

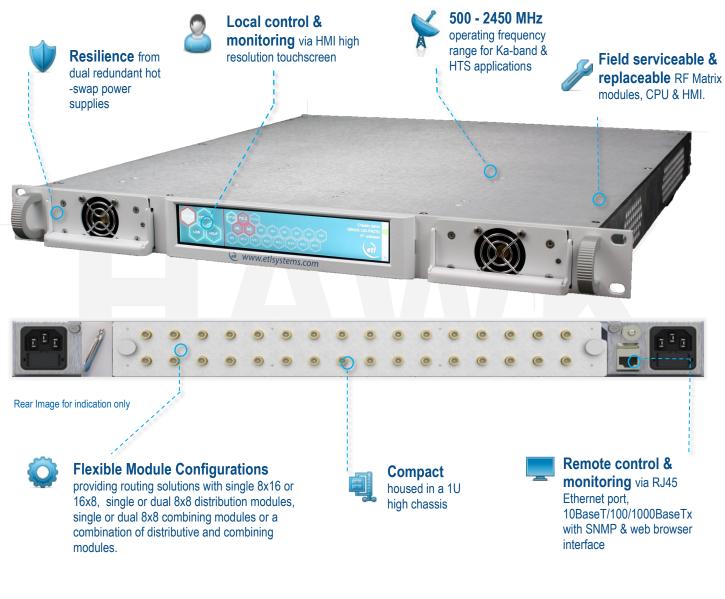
### Model Number: HWK-G1S-10-C168

# Hawk Series 16 x 8 Extended L-band Matrix Fan-in for uplink applications.

#### Typical applications:

- Small Ka/HTS gateway terminals
- LEO gateways
- Oil & Gas
- Deployable VSAT terminals

The 1U Hawk Matrix has capacity for two field replaceable matrix cards – which can be combining (fan-in) or distributive (fan-out) – for uplink and downlink applications. The Hawk can be fitted with any combination of cards depending on application, but is ideally suited for smaller gateways with multiple modems and one or two antennas. Single or dual 8x8 fan-out or fan-in, and single 8x16 fan-out configurations are also available - please enquire.







# ETL Systems

Excelling in RF Engineering

## Model Number: HWK-10-C168

Fragency Range     S00 to 2460 MHz [Extandad Leard]       Spaceb/ Spaceb/ material of a constraint of part indurgs)     Son Filor inseript of a constraint of inplementation of part indurgs)       Spaceb/ material of a constraint of part indurgs)     Son Filor inseript of a constraint of inplementation of part indurgs)       Spaceb/ material of a constraint of constraint			RF Parameters
Sepaday     16 x hput and 8 x Output.       Switching Time     < 50ms (From receipt of a command to implementation of path change)	Routing		HWK-G1S-10- Combining
Switching Time / Let of Soma (From receipt of a command to implementation of path change)oppid & Output Ports0.21 Bit typical, mean across bandSam Patheas0.21 Bit typical, mean across bandSam Fatheas0.21 Bit typical, mean across bandAvan Sob Nath2.20 dBFull Band2.20 dBVery Sob Nath<	Frequency Range		500 to 2450 MHz (Extended L-band)
Applie A Output Parts     50 Ω SMA (All ports DC Blocked)       Sam Finances     0 ± 1 dB typical, mean access band       Sam Finances     2 ± 50 MHz       Ful Band     ± 125 dB       Ful Band     ± 250 MHz       Very 38MHz     2 ± 50 MHz       Very 38MHz     Very 38MHz       Very 38MHz     10 ± 60 dB       Very 38MHz     Very 38MHz       Very 38MHz     Try 28 ± 14 dB, Minnum: 16 dB       Very 38MHz     40 dB 50 dB ± 2150 MHz       Very 38MHz     40 dB 50 dB ± 2150 MHz       Very 38MHz     40 dB 50 dB ± 21 dB mL       Very 38MHz     40 dB 50 dB ± 21 dB mL       Very 38MHz     40 dB mL<	Capacity		16 x Input and 8 x Output.
Sain      0 (2) (1) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	Switching Time		< 50ms (From receipt of a command to implementation of path change)
Sain Flatmess Ful Bane Ful Bane Any SMHz     4150 MHz     a.125 dB       Ful Bane Any SMHz     4150 MHz     a.0.25 dB       Ful Bane Any SMHz     4150 MHz     a.0.25 dB       Jul Bane Any SMHz     a.0.25 dB     Minimum: 12 dB       Data Return Loss     Typical: 18 dB, Minimum: 12 dB       Solidon Animum Bane And Any SMHz     fina Animatical BB, Minimum: 12 dB       Solidon Animum Bane Solidon Animum Bane Solidon Animum Bane Solidon Animum Bane And Any SMHz     fina Animum 20 dB       Solidon Animum Bane Solidon Animum Bane	Input & Output Ports		50Ω SMA (All ports DC Blocked)
File Band4:0 Band4:2 0 dBAvy 30 MHz4:0 MHz4:0 C AAvy 30 MHz4:0 MHz4:0 C AAvy 30 MHzFile Band4:0 C AAvg 30 MHz	Gain		0±1 dB typical, mean across band
Any 36MHz     4190 Mtz     4190 Mtz       Full Band     40.5 d.B       nput Return Loss     Typical: 18 d.B, Minimum: 12 d.B       Duput Return Loss     Typical: 18 d.B, Minimum: 16 d.B       Duput Return Loss     Chip4.Org.ut       Solation     Appl Activat       Option-Org.ut     60 d.B       Option	Gain Flatness	<2150 MHz	±1.25 dB
Put BandFul Band±0.5 dBnput Return LossTypical 18 dB, Minimum: 12 dBDutput Return LossFight Roy04put Output Return LossFight Roy04put Return LossFight Roy04put RoyFight Roy04put RoyFig		Full Band	±2.0 dB
Add Return Loss     Typical 18 dB, Minimum: 12 dB       Duput Return Loss     Typical 18 dB, Minimum: 16 dB       Solution Minimum Return My     Poil + Poil       Solution Minimum Return My     Poil + Poil       Vision Figure     00 dB       Vision Figure     00 dB       Vision Figure     24 dB typical, with one input routed to one output       Vision Figure     480 MHz       Vision Miriz     140 dBm       Vision Miriz     1500 Mirz       Vision Miriz     1500 Mirz       Vision Miriz     100 miriz       Signo Delay     Image Signon       Vision Miriz     1.0       Signo Miriz     1.0	Any 36MHz	<2150 MHz	±0.25 dB
Dubuk Return Loss     Typical: 18 dB, Minimum: 16 dB       solation Minimum Membershaw Part Market Part Mar		Full Band	±0.5 dB
salarian forms between any ports     Input-Nutput     60 dB       forms between any ports     Output-Output     60 dB       forms between any ports     Input-Nutput     60 dB       forms between any ports     60 dB     60 dB       forms between and cupture box     60 dB     60 dB       forms between and cupture box     60 dB     60 dB       forms box     60 dB     60 dB       form box box     610 dB     60 dB       form box box     610 dB     60 dB       form box box     610 dB     610 dB       form box box     610 dB	Input Return Loss		Typical: 18 dB, Minimum: 12 dB
Soldion PerformOutput-OutputOutput-OutputVolueOutput-Output60 dBVolueSci dB <2150MHz, 50 dB >2150MHzVolue Figure24 dB typical, with one input routed to one outputVolue Figure24 dB typical, with one input routed to one outputVolue Figure46 dBmVolue VolueVolue Volue VolueVolue Volue VolueVolue Volue VolueVolue	Output Return Loss		Typical: 18 dB, Minimum: 16 dB
Minimum terwine and point     Optique-Cviput     Optique-Cviput     Optique-Cviput     Optigue-Cviput	loolotion	Input-Input	60 dB
Induct Output     S5 dB < 2160Mtz, 50 dB < 2160Mtz       Voice Figure      24 dB kpical, with one input routed to one output       Voice Figure      450 Mtz      12 dB Kpical, with one input routed to one output       Voice Figure      450 Mtz      12 dB Kpical, with one input routed to one output       Voice Figure       450 Mtz         Voice Figure       6 dB m         Voice Figure Month       6 dB m         Voice Figure Month       6 dB m   <	Minimum between any	Output-Output	60 dB
dB GCP int dig GCP some dig Compression int dig U Some     480 MHz     +12 dBm       480 MHz     +10 dBm       2000 MHz     +00 dBm       2000 MHz     +6 dBm       2000 MHz     +6 dBm       2000 MHz     +500 MHz       4500 MHz     Typical 26 dBm, Minimum 26 dBm       3roup Delay     -500 MHz       5100 MHz     -500 MHz       5100 MHz     -500 MHz       3roup Delay     <1.0 ns across operational bandwidth	2 ports	Input-Output	55 dB <2150MHz, 50 dB >2150MHz
IdB GCP     200 MHz     200 MHz     +10 dBm       Point. output power     200 MHz     +6 dBm       Sinc Compession     4500 MHz     Compession       Visit of order interest did order interest     +500 MHz     Compession       Sinc Dip Since      Compession     Compession       Since Delay      Compession     Compession       AC Input / AC Consumption     AC Consumption: 150W     AC Consumption: 150W       Spec Version      AC Consumption: 150W       Spec Version      Spec Version     Spec Version       Version     Image: Compession     Spec Version     Field replaceable       Spec Version      Spec Version     Spec Version       Version     Image: Compession     Spec Version     Spec Version <td colspan="2">Noise Figure</td> <td>24 dB typical , with one input routed to one output</td>	Noise Figure		24 dB typical , with one input routed to one output
Jain Compression Point, output points     2000 MHz     4000 MHz     4000 MHz       JDP3 dive during the point of the poi		<850 MHz	+12 dBm
P2000 MHz     460 dBm       DIP3 of def interval     4500 MHz       Sinux Delay     4500 MHz       Visit of def interval     1500 MHz       Sinux Delay        AC Input AC Consumption     AC Consumption 10 ma across operational bandwidth       AC Input AC Consumption     AC Consumption 150W       oput RF Power        Spec Version     *       Sec Version     System Control & Melability       Cocal Control & Montrol     Ethemet via RJ45, 10Baser TI/00/1000Baser X. ETL TCP/IP, SNMP & Web browser interface.       SQL Redundancy     Ethemet via RJ45, 10Baser TI/00/1000Baser X. ETL TCP/IP, SNMP & Web browser interface.       SQL Redundancy     Sul Redundant and alarmed Diode OR. Hot swappable       ATTR     Sul Sector Sig Switch Card & CPU: (TBC)       ATTR     Sul Sector Sig Switch Card & CPU: (TBC)       Dimensions     Y     Sul Sector Sig Switch Card & CPU: (TBC)       Version Control Color     Sul Sector Sig Switch Card & CPU: (TBC)	Gain Compression	<2000 MHz	+10 dBm
3 dd order indrender   >1500 MHz   Typical 25 dBm, Minimum 20 dBm     Group Delay       AC Input / AC Consumpton   AC Input: 85-264Vac 50/60Hz   AC Consumption: 150W     nput RF Power       Spec Version       spec Version       Spec Version       Coal Control   System Control & Reliability     Coal Control       Remote Control & Monitoring   Ethemet via RJ45, 10BaseT/r100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.     SPSU Redundancy    Dual redundant and alarmed   Diode OR. Hots wappable     Attrix Card         SPU    Coal South a assumed in house stock     ATTR         Intersions         Velght/ Colour         Velght/ Colour         Immersions         Velght/ Colour	Point, output power	>2000 MHz	+6 dBm
voint     *1500 MHz     Typical 25 dBm, Minimum 20 dBm       Group Delay     Clinity 1.0 ns across operational bandwidth       AC Input / AC Consumption     AC Clinity 1.5 secress operational bandwidth       AC Input / AC Consumption     AC Clinity 1.5 secress operational bandwidth       Spec Version     To       Spec Version     System Control & Reliability       c.ocal Control     Rende Control & Reliability       Sound     Minimum 20 dBm Absolute Maximum.       SQU Redundancy     Dual redundant and alarmed Diode OR. Hot swappable       Artrs     20 minutes (15 minutes to reliave spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock       Artrs     20 Chassis, Switch Card & CPU:     (TBC)       Minemsions     Ultigh x 600mm deep x 19° wide       Velght / Colour     Colour < 10 kg / RAL9003—White (Semi-matte)       Generating: 0 to 45°C / Storage: -20°C to 475°C     Storage: -20	OIP3	<1500 MHz	Typical 28 dBm, Minimum 25 dBm
AC Input: AC Consumption   AC Input: 85-264Vac 50/60Hz   AC Consumption: 150W     nput RF Power   +20 dBm   Absolute Maximum.     Spec Version   1.0     System Control & Reliability     cocal Control & Reliability     System Control & Reliability     Cocal Control & Monitoring     Remote Control & Monitoring   Ethernet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.     PSU Redundancy   Dual redundant and alarmed   Diode OR. Hot swappable     Atrix Card   G   Field replaceable     CPU   Field replaceable   Cocal     ATTR   20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock   ATBE     Othersions     Veight / Colour   Chassis, Switch Card & CPU: (TBC)     Veight / Colour   Clour (N kg / RAL9003—White (Semi-matte)     Veight / Colour   Clour (N kg / RAL9003—White (Semi-matte)     Cocation   Indoor use only	point	>1500 MHz	Typical 25 dBm, Minimum 20 dBm
nput RF Power     +20 dBm     Absolute Maximum.       Spec Version     1.0       Cocal Control     System Control & Reliability       cocal Control     MIII capacitive touch screen: Field replaceable       Remote Control & Monitoring     Ethermet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.       YSU Redundancy     Dual redundant and alarmed     Diode OR. Hot swappable       Atrix Card     Ethermet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.       YSU Redundancy     Dual redundant and alarmed     Diode OR. Hot swappable       Atrix Card     Ethermet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.       CPU     Dual redundant and alarmed     Diode OR. Hot swappable       ATTR     Q0 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock       ATBF     Chassis, Switch Card & CPU: (TBC)       Dimensions     UL high x 600mm deep x 19" wide       Veight / Colour     <10 kg / RAL9003White (Serni-matte)	Group Delay		<1.0 ns across operational bandwidth
Spec Version     1.0       Attrix Card     1.0     1.0       Attrix Card     2.0     1.0     1.0 <th1.0< th=""></th1.0<>	AC Input / AC Consu	mption	AC Input: 85-264Vac 50/60Hz AC Consumption: 150W
System Control & Reliability     cocal Control   HMI capacitive touch screen: Field replaceable     Remote Control & Monitoring   Ethernet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.     PSU Redundancy   Dual redundant and alarmed   Diode OR. Hot swappable     Atrix Card   Field replaceable     CPU   Field replaceable     CPU   Commutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock     ATTR   Chassis, Switch Card & CPU: (TBC)     Dimensions   1U high x 600mm deep x 19" wide     Veight / Colour   <10 kg / RAL9003White (Semi-matte)	Input RF Power		+20 dBm Absolute Maximum.
Accel Control     HMI capacitive touch screen:     Field replaceable       Remote Control & Monitoring     Ethernet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.       PSU Redundancy     Dual redundant and alarmed     Diode OR. Hot swappable       Matrix Card     Field replaceable     Field replaceable       CPU     Field replaceable     Field replaceable       ATTR     20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock       ATBF     Chassis, Switch Card & CPU:     (TBC)       Dimensions     1U high x 600mm deep x 19" wide       Veight / Colour     <10 kg / RAL9003White (Semi-matte)	Spec Version		1.0
Remote Control & Monitoring     Ethernet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.       VSU Redundancy     Dual redundant and alarmed     Diode OR. Hot swappable       Atrix Card     Field replaceable       CPU     Sill replaceable       ATTR     Sill replaceable       MTBF     Chassis, Switch Card & CPU:     (TBC)       Dimensions     Physical & Environment       Dimensions     Sill replaceable     Sill replaceable       Veight / Colour     Soloar     Soloar     Soloar       Gemperature     Operating: 0 to 45'C / Storage: -20'C to +75'C			System Control & Reliability
SU Redundancy     Dual redundant and alarmed     Diode OR. Hot swappable       Adtrix Card     Field replaceable       CPU     Field replaceable       ATTR     20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock       ATBF     Chassis, Switch Card & CPU: (TBC)       Dimensions     1U high x 600mm deep x 19" wide       Veight / Colour     <10 kg / RAL9003—White (Semi-matte)	Local Control		HMI capacitive touch screen: Field replaceable
Arrix Card   Field replaceable     CPU   Field replaceable     Artrix Card   20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock     ATTR   20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock     ATBF   Chassis, Switch Card & CPU: (TBC)     Dimensions   1U high x 600mm deep x 19" wide     Veight / Colour   <10 kg / RAL9003—White (Semi-matte)     Temperature   Operating: 0 to 45°C / Storage: -20°C to +75°C     Location   Indoor use only	Remote Control & Mo	nitoring	Ethernet via RJ45, 10BaseT/100/1000BaseTx. ETL TCP/IP, SNMP & Web browser interface.
CPU   Field replaceable     ATTR   20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock     ATBF   Chassis, Switch Card & CPU: (TBC)     Physical & Environment     Dimensions   1U high x 600mm deep x 19" wide     Veight / Colour   <10 kg / RAL9003—White (Semi-matte)	PSU Redundancy		Dual redundant and alarmed Diode OR. Hot swappable
ATTR   20 minutes (15 minutes to retrieve spare part and 5 mins to replace) Applies to LRUs only and assumed in house stock     ATBF   Chassis, Switch Card & CPU: (TBC)     Physical & Environment     Dimensions   1U high x 600mm deep x 19" wide     Veight / Colour   <10 kg / RAL9003White (Semi-matte)	Matrix Card		Field replaceable
Applies to LRUs only and assumed in house stock     ATBF   Chassis, Switch Card & CPU: (TBC)     Dimensions   Physical & Environment     Dimensions   1U high x 600mm deep x 19" wide     Veight / Colour   <10 kg / RAL9003—White (Semi-matte)     Coration   Indoor use only	CPU		Field replaceable
Physical & Environment       Dimensions     1U high x 600mm deep x 19" wide       Veight / Colour     <10 kg / RAL9003White (Semi-matte)	MTTR		
Dimensions   1U high x 600mm deep x 19" wide     Veight / Colour   <10 kg / RAL9003White (Semi-matte)	MTBF		Chassis, Switch Card & CPU: (TBC)
Veight / Colour <10 kg / RAL9003—White (Semi-matte)   Temperature Operating: 0 to 45°C / Storage: -20°C to +75°C   Location Indoor use only			Physical & Environment
Temperature     Operating: 0 to 45°C / Storage: -20°C to +75°C       ocation     Indoor use only	Dimensions		1U high x 600mm deep x 19" wide
.ocation Indoor use only	Weight / Colour		<10 kg / RAL9003—White (Semi-matte)
	Temperature		Operating: 0 to 45°C / Storage: -20°C to +75°C
lumidity 20 to 90% non-condensing	Location		Indoor use only
	Humidity		20 to 90% non-condensing
Altitude 2,000m AMSL (Operational) 8,000m AMSL (Storage) Above Mean Sea Level	Altitude		

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.



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