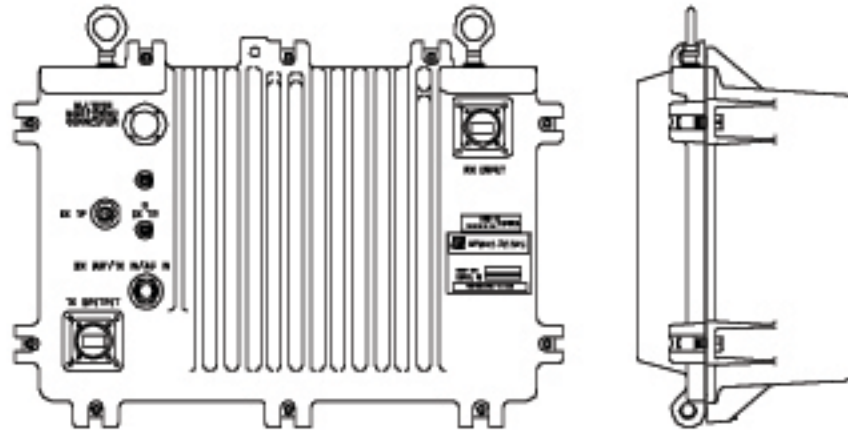


## 13 GHz COMPACT OUTDOOR TRANSCEIVER



- BI-DIRECTIONAL
- MULTI-CHANNEL CAPABILITY
- COMPACT OUTDOOR HOUSING
- COMPATIBLE WITH DIGITAL/ANALOG SYSTEMS
- BPSK, QPSK, 16-QAM (*Upstream Transmit*)
- NTSC, PAL VIDEO, 64-QAM, 256-QAM (*Downstream Receive*)
- 12.7 – 13.2 GHz CARS BAND

### DESCRIPTION:

The 13 GHz compact outdoor transceiver incorporates both the transmit and receive functions within one compact outdoor housing. Utilizing solid-state technology and designed specifically to meet the ever-changing needs of the communications industry, this transceiver offers the advantage of quick implementation. Using an existing antenna, through the use of circulators and filters, makes the incremental cost marginal, with no additional line of site or tower loading issues.

The transceiver incorporates an AML Wireless Networks' multi-channel microwave receiver. The frequency of the *downstream* signal as supplied by a cable modem termination system (CMTS) or video modulator is within the range of 54-504 MHz. The complete microwave input spectrum is block downconverted to the appropriate VHF channel assignments.

The receiver outputs are used to drive the conventional cable plant directly from remote hubs without remodulation, thereby reducing amplifier cascades and the need for supertrunking.

The *upstream* transmitter block upconverts a 5 - 41 MHz BPSK, QPSK or 16-QAM input data stream to a 13.16 – 13.20 GHz microwave output, providing an effective means of sending AML return-path signals to remote cable hubs for distances up to 25 miles. A solid state FET amplifier is utilized in the upstream transmitter.

A multi-pin test connector permits evaluation of various DC voltages. Two test ports are present so that receiver and transmitter output signals can be monitored.

The phase-locked receiver microwave AGC thresholds are factory set for 56 dB C/N. The downconverter local oscillator's frequency reference is phase-locked to an incoming pilot tone in order to eliminate frequency drift and to minimize co-channel interference caused by the potential ingress of off-air signals into the cable plant or the subscriber's Customer Premise Equipment (CPE). The upstream transmitter uses the same local oscillator as the downstream receiver. In the upstream transmitter, a special pilot-tone is generated for the purpose of phase-locking and AGC operation in the upstream receiver.

## TRANSCEIVER SPECIFICATIONS

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Primary Power .....	50 to 60 Hz, 50 to 65 Volts, 125 Watts
Temperature Range .....	-40°F to +120 °F or -40°C to +49°C
Humidity .....	to 100%
Dimensions.....	19.5" x 13.5" x 10. 1 "
Weight .....	48 lbs / 22 kg
Shipping Dimensions .....	24" X 18" X 12"
.....	610 mm X 457 mm X 305 mm
Shipping Weight.....	55 lbs / 25 kg

## DOWNSTREAM RECEIVER

Microwave Input Frequency .....	12.7 to 13.15 GHz
Microwave Input Connector.....	WR75 Waveguide Flange
VHF Output Frequency .....	54 to 504 MHz
VHF Output /Power Input Connector.....	.5/8 – 24 Cable Entry
Nominal Gain .....	+19 dB
Frequency Stability.....	Phaselocked to Downstream Transmitter
Microwave Input Return Loss .....	+16 dB
RF Output Return Loss .....	+/-14 dB
Noise Figure .....	6 dB
Nominal Output in AGC.....	30 dBmV
Gain Flatness .....	+/-1.5 dB
Microwave AGC Dynamic Range.....	35 dB
VHF AGC Dynamic Range .....	12 dB
AGC Flatness .....	+/-1 dB

### Output Signal Quality @ 56 dB C/N

Number of Channels	Composite 2 <sup>nd</sup> Order (dBc)	Composite 3 <sup>rd</sup> Order (dBc)
40 ch	-70	-75
60 ch	-68	-71.5
72 ch	-67.4	-69.8

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## UPSTREAM TRANSMITTER

Microwave Output Level

No. of QPSK/ QAM Signals	P <sub>o</sub> / Signal (dBm)
2	14
4	11
8	8
16	5
32	2
64	-1

Microwave Output Frequency.....	13.16 to 13.20 GHz
Microwave Output Connector.....	WR75 Waveguide Flange
Pilot Tone Frequency.....	13198 MHz
VHF Input Frequency.....	5 to 41 MHz
VHF Input Level.....	25 to 45 dBmV
VHF Input Connector.....	Female F type entry
Nominal Gain.....	+29 dB
Frequency Response.....	+/-1.0 dB
Frequency Stability.....	+/-0.0005%
RF Input Return Loss.....	+14 dB
Microwave Output Return Loss.....	+18 dB

Note: Specifications subject to change without notice.