

# MARENIUS

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# professional ducts

## HOT-303/RTX TRANSCIEVER

## HOT-303/TX TRANSMITTER

## HOT-303/RX RECEIVER

The HOT-303 series of fiber-optical transmission units include the HOT-303/RTX Transceiver, the HOT-303/TX Transmitter and the HOT-303/RX Receiver. All units are available in versions for either single mode or multi mode optical fiber.



### Technical Data

### HOT-303

(All values are typical unless otherwise indicated)

Video bandwidth	6 MHz (-3 dB)
Video input impedance	75 $\Omega$
Video input level	1 V p-p
Video output impedance	75 $\Omega$
Video output level	1 V p-p into 75 $\Omega$
Video resolution	8 bits
Video sample rate	20 MSa
Audio frequency range	20 Hz -18 KHz (+/-1 dB)
Audio dynamic range	90 dB
Audio input impedance	10 K $\Omega$ balanced
Audio input level	max. +18 dBu
Audio output impedance	2 x 100 $\Omega$ balanced 1 K ohm unbal.
Audio output level	max. +18 dBu
Audio resolution	18 bits
Audio sample rate	40 KSa
Data signal format	RS-232 (+/-10 V in)
Max. baud rate	19,2 Kbaud
Fibre optical wave length	1300 nm
Connector	SC type
Transmission speed	200 Mbit
Optical mode	multimode/singlemode
Power supply	2x9 V AC @ 10 VA through external PSU
Size W x H x D approx.	112 x 44 x 164 mm excl. sockets
Weight	approx. 500 grams

HOT-303 handles transmission of one video signal, a stereo audio signal and a RS-232 data signal. All signals are transferred in the digital domain, though inputs and outputs are analog for video and audio. There is no signal degradation of any kind as a function of fiber distance. Transmission distance is up to 2 km for multi mode fiber and up to 50 km for single mode fiber (depending on the fiber quality).

There are also an optional choice of front plate for mounting into a 19" / 3 HE card frame. Up to 8 units go into a single card frame.

The Transmitter section has inputs for CVBS composite video (either PAL, NTSC or SECAM), two line level audio signals and a RS-232 data signal up to 115 Kbaud.

The Receiver has corresponding outputs, hence making the system transparent for both video, audio and data signals.

In the Transmitter section the video signal is digitized through a high-speed A/D converter running at 20 MSa @ 8 bits. There is no compression of any kind. The balanced audio channels are digitized through an industry standard A/D converter running at 40 kHz @ 18 bits. The RS-232 channel has a single line for transmission of the TX signal up to 115 Kbaud.

In the Receiver section there is a corresponding D/A conversion for both video and audio signals. All input levels are restored on the outputs. Power supply is from a separate mains adapter, 2 x 9 V AC @ 10 VA. It is available in both european (230 V) and US (115 V) versions.

The fiber-optical connections are through a pair of standard SC type connectors. The transmission wavelength is 1300 nm and allowable attenuation (power budget) from Transmitter to Receiver is 16 dB (singlemode version) or 10 dB (multimode version).

The transceiver version uses two parallel optical fibers for duplex transmission.

for FIBER-OPTICAL AUDIO/VIDEO COMMUNICATION

HOT-303 TRANSCIEVER

# User Instructions

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## HOT-303 Transceiver HOT-303 Transmitter HOT-303 Receiver

The large label on top of the unit indicates location of all sockets.

The name suffix S or M indicate SINGLE MODE or MULTI MODE version.

There is an adjustments for video output level inside of the unit.

There is a green LED indicating the unit is powered on.

A yellow LED indicate signal status:

In a HOT-303/TX unit it will always be steady on.

In a HOT-303/RX unit it will flash slowly when there is a good fiber connection.

In a HOT-303/RTX unit it will flash slowly when there is a good fiber connection.

It will flash faster when there is a good fiber connection and the unit has automatically selected SYNC SLAVE mode.

For duplex transmission there is always a synchronization problem because of slight difference between the system clock generators. In HOT-303 this problem is automatically handled so that whenever two RTX units are hooked up in a duplex transmission one of them will slave sync to the other.

SLAVE unit.

### Connectors

**Fiber connector** is a standard SC-plug attached to a 62,5/125 um fiber of multi mode type or a 9 um single mode fiber.

**Power supply** is by a separate mains adapter, 2 x 9 V AC @ 10 VA. It goes into the 3-pin plug.

**Video** is connected through BNC sockets. Signal format is composite CVBS 1 V<sub>pp</sub> @ 75 Ω.

## HOT-303/RTX/S

VIDEO/AUDIO/RS-232  
SINGLE MODE FIBER TRANSCEIVER

MARENUS  
ELEKTRONIKUTVECKLING AB  
SWEDEN



### 25PIN D-SUB:

BAL AUDIO IN; L CH = 7(+), 6(-), 19(GND); R CH = 8(+), 9(-), 21(GND)  
BAL AUDIO OUT; L CH = 12(+), 13(-), 24(GND); R CH = 10(+), 11(-), 22(GND)  
RS-232 IN; 4(TX) RS-232 OUT; 3(RX) 16(GND)



**Audio** is balanced connected through a 25-pin subD socket. For RX and TX versions there are additional unbalanced RCA sockets (with approx. 6 dB attenuation)

**RS-232** up to 19,2 Kb is connected through the same 25-pin subD socket.

The socket is a **25-pin female subD** socket. All signals are seen from the modules point of view.

pin #	signal	comment
3	RS-232 output	
4	RS-232 input	
6	audio input 1 -	balanced with input 1 +
7	audio input 1 +	balanced with input 1 -
8	audio input 2 +	balanced with input 2 -
9	audio input 2 -	balanced with input 2 +
10	audio output 2 +	balanced with output 2 -
11	audio output 2 -	balanced with output 2 +
12	audio output 1 +	balanced with output 1 -
13	audio output 1 -	balanced with output 1 +
14-25	signal ground	

### CAUTION!

**The single mode version is a Class 1 Laser product. Protect eyes from direct beam exposure.**

### Power losses

The transmission wavelength is 1300 nm and allowable attenuation (power budget) from Transmitter to Receiver is 16 dB (single mode version) or 10 dB (multi mode version).

Maximum allowable fiber length is dependent on the power loss.

There is a special term: **Power Budget**.

This concerns the way the available optical power is used. For single mode fiber there is a loss of approx 0,1 dB / km. For multi mode there is a loss of approx. 0,4 dB / km. In a single SC connector the loss may be 0,3 dB to 0,5 dB. Add all losses and make sure they are well within the power budget. Else it may be necessary to replace multi mode fiber with single mode fiber.

There is also need for concern about other kinds of signal degradation, i.e. reflection within the fiber.

Normally it should be possible to reach up to 2 kilometres with a multi mode fiber and far more than 10 x that distance with single mode fiber, without running over the power budget limit.

**NOTE that single mode fiber requires skilled personnel and suitable equipment for contacting and splicing.**