

F Series

**The Modular Power Solution of Choice
for Hi Rel & Mil-COTS Applications.**

- *Highest Reliability, Efficiency, Power Density*
- *MIL810G & MIL461*
- *-55 °C to 70 °C Operating temperature*
- *47-440Hz Input Frequency*



Ruggedised COTS AC/DC Power Supply

Ultra-high efficiency 1U size

PLUG & PLAY POWER next generation power source

FEATURES

- MIL-STD-810G: Shock & Vibration
- MIL-STD-461F (CE101 & CE102) : EMC
- Conformal Coated & Ruggedised as standard
- Operating temperature range of -55/-40 to 70°C
- 47-440Hz input frequency
- Anti-Vibration Compound
- 1.15V to 58V standard output voltages
- All outputs fully floating
- Extra low profile: 1U height (40mm)
- Ultra high efficiency, up to 90%
- Plug & Play Power
 - allows fast custom configuration
 - Outputs completely field configurable with option to factory fix
- Series / Parallel outputs for higher voltages and currents
- Parallel powerpacs for higher power
- OVP, OTP, OCP as standard
- 5V/250mA bias standby voltage provided
- Individual output control
- 5 Year Warranty
- SEMI F47 Compliant
- Active PFC (Power Factor Correction)

APPLICATIONS INCLUDE

- Harsh Industrial Electronics
- Radar (Naval, Ground Based)
- Communications
- Test & Measurement



The XF family of power supplies provides up to an incredible 1000W in an extremely compact 1U x 268 x 127mm package. Employing an innovative plug & play architecture the XF family brings unprecedented flexibility that allows users to instantly configure a custom power solution in less than 5 minutes.

Designed for use in harsh operating environments, the XF family is conformal coated and ruggedised to withstand extremes in shock and vibration as well as operation over a wide temperature range of -55 to 70°C. Applications include Harsh Industrial, Test and Measurement, Communications, Fixed and Mobile Radar and Military Electronics which require COTS solutions.

All configurations carry full safety agency approvals, including UL60950 and EN60950 and are fully characterised for EMC according to MIL-STD-461F. All configurations meet the MIL-STD-810G standard for shock and vibration. EMC characterisation, Shock and Vibration and Thermal Stress reports are available.

For further details please contact support@excelsys.com.

powerPacs

	PowerPac	Power	PowerMod Slots	Operating Temperature	MIL-STD-461F	MIL-STD-810G	Conformal Coating
Hi-Rel COTS	XFA	400W	6	-55 to 70°C	Yes	Yes	Yes
	XFB	700W	6	-55 to 70°C	Yes	Yes	Yes
	XFC	1000W	6	-55 to 70°C	Yes	Yes	Yes
	XFN	1000W	6	-40 to 70°C	Yes	Yes	Yes

powerMods

Model	Vnom (V)	Set Point Adjust Range (V)	Dynamic Vtrim Range (V)	I _{max} (A)	Power (W)	Remote Sense	Power Good
XgA	12.0	10.8-15.6	-	12.5	150	-	-
XgB	24.0	19.2-26.4	-	8.3	200	-	-
XgC	36.0	28.8-39.6	-	5.6	200	-	-
XgD	48.0	38.5-50.4	-	4.2	200	-	-
XgE/Xg7	24.0	5.0-28.0	-	5.0	120	-	Yes
XgF/Xg8	24.0	5.0-28.0	-	3.0	72	-	Yes
	24.0	5.0-28.0	-	3.0	72	-	Yes
XgG	2.5	1.5-3.6	1.15-3.6	40.0	100	Yes	Yes
XgH	5.0	3.2-6.0	1.5-6.0	36.0	180	Yes	Yes
XgJ	12.0	6.0-15.0	4.0-15.0	18.3	220	Yes	Yes
XgK	24.0	12.0-30.0	8.0-30.0	9.2	220	Yes	Yes
XgL	48.0	28.0-58.0	8.0-58.0	5.0	240	Yes	Yes
Xg1	2.5	1.5-3.6	1.15-3.6	50.0	125	Yes	Yes
Xg2	5.0	3.2-6.0	1.5-6.0	40.0	200	Yes	Yes
Xg3	12.0	6.0-15.0	4.0-15.0	20.0	240	Yes	Yes
Xg4	24.0	12.0-30.0	8.0-30.0	10.0	240	Yes	Yes
Xg5	48.0	28.0-58.0	8.0-58.0	6.0	288	Yes	Yes

*When ordering individual *powerMods* for use with the XF Series add the suffix **C** for conformal coating.

See our new Wide Trim *powerMods* on page 40 and Reactive Load *powerMods* on page 42 of the Excelsys Product Catalogue.

INPUT					
Parameter	Conditions/Description	Min	Nom	Max	Units
Input Voltage Range	Input Frequency: 47 - 63Hz. Input Frequency: 47 - 440Hz.	85 90 120		264 120 380	VAC VAC VDC
Power Rating	XFA XFB XFC XFN			400 700 1000 1000	W W W W
Input Current	XFA 85VAC in 400W out XFB 85VAC in 700W out XFC 85VAC in 765W out XFN 85VAC in 765W out		7.5 9.5 11.5 11.5		A A A A
Inrush Current	230VAC @ 25°C			25	A
Undervoltage Lockout	Shutdown	65		74	VAC
Power Factor	110 VAC @ Full Load	0.98	0.99		
Fusing	XFA 250V XFB 250V XFC 250V XFN 250V		F8A HRC F10A HRC F12A HRC F12AHRC		
OUTPUT					
Parameter	Conditions/Description	Min	Nom	Max	Units
powerMod Power	As per <i>powerMod</i> table				
Output Adjustment Range	Manual or Electronic As per <i>powerMod</i> Table				
Minimum Load			0		A
Line Regulation	For ±10% change from nominal line			±0.1	%
Load & Cross Regulation	For 25% to 75% load change			±0.2	%
Transient Response	For 25% to 75% load change Voltage Deviation Settling Time			10 250	% µs
Ripple and Noise	20MHz Bandwidth 100mv or 1.0% pk-pk				
Overvoltage Protection	Vmax (Latching)	105		170	%
Overcurrent Protection	Straight line with hiccup activation at <30% of Vnom	105		170	%
Remote Sense	Max. line drop compensation. (See <i>powerMod</i> table on page 2)			0.5	VDC
Overshoot				2	%
Turn-on Delay	From AC In / <i>powerMod</i> Enable signal			1000 /6	ms
Rise Time	Monotonic			5	ms
Hold-up Time	For nominal output voltages at full load.	20			ms
Output Isolation	Output to Output / Output to Chassis	500 / 500			VDC
GENERAL					
Parameter	Conditions/Description	Min	Nom	Max	Units
Isolation Voltage	Primary to Secondary Input to Chassis	3000 1500			VAC VAC
Efficiency	230VAC, 1000W @ 24V		90		%
Safety Agency Approvals	EN60950, UL60950, CSA22.2 No.950 UL File No. E181875				
Earth Leakage Current	230VAC, 50Hz, 25°C			1.5	mA
Bias Supply	Always ON. Current 250mA	4.8	5.0	5.5	VDC
Weight	PowerPac Typical <i>PowerMod</i>		1.2 0.1		kg kg
Reliability	Telcordia SR-332 at 25°C and full load <i>powerMod</i> Telcordia SR-332 at 25°C and full load <i>powerPac</i> (excludes fans) MIL-STD-217F at 25°C and full load <i>powerMod</i> MIL-STD-217F at 25°C and full load <i>powerPac</i> (excludes fans)			1020 1057 86 77	kh kh kh kh
EMC					
Parameter	Standard	Level		Units	
Emissions					
Conducted	EN55011, EN55022, FCC: Class B		Compliant		
Radiated	EN55011, EN55022, FCC: Class B		Compliant		
Harmonic Distortion	EN61000-3-2 Class A & MIL-STD-1399 SECTION 300A		Compliant		
Flicker and Fluctuation	EN61000-3-3		Compliant		
Immunity					
Electrostatic Discharge	EN61000-4-2: Level 2		Compliant		
Radiated RFI	EN61000-4-4: Level 3 & MIL-STD-461F. See note 6.		Compliant		
Fast Transients - burst	EN61000-4-4: Level 3		Compliant		
Input Line Surges	EN61000-4-5: Level 3 & MIL-STD-1399		Compliant		
Conducted RFI	EN61000-4-6: Level 3 & MIL-STD-461F. See note 6.		Compliant		
Voltage Dips	EN61000-4-11 & MIL-STD-70, SEMI F47 compliant (7)		Compliant		
ENVIRONMENTAL					
Parameter	Conditions/Description	Min	Nom	Max	Units
Operating Temperature	XFA, XFB, XFC XFN operates to specification below -20°C after 10 min warm-up	-55 -40		+70 +70	°C °C
Storage Temperature		-55		+75	°C
Derating	See page 20 for full temperature derating				
Acoustic Noise	Measured from distance of 1m; See Page 58 of catalogue		56.5		dBA
Relative Humidity	Non-condensing	5		95	%RH
Shock	3000 Bumps, 10G (16ms) half sine				
Vibration	1.5G : MIL-STD-810G	10		500	Hz
Altitude	Operational: 2000m, Storage: 8000m				

NOTES

- All specifications at nominal input, full load, 25°C unless otherwise stated.
- This product is not intended for use as a stand alone unit and must be installed by qualified personnel.
- The specifications contained herein are believed to be correct at time of publication and are subject to change without notice.
- Derating required below -40 °C.
- With certain configurations when powering inductive or capacitive loads, it is recommended to use a blocking diode on the output.- consult Excelsys for further detail.
- An external filter may be required to meet certain conducted and radiated emissions requirements for MIL-STD-461F. For further details contact support@excelsys.com.
- SEMI F47 compliant at input voltages >160VAC. Consult Excelsys for details.
- Consult Excelsys for module derating at temperatures from -40°C to -55°C.
- Product is not UL/EN certified for 120-380VDC input operation. Consult Excelsys for details.

Output Connectors

The output *powerMods* connection details are shown below. Type A connectors are for single output *powerMods* XgA-XgT and Xg1-Xg7. The Type B connector is for the dual output XgF/Xg8 *powerMod*. The power and signal connectors are as follows:

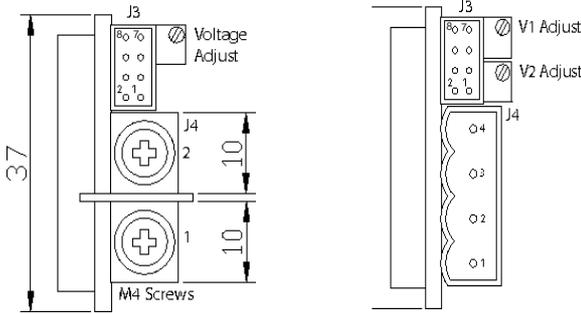
Type A: *powerMods*
XgA to XgE
XgG to XgT
Xg1 to Xg7

Type B: *powerMod*
XgF/Xg8

Output Signals and Power Connector Pinout

Pin	J3 Module (XgA to XgD)	J3 (XgG-XgQ) (Xg1-Xg5)	J3 (XgR-XgT)	J3 (XgE) (Xg7)	J3 (XgF) (Xg8)	J4 (Type A)	J4 (Type B)
1	not used	+Sense*	not used	not used	-pg (V2)	-Vout	-V2
2	Common	-Sense*	-Vtrim	not used	+pg (V2)	+Vout	+V2
3	not used	Vtrim	+Vtrim	not used	Inhibit (V2)		-V1
4	not used	Itrim	Itrim	Common	Common (V2)		+V1
5	+Inhibit	+Inhibit/Enable	+Inhibit/Enable	-pg	-pg (V1)		
6	-Inhibit	-Inhibit/Enable	-Inhibit/Enable	+pg	+pg (V1)		
7	not used	+pg	+pg	Inhibit	Inhibit (V1)		
8	not used	-pg	-pg	Common	Common (V1)		

*remote sense not present on XgR and XgT *powerMods*.



Output Mating Connectors

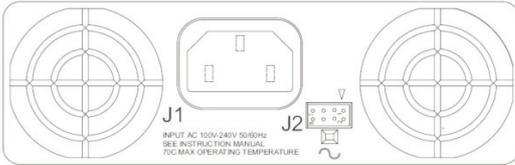
J3: Locking Molex 51110-0860; Non Locking Molex 51110-0850; Crimp Terminal: Molex p/n 50394: Or Molex 51110-0856, includes Locking Tab & Polarization Keying

J4 (Type A): M4 Screw (8mm)

J4 (Type B) Connector(s): Camden CTB9200/4A or Würth Elektronik 691 352 710 004

Input Connectors

Excelsys Modular power supplies have a variety of input connector options to ease system integration. These include IEC, Input cables (3-wire) and IEC to Screw Terminal Adaptor.



Pin	J1	J2
1	Line	Common
2	Neutral	+5V Bias
3	Earth	not used
4		AC Fail
5		Fan Fail
6		Global Enable
7		Temp Alarm
8		Global Inhibit

Input Mating Connectors

J1: IEC320 type female plug rated 13, Locking IEC cable and connector: Schaffner EMC part number IL13-US1-SVT-3100-183.

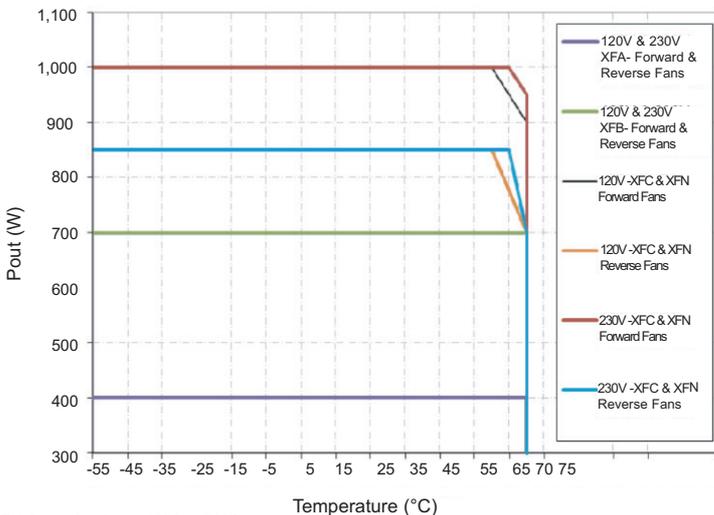
J2: Locking Molex 51110-0860; Non Locking 51110-0850; Crimp Terminal: Molex p/n 50394: Or Molex 51110-0856, includes Locking Tab & Polarization Keying

Input Cable (Option D)

Excelsys modular power supplies are also available with an input cable connection option allowing greater flexibility when mounting the power supply in the system. Individually insulated input cables are 300mm in length and come supplied with Faston connectors.

XF Series Derating Curves

Temperature Derating Curve for XF Models



*XFN Operation from -40°C to 70°C

XF Series Derating Curves

Line Derating Curve for XF Models (@ 60°C)

