

# 32 x 32 Enigma Extended L-band Distributive Switch Matrix / Router

4th generation Enigma matrix with enhanced RF performance including variable gain  $-5$  dB to  $+5$  dB settable per output.

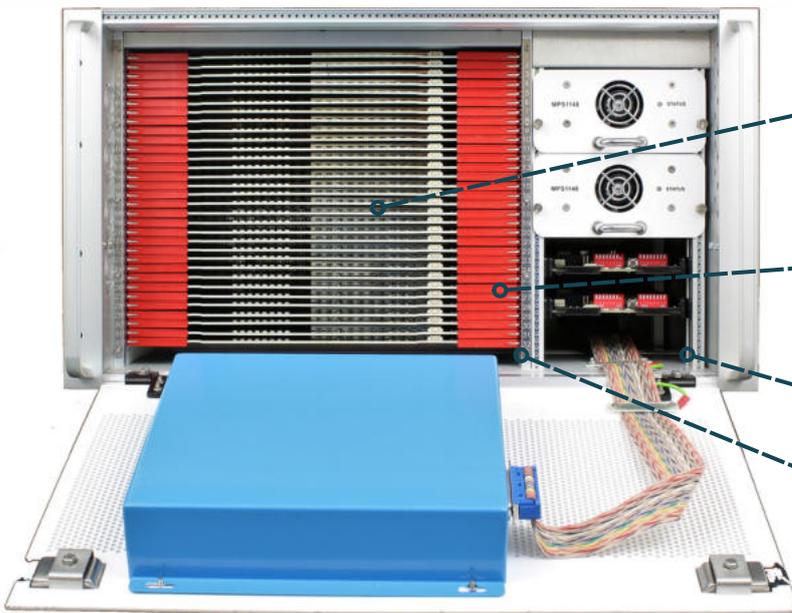


850 - 2450 MHz  
operating frequency range

Suitable for HTS applications  
due to extended bandwidth

Compact  
up to 32 inputs x 32 outputs  
in a 6U high chassis

Upgraded local control & monitoring  
via front panel capacitive touchscreen

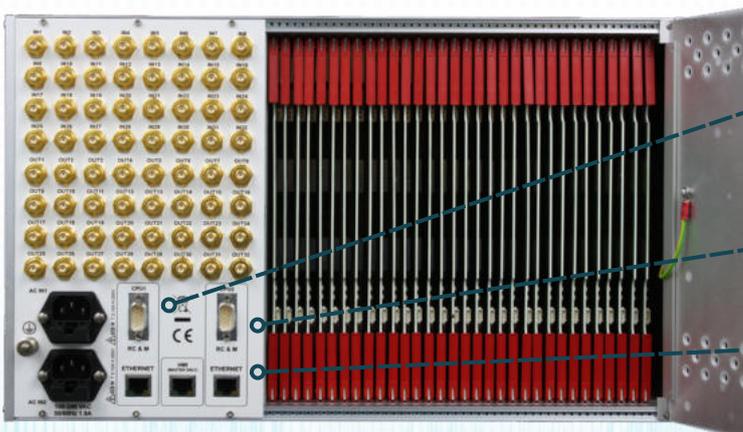


Expansion  
in single increments or with additional matrix  
modules for larger systems

Self diagnostics  
with continuous monitoring  
of amplifiers, CPUs & PSUs

Resilience  
from dual redundant power supplies & CPU modules

Minimal impact from failure  
with hot-swap single input & output  
RF cards, dual power supplies & dual  
CPUs, fans



Dry contact alarm port  
for amplifier & power supply status

Future proof secure protocols  
with SNMPv3 & HTTPS

Remote control & monitoring  
via RJ45 Ethernet port with SNMP & web  
browser interface

RF Parameters					
Capacity	32 inputs x 32 outputs, fully populated				
Routing	Distributive, non-blocking. Any input can be connected to any number of outputs.				
Frequency Range	850-2450 MHz (Extended L-band)				
Gain	0±1 dB Typical, mean across band				
Gain Control	-5 to +5 dB in 0.25 dB steps . Settable at each output.				
RF Connectors	50Ω SMA	50Ω BNC	75Ω BNC	75Ω F-type	
	All ports DC blocked				
Gain Flatness	Full band	±1.25 dB	±1.25 dB	±1.5 dB	±1.5 dB
Any 36MHz	< 2150 MHz	±0.25 dB	±0.25 dB	±0.5 dB	±0.5 dB
	> 2150 MHz	±0.5 dB	±0.5 dB	±0.75 dB	±0.75 dB
Input Return Loss	Typical	20 dB	20 dB	16 dB	16 dB
	Minimum	16 dB	16 dB	10 dB	10 dB
Output Return Loss	Typical	18 dB	18 dB	16 dB	16 dB
	Minimum	14 dB	14 dB	10 dB	10 dB
Isolation (Min. between any 2 ports)	Input-Output	60 dB			
	Input-Input	75 dB			
	Output-Output	75 dB			
Group Delay	≤ 1 ns, across operational bandwidth				
Noise Figure	Minimum Gain	20 dB Typ		With one input routed to one output.	
	Unity Gain	16 dB Typ			
	Maximum Gain	16 dB Typ			
1dB GCP (dBm)	Minimum Gain	+3 dBm Typ		1dB Gain Compression point, output power	
	Unity Gain	+8 dBm Typ			
	Maximum Gain	+12 dBm Typ			
OIP3	Minimum Gain	16 dBm Min			
	Unity Gain	20 dBm Min			
	Maximum Gain	24 dBm Min			
OIP2	Typical	32 dBm Min			
	Minimum	30 dBm Min			
Switching Time	< 50ms from receipt of a command to implementation of path change				
Input RF Power	+ 20 dBm		Absolute maximum		

System Control		
Local Control	Via Front Panel capacitive touchscreen	
Remote Control & Monitoring	Ethernet port via RJ45 10BaseT/100 BaseTx. TCP/IP, SNMPv3, HTTPS & Web browser interface.	
Alarms	Ethernet (RJ45) & Dry contact (D-type) for PSU & Amp. status	
Power		
PSU Power	85-264Vac 50-60Hz	Fused 2A
AC Consumption	150W	Max. consumption at steady state
LNB Power	None	
PSU	Dual redundant & alarmed	Diode OR. Hot swappable
Hot-swap PSU	Yes	
CPU	Dual redundant	Hot swappable
Input cards	Hot swap	Failure affects only one input port
Output cards	Hot swap	Failure affects only one output port
MTTR	20 mins, 15 mins to retrieve spare part and 5 mins to replace	Applies to LRUs only and assumed in house stock
MTBF	Chassis	271,444
	Switch card	270,297
	Divider card	317,227
Chassis excludes HMI & RF cards		
Environmental		
Operating temperature	0 to 45°C	
Gain Stability versus Temperature	0.05dB/°C	
Storage temperature	-20°C to +75°C	
Location	Indoor use only	
Humidity	20 to 90% non-condensing	
Altitude (operational)	10,000 feet AMSL (Above Mean Sea Level)	
Altitude (storage)	30,000 feet AMSL (Above Mean Sea Level)	
Physical		
Dimensions	6U high x 450mm deep x 19" wide	
Weight	35 kg, fully populated	
Colour	RAL9003—White (Semi-Matte)	

Note 1: The specification is subject to regular reviews and will be updated from time to time as part of our continuing product development and improved spec accuracy.

Note 2: Operation beyond the quoted limits stated above may cause instantaneous and permanent damage.