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*Battery
Chargers*

Farnell
P O W E R

Battery Chargers

Models Available

Table 1

12V Systems

Model Number	Output Current	Nominal Voltage
F20070013	5A	13.8V
F20071013	10A	13.8V
F20072013	15A	13.8V
F20073013	25A	13.8V (adjustable)
F20074013	50A	13.8V (adjustable)

Table 2

24V Systems

Model Number	Output Current	Nominal Voltage
F20070027	2.5A	27.2V
F20071027	5A	27.2V
F20072027	7.5A	27.2V (adjustable)
F20073027	12.5A	27.2V (adjustable)
F20074027	25A	27.2V (adjustable)

Input Specification

Voltage Range	198 – 264V a.c. on all models. F20073 and F20074 models also have a 110V tap enabling operation over the range 90 – 132V a.c. 90 – 132V a.c. input available on models F20070, 71 and 72 to order.
Input Current	See table 3.
Inrush Current	<u>F20070, F20071, F20072 and F20073:</u> Unit cold – 20A maximum. Unit hot – 100A maximum. <u>F20074</u> 0.8A maximum under all permissible operating conditions.
Frequency	45 – 440Hz.
Power	Values indicated on table 3 are worst case operating conditions.
Efficiency	12V systems, typically 75%, 24V systems, typically 80%.

Features

- ☐ 2.5 – 50A Charging current
- ☐ 12V and 24V systems
- ☐ Low cost
- ☐ Compact size
- ☐ High efficiency

Table 3

Input Ratings

Model Number	Input Voltage	Input Current	Input Power
F20070	230V	0.6A typ	150W max
	198V	1.2A max	150W max
F20071	230V	1.1A typ	250W max
	198V	2.2A max	250W max
F20072	230V	1.7A typ	375W max
	198V	3.25A max	375W max
F20073	230V	2.7A typ	480W max
	198V	3.3A max	480W max
	115V	5.1A typ	480W max
	90V	6.6A max	480W max
F20074	230V	5.7A typ	1000W max
	198V	7.0A max	1000W max
	115V	11.4A typ	1000W max
	90V	13.6A max	1000W max

Output Specification

Nominal Voltage

12V system models have a nominal output voltage of 13.8V with a tolerance of $\pm 0.1V$. Other preset voltages available.

24V system models have a nominal output voltage as shown in the table of models (Table 2) with a tolerance of $\pm 0.2V$. Other preset voltages available.

Voltage Adjustment

F20073 and F20074 models have adjustable output voltage in the range shown in table 4.

Table 4

Voltage Adjustment Range

Model Number	Adjustment Range
12V systems	11 – 14.5V
24V systems	23 – 28V

Current

The output current is quoted in tables 1 and 2 and is the minimum output current guaranteed to be available at nominal output voltage.

Line Regulation

<100mV for an input voltage variation from 198 to 264V.

Load Regulation

<100mV for an output current variation from 0A to rated output current.

Ripple and Noise

See table 5 for maximum wideband differential ripple and noise.

Table 5

Ripple and Noise Limits

Model Number	Ripple 10Hz – 100kHz	Noise 10Hz – 30MHz
F20070	500mV pk-pk	1V pk-pk
F20071	500mV pk-pk	1V pk-pk
F20072	100mV pk-pk	300mV pk-pk
F20073	100mV pk-pk	300mV pk-pk
F20074	100mV pk-pk	300mV pk-pk

Battery Drain

With the charger connected to a battery, but with the mains input power off, the battery drain is <2mA.

Indicator

Charger running

Green LED

Protection

Input Fuse

Integral time delay mains fuse rated as shown in table 6.

Output Current Limit

The current limit point is defined as the current at which the output voltage drops by 200mV below nominal at 25°C. Ratings as shown in table 6.

Table 6.

Input Fuse and Current Limit

Model Number	Fuse Type	Rating	Current Limit		
			Min	Typ	Max
F20070013	20 x 5mm	2A	5.5A	6.5A	9.0A
F20070027	20 x 5mm	2A	2.7A	3.0A	4.5A
F20071013	20 x 5mm	2A	10.5A	11.5A	14.0A
F20071027	20 x 5mm	2A	5.0A	6.0A	7.5A
F20072013	1¼" x ¼"	4A	15.0A	16.5A	18.0A
F20072027	1¼" x ¼"	4A	7.5A	8.5A	10.0A
F20073013	1¼" x ¼"	6.25A	25.5A	26.5A	30.0A
F20073027	1¼" x ¼"	6.25A	13.0A	13.5A	15.0A
F20074013	1¼" x ¼"	15A	52.0A	53.0A	54.0A
F20074027	1¼" x ¼"	15A	29.0A	30.0A	31.0A

Output Overvoltage

12V system models

An output voltage in excess of 15.4V ± 0.6V will cause the charger to reduce output. The charger output may be restored by interrupting the mains input.

24V system models

An output voltage in excess of 31V ± 2V will cause the charger to reduce output. The charger output may be restored by interrupting the mains input.

Reverse Battery

The charger is fitted with a protection diode across the output. For complete protection, a fast blow fuse should be fitted in the battery line. The fuse rating is as specified in table 7.

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Table 7

Reverse Battery Protection Fusing

Model Number	Fuse Rating	
	Current	Capacity
F20070	15A	350A ² s
F20071	15A	350A ² s
F20072	30A	1000A ² s
F20073	30A	1000A ² s
F20074013	60A	1500A ² s
F20074027	30A	1000A ² s

Auxiliary Functions

The following functions are only available on the F20073 and F20074 models.

Remote sense	Available as standard to allow for compensation of up to 500mV total voltage drop in the power leads.
Current Share	A current share facility is provided as standard which will enable up to 5 units to share the total load current to within 10% of full load current of one charger.
Inhibit	Positive input (+5V to +30V) on pin 4 will inhibit the unit.
Charge fail relay drive	Connect charge fail relay coil between positive output and pin 2. The relay drive will de-energise on charge fail, otherwise it will sink 50mA.
Current meter output	The meter output is scaled to give 5V \pm 0.5V at full output current. Source impedance is 1k Ω .
Temperature Compensation	Available as an option. Provides automatic output voltage adjustment for wide temperature range battery charging applications.

Auxiliary Connections Pin No.

- 1 Current Share.
- 2 Charge fail relay drive.
- 3 Power fail detector output (not used on F20073).
- 4 Inhibit.
- 5 Meter output.
- 6 Temperature probe +ve.
- 7 Temperature probe -ve.
- 8 Negative sense.
- 9 Negative output.
- 10 Negative output (meter return).
- 11 Positive sense.
- 12 Positive output.

Notes:

- a) For local voltage sense connect 11 to 12, and 8 to 9.
- b) When used in the current share mode connect pin 1 of all the supplies together.
- c) Temperature probe is only used with temperature compensation option.

Electrical Isolation

Input to Output	All isolation barriers provide 4kV a.c. isolation. Complete units are tested to 1500V a.c. from primary to secondary and earth.
Output to Earth	Complete units are tested to 500V a.c.

Electromagnetic Compatibility

Exported Noise	Units have been tested to and found to be compliant with VDE0871 Class A.
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Environmental Conditions

Ambient Temperature	0 – 40°C at full rated output power.
Humidity	0 – 90% R.H. non-condensing.
Cooling	Convection cooled. Free air flow is required over all surfaces.

Safety Standards

Units have been designed in accordance with the requirements of BS3456 Part 201, BS EN60335-2-29:1991

Mechanical Specification

Table 8.

Dimensions and Mass

Model Number	Dimensions (mm)	Mass g (lb)
F20070	160 x 110 x 68	800 (1.76)
F20071	180 x 114 x 65	1150 (1.86)
F20072	216 x 117 x 83	1700 (3.74)
F20073	285 x 147 x 93	2300 (5.06)
F20074	232 x 250 x 135	4200 (9.40)

Fixings 4 off 5mm diameter holes are provided on all models:

Connectors

Input

All models have flying lead.

Output

Models F20070, F20071.

¼" Fast-on 2 +ve and 2 -ve.

Model F20072, F20073, F20074

M4 screws +ve and -ve.

Guarantee

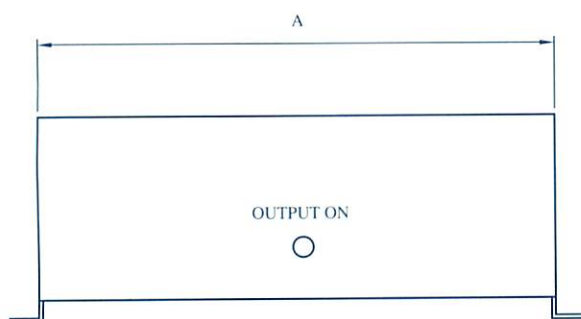
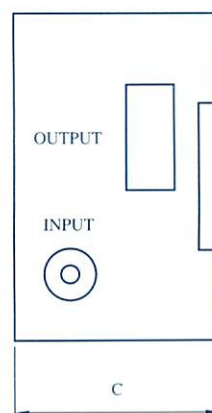
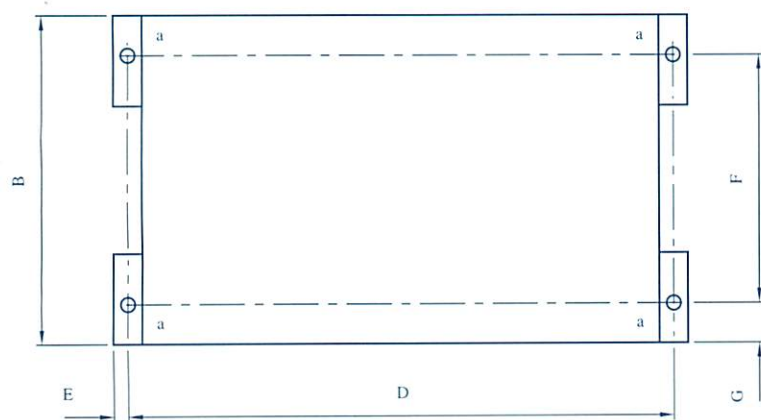
All Farnell Power products are guaranteed against faulty manufacture and faulty components for a period of twelve months from the date of despatch. See conditions of sale for full details.

Battery Chargers

Outline Drawing for the F20070, F20071, F20072

All dimensions are in mm (inches)

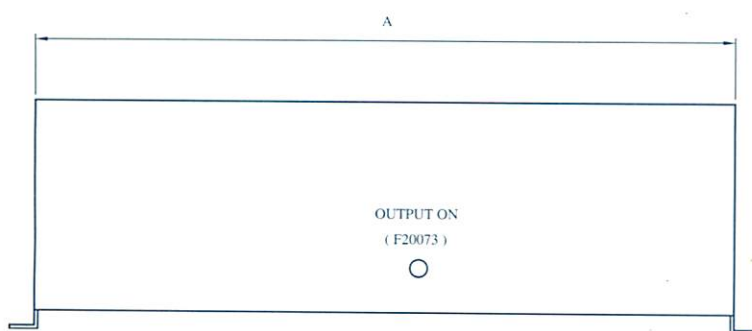
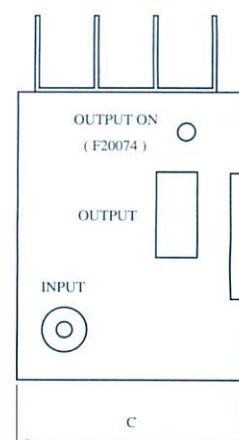
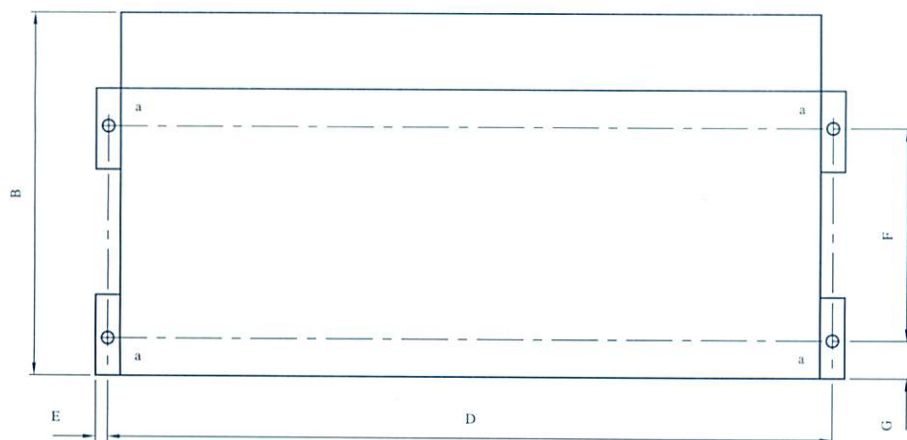
	A	B	C	D	E	F	G
F20070	157.0 (6.18)	107.0 (4.21)	67.9 (2.67)	167.0 (6.57)	5.0 (0.19)	86.0 (3.38)	9.4 (0.37)
F20071	180.0 (7.08)	113.6 (4.47)	70.9 (2.79)	190.0 (7.48)	5.0 (0.19)	86.0 (3.38)	13.0 (0.51)
F20072	216.0 (8.50)	116.6 (4.59)	82.9 (3.26)	226.0 (8.89)	5.0 (0.19)	86.0 (3.38)	14.5 (0.57)



Outline Drawing for the F20073, F20074

All dimensions are in mm (inches)

	A	B	C	D	E	F	G
F20073	284.4 (11.19)	147.6 (5.81)	92.9 (3.65)	294.4 (11.59)	5.0 (0.19)	86.0 (3.38)	13.9 (0.54)
F20074	255.0 (10.03)	232.0 (9.13)	154.5 (6.08)	273.2 (10.75)	10.0 (0.39)	135.0 (5.31)	25.9 (1.01)



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