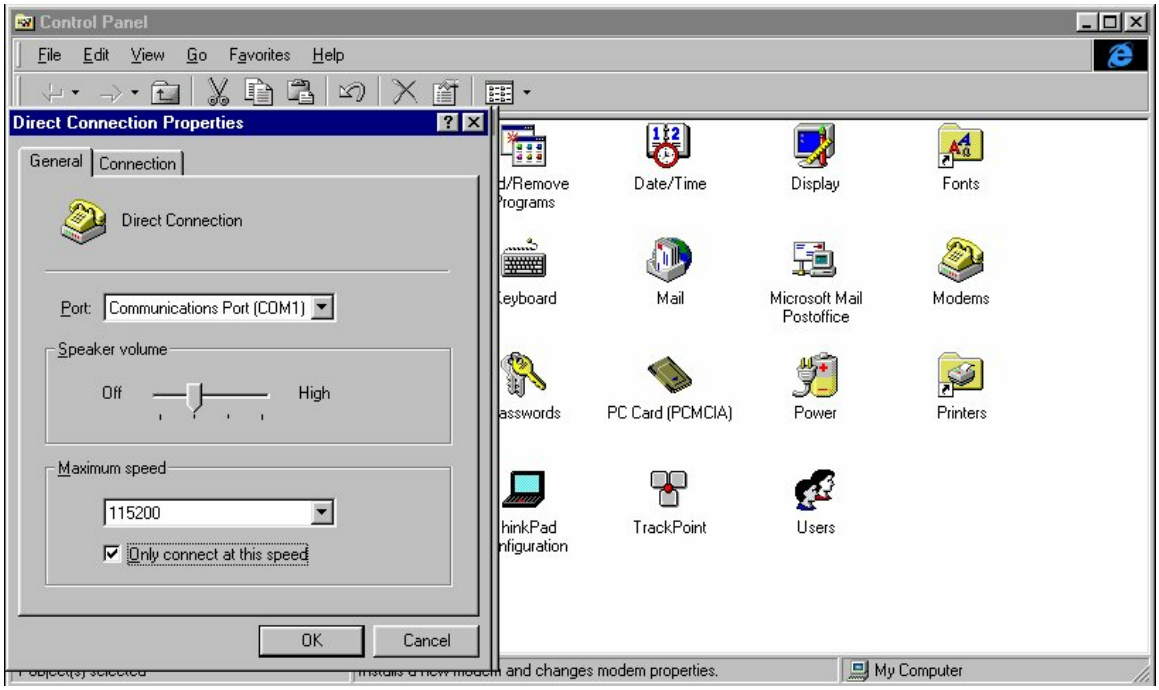
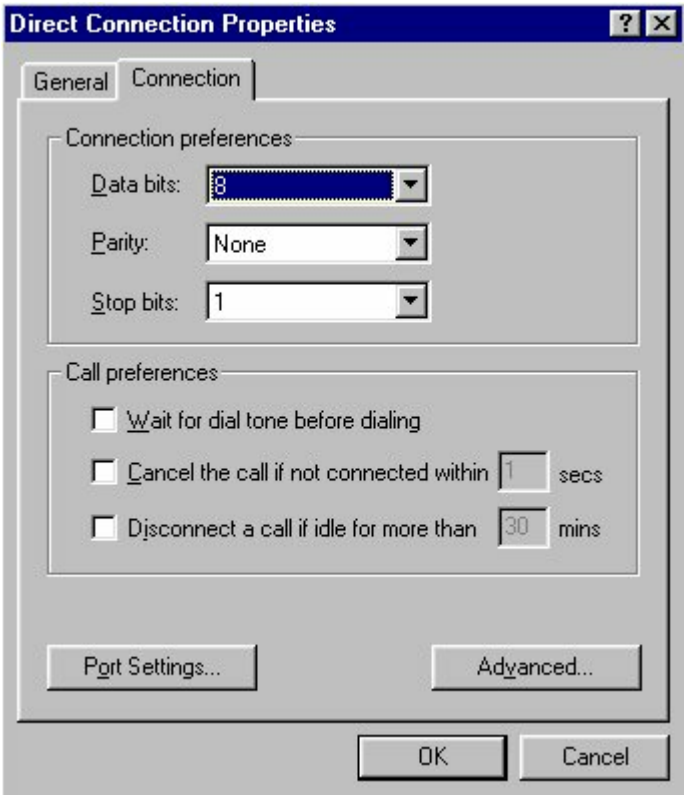


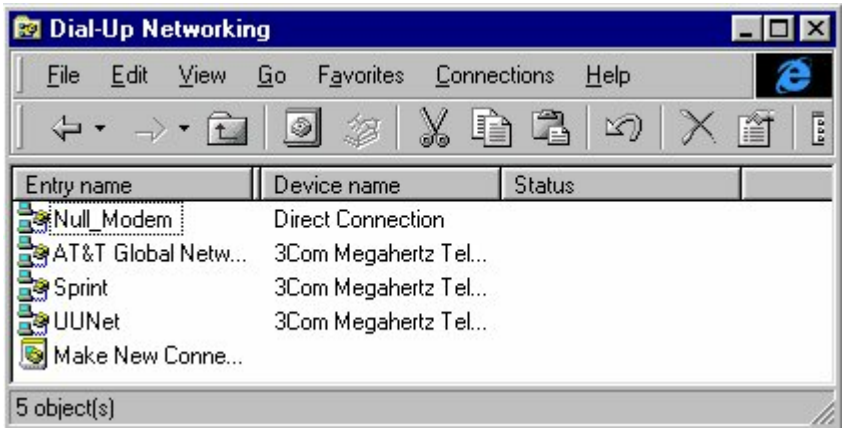
4. Once setup, use the following screens to set up the COM port's parameters.

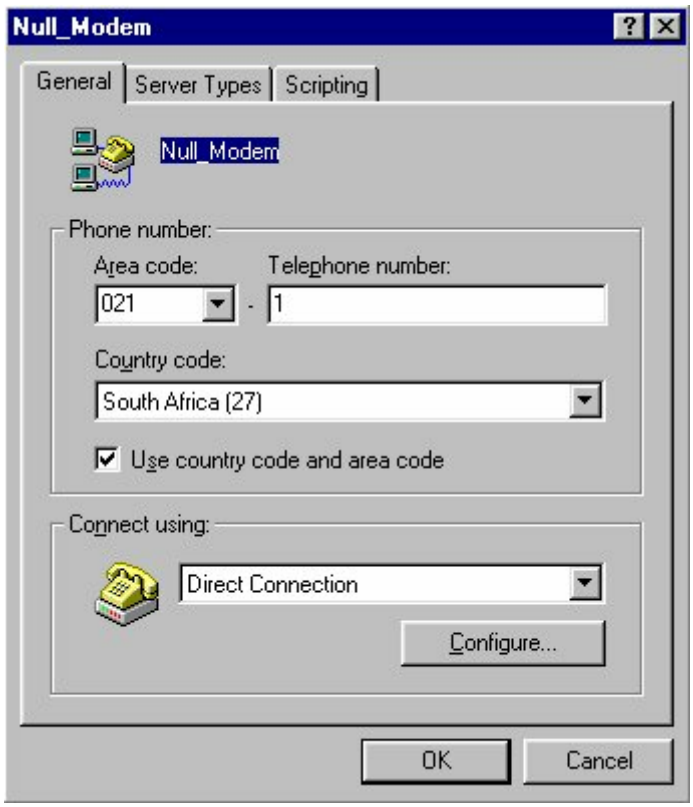


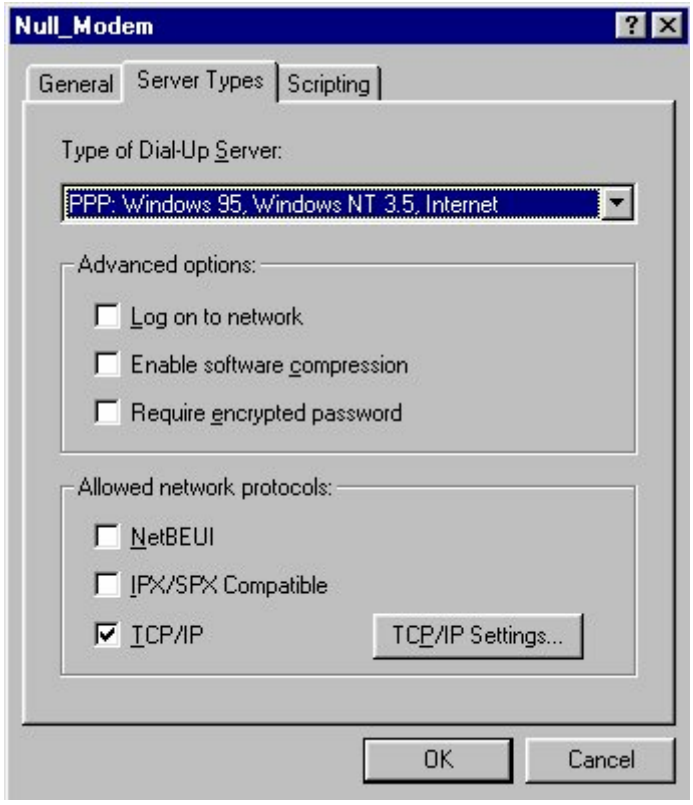


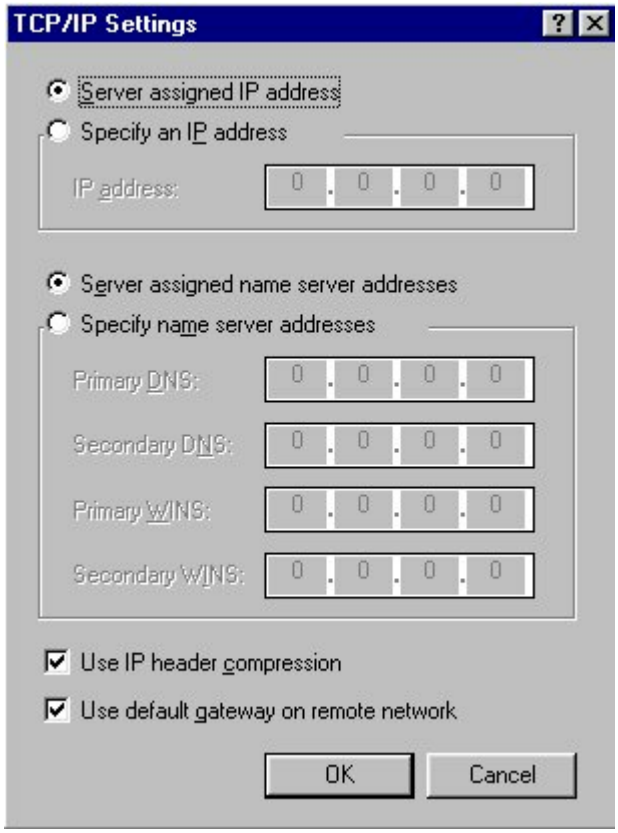
A.4 Adding Dial-up Networking : Windows 95/98

1. After adding the modem, set up the connection properties using the following screens as a guideline. This will allow establishment of a PPP connection between the computer and the DIU's Element Manager port. A Null_Modem connection option as shown below will be created. If one doesn't exist, double click on the "Make New Connection" icon.




Null_Modem
General
Server Types
Scripting
Null_Modem
Phone number:
Area code:
Telephone number:
021
1
Country code:
South Africa (27)
Use country code and area code
Connect using:
Direct Connection
Configure...
OK
Cancel


Null_Modem
General
Server Types
Scripting
Type of Dial-Up Server:
PPP: Windows 95, Windows NT 3.5, Internet
Advanced options:
Log on to network
Enable software compression
Require encrypted password
Allowed network protocols:
NetBEUI
IPX/SPX Compatible
TCP/IP
TCP/IP Settings...
OK
Cancel



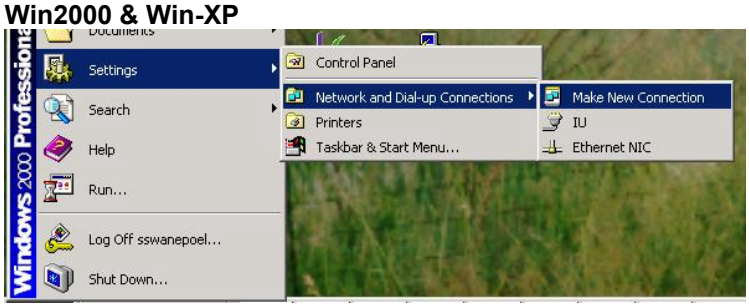
A.5 Adding Dial-up Networking : Windows 2000 / Windows XP

A.5.1 To add dial-up networking

The installation procedure documented here is based on the procedure that should be followed for Windows 2000. Some of the configuration windows for Windows XP may look slightly different, and may appear in a different order, but the basic procedure are the same as for Windows 2000 and are therefore not repeated in an attempt to reduce the size of this user manual.

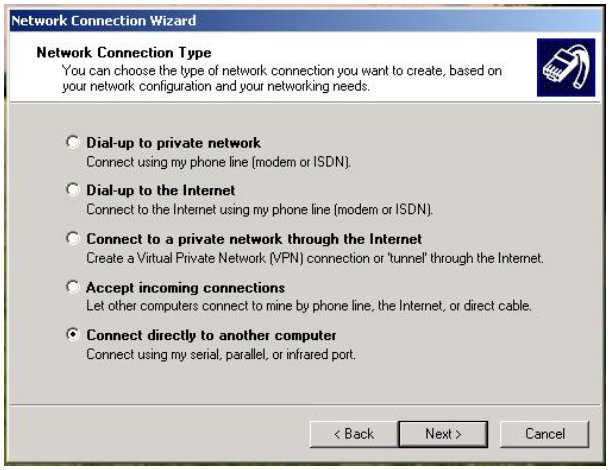
1. Select the ***Make New Connection*** menu item.

Win2000 & Win-XP

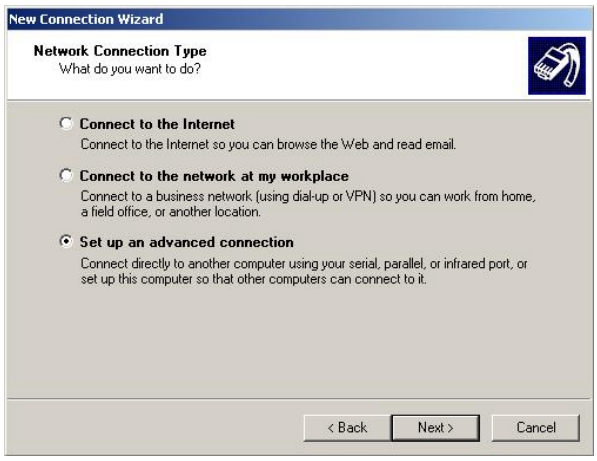


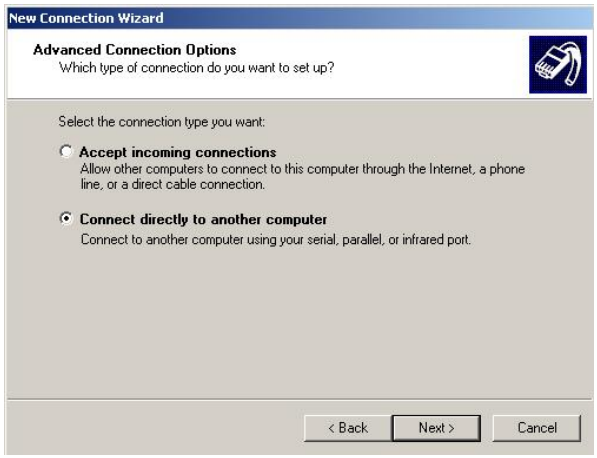
2. Select the ***Connect directly to another computer*** and press the ***Next*** button.

Win2000



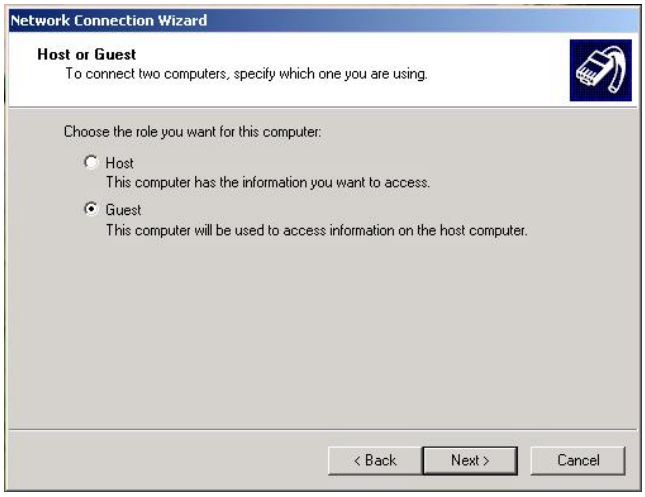
Win-XP





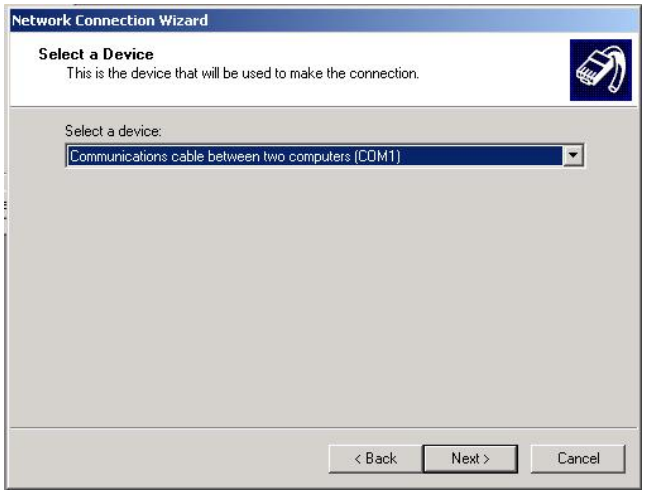
3. Set the dialup connection to connect as ***Guest*** and press the ***Next*** button.

Win2000 & Win-XP



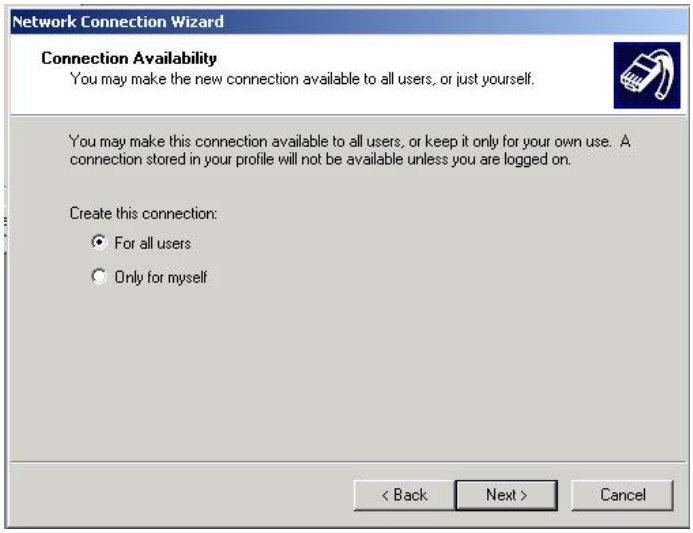
4. Select the COM port you intend to use to connect to the radio from the ***Select Device*** dropdown box and press the ***Next*** button. In Windows XP, this window is preceded by **Step 6** below.

Win2000 & Win-XP



5. Select the users that must be able to use this dialup connection and press the ***Next*** button.

Win2000 & Win-XP



6. Enter the name of this dialup connection and press the ***Finish*** button. This name may be any name of your choice. The connection is now installed, but its properties must still be configured. This window is displayed earlier in Windows XP.

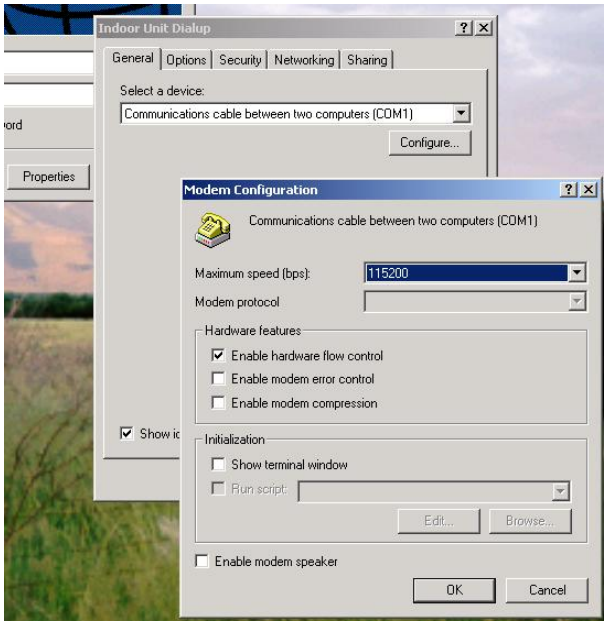
Win2000 & Win-XP

7. Finish installing the connection (Windows XP only)

Win-XP

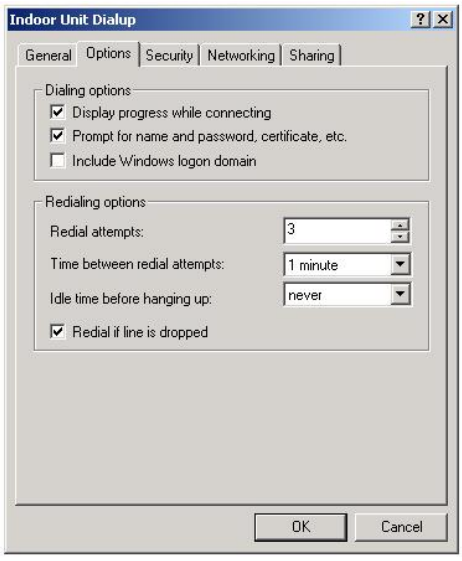
8. Browse to the newly added connection under the ***Network and Dial-Up connections*** menu item of Windows, and right-click on the connection with your mouse. Select the ***Properties*** item from the pop-up menu to bring up the properties window below. Now click on the ***Configure*** button below the ***Select a Device*** combo box in the ***General*** properties tab window to bring up the ***Modem Configuration*** box below. Make sure that all the settings on your PC are the same is in this window (Maximum speed: 115200 bps & hardware flow control enabled). Now press the **OK** button.

Win2000 & Win-XP



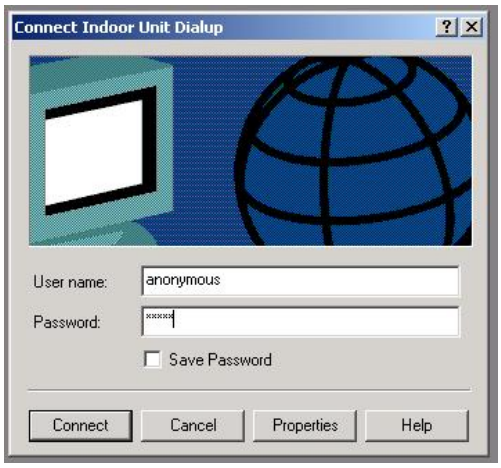
9. In the ***Options*** properties box below, select ***Redial if line is dropped*** and press the **OK** button.

Win2000 & Win-XP



10. Browse to the newly added connection under the ***Network and Dial-Up connections*** menu item of Windows, and left-click on the connection with your mouse. This will bring up the connection window below. The values of the ***Username*** and ***Password*** fields does not matter, press ***Connect*** to dial into the radio once the dialup cable has been plugged into the Digital Indoor Unit and the PC.

Win2000 & Win-XP



B Appendix: MANAGEMENT OF THE MDR2400-SR MDR5800-SR and the Orion 5825-sr

All management of the MDR and Orion products are implemented using SNMP (Simple Network Management Protocol), an open standard. The products can be managed by:

1. Standard SNMP managers such as HP OpenView or SNMPc i.e. there is Open Network Management compatibility.
2. For rapid product installation, the NMS GUI Application (hereafter referred to as the NMS-GA) provides extensive management functions on site and, via the microwave radio link, can be used to access the MDR / Orion station on the opposite side of the link. The NMS-GA is a software application that runs on a PC workstation such as a laptop or notebook computer that is connected to an MDR / Orion Digital Indoor Unit serial port (DB9 DTE) or an Ethernet connection (10BaseT DTE), both accessed via the DIU front-panel.

B.1 SNMP and the MDR / Orion

Use of SNMP within the product allows remote: configuration, monitoring of performance, notification of alarms and firmware upgrades via an IP-network. Within an IP network supporting routing of IP data, the radios can be supported from any remote location. The product can be accessed via the Internet if the necessary gateways are provided. A GSM/PCS modem dial-up capability provides another remote management option.

The Digital Indoor Units have built-in SNMP agents and an extensive MIB (Management Information Base). The MDR /Orion product uses SNMP V1 (RFC1155, 1157). The user has access to an Enterprise MIB (obtainable though customer services) and MIB II (RFC 1213).

Access to the MIB via the DIU SNMP agent is via Ethernet (10BaseT interface on the product's front panel) or PPP (RFC 1661) via the product's serial channel Element Manager port. The use of SNMP provides flexibility for operators with central equipment monitoring. It provides management access to radio configuration (all data interfaces), interface status and statistics, fault and maintenance information.

SNMP security (if enabled) is ensured by using a login and password to give the user "administrator" or "standard user" rights. The "standard user rights" option limits the ability to SET MIB variables.

NOTE Secure SNMP is not longer supported.

The product has threshold-based alarm generation (there is an extensive SNMP trap list with a trap filter that is adjustable via SNMP). Network access (wired or wireless i.e. GSM/PCS Modem) allows over-the-air remote firmware uploading (FTP) with a load verification (and reversion) capability.

There are three principle requirements to use SNMP with the MDR / Orion Radio Stations.

1. A Management Station that runs a SNMP Management Software package that is installed on a networked or stand-alone PC that can be connected to an Digital Indoor Unit either using a serial connection or an Ethernet connection. From the Management station, the agents within the Digital Indoor Units can be configured or polled for information.
2. Agent: The agent accepts SNMP GET, SET or GET-NEXT commands from the Management Application software and collects or adjusts information from the Digital Indoor Unit's MIB.
3. Management Information Base (MIB): the MIB is a database that is accessed based on the OID (object ID) the SNMP Manager has chosen. The Digital Indoor Unit uses an Enterprise MIB and a standard MIB (MIB II) to store or allow access to information relevant to the MDR / Orion link.

B.2 The MIB Elements – OID (Object ID) DESCRIPTIONS

Object ID	Object name	Object Type	Access Rights	Description
.1316	plessey			
.1316.1	products			
.1316.1.1	digitalradio			
.1316.1.1.1	mdrmte			
.1316.1.1.1.1	mdrmtePerformance			
.1316.1.1.1.2	mdrmteConfiguration			
.1316.1.1.1.3	mdrmteFault			
.1316.1.1.1.4	mdrmteAccess			
.1316.1.1.1.5	mdrmteRelayOutputs			
.1316.1.1.1.6	mdrmteOptoInputs			
.1316.1.1.1.1.1	mdrmtePayloadPerf			
.1316.1.1.1.1.1.1	mdrmtePpTable	SEQUENCE	not-accessible	
.1316.1.1.1.1.1.1.1	mdrmtePpEntry	MdrmtePpEntry	not-accessible	
.1316.1.1.1.1.1.1.1.1	mdrmtePpIndex	INTEGER	read-only	
.1316.1.1.1.1.1.1.1.2	mdrmtePpLOS	INTEGER	read-only	A Loss of Signal has been detected on the input to a tributary - there is one for each tributary (0, 1, 2, 3, ...)
.1316.1.1.1.1.1.1.1.3	mdrmtePpAIS	INTEGER	read-only	An Alarm Indication Signal has been detected on the input to a tributary - there is one for each tributary (0, 1, 2, 3, ...)
.1316.1.1.1.1.1.2	mdrmteCrcErrors	INTEGER	read-only	The number of CRC4 or CRC6 errors seen on the selected tributary since the last time errors were cleared.
.1316.1.1.1.1.1.3	mdrmteCrcTribSelect	INTEGER	read-write	The tributary selected for CRC checking.
.1316.1.1.1.1.1.4	mdrmteCrcLock	INTEGER	read-only	Indication of whether the CRC checking algorithm has locked onto a CRC frame signature in the payload data.
.1316.1.1.1.1.1.5	mdrmteCrcEbitCnt	INTEGER	read-only	Reflects the number of assertions of the 'E' bits in selected tributary.
.1316.1.1.1.1.2	mdrmteRFLinkPerf			
.1316.1.1.1.1.2.1	mdrmteCarrierDetect	INTEGER	read-only	Indicates if a RF Carrier has been detected by the RF Unit - if so, the header in the RF Packet has been identified as a potential valid packet - note however, that it could be received from another transmitter that uses the same header format
.1316.1.1.1.1.2.2	mdrmteRSSI	Gauge	read-only	A dBm value representative of the received signal level. The value detected is representative of the level that would be measured should a spread spectrum signal be input at the RF Unit's Diplexer RF Port - a CW (Continuous Wave) signal will appear to be 20 dB higher

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.1.2.3	mdrmteCurrentPER	DisplayString	read-only	This is the current Packet Error Rate and is based on the number of uncorrectable packets/blocks being detected by the FEC (Forward Error Correction) circuitry within the Digital Indoor Unit (based of the number of errored packets divided by the total number of packets transmitted in a measurement period of 250msec)
.1316.1.1.1.1.2.4	mdrmteMaximizedPER	DisplayString	read-only	This is the maximum Packet Error Rate detected during the last measurement period, based number of maximum number
.1316.1.1.1.1.2.5	mdrmteLinkUnavailable	INTEGER	read-only	Based on G.826 criteria, this MIB element indicates RF Link Availability/Non-availability
.1316.1.1.1.1.2.6	mdrmteFrameUnlock	INTEGER	read-only	The data that is transmitted across the RF Link is conveyed in a frame, compiled within
.1316.1.1.1.1.2.7	mdrmteRemoteFrameUnlock	INTEGER	read-only	Frame-lock (mdrmteFrameUnlock) as seen by the other end of the link is fed back here.
.1316.1.1.1.1.2.8	mdrmteErrSecRatioExceeded	INTEGER	read-only	The ESR is a ratio of the number of Errored seconds (one second periods within
.1316.1.1.1.1.2.9	mdrmteSevErrSecRatioExceeded	INTEGER	read-only	The SESR is a ratio of the number of Severely Errored seconds (one second periods within
.1316.1.1.1.1.2.10	mdrmteBkgrndBlkErrRatioExceeded	INTEGER	read-only	The BBER is a ratio of the number of uncorrectable blocks/packets received
.1316.1.1.1.1.2.11	mdrmteMinorPERExceeded	INTEGER	read-only	This parameter indicates if the minor packet (uncorrectable by FEC) error rate has been exceeded based on the defined
.1316.1.1.1.1.2.12	mdrmteMajorPERExceeded	INTEGER	read-only	This parameter indicates if the major packet (uncorrectable by FEC) error rate has been exceeded based on the defined
.1316.1.1.1.1.2.13	mdrmteCriticalPERExceeded	INTEGER	read-only	This parameter indicates if the critical packet (uncorrectable by FEC) error rate has been exceeded based on the defined
.1316.1.1.1.1.2.14	mdrmtePrevParamsRestored	INTEGER	read-only	Indicates if autorecovery for the RF Unit settings had to be invoked
.1316.1.1.1.1.2.15	mdrmteAveragePER	DisplayString	read-only	This is the current Average Packet Error Rate and is based on the number of
.1316.1.1.1.1.2.16	mdrmteStartSweep	INTEGER	read-write	This is used to start the spectral RSSI sweep.
.1316.1.1.1.1.2.17	mdrmteRssiSpectrum	DisplayString	read-only	This contains the results of the sweep through the spectum of
.1316.1.1.1.1.3	mdrmteG826			

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.1.3.1	mdrmteStatus	INTEGER	read-only	Indicates if 'G.826-like' errored, severely errored and unavailable
.1316.1.1.1.1.3.2	mdrmteTotalSeconds	Counter	read-only	Indicates the total number of seconds, both available and unavailable
.1316.1.1.1.1.3.3	mdrmteAvailableSeconds	Counter	read-only	A period of unavailable time begins at the onset of ten consecutive SES events.
.1316.1.1.1.1.3.4	mdrmteUnavailableSeconds	Counter	read-only	A period of unavailable time begins at the onset of ten consecutive SES events.
.1316.1.1.1.1.3.5	mdrmteErroredSeconds	Counter	read-only	A one second period with one or more errored packets(uncorrectable packets) or at least one defect
.1316.1.1.1.1.3.6	mdrmteSeverelyErroredSeconds	Counter	read-only	A one-second period which contains > 30% errored blocks or at least one defect. SES is a subset of ES.
.1316.1.1.1.1.3.7	mdrmteErroredBlocks	Counter	read-only	A packet which has been identified as containing uncorrectable bits by the FEC circuitry
.1316.1.1.1.1.3.8	mdrmteBackgroundBlockErrors	Counter	read-only	An errored block not occurring as part of a SES.
.1316.1.1.1.1.3.9	mdrmteErroredSecondsRatio	DisplayString	read-only	The ratio of ES to total seconds in available time during a fixed measurement interval.
.1316.1.1.1.1.3.10	mdrmteSeverelyErroredSecondsRatio	DisplayString	read-only	The ratio of SES to total seconds in available time during a fixed measurement interval.
.1316.1.1.1.1.3.11	mdrmteBackgroundBlockErrorRatio	DisplayString	read-only	The ratio of Background Block Errors (BBE) to total blocks in available time
.1316.1.1.1.1.3.12	mdrmteDeprecated2	INTEGER	write-only	Deprecated
.1316.1.1.1.1.3.13	mdrmteCorrectedSymbols	INTEGER	read-only	This parameter lists the number of corrected symbols i.e. those corrected by the FEC
.1316.1.1.1.1.4	mdrmteCounters			
.1316.1.1.1.1.4.1	mdrmteLostEthRxPkts	Counter	read-only	Indicates the total number of times an ethernet packet could not be buffered
.1316.1.1.1.1.4.2	mdrmteLostLinkRxPkts	Counter	read-only	Indicates the total number of times a link packet could not be buffered
.1316.1.1.1.1.4.3	mdrmteLostWaySideTxPkts	Counter	read-only	Indicates the total number of times a wayside packet could not be buffered
.1316.1.1.1.1.4.4	mdrmteScc1FullCnt	Counter	read-only	Indicates the total number of times SCC1 was full to capacity
.1316.1.1.1.1.4.5	mdrmteScc2FullCnt	Counter	read-only	Indicates the total number of times SCC2 was full to capacity
.1316.1.1.1.1.4.6	mdrmteScc1UnderrunCnt	Counter	read-only	Indicates the total number of times SCC1 ran out of BDs
.1316.1.1.1.1.4.7	mdrmteScc2UnderrunCnt	Counter	read-only	Indicates the total number of times SCC2 ran out of BDs
.1316.1.1.1.1.4.8	mdrmteScc2RxBdAbortCnt	Counter	read-only	Indicates the total number of times SCC2 received an aborted frame

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.1.4.9	mdrmteScc2RxBdNonOctCnt	Counter	read-only	Indicates the total number of times SCC2 received a Non octet aligned frame
.1316.1.1.1.1.4.10	mdrmteScc2RxBdCrcCnt	Counter	read-only	Indicates the total number of times SCC2 received a frame with a CRC error
.1316.1.1.1.1.4.11	mdrmteEtherTxRetries	Counter	read-only	Indicates the total number of (collisions) packets that were retransmitted on ethernet
.1316.1.1.1.1.4.12	mdrmteEtherTxDeferCnt	Counter	read-only	Indicates the total number of frames deferred due to early collisions on ethernet
.1316.1.1.1.1.4.13	mdrmteEtherTxHeartBeatCnt	Counter	read-only	Indicates the total number of times the collision inup was not asserted on ethernet
.1316.1.1.1.1.4.14	mdrmteEtherTxLateCollisions	Counter	read-only	Indicates the total number of late collisions on ethernet
.1316.1.1.1.1.4.15	mdrmteEtherReTxLimit	Counter	read-only	Indicates the total number of times the retransmission limit was reached on ethernet
.1316.1.1.1.1.4.16	mdrmteEtherTxUnderrun	Counter	read-only	Indicates the total number of buffer underruns on ethernet
.1316.1.1.1.1.4.17	mdrmteEtherTxCarrierLost	Counter	read-only	Indicates the total number of times carrier was lost on ethernet
.1316.1.1.1.1.4.18	mdrmteEtherRxLenErr	Counter	read-only	Indicates the total number of frame length violations received on ethernet
.1316.1.1.1.1.4.19	mdrmteEtherRxNonOctet	Counter	read-only	Indicates the total number of non-octet aligned frames received on ethernet
.1316.1.1.1.1.4.20	mdrmteEtherRxShort	Counter	read-only	Indicates the total number of (too) short frames received on ethernet
.1316.1.1.1.1.4.21	mdrmteEtherRxCRCerr	Counter	read-only	Indicates the total number of CRC errored frames received on ethernet
.1316.1.1.1.1.4.22	mdrmteEtherRxOverrun	Counter	read-only	Indicates the total number of receiver overruns received on ethernet
.1316.1.1.1.1.4.23	mdrmteEtherRxCollision	Counter	read-only	Indicates the total number of collisioned frames received on ethernet
.1316.1.1.1.1.4.24	mdrmteEtherJunkFrames	Counter	read-only	Indicates the total number of invalid frames received on ethernet
.1316.1.1.1.1.4.25	mdrmteEtherShortFrames	Counter	read-only	Indicates the total number of times the Ethernet frame received was too short.
.1316.1.1.1.1.4.26	mdrmteEtherTxBdsFull	Counter	read-only	Indicates the total number of times the ethernet Tx BD queue was too full to insert data
.1316.1.1.1.1.4.27	mdrmteEtherRxPauseCnt	Counter	read-only	Indicates the total number of times the ethernet receiver was disabled due to lack of buffers.
.1316.1.1.1.1.4.28	mdrmteIdma1InUse	Counter	read-only	Indicates the total number of times IDMA controller 1 was already in use. memcpy() was used instead.

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.1.4.29	mdrmteIdma2InUse	Counter	read-only	Indicates the total number of times IDMA controller 2 was already in use. memcpy() was used instead.
.1316.1.1.1.1.4.30	mdrmteLinkKnQueueFull	Counter	read-only	Indicates the total number of times a Kwiknet frame was deferred due to a lack of space in the AMX link queue.
.1316.1.1.1.1.4.31	mdrmteLinkTxBdsFull	Counter	read-only	Indicates the total number of times the Rf Link Tx BD queue was too full to insert data
.1316.1.1.1.1.4.32	mdrmteKnEtherFramesLost	Counter	read-only	Indicates the total number of times the Kwiknet queue was too full to insert Ethernet data
.1316.1.1.1.1.4.33	mdrmteKnCraftFramesLost	Counter	read-only	Indicates the total number of times the Kwiknet queue was too full to insert SCC4 data
.1316.1.1.1.1.4.34	mdrmteKnLinkFramesLost	Counter	read-only	Indicates the total number of times the Kwiknet queue was too full to insert SCC2 data
.1316.1.1.1.1.4.35	mdrmteKnFramesTooShort	Counter	read-only	Indicates the total number of times the Kwiknet buffer allocated was too short.
.1316.1.1.1.1.4.36	mdrmteLinkVoidFrames	Counter	read-only	Indicates the total number of overwritten frames received on the wireless PPP link
.1316.1.1.1.1.4.37	mdrmteLinkRxPauseCnt	Counter	read-only	Indicates the total number of times the link receiver was disabled due to lack of buffers.
.1316.1.1.1.1.4.38	mdrmteRelayServerRestarts	Counter	read-only	Indicates the total number of times the Relay scripting server restarted.
.1316.1.1.1.1.4.39	mdrmteRelayClientRestarts	Counter	read-only	Indicates the total number of times the Relay scripting client restarted.
.1316.1.1.1.1.4.40	mdrmteMuxEtherErrors	Counter	read-only	The number of Ethernet errors reported by the FPGA
.1316.1.1.1.1.4.41	mdrmteMuxBlockErrors	Counter	read-only	The number of Block errors reported by the FPGA
.1316.1.1.1.1.4.42	mdrmteOuRxEtherCRCerrors	Counter	read-only	The number of Ethernet errors reported by the FPGA on the RFU
.1316.1.1.1.1.5	mdrmteResetAllPerfData	INTEGER	write-only	Reset all parameters associated with Packet Error and G.826 measurements for the RF Link
.1316.1.1.1.2.1	mdrmtePayloadConf			
.1316.1.1.1.2.1.1	mdrmteDataRate	INTEGER	read-write	Configure the tributary data interface rate - either E1 or T1
.1316.1.1.1.2.1.2	mdrmteLineCodeType	INTEGER	read-only	Deprecated
.1316.1.1.1.2.1.3	mdrmtePcTable	SEQUENCE	not-accessible	
.1316.1.1.1.2.1.3.1	mdrmtePcEntry	MdrmtePcEntry	not-accessible	
.1316.1.1.1.2.1.3.1.1	mdrmtePcIndex	INTEGER	read-only	
.1316.1.1.1.2.1.3.1.2	mdrmtePcLabel	DisplayString	read-write	E1/T1 Payload configuration tributary label
.1316.1.1.1.2.1.3.1.3	mdrmtePcActive	INTEGER	read-write	Defines whether tributaries are active or inactive
.1316.1.1.1.2.1.4	mdrmteLineEncodingTable	SEQUENCE	not-accessible	

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.2.1.4.1	mdrmteLineEncodingEntry	MdrmteLineEncoding Entry	not-accessible	
.1316.1.1.1.2.1.4.1.1	mdrmteLineEncodingIndex	INTEGER	read-only	
.1316.1.1.1.2.1.4.1.2	mdrmteLineEncodingTribSelect	INTEGER	read-only	Selects the trib, or group of tributaries to which encoding applies
.1316.1.1.1.2.1.4.1.3	mdrmteLineEncoding	INTEGER	read-write	Defines the line code types for the tributaries, either HDB3 or AMI for E1
.1316.1.1.1.2.2	mdrmteRFLinkConf			
.1316.1.1.1.2.2.1	mdrmteTxPower	INTEGER	read-write	Allows setup of the output power available at the diplexer port of the RF Unit
.1316.1.1.1.2.2.2	mdrmteBandPlan	INTEGER	read-write	The MDR5800 RF Units operate in the 5.725 GHz to 5.850 GHz ISM frequency band.
.1316.1.1.1.2.2.3	mdrmteTxFrequencyPlanD	INTEGER	read-write	Frequency plan D allows independent control of transmit and receive frequencies.
.1316.1.1.1.2.2.4	mdrmteRxFrequencyPlanD	INTEGER	read-write	Refer to the mdrmteTxFrequencyPlanD description
.1316.1.1.1.2.2.5	mdrmteTransmitBand	INTEGER	read-only	This value is read from the RF Unit via the Digital Indoor Unit and defines whether it transmits in the
.1316.1.1.1.2.2.6	mdrmteReserved2	INTEGER	read-write	
.1316.1.1.1.2.2.7	mdrmteRegulations	INTEGER	read-only	This parameter is read from the RF Unit via the Digital Indoor Unit and defines regulatory compliance of the RF Unit
.1316.1.1.1.2.2.8	mdrmteAutoRecovery	INTEGER	read-write	This feature is used if the user is installing a link from one side and there is no assistance on the opposite side of the link. It mitigates against the link failing and not being able to be
.1316.1.1.1.2.2.9	mdrmteOURateOverride	INTEGER	read-write	Depracated
.1316.1.1.1.2.2.10	mdrmteOUDataRate	INTEGER	read-write	A setable rate that allows a reduced transfer data rate over the RF Link
.1316.1.1.1.2.2.11	mdrmteTxFrequencyCurrent	INTEGER	read-only	This value [MHz] is read back from the RF Unit and defines the transmit frequency of the RF Unit
.1316.1.1.1.2.2.12	mdrmteRxFrequencyCurrent	INTEGER	read-only	This value [MHz] is read back from the RF Unit and defines the receive frequency of the RF Unit
.1316.1.1.1.2.2.13	mdrmteNonAutoBandPlan	INTEGER	read-write	Same as mdrMTEBandPlan setting in this MIB group except Autorecovery is not enabled - this allows control of the Outdoor
.1316.1.1.1.2.2.14	mdrmteNonAutoTxFreqPlanD	INTEGER	read-write	Same as mdrTxFrequencyPlanD setting in this MIB group except autorecovery is not enabled - this allows control of the Outdoor

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.2.2.15	mdrmteNonAutoRxFreqPlanD	INTEGER	read-write	Same as mdrRxFrequencyPlanD setting in this MIB group except autorecovery is not enabled - this allows control of the Outdoor
.1316.1.1.1.2.2.16	mdrmteNonAutoTxPower	INTEGER	read-write	Same as mdrTxPower setting in this MIB group except autorecovery is not enabled - this allows control of the Outdoor
.1316.1.1.1.2.2.17	mdrmteRadioType	INTEGER	read-only	This value is read from the RF Unit via the Digital Indoor Unit and defines
.1316.1.1.1.2.2.18	mdrmteSevereErrorMargin	INTEGER	read-write	Defines the percentage threshold (1-99) used when calculating in a one second period
.1316.1.1.1.2.2.19	mdrmteTimedMute	INTEGER	write-only	Initiates muting of transmitted signal for a short period to facilitate spectral analysis.
.1316.1.1.1.2.3	mdrmteServiceChannel			
.1316.1.1.1.2.3.1	mdrmteScDataRate	INTEGER	read-write	Bit rate used across the wayside service channel link
.1316.1.1.1.2.3.2	mdrmteScDataBits	INTEGER	read-write	The data width - can be 7 or 8 bits
.1316.1.1.1.2.3.3	mdrmteScParity	INTEGER	read-write	Serial channel - set to none, odd or even
.1316.1.1.1.2.3.4	mdrmteScStopBits	INTEGER	read-write	The nuber of stop bits can be set to 1 or 2
.1316.1.1.1.2.3.5	mdrmteScFlowControl	INTEGER	read-write	Either hardware or no flow control is used
.1316.1.1.1.2.3.6	mdrmteScStatusDump	INTEGER	read-write	Allows the wayside service (serial) channel to be used as a diagnostics port
.1316.1.1.1.2.4	mdrmteGeneral			
.1316.1.1.1.2.4.1	mdrmteStationName	DisplayString	read-write	The station name is stored in the Digital Indoor Unit in nonvolatile memory
.1316.1.1.1.2.4.2	mdrmteIUSerialNumber	DisplayString	read-only	An electronic serial number is read from the Digital Indoor Unit - this number is unique
.1316.1.1.1.2.4.3	mdrmteIUFirmwareVersion	DisplayString	read-only	The Digital Indoor Unit firmware number is the version of application firmware that is loaded into
.1316.1.1.1.2.4.4	mdrmteIUBootkernelVersion	DisplayString	read-only	The Digital Indoor Unit bootkernel version is the version of boot firmware that is loaded into
.1316.1.1.1.2.4.5	mdrmteOUBarCode	INTEGER	read-only	The RF Unit bar-code number is programmed into the RFU at time of manufacture and is read via the
.1316.1.1.1.2.4.6	mdrmteOUPICFirmwareVersion	DisplayString	read-only	The RF Unit PIC firmware number is programmed into the RFU at time of manufactute and is read via the
.1316.1.1.1.2.4.7	mdrmteOUPayloadSupport	INTEGER	read-only	Deprecated
.1316.1.1.1.2.4.8	mdrmteDate	DisplayString	read-write	This is a date record that is recovered from the Digital Indoor Unit's Real Time Clock

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.2.4.9	mdrmteTime	DisplayString	read-write	This is a time record that is recovered from the Digital Indoor Unit's Real Time Clock
.1316.1.1.1.2.4.10	mdrmteNOVRAMInit	INTEGER	read-write	If activated, the Nonvolatile memory is initialised to a set of default parameters
.1316.1.1.1.2.4.11	mdrmteFECBypass	INTEGER	read-write	This is primarily a laboratory test entry used to control whether the FEC circuitry within the
.1316.1.1.1.2.4.12	mdrmteFECCorrectableSymbols	INTEGER	read-write	This is primarily a laboratory test entry used to control the FEC correction power - 20 parity symbols
.1316.1.1.1.2.4.13	mdrmteTribCode	DisplayString	read-write	This is a text entry code (80 characters ie 40 bytes) used to allow activation of tributaries on the Digital Indoor Units.
.1316.1.1.1.2.4.14	mdrmteIndoorUnitBarCodeNumber	DisplayString	read-write	This is a text entry code used to allow storage of the Digital Indoor Unit's bar code serial number (as seen on the outside of the
.1316.1.1.1.2.4.15	mdrmteIndoorUnitPCBrevision	INTEGER	read-write	This is a numeric entry code used to reflect the PCB revision number and modification status.
.1316.1.1.1.2.4.16	mdrmteLocation	DisplayString	read-write	The station location is stored in the Digital Indoor Unit in nonvolatile memory
.1316.1.1.1.2.4.17	mdrmteOnePlusOne	INTEGER	read-write	Enables 'one-plus-one' dual-redundant (non-hitless) operation
.1316.1.1.1.2.4.18	mdrmteMaxTribs	INTEGER	read-only	How many tribs can be used with the current trib code.
.1316.1.1.1.2.4.19	mdrmteDefaultConfig	INTEGER	write-only	Allows one to set one of four default-configurations.
.1316.1.1.1.2.4.20	mdrmteTotalTribs	INTEGER	read-only	How many tribs in total on this version of IDU motherboard.
.1316.1.1.1.2.4.21	mdrmteCustomConfigSet	INTEGER	read-write	Changes the way in which the default configurations work by pre-loading
.1316.1.1.1.2.4.22	mdrmteFpgaVersion	INTEGER	read-only	Firmware version of the FPGA.
.1316.1.1.1.2.4.23	mdrmteOuCommsRate	INTEGER	read-write	Data-rate of the ethernet link between the DIU and the RFU.
.1316.1.1.1.2.4.24	mdrmteHdlcRateCap	INTEGER	read-write	Maximum Data-rate of the HDLC link between the DIU's (Mbit/sec + 1)
.1316.1.1.1.2.4.25	mdrmteOUSerialNo	DisplayString	read-only	The RF Unit serial number is programmed into the RFU at time of manufacture and is read via the
.1316.1.1.1.2.4.26	mdrmteApVersion	DisplayString	read-only	The Firmware version number of the Atmel processor
.1316.1.1.1.2.5	mdrmteFirmware			
.1316.1.1.1.2.5.1	mdrmteFTPServerStatus	INTEGER	read-write	This allows activation/deactivation of the FTP server that runs in the Digital Indoor Unit and is
.1316.1.1.1.2.5.2	mdrmteFlashNewFirmware	INTEGER	read-write	This entry determines the time when the new version of firmware will be activated

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.2.5.3	mdrmtePlatformSupport	DisplayString	read-only	This indicates the hardware types supported by the firmware:
.1316.1.1.1.2.6	mdrmteOutdoorUnit			
.1316.1.1.1.2.6.1	mdrmteOuPersonalityTable	SEQUENCE	not-accessible	
.1316.1.1.1.2.6.1.1	mdrmteOuPersonalityEntry	MdrmteOuPersonality Entry	not-accessible	
.1316.1.1.1.2.6.1.1.1	mdrmteOuPersonalityIndex	INTEGER	read-only	
.1316.1.1.1.2.6.1.1.2	mdrmteOuPersonalityActive	INTEGER	read-write	Indicates whether this particular RFU personality is selected.
.1316.1.1.1.2.6.1.1.3	mdrmteOuPersonalityDataRate	INTEGER	read-only	Maximum raw data rate of the personality.
.1316.1.1.1.2.6.1.1.4	mdrmteOuPersonalityModulation	INTEGER	read-only	Modulation type.
.1316.1.1.1.2.6.1.1.5	mdrmteOuPersonalityFpgaVersion	INTEGER	read-only	FPGA version.
.1316.1.1.1.2.6.1.1.6	mdrmteOuPersonalityRssiComp	INTEGER	read-only	RSSI compensation factor used by the RFU
.1316.1.1.1.2.6.1.1.7	mdrmteOuPersonalityMinTxFreq	INTEGER	read-only	Lowest allowed Tx frequency
.1316.1.1.1.2.6.1.1.8	mdrmteOuPersonalityMaxTxFreq	INTEGER	read-only	Highest allowed Tx frequency
.1316.1.1.1.2.6.1.1.9	mdrmteOuPersonalityMinRxFreq	INTEGER	read-only	Lowest allowed Rx frequency
.1316.1.1.1.2.6.1.1.10	mdrmteOuPersonalityMaxRxFreq	INTEGER	read-only	Highest allowed Rx frequency
.1316.1.1.1.2.6.1.1.11	mdrmteOuPersonalityPlanATxFreq	INTEGER	read-only	Band plan A Tx frequency
.1316.1.1.1.2.6.1.1.12	mdrmteOuPersonalityPlanARxFreq	INTEGER	read-only	Band plan A Tx frequency
.1316.1.1.1.2.6.1.1.13	mdrmteOuPersonalityPlanBTxFreq	INTEGER	read-only	Band plan B Tx frequency
.1316.1.1.1.2.6.1.1.14	mdrmteOuPersonalityPlanBRxFreq	INTEGER	read-only	Band plan B Rx frequency
.1316.1.1.1.2.6.1.1.15	mdrmteOuPersonalityPlanCTxFreq	INTEGER	read-only	Band plan C Rx frequency
.1316.1.1.1.2.6.1.1.16	mdrmteOuPersonalityPlanCRxFreq	INTEGER	read-only	Band plan C Rx frequency
.1316.1.1.1.2.6.1.1.17	mdrmteOuPersonalityMaxTxPower	INTEGER	read-only	Maximum allowed Transmit Power
.1316.1.1.1.2.6.1.1.18	mdrmteOuPersonalityMinTxPower	INTEGER	read-only	Minimum allowed Transmit Power
.1316.1.1.1.2.6.1.1.19	mdrmteOuPersonalityDefTxPower	INTEGER	read-only	Default Transmit Power
.1316.1.1.1.2.6.1.1.20	mdrmteOuPersonalityDescription	DisplayString	read-only	Verbal description of this personality
.1316.1.1.1.2.6.2	mdrmteOuPersonalities	INTEGER	read-only	The number of FPGA personalities that the RFU has programmed
.1316.1.1.1.2.6.3	mdrmteOuActivePersonality	INTEGER	read-write	The currently active FPGA personality
.1316.1.1.1.3.1	mdrmteInfo			
.1316.1.1.1.3.1.1	mdrmteLEDTable	SEQUENCE	not-accessible	A group of LEDs on the front panel of the Digital Indoor Unit.
.1316.1.1.1.3.1.1.1	mdrmteLEDEntry	MdrmteLEDEntry	not-accessible	A LED entry containing objects describing a particular LED.
.1316.1.1.1.3.1.1.1.1	mdrmteLEDIndex	INTEGER	read-only	A unique value for each LED in the Digital Indoor Unit. Its value
.1316.1.1.1.3.1.1.1.2	mdrmteLEDLabel	DisplayString	read-only	SYSTEM Green OK, Orange (RFU/DIU Comms Error), Red (RFU/DIU Comms Down).
.1316.1.1.1.3.1.1.1.3	mdrmteLEDState	INTEGER	read-only	The current state of the LED - for a detailed description of functionality, see the mdrmteLEDLabel entry

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.3.1.1.1.4	mdrmteLEDColour	INTEGER	read-only	The current colour of the LED - for a detailed description of functionality, see the mdrmteLEDLabel entry
.1316.1.1.1.3.1.1.1.5	mdrmteLEDHistoricAmberWarning	INTEGER	read-only	The number of Amber 'blips' that the LED is flashing
.1316.1.1.1.3.1.1.1.6	mdrmteLEDHistoricRedError	INTEGER	read-only	The number of Red 'blips' that the LED is flashing
.1316.1.1.1.3.1.2	mdrmteOutdoorUnitComms	INTEGER	read-only	Describes the state of Digital Indoor Unit communication with the RF Unit.
.1316.1.1.1.3.1.3	mdrmteOutdoorUnitResetType	INTEGER	read-only	This message is read from the RF Unit and identifies the last reason for a reset within the
.1316.1.1.1.3.1.4	mdrmteOutdoorUnitLockDetect	INTEGER	read-only	The transmit RF synthesizer, receive RF synthesizer and IF phased locked loop lock detect signals
.1316.1.1.1.3.1.5	mdrmtePayloadDrive	INTEGER	read-only	In a One-Plus-One configuration, this tells you if this DIU is driving the
.1316.1.1.1.3.1.6	mdrmteLock	INTEGER	read-only	In a One-Plus-One configuration, this tells you if this DIU is driving the
.1316.1.1.1.3.1.7	mdrmtePeerPayloadDrive	INTEGER	read-only	In a One-Plus-One configuration, this tells you if the peer (standby) is driving the
.1316.1.1.1.3.1.8	mdrmtePeerLock	INTEGER	read-only	In a One-Plus-One configuration, this tells you if the peer (standby) is driving the
.1316.1.1.1.3.1.9	mdrmteOuEtherRate	INTEGER	read-only	The current (actual) Data-rate of the ethernet link between the DIU and the RFU.
.1316.1.1.1.3.2	mdrmteSelfTest			
.1316.1.1.1.3.2.1	mdrmteFlash	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's application flash
.1316.1.1.1.3.2.2	mdrmteDRAM	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's Dynamic RAM
.1316.1.1.1.3.2.3	mdrmteSRAM	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's Static RAM
.1316.1.1.1.3.2.4	mdrmteLineInterface	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's Line Interface IC
.1316.1.1.1.3.2.5	mdrmteFPGA	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's FPGA interface registers to the microprocessor
.1316.1.1.1.3.2.6	mdrmteFEC	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's FEC IC electrical interface
.1316.1.1.1.3.2.7	mdrmteRealTimeClock	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's Real Time Clock
.1316.1.1.1.3.2.8	mdrmteIndoorUnitResetType	INTEGER	read-only	This message is read from the Digital Indoor Unit and identifies the last reason for a reset within the
.1316.1.1.1.3.2.9	mdrmteLoopbackMode	INTEGER	read-write	Entry defines the loopback mode of a radio station in terms of loopback at either
.1316.1.1.1.3.2.10	mdrmteLoopbackTimeOut	INTEGER	read-write	This is the number of seconds the loopback will run for until it times out

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.3.2.11	mdrmteOuTemperature	DisplayString	read-only	This is the measured temperature in the Out-door unit (if supported) in degrees Celcius
.1316.1.1.1.3.2.12	mdrmteOuEtherPhy	INTEGER	read-only	Identifies pass/fail status of the ethernet phy to the RFU
.1316.1.1.1.3.2.13	mdrmteEEprom	INTEGER	read-only	Identifies pass/fail status of the Digital Indoor Unit's EEPROM
.1316.1.1.1.3.3	mdrmteTrapManagement			
.1316.1.1.1.3.3.1	mdrmteTrapFilter	INTEGER	read-write	Alarms within the MDR product are classfied as critical, major, minor or informational. The trap
.1316.1.1.1.3.3.2	mdrmteNumberTrapManagers	INTEGER	read-only	This entry shows the number of trap managers allowed
.1316.1.1.1.3.3.3	mdrmteTrapManagerTable	SEQUENCE	not-accessible	
.1316.1.1.1.3.3.3.1	mdrmteTrapManagerEntry	MdrmteTrapManager Entry	not-accessible	
.1316.1.1.1.3.3.3.1.1	mdrmteTrapManagerIndex	INTEGER	read-only	
.1316.1.1.1.3.3.3.1.2	mdrmteTrapManagerIP	IpAddress	read-write	This is the IP address of the management station that is set up to detect and act upon
.1316.1.1.1.3.3.3.1.3	mdrmteTrapManagerComm	DisplayString	read-write	This is the 'SNMP community name' used for dispatch of traps
.1316.1.1.1.3.3.3.1.4	mdrmteTrapManagerActive	INTEGER	read-write	Defines whether a particular Trap Manager is active or inactive
.1316.1.1.1.3.4	mdrmtePerfTrapThreshold			
.1316.1.1.1.3.4.1	mdrmteMinorPERThreshold	DisplayString	read-write	Defines the threshold used as a checking criterion for the Minor PER (Packet Error Rate)
.1316.1.1.1.3.4.2	mdrmteMajorPERThreshold	DisplayString	read-write	Defines the threshold used as a checking criterion for the Major PER (Packet Error Rate)
.1316.1.1.1.3.4.3	mdrmteCriticalPERThreshold	DisplayString	read-write	Defines the threshold used as a checking criterion for the Critical PER (Packet Error Rate)
.1316.1.1.1.3.4.4	mdrmteErrSecRatioThreshold	DisplayString	read-write	Defines the threshold used as a checking criterion for the Errored Second Ratio
.1316.1.1.1.3.4.5	mdrmteSevErrSecRatioThreshold	DisplayString	read-write	Defines the threshold used as a checking criterion for the Severely Errored Second Ratio
.1316.1.1.1.3.4.6	mdrmteBkgrndBlkErrRatioThreshold	DisplayString	read-write	Defines the threshold used as a checking criterion for the Background Block Error Ratio
.1316.1.1.1.3.5	mdrmteEventLogTable	SEQUENCE	not-accessible	
.1316.1.1.1.3.5.1	mdrmteEventLogEntry	MdrmteEventLogEntry	not-accessible	
.1316.1.1.1.3.5.1.1	mdrmteEventIndex	INTEGER	read-only	
.1316.1.1.1.3.5.1.2	mdrmteEventDate	DisplayString	read-only	Lists the date on which the event occurred
.1316.1.1.1.3.5.1.3	mdrmteEventTime	DisplayString	read-only	Lists the time when the event occurred
.1316.1.1.1.3.5.1.4	mdrmteEventType	INTEGER	read-only	Lists the type of event - informational, minor, major or critical
.1316.1.1.1.3.5.1.5	mdrmteEventDescription	DisplayString	read-only	Textual description of the logged event

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.3.6	mdrmteClearEventLog	INTEGER	write-only	This entry is used to clear the Event Log
.1316.1.1.1.3.7	mdrmteResetAllFaults	INTEGER	write-only	This entry is used to
.1316.1.1.1.3.8	mdrmteEnableDebug	INTEGER	read-write	This entry is used to enable test and debugging features
.1316.1.1.1.3.9	mdrmteErrorWindow	INTEGER	read-write	This entry is used to set the time period in minutes during
.1316.1.1.1.3.10	mdrmteTrapData	DisplayString	read-only	Textual description or data relating to a trap
.1316.1.1.1.3.11	mdrmteLogCorrectedSymbols	INTEGER	read-write	Enable or disable periodic logging of corrected sybmols
.1316.1.1.1.3.13	mdrmteHideHistoricLeds	INTEGER	read-write	Enable or disable the 'historic' flashing on the LEDs
.1316.1.1.1.3.12	mdrmteEngineering			
.1316.1.1.1.3.12.1	mdrmteDataStreamStatus	INTEGER	read-only	Status bits for the RF Unit and tribs during during production tests.
.1316.1.1.1.3.12.2	mdrmteFramingSchedule	INTEGER	read-only	The current framing schedule selected on the FPGA
.1316.1.1.1.3.12.3	mdrmteFrameTribCnt	INTEGER	read-only	The number of tribs supported by the framing structure in use
.1316.1.1.1.3.12.4	mdrmteIuBackToBack	INTEGER	read-write	Loop one Digital Indoor Unit to another without RF Units for production tests
.1316.1.1.1.3.12.5	mdrmteWaysideFeedsOu	INTEGER	read-write	Feed the Wayside channel to the RF Unit for production tests
.1316.1.1.1.4.1	mdrmteEthernetIPAddress	IpAddress	read-write	The IP address associated with product's Ethernet port.
.1316.1.1.1.4.2	mdrmteEthernetNetMask	IpAddress	read-write	The netmask associated with the Ethernet port
.1316.1.1.1.4.3	mdrmteMaxNumUsers	INTEGER	read-only	If the firmware is compiled with the security feature
.1316.1.1.1.4.4	mdrmteMaxNumActiveUsers	INTEGER	read-only	If the firmware is built with the security feature switched on, users
.1316.1.1.1.4.5	mdrmteNumActiveUsers	Gauge	read-only	If the firmware is built with the security feature switched on, users
.1316.1.1.1.4.6	mdrmteUserTable	SEQUENCE	not-accessible	Deprecated
.1316.1.1.1.4.6.1	mdrmteUserEntry	MdrmteUserEntry	not-accessible	Deprecated
.1316.1.1.1.4.6.1.1	mdrmteUserIndex	INTEGER	read-only	Deprecated
.1316.1.1.1.4.6.1.2	mdrmteUserName	DisplayString	read-write	If the firmware is built with the security feature switched on, users
.1316.1.1.1.4.6.1.3	mdrmteUserPassword	DisplayString	write-only	If the firmware is built with the security feature switched on, users
.1316.1.1.1.4.6.1.4	mdrmteUserAccessLevel	INTEGER	read-write	If the firmware is built with the security feature switched on, users
.1316.1.1.1.4.6.1.5	mdrmteUserActive	INTEGER	read-write	Indicates if a user is active or not based on password entry
.1316.1.1.1.4.6.1.6	mdrmteUserAdd	INTEGER	write-only	In security-enabled mode, allows an administrator to add users
.1316.1.1.1.4.6.1.7	mdrmteUserDelete	INTEGER	write-only	In security-enabled mode, allows an administrator to delete users

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.4.7	mdrmteRFLinkIPAddress	IpAddress	read-write	PPP IP address for the RF Link. The user need not adjust this parameter
.1316.1.1.1.4.8	mdrmteRFLinkNetMask	IpAddress	read-write	PPP IP netmask for the RF Link. The user need not adjust this parameter
.1316.1.1.1.4.9	mdrmteRemoteIPAddress	IpAddress	read-write	Default PPP IP address for the other end of the link. The user need not adjust this parameter
.1316.1.1.1.4.10	mdrmteElementManagerIPAddress	IpAddress	read-write	Default PPP IP address for the the element manager port - 10.13.1.1
.1316.1.1.1.4.11	mdrmteElementManagerNetMask	IpAddress	read-write	IP netmask for the Element Manager PPP port
.1316.1.1.1.4.12	mdrmteIPNegotiable	INTEGER	read-write	Determines if the local PPP IP address is negotiable or not - does not need to be adjusted by
.1316.1.1.1.4.13	mdrmtePPPisDefaultRoute	INTEGER	read-write	Determines if PPP interface is the default route - does not need to be adjusted by
.1316.1.1.1.4.14	mdrmteStaticRouteTable	SEQUENCE	not-accessible	Manually added static routes. (Only activated after system reset)
.1316.1.1.1.4.14.1	mdrmteStaticRouteEntry	MdrmteStaticRouteEntry	not-accessible	
.1316.1.1.1.4.14.1.1	mdrmteStaticRouteIndex	INTEGER	read-only	
.1316.1.1.1.4.14.1.2	mdrmteStaticRouteIPAddressDestination	IpAddress	read-write	Ultimate destination
.1316.1.1.1.4.14.1.3	mdrmteStaticRouteIPAddressMask	IpAddress	read-write	net mask, 255.255.255.255 if destination is host address
.1316.1.1.1.4.14.1.4	mdrmteStaticRouteIPAddressNextHop	IpAddress	read-write	Where to forward to
.1316.1.1.1.4.14.1.5	mdrmteStaticRouteInterfaceForNextHop	INTEGER	read-write	Interface (net) for nexthop
.1316.1.1.1.4.15	mdrmteBridgeEnable	INTEGER	read-write	Determines if the system is to act as a transparent bridge for all ethernet packets received.
.1316.1.1.1.4.16	mdrmteEthernetFullDuplex	INTEGER	read-write	Determines if the ethernet interface is full- or half-duplex.
.1316.1.1.1.4.17	mdrmteDefaultGateway	IpAddress	read-write	Default Gateway (Only activated after system reset)
.1316.1.1.1.4.18	mdrmteDefaultGWInterface	INTEGER	read-write	Default Gateway interface
.1316.1.1.1.4.19	mdrmteElementManagerPeerIP	IpAddress	read-write	Default PPP IP address for the the PC connected to the element manager serial port.
.1316.1.1.1.4.20	mdrmteMacLearning	INTEGER	read-write	Enable or disable the ability to learn what MAC addresses are present locally.
.1316.1.1.1.4.21	mdrmteEnableDHCP	INTEGER	read-write	Enable or disable the DHCP client on ethernet. If enabled, the locally stored IP
.1316.1.1.1.4.22	mdrmteClearArpCache	INTEGER	read-write	Delete all cached MAC addresses in the ARP table
.1316.1.1.1.4.23	mdrmteMacAddress	DisplayString	read-write	3-octet substring of the ethernet MAC address excluding the Plessey RFUI.
.1316.1.1.1.4.24	mdrmteSnmpSetCommunity	DisplayString	write-only	Up to 31 octets defining the SNMP Write community string for READ/WRITE access.

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.4.25	mdrmteSnmpGetCommunity	DisplayString	write-only	Up to 31 octets defining the SNMP Read community string for READ access.
.1316.1.1.1.5.1	mdrmteRelay1			
.1316.1.1.1.5.1.1	mdrmteRelay1Label	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the relay,
.1316.1.1.1.5.1.2	mdrmteRelay1OpenStateLabel	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the relay
.1316.1.1.1.5.1.3	mdrmteRelay1ClosedStateLabel	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the relay
.1316.1.1.1.5.1.4	mdrmteRelay1Reserved	INTEGER	read-write	Reserved.
.1316.1.1.1.5.1.5	mdrmteRelay1CurrentState	INTEGER	read-write	The current state of the relay. Used to activate/deactivate a relay.
.1316.1.1.1.5.1.7	mdrmteRelay1Latching	INTEGER	read-write	Indicates whether the relay will be latched by Scripting events, or will follow the state.
.1316.1.1.1.5.1.6	mdrmteRelay1ScriptTable	SEQUENCE	not-accessible	
.1316.1.1.1.5.1.6.1	mdrmteRelay1ScriptEntry	MdrmteRelay1ScriptEntry	not-accessible	
.1316.1.1.1.5.1.6.1.1	mdrmteRelay1ScriptIndex	INTEGER	read-only	
.1316.1.1.1.5.1.6.1.2	mdrmteRelay1ScriptID	INTEGER	read-only	Defines which of the listed alarms can cause a relay to activate
.1316.1.1.1.5.1.6.1.3	mdrmteRelay1ScriptActiveLocal	INTEGER	read-write	Defines if the script is active or not for local relay activation
.1316.1.1.1.5.1.6.1.4	mdrmteRelay1ScriptActiveRemote	INTEGER	read-write	Defines if the script is active or not for remote relay activation
.1316.1.1.1.5.2	mdrmteRelay2			
.1316.1.1.1.5.2.1	mdrmteRelay2Label	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the relay.
.1316.1.1.1.5.2.2	mdrmteRelay2OpenStateLabel	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the relay
.1316.1.1.1.5.2.3	mdrmteRelay2ClosedStateLabel	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the relay
.1316.1.1.1.5.2.4	mdrmteRelay2Reserved	INTEGER	read-write	Reserved.
.1316.1.1.1.5.2.5	mdrmteRelay2CurrentState	INTEGER	read-write	The current state of the relay. Used to activate/deactivate a relay.
.1316.1.1.1.5.2.7	mdrmteRelay2Latching	INTEGER	read-write	Indicates whether the relay will be latched by Scripting events, or will follow the state.
.1316.1.1.1.5.2.6	mdrmteRelay2ScriptTable	SEQUENCE	not-accessible	
.1316.1.1.1.5.2.6.1	mdrmteRelay2ScriptEntry	MdrmteRelay2ScriptEntry	not-accessible	
.1316.1.1.1.5.2.6.1.1	mdrmteRelay2ScriptIndex	INTEGER	read-only	
.1316.1.1.1.5.2.6.1.2	mdrmteRelay2ScriptID	INTEGER	read-only	Defines which of the listed alarms can cause a relay to activate
.1316.1.1.1.5.2.6.1.3	mdrmteRelay2ScriptActiveLocal	INTEGER	read-write	Defines if the script is active or not for local relay activation
.1316.1.1.1.5.2.6.1.4	mdrmteRelay2ScriptActiveRemote	INTEGER	read-write	Defines if the script is active or not for remote relay activation

Object ID	Object name	Object Type	Access Rights	Description
.1316.1.1.1.5.3	mdrmteRelayScriptServerPort	INTEGER	read-write	This specifies the IP port number to be used by the Relay scripting server
.1316.1.1.1.5.4	mdrmteRelayClientComms	INTEGER	read-only	This indicates the state of the Relay Scripting client-server socket.
.1316.1.1.1.5.5	mdrmteRelayScriptRemotePollTime	INTEGER	read-write	This specifies the poll interval for remote scripting updates in seconds.
.1316.1.1.1.5.6	mdrmteActiveEventsTable	SEQUENCE	not-accessible	Shows all the currently active events (even if scripting on the event is disabled.)
.1316.1.1.1.5.6.1	mdrmteActiveEventsEntry	MdrmteActiveEvents Entry	not-accessible	
.1316.1.1.1.5.6.1.1	mdrmteActiveEventsIndex	INTEGER	read-only	Index
.1316.1.1.1.5.6.1.2	mdrmteActiveEventsLabel	INTEGER	read-only	Name of the event
.1316.1.1.1.5.6.1.3	mdrmteActiveEvents	INTEGER	read-only	Defines whether events are active or inactive
.1316.1.1.1.5.6.1.4	mdrmteActiveRemoteEvents	INTEGER	read-only	Defines whether remote events are active or inactive
.1316.1.1.1.5.7	mdrmteRelayScriptingEnable	INTEGER	read-write	This enables or disables relay scripting. Both near and far units must have the same setting.
.1316.1.1.1.6.1	mdrmteOptoInput1			
.1316.1.1.1.6.1.1	mdrmteOptoInput1Label	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the contact-closure input
.1316.1.1.1.6.1.2	mdrmteOptoInput1State	INTEGER	read-only	Indicates if the opto input contact-closure input is active (on) or not (off)
.1316.1.1.1.6.2	mdrmteOptoInput2			
.1316.1.1.1.6.2.1	mdrmteOptoInput2Label	DisplayString	read-write	A short, descriptive name indicating the primary funtion of the contact-closure input
.1316.1.1.1.6.2.2	mdrmteOptoInput2State	INTEGER	read-only	Indicates if the opto input contact-closure input is active (on) or not (off)

B.3 The MIB elements – TRAP DESCRIPTIONS

1	mdrmteTrapUndefined : Informational	
2	mdrmteTrapPayloadLOS : Critical	Indicates a Loss of Signal identified on the INPUT TO a tributary
3	mdrmteTrapPayloadAIS : Critical	Indicates an Alarm Indication Signal ' all 1's ' identified/sensed on the INPUT TO a tributary
4	mdrmteTrapLinkUnavailable : Critical	Indicates, based on G.826 criteria if the RF Link has become unavailable
5	MdrmteTrapLinkFrameUnlock : Critical	Indicates a Frame Unlock condition associated with the Digital Indoor Unit
6	mdrmteTrapLinkOuSynthUnlock : Critical	Indicates if a synthesizer unlock condition was identified in the RF Unit
7	mdrmteTrapLinkMinorPERExceeded : Minor	Indicates the minor packet error rate threshold was exceeded
8	mdrmteTrapLinkMajorPERExceeded : Major	Indicates the major packet error rate threshold was exceeded
9	mdrmteTrapLinkCriticalPERExceeded : Critical	Indicates the critical packet error rate threshold was exceeded
10	mdrmteTrapLinkESRExceeded : Minor	Indicates the Link Errored Second Ratio Threshold limit was exceeded
11	mdrmteTrapLinkSESRExceeded : Critical	Indicates the Link Severely Errored Second Ratio threshold limit was exceeded
12	mdrmteTrapLinkBBERExceeded : Minor	Indicates the Link Background Block Error Rate threshold limit was exceeded
13	mdrmteTrapFTPUploadDone : Informational	Indicates FTP Upload done
14	mdrmteTrapFlashEraseFail : Informational	Indicates failure to erase Application flash
15	mdrmteTrapFirmwareUpgradePass : Informational	Indicates that firmware was uploaded successfully
16	mdrmteTrapFirmwareUpgradeFail : Informational	Indicates that there was a firmware upload failure
17	mdrmteTrapInterstationCommsTimeOut : Major	Indicates an interstation communications timeout
18	mdrmteTrapInterstationCommsInvalidResponse : Minor	Indicates a communications error on the interstation overhead link
19	mdrmteTrapOUCommsTimeOut : Major	Indicates an RF Unit communications timeout
20	mdrmteTrapOUCommsInvalidResponse : Minor	Indicates an RF Unit communications error - an invalid response was received
21	MdrmteTrapOUCommsTxFail	Indicates RF Unit communications transmit failure
22	mdrmteTrapSSPCRCError : Minor	Simple Serial Protocol CRC error identified
23	mdrmteTrapSSPLengthError : Minor	Simple Serial Protocol Length error identified
24	mdrmteTrapOptoInput1Off : Major	Contact closure input off state detected - Opto 1
25	mdrmteTrapOptoInput1On : Major	Contact closure input off state detected- Opto 1
26	mdrmteTrapOptoInput2Off : Major	Contact closure input off state detected - Opto 2
27	mdrmteTrapOptoInput2On : Major	Contact closure input on state detected - Opto 2
28	mdrmteTrapUserLoginFailed : Informational	With security MODE ON - indicates a user attempted to log on and the attempt failed
29	mdrmteTrapUserLogoutFailed : Informational	With security MODE ON - indicates a user attempted to log out and the attempt failed
30	MdrmteTrapUserAddFailed : Informational	With security MODE ON - indicates there was an attempt to add a user, but the attempt failed.
31	mdrmteTrapUserDeleteFailed : Informational	With security MODE ON - indicates there was an attempt to remove/delete a user, but the attempt failed.
32	mdrmteTrapUserLogIn : Informational	With security MODE ON - indicates a user logged in.
33	mdrmteTrapUserLogOut : Informational	With security MODE ON - indicates a user logged out.
34	mdrmteTrapUserAdd : Informational	With security MODE ON - indicates a user was added successfully.
35	mdrmteTrapUserDelete : Informational	With security MODE ON - indicates a user was deleted successfully.
36	mdrmteTrapOUSetBandPlan : Informational	Indicates the RF Unit channel/band plan was changed.
37	mdrmteTrapOUSetTxChannel : Informational	Indicates the RF Unit transmit frequency was changed.
38	mdrmteTrapOUSetRxChannel : Informational	Indicates the RF Unit receive frequency was changed.

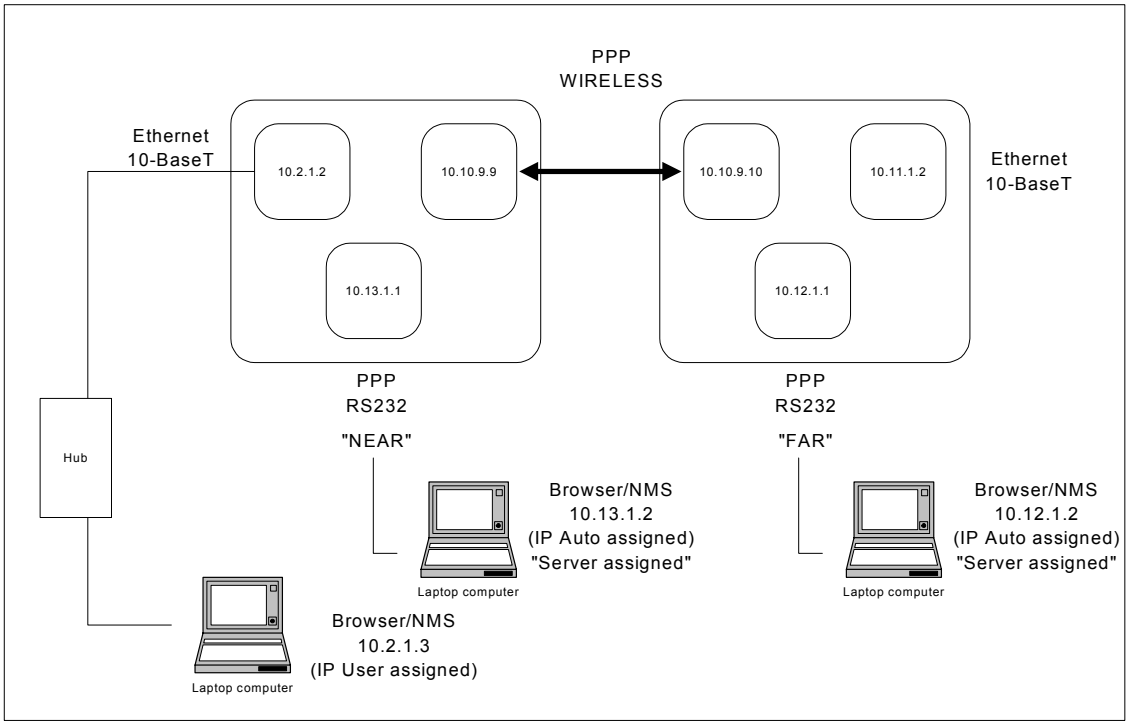
39	mdrmteTrapOUEepromWrite : Minor	Indicates there was an attempt to write to the RF Unit EEPROM.
40	MdrmteTrapOUSetTxPower : Informational	Indicates there was an attempt to change the transmit power.
41	*MdrmteTrapOUSetPNCode*	*Deprecated*
42	MdrmteTrapOUSetAutoRecovery	Indicates there was an attempt to change the 'auto recovery' setting.
43	*MdrmteTrapOUProgramConfig*	*Deprecated*
44	mdrmteTrapOUChangeRFLoopback : Informational	Indicates a change the RFU RF Loopback setting was implemented.
45	mdrmteTrapOUChangeBBPLoopback : Informational	Indicates a change the Baseband Processor Loopback setting was implemented.
46	mdrmteTrapOUWriteBBP : Minor	Indicates there was an attempt to write to the Baseband Processor.
47	mdrmteTrapSetDate : Informational	Indicates the Digital Indoor Unit date was adjusted.
48	mdrmteTrapSetTime : Informational	Indicates the Digital Indoor Unit time was adjusted.
49	mdrmteTrapSynchronizeSwRTC : Informational	Indicates the Digital Indoor Unit's time was synchronized with its real-time clock.
50	MdrmteTrapSetRelayLabel	A relay label was changed.
51	MdrmteTrapSetRelayOpenStateLabel	A relay open-state label was changed.
52	MdrmteTrapSetRelayClosedStateLabel	A relay closed-state label was changed.
53	*mdrmteTrapSetRelayDefaultState : NA*	*Deprecated*
54	mdrmteTrapSetRelayCurrentState : Informational	Relay's current state has changed
55	MdrmteTrapRelayScriptEnable	Relay scripting is enabled.
56	MdrmteTrapRelayScriptDisable	Relay scripting is disabled.
57	mdrmteTrapGetEventLog : Informational	Digital Indoor Unit's event log is being accessed.
58	mdrmteTrapClearEventLog : Informational	Digital Indoor Unit's event log is being cleared.
59	mdrmteTrapSelfTestFailure : Major	Digital Indoor Unit's self test failed.
60	mdrmteTrapProcessorReset : Critical	There was an Digital Indoor Unit processor reset.
61	MdrmteTrapEtherRx	There was an Digital Indoor Unit Receive Ethernet buffer error.
62	mdrmteTrapTest : Informational	Test trap
63	MdrmteTrapGenericText	Test trap
64	mdrmteTrapGenericText_Data	Test trap
65	mdrmteTrapGenericText_DecData	Test trap
66	mdrmteTrapSocket_Error	Test trap
67	mdrmteLog_Link_Status : Informational	The Event Log was cleared, so a summary of the status has been logged.
68	mdrmteLog_Link_Errors : Informational	One or more packet errors occurred in the last error window.
69	mdrmteLog_Link_Corrections : Informational	One or more corrected symbols occurred in the last error window.
70	mdrmteLocRelayScriptOpen : Minor	A relay opened as a result of a local relay scripting event.
71	mdrmteLocRelayScriptClose : Minor	A relay closed as a result of a local relay scripting event.
72	mdrmteRemRelayScriptOpen : Minor	A relay opened as a result of a remote relay scripting event.
73	MdrmteRemRelayScriptClose : Minor	A relay closed as a result of a remote relay scripting event.
74	mdrmteRemScriptEvent : Minor	A remote event occurred which will be processed by relay scripting.
75	MdrmteTrapLinkFrameUnlockAgain	Indicates a Frame Unlock condition associated with the Digital Indoor Unit
76	MdrmteTrapOUSetFrequencies	Indicates the RF Unit receive frequencies were changed.
77	MdrmteTrapOUSetPersonality	Indicates the RF Unit FPGA personality was changed.

C Appendix: SETUP OF A PC (WIN 95, 98, NT) TO ALLOW PINGING OF A 'REMOTE'-CONFIGURED DIGITAL INDOOR UNIT

The following diagram shows the default (factory) network IP addresses assigned to the various network ports on the MDR / Orion System: ROUTING CONFIGURATION

C.1 IP CONFIGURATION OF THE MDR / Orion – ROUTING CONFIGURATION

MDR / Orion - ROUTING CONFIGURATION



To allow pinging of a DIU configured as a "remote unit" i.e. with an IP address of (10.11.1.2) when the PC has a 10.2.1.3 IP address, 10.2.1.2 default gateway and netmask 255.255.0.0, create batch files.

Batch file 1 - addroute.bat

route add 10.11.0.0 mask 255.255.0.0 10.2.1.3

Batch file 1 adds a route so that the IP stack on the PC "knows" where to send IP packets destined for the net 10.11.0.0

If you want to delete the route, use

Batch file 2 - delroute.bat

route delete 10.11.0.0

If you want a screen printout of the routes the PC is using, use the command line entry:

route print

NOTE

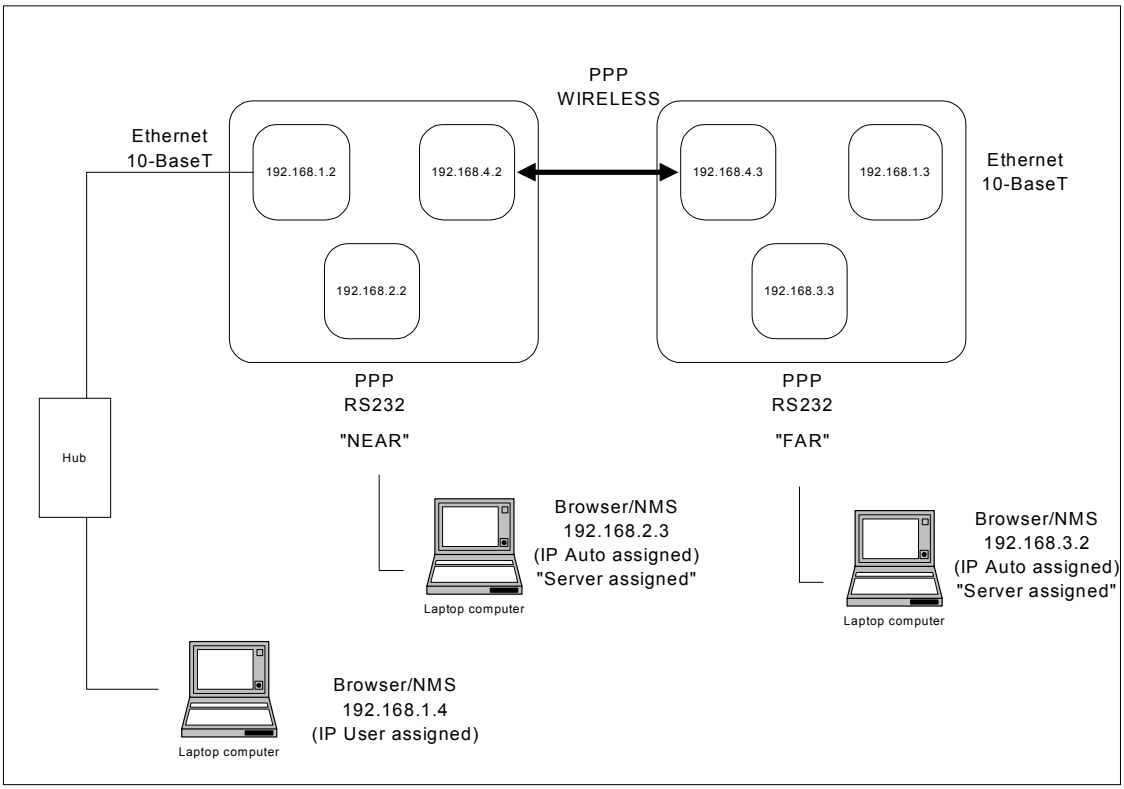
DO NOT ALLOW AN RF LINK TO ESTABLISH BEFORE DOING A PING on the remote DIU (with 10.11.1.2 as an IP address) - if the RF link was established before, use the front panel button "position 3" to reset the DIU before attempting to ping.

C.2 IP CONFIGURATION OF THE MDR / Orion – BRIDGING CONFIGURATION

The following diagram shows the default (factory) network IP addresses assigned to the various network ports on the MDR / Orion System: BRIDGING CONFIGURATION.

NOTE For most networks, bridging is the preferred IP configuration.

MDR / Orion - BRIDGING CONFIGURATION



NOTE The netmask for all the 192.168.x.x addresses is 255.255.255.0

D Appendix: MDR5800 hardware VERSION 1, 2.x DIFFERENCES, COMPATIBILITY SUMMARY

Version 1 hardware (Indoor and RF Units) is **incompatible** with Version 2.x hardware.

The Digital Indoor Unit /RF Unit Twisted Pair Data Interconnection for Version 2 hardware uses 2 twisted pair cables to convey payload and RF Unit control signals whereas Version 1 hardware uses 4 twisted pair cables.

Notes :

Version 2.x firmware (can be uploaded into the Digital Indoor Unit using the NMS's Maintenance option) that can be used in Version 1.x hardware must be obtained from the product manufacturer. The file is **not** the same file that is used with Version 2.x hardware.

Updated RSSI and Power control functionality have been added to Version 2.x hardware and firmware.

Version 2.x firmware has

1. FTP upload functionality (needs to be activated via the MIB)
2. IP Bridging functionality (half and full duplex – selectable via the MIB). Appropriate DIU hardware must be used.
3. Band Plan C
4. Refer to the MIB section of this manual and look for the † symbol to see what MIB-related functionality is in place/activated/planned for Version 2.x + firmware.
5. Functional RF Loopback built-in test feature.
6. Ethernet packet error monitoring and buffer monitoring added to MIB
7. E1 CRC4 payload monitoring added to MIB (only applicable for a single tributary)
8. Digital Indoor Unit PCB hardware revision added to MIB
9. Periodic reporting of RF Link packet errors (adjustable in time, defaulted to 10 minutes) added to MIB.

Version 2.x NMS has

1. Ability to allow the user to connect to the Digital Indoor Unit using PPP (via a serial cable interface to the DIU's front panel Element Manager RS232 port) or via Ethernet (via the front panel RJ45 connector: 10BaseT).
2. Graphical Spectrum Analyzer display

By default, firmware provided for the Digital Indoor Units does not provide a secure login feature (thereby limiting a user's ability to 'set' MIB variables). Suitably adapted firmware versions (dependent on hardware version) need to be requested from the product manufacturer to allow activation of this feature.

MDR / ORION DIGITAL INDOOR UNIT FIRMWARE UPGRADE NOTICE

MDR Version 2 hardware Digital Indoor Units are identified as having 200+ serial numbers, RF Units have 250+ serial numbers.

If upgrading Digital Indoor Units to use V2.02+ DIU firmware, upgrade the DIU firmware on **BOTH** sides of the RF Link.

Note that firmware upgrades of Version 1 MDR Digital Indoor Unit hardware do not require setting up of the PCB Issue in the MIB i.e. mdrmteIndoorUnitPCBrevision element. Upgrade to DIU firmware Version 2+ of Version 1 hardware will NOT give improved RSSI functionality. This is only achieved with Version 2 hardware or modified version 1 hardware.

Full Duplex Ethernet Capability on MDR DIUs

As a standard setting for mdrmteIndoorUnitPCBrevision, use MIB selection Issue_2. **HOWEVER,** if an appropriate Indoor PCB modification (made at the factory) has been made to allow Full Duplex Ethernet operation, the Issue_2_Mod_A selection option in the MIB **MUST** be used.

Per trib line code selectivity on MDR DIUs

MDR Digital Indoor Units that are modified to allow T1 line codes to be selected uniquely on a per trib basis are identified by a hardware version number of **2.1AT**. These Digital Indoor Units must only be operated with firmware version 4.09 and higher. The PCB revision of these units should also be set to 5.

Table 13 indicates the compatibility between different indoor and RF Unit types. The DIU firmware types required to provide the compatibility between different hardware types are listed in.

NOTE Different Digital Indoor Unit firmware versions may be required to provide compatibility between different indoor and RF Unit types.

Table 13 Indoor - RF Unit compatibility matrix.

Hardware Type	MDR DIU	ORION 10 DIU	ORION 25 DIU
MDR2400 RFU Orion2410i RFU	X	X	X
MDR5800 RFU Orion5810i RFU	X	X	X
MDR5850 RFU		X	X

Older versions (up to version 3.08) of the firmware are only suitable for MDR Digital Indoor Units and are identified by the following filename:

IDU_X_XX.CVF**, WHERE THE X_XX IS THE NUMERIC VERSION NUMBER.**

Newer firmware versions (version 4 upwards) are identified by the following filename:

abcddeeefghl_x_xx.cvf, where x_xx is the numeric version number of the firmware. The other fields in the name has the following meaning:

a: M or O = Digital Indoor Unit PCB (MDR or Orion)

b: C=100 X=10 Ethernet to RFU (or - if both are supported)

c: 2=v2 framing 3=v3 framing structure (3 is programmable, 2 is used on MDR)
dd: tt = 04=4 tribs 08=8 tribs E3, T3, etc
eee: 2.4 5.8 if it's specifically limited, not in name if not used
f: T or E for T1/E1 if it's specifically limited, not in name if not used
ghi: Reserved, not in number if not used

Examples:
oc308_4_04.cvf = Orion 100M v3 framing 8 tribs (Normal 8e1)
ox204_4_04.cvf = Orion 10M v2 framing 4 tribs (CCK-compatible 8e1)
mx204_4_09.cvf = MDR type DIU firmware.

E Appendix: FIXED Antennas

The table below identifies the distances where the 1mW/cm^2 exposure limits may be exceeded during continuous transmission using the proposed fixed antennas.

E.1 MDR5800

Manufacturer	Type	Model	Gain (dBi)	Numeric gain	Peak Power (mW)	Calculated Distance (m)	Minimum RF Exposure Separation Distance (m)
Gabriel	Dish	SSP2 52B	29.0	794.3	239.9	1.2	2
Gabriel	Flat panel	DFPD1-52	23.9	245.5	239.9	0.7	2
MTI	Flat panel	MT-20004	28.0	631.0	239.9	1.1	2

E.2 Orion5810i

Manufacturer	Type	Model	Gain (dBi)	Numeric gain	Peak Power (mW)	Calculated Distance (m)	Minimum RF Exposure Separation Distance (m)
Gabriel	Dish	SSP2 52B	29.0	794.3	239.9	1.2	2

E.3 Orion5850

Manufacturer	Type	Model	Gain (dBi)	Numeric gain	Peak Power (mW)	Calculated Distance (m)	Minimum RF Exposure Separation Distance (m)
Gabriel	Dish	SSP2 52B	29.0	794.3	239.9	1.2	2
MTI	Flat panel	MT-20004	28.0	631.0	239.9	1.1	2

E.4 MDR2400 and Orion2410i

Manufacturer	Type	Model	Gain (dBi)	Numeric gain	Peak Power (mW)	Calculated Distance (m)	Minimum RF Exposure Separation Distance (m)
Gabriel	Parabolic	SSG4-23	26.7	467.7	63	0.5	2

WARNING: It is the responsibility of the professional installer to ensure that when using the outdoor antenna kits in the United States (or where FCC rules apply), only these antenna configurations shown in the table above are used. The use of any antenna other than those listed is expressly forbidden in accordance to FCC rules CFR47 part 15.204.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment when installed as directed.

This equipment should be installed and operated with fix-mounted antennas that are installed with a minimum separation distance of 2 meters (6.6 ft) or more from all persons during normal operation to satisfy RF exposure requirements.

F Appendix: Useful web links

The URL **http://www.plesseyinc.com/** provides information on current products as well as some FAQ.

For any other questions, the latest firmware or software, contact your local distributor, customer support on the above web site or customer support at mdrsupport@tellumat.com.

G Appendix: MDR / Orion SCALABLE 1-to-4/8 E/T1 / 10 Base-T Ethernet functionality

Depending on the radio model and RFU configuration, the MDR / Orion radio can simultaneously support 1 to 8 E1 or T1 tributary channels, with the balance of the available user BW made up by Ethernet packet data, up to a maximum aggregate Ethernet throughput no greater than 9.5 Mbps (Combined up- and downstream throughput). The unidirectional Ethernet throughput of the radios is limited to a maximum of 8 Mbps, which decreases as more tributary channels are activated.

H Appendix: MDR / Orion FTP Firmware Upload

Firmware can be uploaded to MDR and Orion DIUs using FTP uploads as well as by using the "CVF Loader" or NMS software, available on the software CD or from the distributor.

Note the following:

Username : anonymous
Password : guest

The relevant MIB info is in the "mdrmteConfiguration" GROUP

1.3.6.1.4.1.1316.1.1.1.2.5 mdrmteFirmware
1.3.6.1.4.1.1316.1.1.1.2.5.1 mdrmteFTPServerStatus
1.3.6.1.4.1.1316.1.1.1.2.5.2 mdrmteFlashNewFirmware

By Default for mdrmteFTPServerStatus : the Digital Indoor Unit FTP server is active
By Default for mdrmteFlashNewFirmware : the upgrade is immediate (it can also be timed)

We recommend that the user ALWAYS verify that the new version has indeed been uploaded and is being used by the DIU. In this case one checks the following element:

1.3.6.1.4.1.1316.1.1.1.2.4.3 mdrmteIUFirmwareVersion

This OID (object ID) is part of:

1.3.6.1.4.1.1316.1.1.1.2.4 mdrmteGeneral, part of the "mdrmteConfiguration" GROUP

When updating the Digital Indoor Unit firmware by means of FTP, please note that the choice of IP address is very important. You must always choose the IP address of the interface "closest" to you. In other words if you are using Ethernet to connect, then use the IP address of the Ethernet Interface.

NOTE If you are updating the firmware on the remote unit, use the IP address of the "overhead" PPP link - NOT the Ethernet interface of the remote unit. For example use 192.168.4.3 when uploading to the far side and using the bridging configuration. If by mistake you use the wrong address, you will create a "half-established" FTP session, and NO FURTHER SESSIONS will be permitted until the session times out after some minutes.

Setup for Full Duplex mode on the MDR: Max Transfer Rate

Follow the steps outlined below to setup the MDR radio in Full Duplex mode:

- Upload the radio Firmware by following the aforementioned procedure. Full duplex Ethernet operation is supported from version 2 of the firmware.
- Setup default configuration of the radio to the required configuration. Refer to Section 2.3.4 for a description of the different default configurations.
- Ensure that the PCB revision of the DIU is *issue_2_mod_a(3)* by reading the following MIB element: 1.3.6.1.4.1.1316.1.1.1.2.4.15 mdrmteIndoorUnitPCBrevision. If the PCB revision is *issue_2(2)* the radio hardware does not support Full Duplex Ethernet mode.
- Disable all tributary channels to make the maximum user bandwidth available for Ethernet traffic.
- Enable Full Duplex mode via the MIB using element: 1.3.6.1.4.1.1316.1.1.1.4.16 mdrmteEthernetFullDuplex.
- Set the data rate to T1 if required using MIB element: 1.3.6.1.4.1.1316.1.1.1.2.1.1 mdrmteDataRate.

I Appendix: Getting started guide

I.1 Checklist for Bench Testing (without a PC)

You will need the following:		Check	Additional Information
1	1 MDR / Orion User Manual (Issue 11)		
2	2 Digital Indoor Units		
3	2 RF Units		1 low and 1 high band - see L/H stamp near serial number
4	1 or 2 Power supplies		User Manual par. 4.2.3 and 8.4
5	2 Digital Indoor Unit power cables		User Manual par. 4.2.3
6	2 Indoor to RF Unit power cables		Specifications - User Manual par. 8.5.10
7	2 Indoor to Outdoor RJ45 Data cables		Connections - User Manual par. 4.4.1
8	N-type male to N-type male (6 GHz) RF cable		Type and connection - User Manual par. 4.3.1
9	60 - 90 dB of N-type attenuators		Note Max input is -30 dBm, default output power is +24 dBm
10	2.5 mm Allen Key		Required to open the connector lid on the RF Unit.
11	3 mm terminal screwdriver		Required to connect the power cables
Recommended items:			
12	T1 or E1 BER Tester		
13	T1/E1 Payload cable		User Manual par. 4.2.4, 4.2.5, 4.2.6
14	Payload Loopback Connector		User Manual par. 4.2.4, 4.2.5, 4.2.6
You will need to know:			
15	**How to use the reset button:**		

When you press and hold down the reset button on the front panel with a suitable tool,the 3 LEDs on the front panel will change state depending on the duration that the button is held down for:
Count the number of state changes and let go of the reset button when the desired count is reached: It starts off with one green LED in the right most position, "moving" to the left:

Number	Left (System)	Middle(Payload)	Right (RF Link)
1	off	off	Green

2	off	Green	off
3	Green	off	off

Then an Orange LED "moving" from right to left (for 4-6), then Red, then Green again etc.

NOTE If you accidentally overshoot, keep on holding the reset button until all the LEDs eventually go off. Then release the button and try again.
See User Manual - par. 2.3.4 for more detail.

16 How to interpret the status of the LEDs:

Interpreting Rear Panel LED (Front Panel on Orion DIU)

DIU/RFU Link LED - OFF: No communication between Indoor and RF Units
Check cables between Digital Indoor Unit and RF Unit

Interpreting Front Panel LEDs

Continually Lit LEDs

LED	COLOR	I.2 Interpretation	I.3 Action
System	RED	There is a problem with the communication to the RF Unit	*Check cables between Digital Indoor Unit and RF Unit*
RF Link	RED	Continually running bit errors on tributaries	*If System LEDs are green then check RF Units*
Payload	RED	The is no Payload signal present (LOS) on one or more tributaries	*Check connections to the BER Tester*
System	ORANGE	There is a problem with the communication to the RF Unit	*Check cables between Digital Indoor Unit and RF Unit*
RF Link	ORANGE	FEC is correcting errors - no problem	*No problem unless the LED stays orange*
Payload	ORANGE	The incoming payload signal is AIS	*Check BER tester*

Flashing/Blinking LEDs

A blinking LED indicates that a particular error condition from the table above (same colour coding) occurred at some time in the past.
You can clear this memory of past errors by applying a "1 LED"-reset.

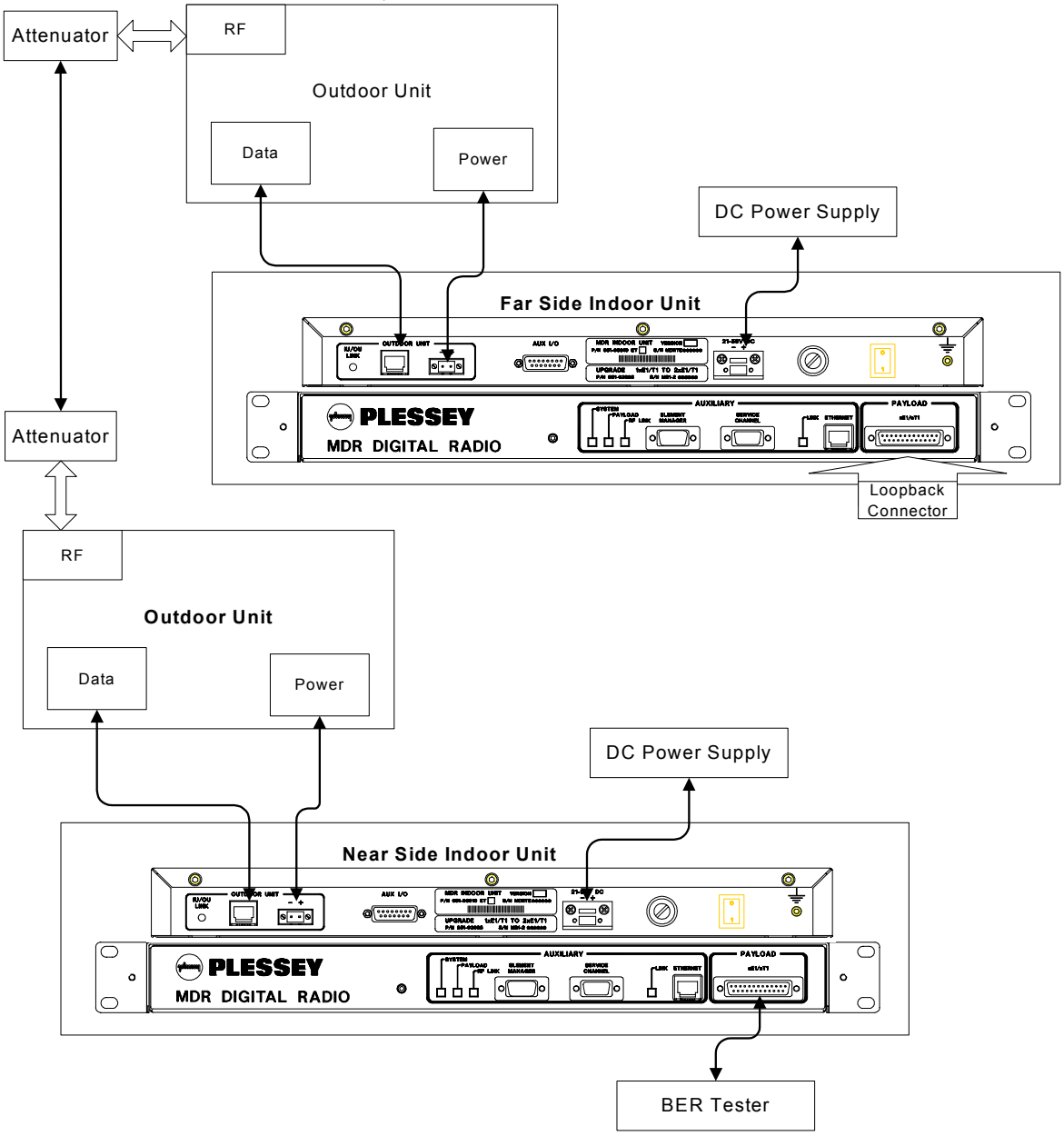
I.4 One Page Set-up for T1/E1 Bench Test (without a PC)

1. PREPARATION: Complete the attached check list

This section applies to the MDR and Orion radio series with the only difference being the location of the interface connectors on the MDR and Orion DIUs.

Complete the attached checklist (above section) to ensure that you have the required equipment and information to continue.
Do not continue until you have read the checklist in the above section!

2. CONNECT AS SHOWN, THEN SWITCH POWER ON



3. CONFIGURE USING THE RESET BUTTON

Be sure that you know how to use the reset button before continuing!
See note "How to use the reset button" on the checklist, above section.

Configure your payload type to T1 or E1:
For E1: Do a 12-reset on both Digital Indoor Units
For T1: Do a 13-reset on both Digital Indoor Units

Configure Near and Far side Digital Indoor Units:
For Near: **Do an 8-reset on the Digital Indoor Unit you would like as the "Near" side unit**
Note that this clears all stored parameters to factory defaults
For Far: **Do a 7-reset on the Digital Indoor Unit you would like as the "Far" side unit**
Note that this clears all stored parameters to factory defaults

4. CLEAR ERRORS

Apply a 1-reset to Clear the Historical errors on the Front Panel LEDs
See note "Interpreting LED Status" on the checklist

Apply a 2-reset to Clear the Event Log in the Digital Indoor Unit
This is required if you wish to view the Event Log using a PC.

Reset your BER Tester.

5. MONITOR STATUS

Be sure that you know how to interpret the status of the LEDs before continuing!
See note "Interpreting LED Status" on the checklist

If all is well, then:
BER Tester should run with no errors
All 3 Front Panel LEDs should be green.
(The RF Link LED may flash orange without the need to worry.)

If you have not connected a BER Tester, then the Payload LED will be Red, indicating LOS i.e. no payload signal.

> **NOTE** Make sure to *deactivate* all *unused* tribs to ensure that the Payload LED stays GREEN for the tribs *used*. That is: if only two tribs are used, but all four are active, a RED Payload LED will be indicated as the two unused tribs have LOS. Deactivating the two unused tribs through the NMS / GUI, will result in the Payload LED only indicating information for two active tribs – i.e. are there a valid signals on the two tribs, regardless of the two other, unused tribs.

J APPENDIX: 1+1 PROTECTION SYSTEM OPERATION

J.1 Introduction

J.1.1 System Description

When a single radio link is used to convey user data, any number of unexpected events may cause the link to fail resulting in user data being lost. This would require immediate corrective actions from the network operator responsible for maintaining the radio link. Since such a failure may occur at any time and possibly at a remote location, corrective actions may be very costly, both in terms of downtime and human resources. Common reasons for radio links to fail are:

- Signal fading on the radio link
- The presence of strong in-band interference
- Equipment failure

One possible solution to this problem is to install a second redundant radio link that can automatically take over the function of the primary radio link. This not only reduces the downtime of the link, but also provides the network operator with the opportunity to repair the faulty link at a convenient time.

This document describes the one-plus-one redundancy system that can be used with the radio products of Plessey BBW. Radio systems that are currently supported by the system are:

- MDR2400-SR
- MDR5800-SR
- Orion 2410-SRi
- Orion 5810-SRi
- Orion 5825-SR

The remainder of this document is aimed at giving a detailed technical description of the redundancy system and the installation thereof.

J.2 Technical Description

J.2.1 System Overview

The functionality required to establish a protected radio link is already built into the MDR- and Orion-type Software Radios. This implies that the user can set up a protected radio link by interconnecting the equipment for two parallel radio links through a 1U protection panel and a dedicated communications cable.

Each Digital Indoor Unit in a protected radio system continuously monitors the status of the radio link it uses, as well as the radio link provided through the redundant system running in parallel. Digital Indoor Units forming part of a redundant link at each end of the radio link share status information through a cable connecting the two Auxiliary ports of the Digital Indoor Units.

Only the tributary payload data channels are protected by the redundant link i.e. there is no protection for Ethernet data. Tributary payload data is split and combined between links through a 1U protection panel that connects to the user network equipment as well as the two Digital Indoor Units used at each end of the redundant link. Although both radio links are functioning continuously, only one of the Digital Indoor Units is actively driving the tributary channels of the user network at any given time.

Each Digital Indoor Unit continuously monitors the level of the Packet Error Ratio (PER) for the radio link on which it is receiving user data. When the PER exceeds a predefined ratio of 10 consecutive seconds, the Digital Indoor Unit driving the tributary channels of the user network will signal the redundant Digital Indoor Unit to take over processing the data it receives over the radio link.

The value of the PER threshold is configurable and can be changed through the Orion NMS if required. The default value is set at 30%.

There is no notion of a primary and secondary link in this redundancy system. The first link to be configured successfully will start driving the tributary payload channels. Switch over will only take place when the aforementioned condition occurs. In the event where the link to which the data was switched over fails at a later stage, the system will attempt to switch the data back to the original link.

NOTE 1 A situation can arise where the up- and downstream user tributary data is carried by separate radio links, i.e. link A carries the upstream data, and link B carries the downstream data.

NOTE 2 Due to the architecture of the redundancy system, the process of switching over from one link to another is not hitless and user tributary data will be lost for a few seconds (< 10)

J.2.2 System Configuration

The block diagram in Figure 10 illustrates a typical redundancy system configuration. Note that this system is managed over an Ethernet LAN, where the two local Digital Indoor Units are connected to the LAN using a hub. It is important to note that the IP addresses for each Digital Indoor Unit should be unique. It is however possible to configure each link in the redundant system separately through the Element-Manager port of each local Digital Indoor Unit, in which case it is not necessary to assign unique IP addresses to the Digital Indoor Units.

The block diagram in Figure 10 also clearly illustrates the following important interfaces:

- DIU A to DIU B connection through the respective Auxiliary ports of the four Digital Indoor Units
- The Protection Panel interfaces on each side of the link that combines and splits the tributary payload channels between the two radio links
- The single user network interfaces provided by the Protection Panel
- The two radio links that provide the redundancy required for user data protection

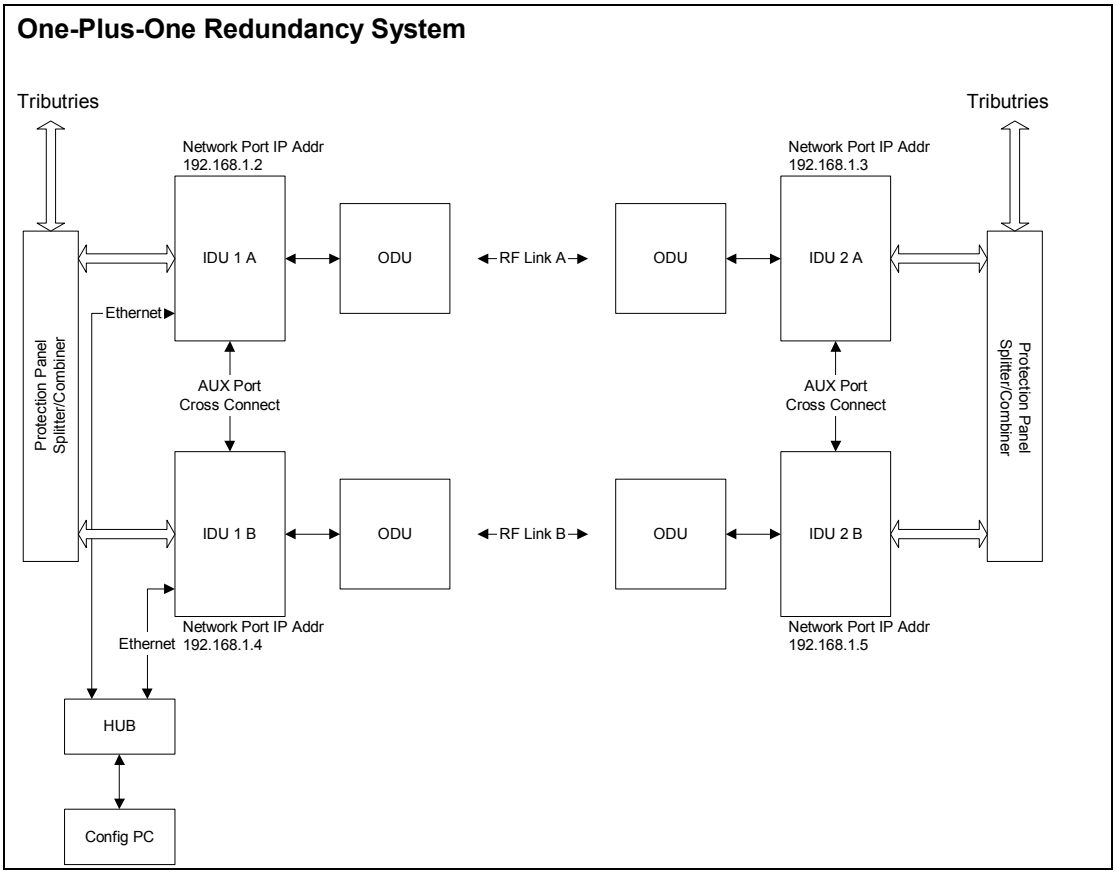


Figure 10: Block diagram of a typical redundancy protected system where the radio links are managed through an Ethernet network.

J.2.2.1 1U Protection Panel

There are two types of protection panels: a four and an eight tributary channel panel. They operate in the same way and perform the signal splitting and combination functions for the tributary channels taking part in the redundancy protected radio system. Note from Table 14: Protection Kit connector interfaces. that the Protection Kit is currently only provided in 110-ohm as a compromise to make provision for E1 and T1 mode.

Table 14: Protection Kit connector interfaces.

Description	Connector	Impedance
Orion Protection Panel		
Payload Network Interface	2xDB-25 or 8xRJ-48	110 ohm
Digital Indoor Unit Interface	2x2xDB-25	110 ohm
Orion Protection Panel		
Payload Network Interface	DB-25 or 4xRJ-48	110 ohm
Digital Indoor Unit Interface	2xDB-25	110 ohm

The cables required to connect the Patch Panel to the two Digital Indoor Units are provided with the Patch Panel. The DB-25 pinouts used for each DB-25 connector on

the patch panel are exactly the same as that of the MDR and Orion Digital Indoor Units respectively.

J.2.2.2 Auxiliary port communication

The two Digital Indoor Units on each side of the radio link share status information through the two relay outputs and OPTO inputs on the Auxiliary (AUX) port of each Digital Indoor Unit. Information shared by each of these:

- Indication if the Digital Indoor Unit is currently driving the tributary channels on the user network
- The current Frame Lock status detected by the Digital Indoor Unit for the radio link it is using

J.3 System functional description

Each Digital Indoor Unit taking part in a protected radio link continuously monitors the PER of the radio link it is receiving tributary data over. If the PER for the link increases above the Sever Error Margin for more than 10 consecutive seconds, the Digital Indoor Unit will request the second Digital Indoor Unit to take over the driving of the tributary channels if the second Digital Indoor Unit sees a frame lock.

Once the second Digital Indoor Unit has started driving the tributary channels, the first Digital Indoor Unit becomes the redundant link.

The flow diagram for the algorithm that governs the protection switch-over process in each Digital Indoor Unit is illustrated in Figure 11.

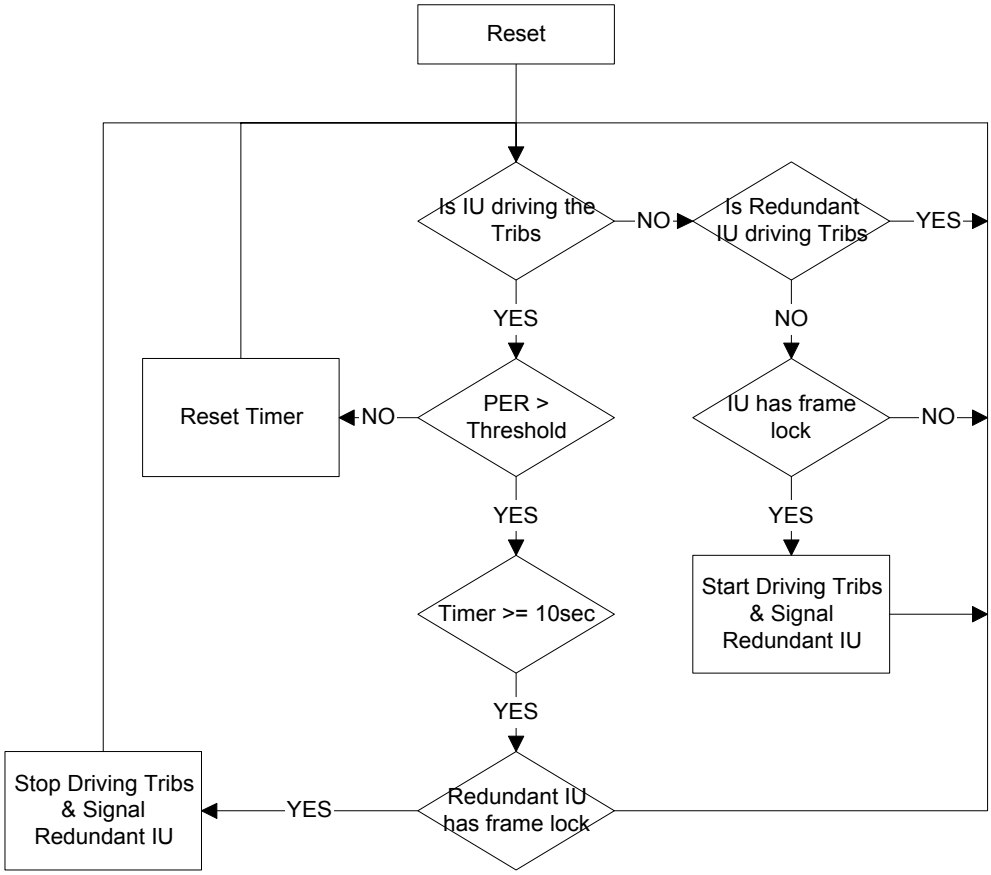


Figure 11: Redundant system switch-over algorithm.

J.4 Installation

J.4.1 Hardware Installation

The following list of equipment is required to set up a protected radio link:

- Four MDR / Orion Digital Indoor Units
- Four MDR / Orion RF Units
- Two MDR / Orion Protection Kit 1U panels (Supplied with protection kit)
- Four / Eight DIU interface loom cables (Supplied with protection kit)
- Tributary channel interface cables to connect to the user network
- Two DIU auxiliary communications cables (Supplied with protection kit)
- Standard tools and cabling required to set up a MDR / Orion radio link

Illustrations of the Protection Kits can be seen in Figure 12and Figure 13. Note from the drawings that the Orion Protection Kit offers the ability to protect eight E1/T1 tributary channels. Thus, the latter could be used with either the MDR or Orion radios.

Follow the steps below at each site to interconnect and set up the protected radio systems:

- Install each DIU-RFU system as described in the MDR / Orion User Manual
- Install the four / eight tributary channel Protection Kit panel in the rack mount
- Connect tributary paths A and B on the Protection Kit panel to the two installed Digital Indoor Units using the provided DB-25 interface cables
- Link the two Digital Indoor Unit auxiliary ports of the Digital Indoor Units through the DIU auxiliary communications cable
- Switch on the two units and configure the radios as explained in Section J.4.2
- Connect the tributary interface of the Protection Kit panel to the user network through the preferred interface (DB-25 / RJ48)

NOTE Be sure to acquire the correction protection kit that matches the Digital Indoor Unit type you intend to use.

Figure 12: MDR Protection Kit front panel.

Figure 13: Orion Protection Kit front panel.

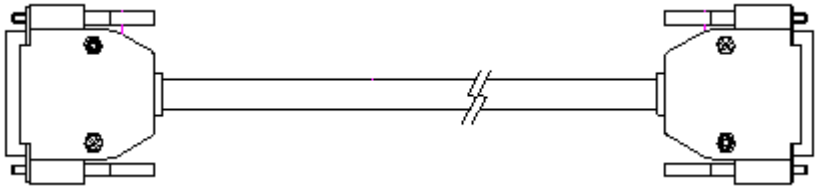


Figure 14: Tributary channel interface cable used to connect Protection Kit Paths A & B to the two Digital Indoor Units.

DIU auxiliary communications cables are supplied with the Protection Kit and are used to connect the auxiliary ports of the two Digital Indoor Units according to Table 15. The system diagram when using the two radio pairs in bridging mode is shown in Figure 10.

Table 15: Auxiliary Port cross connection.

Radio 1A Pin No	Radio 1B Pin No
1	12
2	13
8	14
9	15
12	1
13	2
14	8
15	9

J.4.2 Radio Software Configuration

Two MIB elements are used to configure the radios taking part in the protected radio link. These MIB elements can be set using any SNMP element manager application, or through the Orion NMS application. Please refer to the following user manuals for details on using the above applications:

- MDR / Orion – SR user manual
- Orion NMS HTML user manual
- 3rd party user manual (If a 3rd party SNMP element manager / MIB browser is used.

Set the following MIB element in all IDUs taking part in the protected radio link to 1 (Yes). **mdrmteOnePlusOne (OID: 1.3.6.1.4.1.1316.1.1.1.2.4.17, Parent: mdrmteGeneral)**

The MIB element controlling the switch-over threshold, **mdrmteSevereErrorMargin (OID: 1.3.6.1.4.1.1316.1.1.1.2.2.18, Parent: mdrmteRFLinkConf),** is set to 30% by default. This value is a percentage and represents the switch-over threshold for the Packet Error Ratio (PER). When the PER exceeds 30%, the switch-over will occur. The value of this MIB element can be adjusted to meet the exact user requirements. It is advisable to set the switch-over threshold on all Digital Indoor Units to the same value.

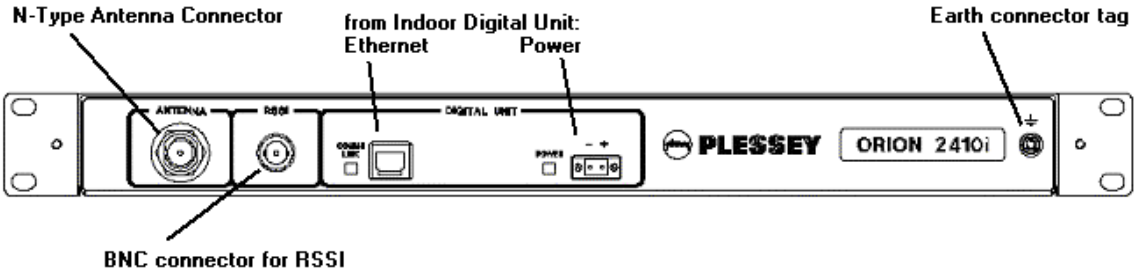
J.5 System Verification

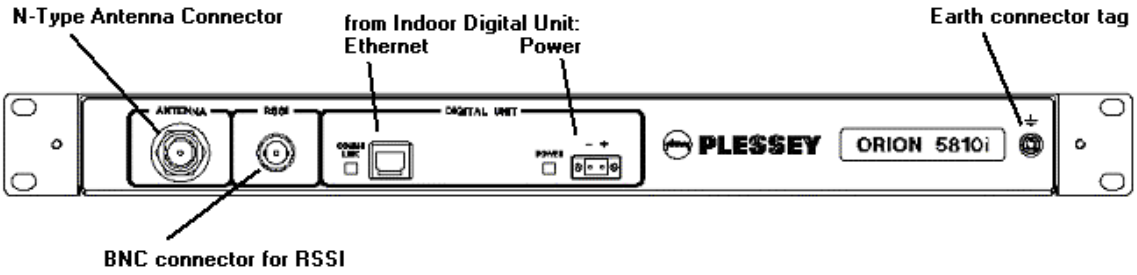
Since most of the functionality of the protected system is hidden from the user, it may be difficult to monitor the status at times. It can however be determined by monitoring the MIB elements listed below.

The status of the protected link can also be monitored through the Orion NMS. Please refer to the Orion NMS user manual for more information on this option.

- Name: mdrmteOnePlusOne – shows if the protected mode is active (OID: 1.3.6.1.4.1.1316.1.1.1.2.4.17, Parent: mdrmteGeneral)
- Name: mdrmtePayloadDrive – shows if the Digital Indoor Unit is driving the tributary channels of the user network (OID: 1.3.6.1.4.1.1316.1.1.1.3.1.5, Parent: mdrmteInfo)
- Name: mdrmteLock – shows if frame lock is present (OID: 1.3.6.1.4.1.1316.1.1.1.3.1.6, Parent: mdrmteInfo)
- Name: mdrmtePeerPayloadDrive – shows if the Auxiliary port connected Digital Indoor Unit (Peer) is driving the tributary channels. This element is the inverse (opposite) of mdrmtePayloadDrive (OID: 1.3.6.1.4.1.1316.1.1.1.3.1.7, Parent: mdrmteInfo)
- Name: mdrmtePeerLock - shows if the Auxiliary port connected Digital Indoor Unit (Peer) has frame lock (OID: 1.3.6.1.4.1.1316.1.1.1.3.1.8, Parent: mdrmteInfo)
- Name: mdrmteSevereErrorMargin – the threshold percentage value for link unavailable to switch over (OID: 1.3.6.1.4.1.1316.1.1.1.2.2.18, Parent: mdrmteRFLinkConf)
- Name: mdrmteAveragePER – average Packet Error Ratio (OID: 1.3.6.1.4.1.1316.1.1.1.1.2.15, Parent: mdrmteRFLinkPerf)
- Name: mdrmteCurrentPER – real time Packet Error Ratio. For example a PER of 1e-1 (10%) corresponds to a SevereErrorMargin value of 10. The Current PER has to exceed the Severe Error Margin for 10 seconds continuously for the link to become unavailable and switch over to its peer Digital Indoor Unit. (OID: 1.3.6.1.4.1.1316.1.1.1.1.2.3, Parent: mdrmteRFLinkPerf)

K APPENDIX: Indoor RF Units Orion2410i, Orion5810i





K.1 Description

The Indoor RF Units are functionally similar to the MDR2400 and MDR5800 RF Units referred to in the body of this manual. All connections and functional indicators are on the front panel.

Combinations:

Orion2410-SRi = Orion10 (Digital Indoor Unit) + Orion2410i (Indoor RFU)

Orion5810-SRi = Orion10 (Digital Indoor Unit) + Orion5810i (Indoor RFU)

K.2 Steps to install the Indoor RF Unit:

1. Install the Indoor RF Unit similar to description in 4.2.2 not forgetting earthing.
2. Install the system antenna with reference to Section 5. The RSSI BNC connector is on the front panel.
3. Connect the RF cable or wave guide outer conductor to the pole lightning earth electrically before it enters the equipment shelter.
4. Connect the type-N RF output connector to the system antenna through an inline lightning protection unit in areas with lightning activity.
5. Cover the connectors using an ultra violet protective, self-vulcanising tape.

CAUTION – ENSURE THAT THE POLE IS EARTHED FOR LIGHTNING PROTECTION.

K.3 RF Connection

1. The RF port is an N-type female connector on the front panel.
2. The N-Type connector is used to connect to the antenna, typically using coaxial transmission line or flexible wave guide via a launch/N-type adaptor.
3. Elliptical wave guide is recommended for longer feeder runs to minimize losses.
4. Also refer to 4.3.1.

K.4 Interconnection Cable Installation

Refer to 4.4 and follow the steps to install the interconnection cables between Indoor (Digital) Unit and Indoor (RF) Unit. All connections to the Indoor (Digital) Unit are on the front panel.

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W