

HF BAND MATRIX SWITCH

Model: USC410-HF

GENERAL:

The USC410-HF is a HF Band (nominal 2 to 30 MHz) Communications front end Matrix Switch, designed mainly for Military and other Professional applications.

The unit is compact, featuring fully non-blocking operation, and 4 Antenna to 10 Receiver (maximum) capacity, in a 1U nineteen inch rack mounting chassis.

The equipment can also be supplied with reduced Receiver capacity, of either 4 or 8 Receivers.

Normal System control is from a remotely located PC, via a LAN (Ethernet running TCP/IP).

PC Control Software (GUI based) is supplied with the equipment.

Optional Internet control is available (Please consult Factory).

System specifications are detailed below. Please contact the factory if you require additional information.

ELECTRICAL SPECIFICATIONS:

Configuration:	4 Antennas to 10 Receivers (maximum).
Operation:	Fully Non Blocking.
Expansion Capacity:	Not available.
Frequency Response:	0.1 MHz to 35MHz (nominal). Roll-off of 6db per octave above 35 MHz. (or to Customer specifications - see 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.
Pre Amplifiers:	Four internally mounted Pre Amplifier Modules.
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: (all inputs):	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:	3 KG.
RF Connectors (inputs):	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.

GENERAL NOTES

1. Frequency Response: The frequency response of each Antenna Input (channel) 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).

All Pre-Amplifier HP Filters are optional, and are provided to meet Customer specification only where required, and are at additional cost.

Accordingly, the low end High Pass (HP) Filters 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.



**A TYPICAL HF BAND HIGH PASS FILTER RESPONSE
(CORNER FREQUENCY 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 sensitivity. This extends the linear operation of the system to +15 dbm at the input.

3. Auto Recover: During normal operation, the internal Switch control system stores all current control settings in non volatile memory, in order that, in the event of a shut down or unintentional power interruption, the system will automatically restore all last saved control settings at power up, thereby restoring the Switch to the same configuration as it was immediately prior to shut down.

CONTROL SYSTEM:

Matrix Switch Control, and current Status Display, is provided from a remotely located PC via a standard 10/100Base-T Ethernet link, running TCP/IP.

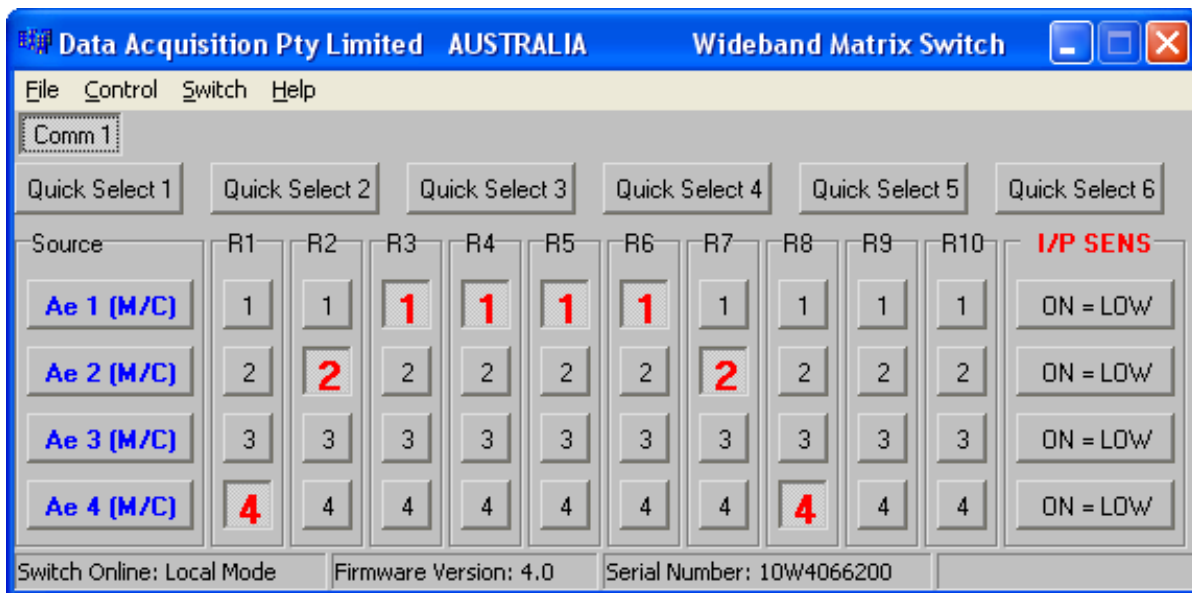
PC User Interface: The PC User Interface is a windows based point and click system, and is provided with the Switch. The PC User Interface provides a screen presentation similar to that shown below.

Basic Matrix control includes:

- * Separate Columns and Rows of illuminated buttons for Matrix Control, Sensitivity, and Multicouple.
- * Captions on all Pushbuttons can be user defined.
- * ‘Quick Select’ buttons for single click recall of stored Switch configurations.

AUXILIARY CONTROL: 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.



TYPICAL GUI EXAMPLE - 4 x 10 SWITCH



**REAR PANEL VIEW - USC410 MATRIX SWITCH
(TNC INPUT and OUTPUT CONNECTORS)**

TOTALLY AUSTRALIAN DESIGNED AND MANUFACTURED