

## 450 HEAD END UHF-H00



Varis' Smart Com 450 Head End is the interface between Base Station equipment (Repeaters, CMTS, Head end server) and the Smart Com 450 and Smart Com 450IS Leaky Feeder network. The Head End also provides a downstream pilot, bi-directional remote diagnostics, local diagnostics and a single downstream channel calibration utility.



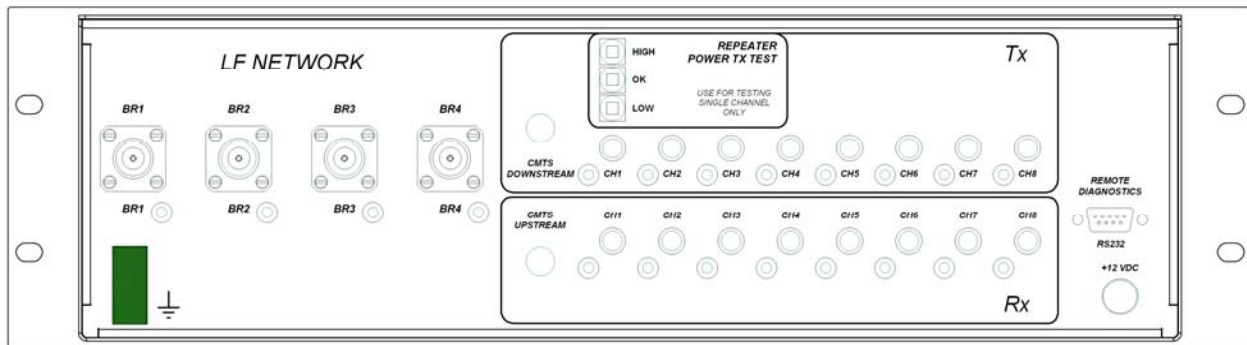
UHF-H00 Head End

### Product Specifications

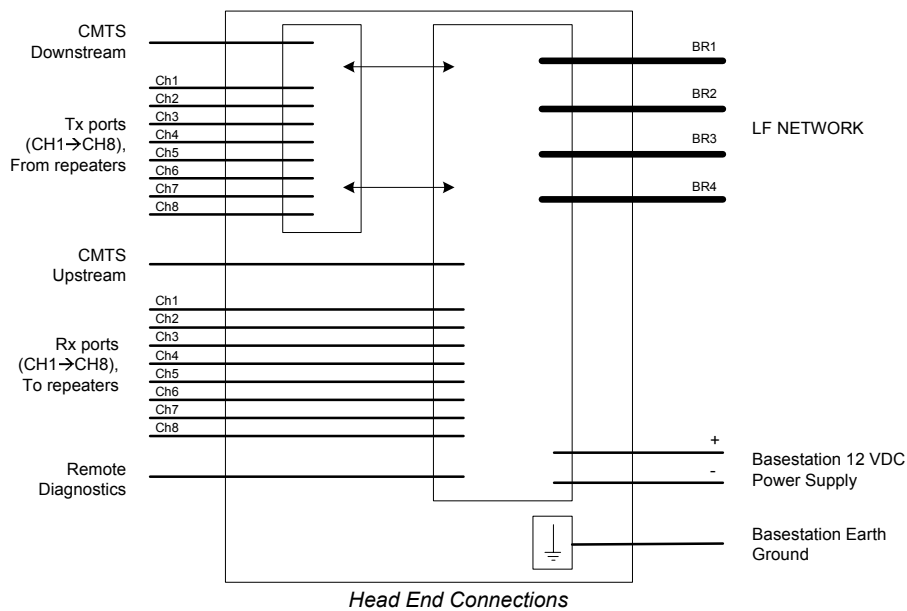
Part Number	UHF-H00
<b>Physical</b>	
Construction	Rack mount enclosure
Enclosure	19" 3U, Steel enclosure
Dimensions (W x H x D)	483 x 132 x 356 mm (19 x 5.2 x 14 in)
Weight (nominal)	6.5 kg (14.33 lbs)
Connectors	BR1 → BR4: N-type Jack CH1 → CH8 Tx/Rx: SMA Jack CMTS Downstream/Upstream: F Jack Head End Server: DB9 Base station Power: 16 AWG Wire Earth Ground: 2-14 AWG Wire
<b>Environmental</b>	
Temperature Range	-20 to +60° C (-4 to +140 °F)
<b>Electrical</b>	
Input Voltage	12-14 VDC
Output Voltage	No
Current Consumption (nominal)	240 mA
DC Blocking	All ports
<b>RF Characteristics</b>	
Impedance	BR1 → BR4 ports: 50 ohm Rx/Tx CH1 → CH8 ports: 50 ohm CMTS Downstream/Upstream ports: 75 ohm
Leaky Cable Types	UHF-175
<b>Voice Downstream</b>	
Loss (nominal)	35 dB
Bandwidth (1 dB)	5 MHz
1 dB Bandpass	475 → 480 MHz
3 <sup>rd</sup> Order Intermod free	8 Voice/Data
Channel Capacity	
Max input power	1W (30 dBm)
<b>Voice Upstream</b>	
Loss (nominal)	22 dB
Bandwidth (1 dB)	5 MHz
1 dB Bandpass	450-455 MHz
Target Input Power @ BR1 → BR4	-30 to -45 dBm
<b>CMTS Downstream</b>	
Loss (nominal)	14 dB
Bandwidth	45 MHz
Bandpass	140 → 185 MHz

Channel Bandwidth	6 MHz
MER	≥ 40 dB
BER	< 1.0E-10 Pre-FEC
Modulation Mode	QAM 64, QAM 256
Max Input Power	60 dBmV
<b>CMTS Upstream</b>	
Loss (nominal)	14 dB
Bandwidth	22 MHz
Bandpass	20→42 MHz
Channel Bandwidth	3.2, 6.4 MHz
MER	≥ 40 dB
BER	< 1.0E-10 Pre-FEC
Target Input Power Level @ CMTS	-21 dBmV
<b>Diagnostic Leds</b>	
HI	> 31 dBm
OK	≤ 31 dBm, ≥ 28 dBm
LO	< 28 dBm
UD (Upstream Diagnostics)	Upstream Diagnostics ON
DD (Downstream Diagnostics)	Downstream Diagnostics/Pilot ON
<b>Approvals</b>	
Intrinsic Safety	No
CE Certification	No

### Hardware Overview



Head End Back Panel



Head End Connections

<b>CMTS Downstream:</b>	Connects to CMTS Downstream port using a 75 ohm, F-plug to F-plug cable.
<b>CMTS Upstream:</b>	Connects to CMTS Upstream port using a 75 ohm, F-plug to F-plug cable.
<b>TX PORTS:</b>	Connects to Base station repeaters.
<b>RX PORTS:</b>	Connects to Base station repeaters.
<b>Remote Diagnostics:</b>	Provides connection between the head end and head end server through a serial crossover cable.
<b>+12 VDC:</b>	Connects to Base station's 12 VDC power supply.
<b>Ground Lug:</b>	Connects to Base station earth ground using a 2-14 AWG wire.
<b>LF Network:</b>	Connects directly to the LF cable on branches 1 to 4.
<b>Repeater Power Tx Test:</b>	The HI, OK and LO leds located on the head end back panel enable single channel power level testing.
<b>Upstream Diagnostics:</b>	Led illuminates whenever upstream remote diagnostic data is detected at the head end.
<b>Downstream Diagnostics:</b>	Led illuminates whenever downstream pilot is on.

## Installation

- Mount head end enclosure in basestation cabinet.
- Ensure that required transmit ports (CH1 to CH8) are connected to base station repeaters. Terminate unused ports. If the output power level of these channels needs to be adjusted to 1W (30 dBm), the *Repeater Power Tx Test* leds can be used.

### Repeater Power Tx Test:

1. Ensure that all transmit ports but one are terminated (i.e., terminate CH2 → CH8). Terminate the CMTS downstream port.
2. Connect the repeater transmitter under test to the un-terminated port (i.e., CH1). Adjust the transmitter power level so that the OK led is lit. The power level ranges for these leds are as follows:
  - HI Led: > 31 dBm
  - OK Led: ≤ 31 dBm, ≥ 28 dBm
  - LO Led: < 28 dBm

**NOTE:** These leds will only show the power level for one channel at a time. During normal operation with more than one downstream channel active, the Hi led will be lit.

3. Repeat for remaining repeater transmitters.
- Ensure that the receive ports (CH1 to CH8) are connected to base station repeaters. Terminate unused ports.
  - Ensure that required LF branches are connected to LF network ports BR1 → BR4. Terminate unused ports.
  - Connect CMTS downstream and upstream ports to the basestation CMTS if needed. Otherwise, ensure these ports are terminated.
  - Connect ground lug to base station earth ground (2-14 AWG wire).
  - Connect power leads to the base station 12V power supply.
  - Ensure that a serial cross-over cable is connected between the head end and head end server. Remote diagnostics requires no further setup.