

HF BAND SWITCHING MULTICOUPLER

Model: SMC-1HF

GENERAL:

All RF Multicouplers manufactured by Data Acquisition Pty limited are designated as 'Switching Multicouplers'. The 'Switching' identification simply means that each RF Output can be individually turned ON or OFF as required by the User. This offers two main advantages:-

- The Unit's Power dissipation is always minimized (critical for some temperature sensitive environments).
- The inclusion of a control system enables other features (e.g. Sensitivity control) to be added.

The SMC-1HF is a HF Band (nominal 2 to 30 MHz) Communications Front End Switching Multicoupler, designed mainly for Military and other Professional applications.

The Multicoupler is manufactured as a standard 1U Rack Mounting Chassis, and has a maximum capacity of One Input (Antenna), to 12 Outputs (Receivers), when the output connectors are either BNC or TNC.

Smaller Output Connectors (e.g. SMC) can provide larger capacity (please consult the Factory).

Input connectors can be N or TNC or BNC.

This Unit can also be supplied with reduced Receiver capacity to meet Customer requirements.

ELECTRICAL SPECIFICATIONS

Configuration:	1 Antenna to 12 Receivers (maximum).
Operation:	Remotely controlled (refer to 'Control' section).
Frequency Response:	0.1 MHz to 35 MHz (nominal). Roll-off of 6db per octave above 35 MHz. (or to Customer specifications - refer to Note 1 below)
Gain:	Nominal 3db @ 20 MHz
Flatness:	+2db to -1db about a reference frequency of 20 MHz.
Linearity (Third Order)	IM3 < -35dbc @ -5dbm input level. (Measured @ 30 MHz).
NF:	< 8db (High Sensitivity).
Pre Amplifier:	Internally mounted Pre Amplifier Module.
Sensitivity Control:	Switch-able Attenuator, 15db. Refer to Note 2 below.
Max Input (linear operation):	0dbm for High Sensitivity. +15dbm for Low Sensitivity.
Max Input (no damage):	>> +30dbm (Input protection included).
On / Off Isolation:	>50db @ 30 MHz.
Output to Output Isolation:	>40db worst case.
Crosstalk:	>50db worst case.
Input Impedance: (input):	50 Ohms (Nominal).
Input VSWR:	< 1.4 : 1
Output Impedance (all outputs):	50 Ohms (Nominal).
Output VSWR:	< 1.2 : 1

POWER SUPPLY

Input Voltage:	90 to 264 VAC Auto-sensing.
Input Frequency:	47 to 63 Hz.

MECHANICAL

Width:	19 Inch Rack Mounting.
Height:	1RU (1.75 inches, 44 mm).
Depth:	260 mm overall (Includes rear connectors).
Weight:	2 KG.
RF Connector (input):	N or TNC or BNC (Female). Customer option (no cost).
RF Connectors (outputs):	TNC or BNC (Female). Customer option (no cost)
Power Connector:	IEC.
Ethernet Connector (Network Control):	RJ45.
USB Auxiliary Control Connector:	USB Unpowered Type A. Front Panel mounted.

CONTROL SYSTEM:

Three basic control options are available (one or more can be provided) (Refer to Note 3):

- Network control via a LAN.
- Front Panel control via USB
- iPad or iPhone control via WiFi

Network control connects the Multicoupler to a PC, and provides control from a GUI (point and click). This type of control is only recommended if the Unit is going to be subject to regular control. PC control software is provided.

As Multicouplers are mostly a 'set and forget' system, either USB or WiFi control will usually be more appropriate.

The Unit includes a Front Panel mounted USB connector (unpowered A) to which a Laptop computer can be connected to provide control for set up and occasional use. Control software is provided with the Unit.

The Unit can be WiFi enabled to enable control from an iPhone or iPad. An application is provided with the Unit.

GENERAL NOTES

1. Frequency Response: The frequency response can be modified to meet individual Customer specifications. This is done by the inclusion of high performance LC filters.

A high pass (HP) filter may be included to limit response below the lower nominated frequency limit, whilst a low pass (LP) filter is included to limit response above the upper nominated frequency limit.

The HP filter is usually included to eliminate interference from the Broadcast band below the nominal 3 MHz (or specified) lower limit of HF. This filter is usually a minimum 5th order Elliptic, and is often a 7th order Elliptic design to provide the required very steep skirt characteristics.

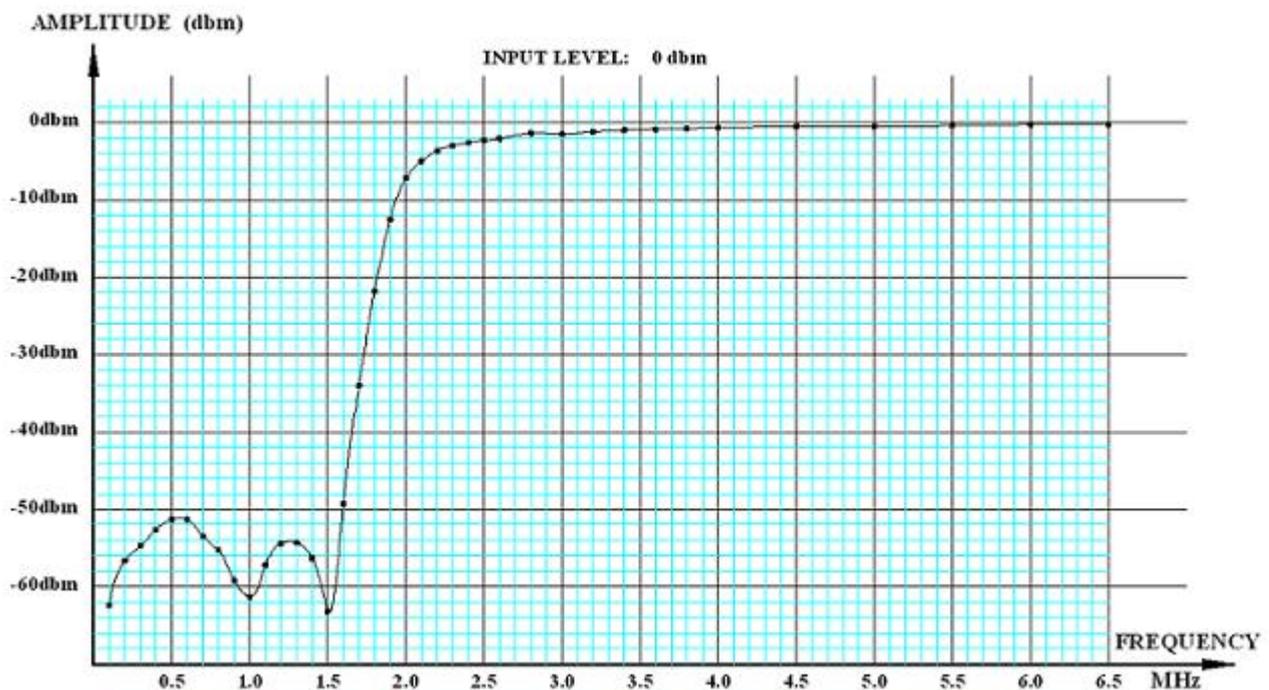
The LP filter is included to provide roll off above the nominal 30 MHz (or specified) upper limit of HF. This filter tends to be of much less importance than the HP filter, and accordingly, a 3rd order Chebyshev design will usually suffice.

Note that a 3rd order LP filter is included in the standard Pre Amplifier, hence no further action is required unless increased top end roll off is deemed necessary by the Customer (the corner frequency may be Customer specified).

The Pre-Amplifier HP Filter is optional, and is provided to meet Customer specification only where required, and is at additional cost.

Accordingly, the low end High Pass (HP) Filter must be fully specified prior to manufacture.

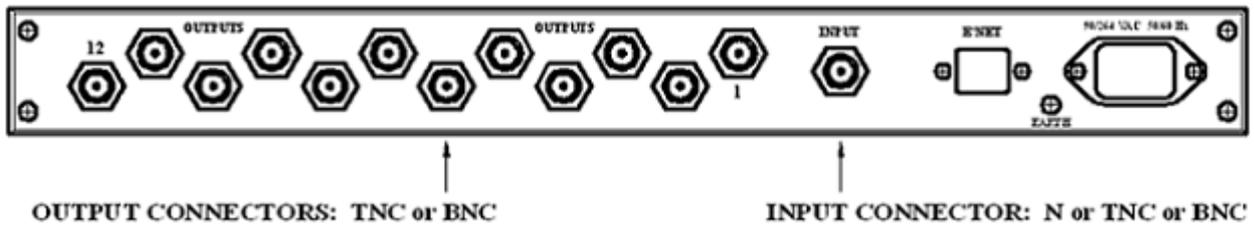
A typical response plot of a HF High Pass Filter is shown below. This Filter is realized by a 7th order Elliptic design, and has a (Customer specified) corner frequency of 2.2 MHz.



2. Sensitivity Control: The Pre Amplifier Module includes a 'Sensitivity' control. This comprises an in line 15db Attenuator that can be switched into circuit to provide a de-sensitised input, or out of circuit to provide normal (high) sensitivity. This extends the linear operation of the system to +15 dbm at the input.

3. Auto Recover: During normal operation, the control system stores all current control settings in non volatile memory, such that, in the event of shut down or a power interruption, the system will automatically restore all control settings at power up, to the same condition as prior to the interruption or shut down.

**SMC-1HF - TYPICAL REAR PANEL LAYOUT
(TNC or BNC INPUT AND OUTPUT CONNECTORS)**



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