



SI/1590 HF RX MATRIX

The SI/1590 HF Rx matrix is a switching system which allows the connection of every receiver of a Rx Radio Station to each antenna. The connection is non blocking: more than one receiver can be connected to one antenna, but not viceversa.

DESCRIPTION

Every SI/1590 System includes:

- One (or more) active multicoupler SI/1589
- One (or more) Passive Rx Matrix SI/1591
- One patch panel antennas with EMP protection
- One patch panel receivers

Multicoupler

Each multicoupler allows the multiplexing of one receiving antenna towards eight receivers in VLF, LF, MF, and HF with recovery of the insertion loss by a low noise and high input dynamics amplifier.

The multicoupler is specially designed for a frequency range 10KHz ÷ 32MHz (*extended frequency range*) and high signals ($\leq 20\text{dBm}$) with an insertion loss of $\emptyset\text{dB}$, channel isolation better than 30dB and impedance input/output of 50 ohm.

The multicoupler includes on the input circuit a Power monitor system which can automatically connect a 20dB attenuator in order to assure low intermodulation when the RF signals are higher than +20dBm.

Two multicouplers are normally mounted in one unit of 1U for rack standard 19”.



Figure 1: RF Multicoupler

TECHNICAL CHARACTERISTIC

Characteristic/Parameter	Value
Antenna input	1+1
Receiver outputs	8+8
Frequency range	10 KHz ÷ 32 MHz
In/out impedance	50 Ohm
In/out insertion loss	0 dB +- 1 dB (20 KHz ÷ 32 MHz) ≤ 3 dB (10 kHz)
In/out VSWR	≤ 1,5:1 (20 KHz ÷ 32 MHz) ≤ 2:1 (10÷20 KHz)
Output isolation	≥ 30 dB
Noise figure	≤ 8 dB
Mutual isolation	Better than 35 dB at 30 MHz
RF intermodulation	≤ 40 dB with 2 tones RF + 14 dBm pep f1-f2=500 Hz
Intercept point IP3	+ 40 dBm
Power monitor RF input	Adjustable between +10 and +20 dBm
Power monitor control	Switch two position Ext/Auto on the front panel
Bite	Led on the front panel
Input protection	90 Vrms Max
Maximum continuous signal with Power monitor	30 W rms
RF connectors	Type N for the antenna inputs Type BNC for the receiver outputs
RF Attenuator connector	9 poles female
Power supply	220/115 Vac 0,5 Amp

Rx Matrix

The Rx matrix allows the switching of one antenna to one or more receivers.

The Rx matrix SI/1591 is modular; every module is designed for 5 (antennas) and 4 outputs (receivers).

By using an adequate number of modules the desired size can be reached. The maximum configuration is 15 antennas x 24 receivers.

The modules can be changed during the operation with no interruption.

The control of the matrix can be done locally or by serial line RS 232/422-485.

A BITE circuit indicates a missed closure of a RF cross point.

The Rx matrix up to 15x12 is mounted in a 3U unit for rack standard 19"; Up to 15x24 is mounted in a 6U unit for rack standard 19".



Figure 2: RF Receiver Matrix

TECHNICAL CHARACTERISTICS

Characteristic/Parameter	Value
Max number of antenna inputs	5 x 3 modules = 15
Max number of receiver outputs	4 x 6 modules = 24
Frequency range	10 KHz ÷ 30 MHz (opz. 1 MHz)
Impedance	50 Ohm
Insertion loss In/Out	-6 dB \pm 1 dB
Linearity	2 dB
Noise figure	6 dB \pm 1 dB
Isolation Input– Input	> 60 dB
Isolation Output – Output	> 60 dB
Intercept point	\geq 40 dBm 3 ord \geq 50 dBm 2 ord
Inter-modulation Distortion	Suppressed at 35 dB below the maximum input level of -13dBm
VSWR	\leq 1,5:1
Gain	0 \pm 1 dB
Patch Connection Loss	\leq 0.25 dB in the frequency range
RF Connectors	Type BNC Inputs & Outputs
Power supply	110/220 Vac 50÷60 Hz 200 VA max
BITE	Led on the front panel
Size	Rack Standard 19” 3 U
MTTR	20’