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Farnel 0 W E R

F20069 Series Inverters

Introduction

The F20069 inverters convert a low voltage d.c. input into a sinusoidal a.c. output at 110V or 230V. A wide input voltage range enables the inverters to operate over the useful voltage range of 24V or 48V battery systems while supplying up to 1000VA output.

A high reliability fan is included in the 5" x 8" x 13" package providing cooling air which exhausts at the front of the inverter. The output voltage is sinusoidal when driving passive loads, but the comprehensive protection circuitry also allows for direct connection to uncorrected power supplies of up to 700W input power. Output frequencies of 50Hz or 60Hz are available, but either can be ynchronised to clock frequencies between 50Hz and 0Hz.

A range of control and monitor functions are provided.

Output Specification

Voltage	Q Version: 110V r.m.s. S Version: 230V r.m.s. Output voltage is factory preset.
Voltage Waveshape	Sinusoidal.
Frequency	50Hz or 60Hz versions available. Either frequency may be over-ridden by connecting an external synchronising signal. See Signals.
Power	1000VA maximum. 1000W into a resistive load; 700W nominal into a SMPS load (not power factor corrected); 500W load into an inductive load.
Current	Q Version: 9.1A r.m.s. into a resistive load. S Version: 4.3A r.m.s. into a resistive load
Voltage Regulation	Better than ±3%.
Noise	VDE0871 curve A.
Waveform Distortion	Better than 5% T.H.D. on voltage waveform when driving a resistive load.

Features

- □ 1000VA output
- □ 110V or 230V a.c. output at 50/60Hz
- Wide input voltage range for 24V or 48V systems.
- □ Fully enclosed with internal fan.
- Fully protected against non-continuous loads.
- Comprehensive monitoring and control signals.

Protection

Output Current Limit

Output Overvoltage

Thermal Overload

Output current is limited in three ways:

i) Peak current is limited on each cycle for the following:

Q Version: 18A ±5%. S Version: 9A ±5%.

ii) The average half cycle current is monitored and has a delayed current limit.

Version	Average cu reduced (after approx 3s)	to	Average continuous current ±5%
Q	17A	11A	10A
S	8.5A	5.5A	5A

iii) Short circuit protection is provided which will shut down the inverter output in the presence of a hard short. The power supply is reset by removing the d.c. input or by taking the inhibit input high then low.

Shuts down inverter until reset by removing the d.c. input power.

> Shuts down inverter until reset by removing the d.c. input power or by taking the inhibit input high then low.



sine wave

With sine wave link, pin 9,

connected to OV the output power sine wave will phase lock to a sinusoidal input provided its amplitude is in the range 10V to 25V peak to peak and its frequency is in the range 50Hz to 60Hz. The positive going zero crossing of

output

(measuring AC1 with respect to AC2) will be synchronised to the positive going zero crossing of the sync input.

TTL output. Positive going edge is synchronised with the

positive going zero crossing of the output sine wave

(measuring AC1 with respect

TTL output. High when the

the

Input Specification - 54V Input Version

Voltage Range	54V nominal input. 40V min, 60V max.
Input Current	28A nominal when delivering 1kW output into resistive load. 34A maximum at 40V input and 1kW output power.
Efficiency	76% when delivering 1kW output power into a resistive load.
Dissipated Power	315W when delivering 1kW output power into a resistive load.
	C: I

Sync Output

Signals

The signals are fully isolated by safety isolation from the unit output. Also, the signals are isolated from the d.c. input and from chassis. The signals OV connection may be externally tied to any of + input, - input or ground.

Output Healthy

TTL output and relay drive. High when the PSU output voltage and waveshape are within specification. 5V 100mA maximum drive.

Input Voltage Healthy

Inverter Shutdown

hibit

Sync Input

TTL output. High if the d.c. input voltage is greater than the minimum specified input voltage.

> TTL output. High when the inverter has been shutdown.

> > TTL input. >2.4V input will inhibit the power stages.

5Vpk 50/60Hz sinusoidal or square wave input.

With sine wave link, pin 9, floating the power output sine wave will phase lock to a square wave input provided its amplitude is in the range 3V to 12V and its frequency is in the range 50Hz to 60Hz. The positive going zero crossing of the output sine wave (measuring AC1 with respect to AC2) will be synchronised to the positive going edge of the sync input.

Phase Locked

inverter output is successfully phase locked to an external signal connected to Sync. Input.

to AC2).

Heatsink Temperature

Analogue output proportional to heatsink temperature:

 $T = V_{out} \times 100^{\circ}C (0 \text{ to } 1V)$

F20069 Series Inverters

Indicators

Safety

Description of front panel indicator LED's starting from the top:

be sinusoidal.

"OL", Red LED. Lights when the output loading is greater than 1000VA. Unit is still operating and delivering power but output waveshape will not

"OV", Red LED. Lights if the output or the internal D.C. bus rises above safe limits. Unit is latched off and will not reset until the dc input is removed.

"OT", Red LED. Lights if the

Output Overload

Overvoltage

nermal Shutdown

Input Healthy

Output Healthy

Designed to meet EN60950, UL1950, CSA 22.2 No 234

Environmental Conditions

Ambient Temperature	0°C to 70°C operating. Above 50°C the output power must be derated by 2.5%/°C.	
Humidity	0 to 95% R.H. non-condensing.	
Pollution	These inverters are intended for operation in office type environments. i.e. pollution degree 2 environments, as defined in EN60950.	
Mechanical Specification		
Mechanical Format	Units are fully enclosed with internal fan.	
Mounting Orientation	May be mounted in any orientation.	
Ventilation and Cooling	Units are cooled by an internal	

or, neu LED. Lights in the	Mechanical Specification		
internal heatsink temperature exceeds 100°C. Unit is latched off and will not reset until the dc input is removed.	Mechanical Format	Units are fully enclosed with internal fan.	
"IH", Yellow LED. Lights if the	Mounting Orientation	May be mounted in any orientation.	
dc input is connected and is greater than 40V.	Ventilation and Cooling	Units are cooled by an internal fan and require free air flow in	
"OK", Green LED. Lights if the output voltage and waveshape are within specification.		the area of the fan at the rear of the power supply and over the ventilated front face of the power supply.	
ation External Dimensions		203mm (8") x 127mm (5") x 330mm (13") including fan.	
components are specified to 4kV a.c. for 1 minute.	Fixings	Two sets of four M4 ISO standard inserts are provided.	
Units are tested to 2.1kV d.c. for 1 minute between d.c. input and a.c. output with all input and signal ports connected together.		One set in the base and one in the left side panel.	
	Connections	The following connectors are fitted to the inverter.	
	Input	M8 ISO standard studs.	
Units are tested to 200V d.c. from input to earth with all output and signal ports connected to earth.	Output	IEC320 10A socket. Starting from the top, connections are: AC2, EARTH, AC1. See front panel diagram for details.	
Units are tested to 2.1kV d.c. output to earth with all input and signal ports connected to earth.	Signals	Standard 15 pin D connector (customer part to be female).	
Units are rated for a maximum	Guarantee		
of 250V between ports and earth or between signal ports	All Farnell Power products are guaranteed again manufacture and faulty components for a period of		

Isolati

Primary Secondary Barriers Inpu com 4kV

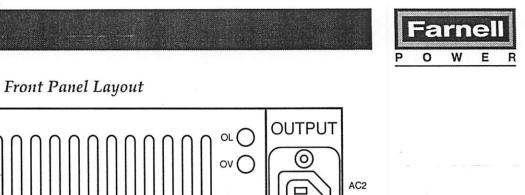
out to Output Units for 1 and and toge

Input to Earth Units from outp conr

Output to Earth Units outp and eart

Signal Ports to Earth Units of 2 earth, or between signal ports and input.

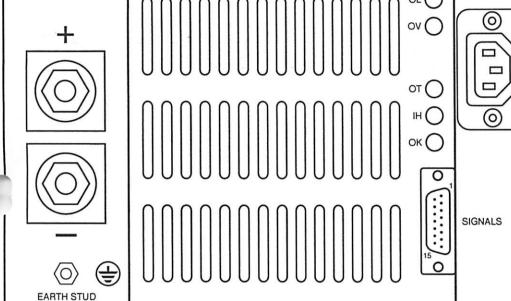
manufacture and faulty components for a period of twelve months from the date of despatch. See conditions of sale for full details.



EARTH

>

AC1



Signals Connector Pinout:

- 1. Inhibit.
- 2. Sync input.
- 3.

INPUT

- Output healthy. Inverter shutdown. 4.
- 5. Phase locked.
- 6. Heatsink Temperature.
- 7. Input healthy.
- 8. +5V signals rail. 20mA load maximum.
- Sine wave link. ,
-). Sync output.
- 11.
- 12.
- 13. 0V
- 14.
- 15.

20069 Series Inverters

Notes

- 1. If the inverter is used to power a switched mode power supply without power factor correction, the output current will be a rectangular pulse in the centre of each power half cycle with the current peak limited to 9A. Due to the action of the current limit under these circumstances the output voltage waveshape will be deliberately distorted.
- 2. OutputAC2 may be externally connected to ground or to utility power system neutral.
- 3. Unit earth stud (below the dc input studs) should be connected to ground.

Ordering Information

.ne order code consists of up to 6 fields as follows:

- 1. Model Number F20069
- 2. Output Voltage 110V a.c. Q 230V a.c. S 3. Input Voltage 27V d.c. 027 54V d.c. 054 4. Package 5" x 8" x 13" L 5. Version Standard А 6. Options 50Hz (standard)

60Hz

/6

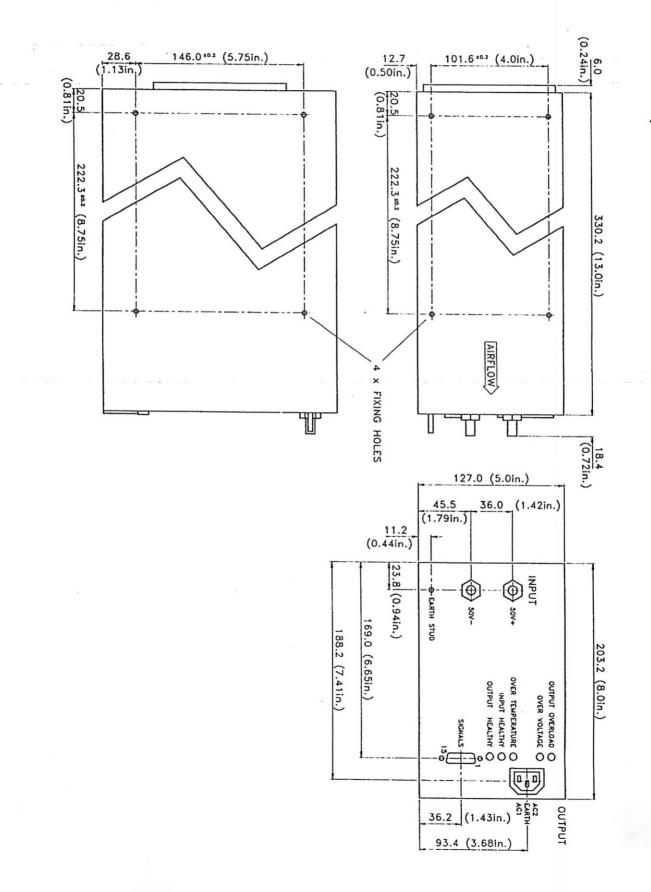
Example

order an inverter with 230V 50Hz output from 54V c. input the order code will be:

F20069S054L

F20069 Outline Drawing

All dimensions in mm (inches)



Ref: 9FS0070E

Issue: A October 1994

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