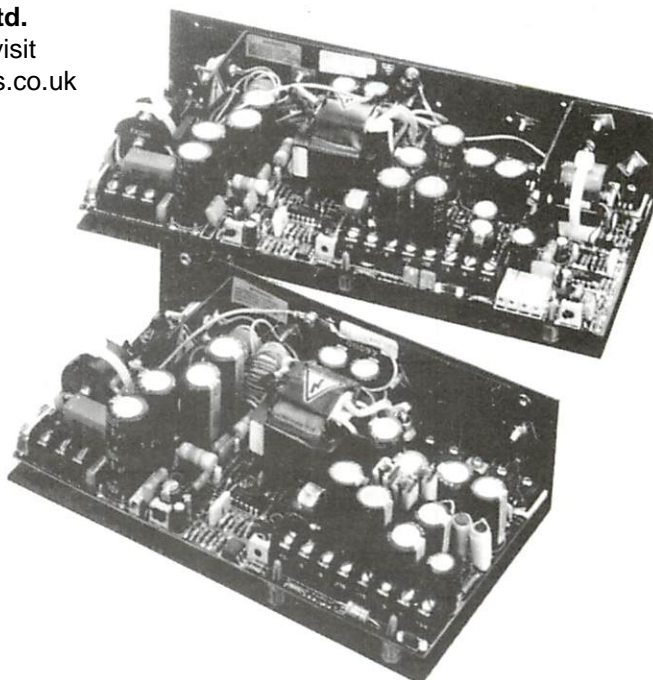


Downloaded from  
**Advance Product Services Ltd.**  
 For repairs and replacements, visit  
<http://www.advanceproductservices.co.uk>



#### FEATURES

- Switched-mode for small size, high efficiency and low cost
- Quality construction
- Optional safety cover
- Dual range mains input
- Standard models have five outputs:  $\pm 5V$ ,  $\pm 12V$  (or  $\pm 15V$ ) and  $+24V$  d.c.
- Alternative outputs on power trading principle
- All units undergo 'burn-in' at full load
- Soft start limits in rush current
- Power fail and output monitor options
- Output will hold up for missing whole cycle from 220V mains
- Choice of fully regulated (R) or semi-regulated (P)
- Tailored versions and custom designs to order

#### APPLICATIONS

- ★ Computers, logic systems, memories, microprocessors, MOS, TTL
- ★ Peripherals, terminals, floppy disk drives, I/O devices
- ★ Business machines, medical, military and industrial OEM
- ★ Communications, telex, radio links, telephone exchanges, call loggers, etc.
- ★ CAD/CAE/CAM equipment

#### OPTIONS

- Power failure signal
- Power failure signal plus output level monitor
- Safety cover

The Farnell N range of open frame, switch-mode power supplies provide the OEM with a reliable, high quality power source to build into equipment at minimum cost. There are 50, 55, 75, 90, 100, 180, 200, 300 and 350W multi-output, standard N range units available.

The N90R and N100P provide 5 d.c. outputs and can deliver 90W and 100W total output power respectively. All outputs on the N90R are fully regulated and the N100P has two outputs fully regulated ( $\pm 5V$ ), the remaining three being semi-regulated. Cooling is by natural convection. Standard outputs are shown in the table below.

Other combinations of voltage or current, on the power trading principle, can be supplied to order.

Operating from a field selectable 115/230V a.c. input and with optional safety covers being available, these units comply with all relevant safety requirements (see overleaf).

#### Units available

MODEL NO	OUTPUT 1		OUTPUT 2		OUTPUT 3		OUTPUT 4		OUTPUT 5	
	Voltage Vdc nom	Current Idc max	Voltage Vdc nom	Current Idc max	Voltage Vdc nom	Current Idc max	Voltage Vdc nom	Current Idc max	Voltage Vdc nom	Current Idc max
N90R	+5	10A	+12	5A	-12	2A	-5	1A	+24	1A
N90R132	+5	10A	+15	5A	-15	2A	-5	1A	+24	1A
N100P	+5	10A	+12	5A	-12	2A	-5	1A	+24	2A
N100P133	+5	10A	+15	5A	-15	2A	-5	1A	+24	2A

**DESIGNED TO MEET  
THE FOLLOWING  
SPECIFICATIONS  
WHEN USED INSIDE  
FINISHED PRODUCTS**

VDE 0875N

FCC Rules Part 15, Sub part J,  
Class A

VDE 0871 level A

BS6527 level A

BS800

BS6204

IEC 435

UL 478 recognition pending

PARAMETER	N90R	N90R132
INPUT VOLTAGE	115/230V a.c. 92/176V a.c. 132/264V a.c.	115/230V a.c. 92/176V a.c. 132/264V a.c.
INPUT FREQUENCY	50Hz 45Hz 440Hz	50Hz 45Hz 440Hz
INPUT CURRENT (typical, at full load)	115V 220V 240V 1.8A 1.1A 1.0A 930mA 470mA 440mA 5.2A 3.6A 3.5A	115V 220V 1.8A 1.1A 930mA 470mA 5.2A 3.6A
OUTPUT V1	+5V d.c. 10A	+5V d.c. 10A
OUTPUT V2	+12V d.c. 5A	+15V d.c. 5A
OUTPUT V3	-12V d.c. 2A	-15V d.c. 2A
OUTPUT V4	-5V d.c. 1A	-5V d.c. 1A
OUTPUT V5	+24V d.c. 1A	+24V d.c. 1A
OUTPUT POWER	90W	90W
EFFICIENCY	71%	71%
HOLD UP TIME	refer to graph	refer to graph
OPERATING TEMPERATURE RANGE	0 to 50°C full load	0 to 50°C full load
DERATING	2.5% per °C over range 50-70°C	2.5% per °C over range 50-70°C
TEMPERATURE COEFFICIENT	±0.02% per °C all outputs	±0.02% per °C all outputs
RIPPLE AND NOISE	< 75mV pk-pk < 20mV r.m.s.	< 75mV pk-pk < 20mV r.m.s.
OUTPUT VOLTAGE ADJUSTMENT	±5% each output	±5% each output

#### OUTPUT VOLTAGE REGULATION

**N90R**—each output ±1% maximum total change in voltage for: a zero to full load change on the measured output, the worst case change of load on the other outputs, and a line change of 198 to 264V or 103.5 to 132V.

#### N100P

Line regulation

Outputs 1 and 4, ±0.2% maximum change  
Outputs 2, 3 and 5, ±1% maximum change for a line change of 198 to 264V or 103.5 to 132V all outputs loaded to 30% of their I<sub>max</sub> ratings.

Load regulation

Outputs 1 and 4, ±0.5% maximum change  
Outputs 2 and 3, ±3.5% maximum change  
Output 5, ±3% maximum change for a 20% to 100% load change on the measured output. All other O/P's at 30% max. load.

Cross regulation

Outputs 1 and 4, ±0.1% maximum deviation  
Outputs 2, 3 and 5 ±1.5% maximum deviation for a ±25% change from 75% I<sub>max</sub> on any other output (measured outputs and outputs not being varied set at 30% I<sub>max</sub>).

#### PROTECTION

Overload: Self resetting electronic current limit. Set to approximately 115% of rated output current.

**N90R**—all outputs electronically protected

**N100P**—current limit on outputs 1 and 4 only. 20mm fuses on outputs 3 and 5. Overall power limit at approximately 150% of rated power.

Output 2 protected by power limit circuit.

Overvoltage: shuts down all outputs. Reset by interrupting mains input.

**N90R**—all outputs protected.

**N100P**—protection on output 1 only.

Overvoltage trigger: 5V outputs—operates at 5.8V min., 7V max.

12V outputs—operation at 13V min., 16V max.

24V outputs—operates at 26V min., 31V max.

Fuses: The mains input is fused (fuse type 20mm 4A THRC). Outputs 3 and 5 on model N100 protected by fuses.



	N100P	N100P133	CONDITION
	115/230V a.c. 92/176V a.c. 132/264V a.c.	115/230V a.c. 92/176V a.c. 132/264V a.c.	nominal minimum maximum
	50Hz 45Hz 440Hz	50Hz 45Hz 440Hz	nominal minimum maximum (limits to 66Hz for UL recognition)
240V 1.0A 440mA 3.5A	115V 220V 240V 1.8A 1.1A 1.0A 930mA 470mA 440mA 5.2A 3.6A 3.5A	115V 220V 240V 1.8A 1.1A 1.0A 930mA 470mA 440mA 5.2A 3.6A 3.5A	r.m.s. mean repetitive peak
	+5V d.c. 10A	+5V d.c. 10A	nominal maximum cont. (current limit at 11.5A approx.)
	+12V d.c. 5A	+15V d.c. 5A	nominal maximum cont. (Peak surge to 150% PO max. permissible, N100) (Current limit at 5.75A approx., N90)
	-12V d.c. 2A	-15V d.c. 2A	nominal maximum cont. (Peak surge to 150% PO max. permissible, N100) (Current limit at 2.7A approx., N90)
	-5V d.c. 1A	-5V d.c. 1A	nominal maximum cont. (current limit at 1.5A approx.)
	+24V d.c. 2A	+24V d.c. 2A	nominal maximum cont. (Peak surge to 150% PO max. permissible, N100) (Current limit at 1.5A approx., N90)
	100W	100W	maximum continuous 0-50°C
	74%	74%	typical at full load and nominal input
	refer to graph	refer to graph	—
	0 to 50°C full load	0 to 50°C full load	storage temperature range is -25°C to +85°C
0-70°C	2.5% per °C over range 50-70°C	2.5% per °C over range 50-70°C	maximum operating temperature 70°C
s	±0.02% per °C output 1. Other outputs ±0.05% per °C	±0.02% per °C output 1. Other outputs ±0.05% per °C	typical
	< 2% Vout pk-pk < 0.5% Vout r.m.s.	< 2% Vout pk-pk < 0.5% Vout r.m.s.	measured with unit delivering max. output power. Δf=30MHz
	±5% output 1. Other outputs vary in proportion except V4	±5% output 1. Other outputs vary in proportion except V4	N90R units factory preset to 0.5% of nominal. N100 units: With output 1 set to 5.00V and all outputs loaded at 50% of maximum rated current, the other outputs will be within 5% of stated nominal.

## RELIABILITY

All units undergo burn-in at full load after test. Wound components produced to DEF STAN 05-24 in special Farnell factory. All components operated well within vendor ratings.

M.T.B.F. 75,000 hours calculated.

## INSULATION

Unit input to output isolation barriers including layout and wiring, are designed to meet a test of 4kV a.c. r.m.s. for one minute (i.e. 2kV r.m.s. input to earth, 2kV r.m.s. output to earth). Tests are applied to relevant components to ensure compliance with BS3535 clause 17b and CEE15 clause 17c. The complete unit is tested at 1.5kV a.c. for one minute between a.c. input and d.c. outputs, with output terminals connected to earth. Tested at 500V d.c. for one minute between output and earth.

## CONNECTIONS

Slotted screw terminals on barrier strip. Three way barrier strip for supply input. Separate barrier strip for outputs (see Mechanical Details).

## OPTIONS

Power failure signal.  
Power failure signal plus output level monitor.  
Safety cover.

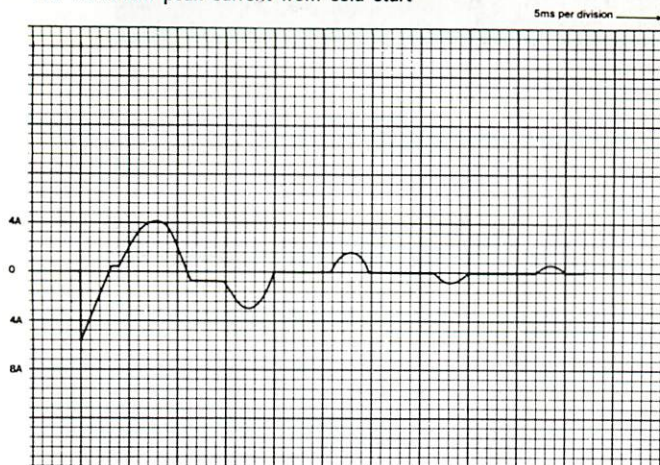
ORDER CODES	ITEM
13N090R109	N90R
13N090R132	N90R132
13FMC090	Cover
13N090RA	Mains failure alarm
13N090RB	Output level monitor
13N100P108	N100P
13N100P133	N100P133
13FMC100	Cover
13N100PA	Mains failure alarm
13N100PB	Output level monitor

Note: Specification applies in an ambient temperature of 25°C unless otherwise stated.

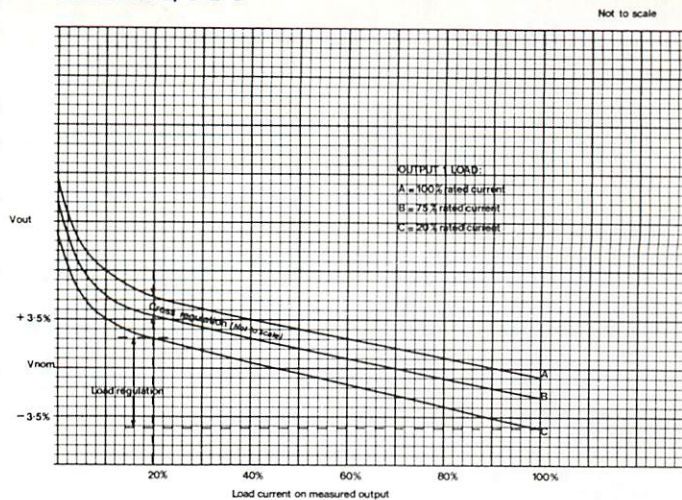


## N100/N90R SWITCH ON SURGE AT 246V MAINS INPUT.

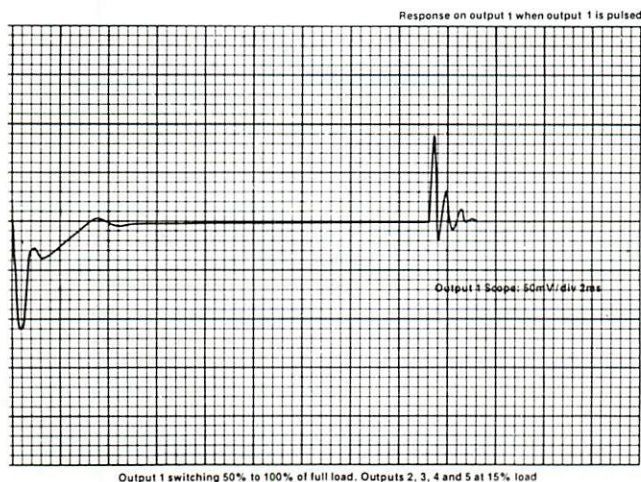
11A maximum peak current from cold start



## N100 TYPICAL REGULATION CHARACTERISTICS FOR OUTPUTS 2, 3 & 5



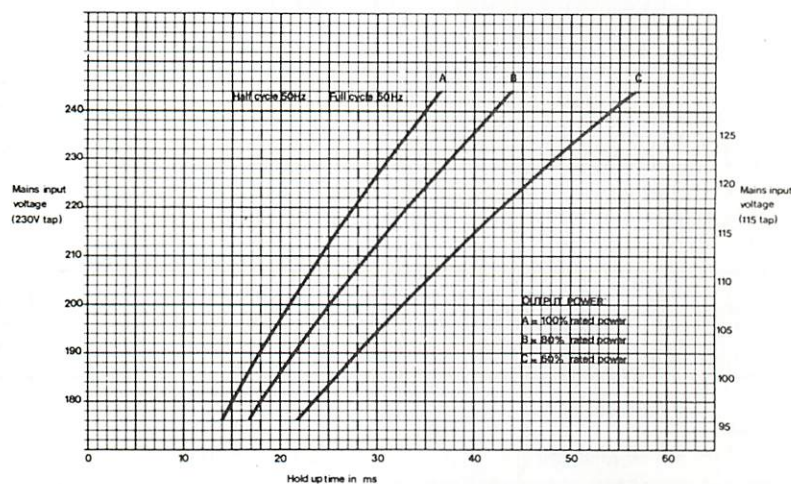
## N100 TRANSIENT RESPONSE



Output 1 switching 50% to 100% of full load. Outputs 2, 3, 4 and 5 at 15% load

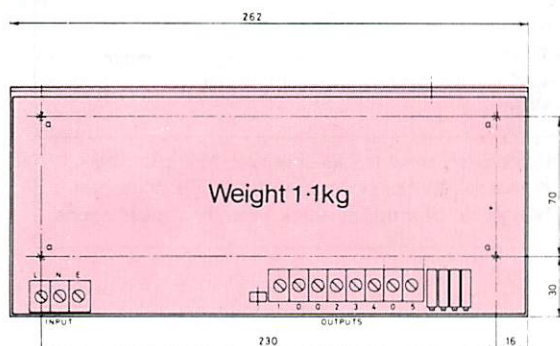
## N100/N90R MINIMUM HOLD-UP TIME

115V and 230V mains and full load: >1 missing cycle at 50Hz

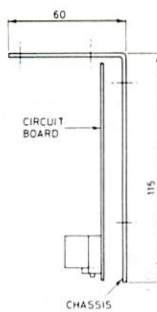


## N90R AND N100P OUTLINE DRAWING

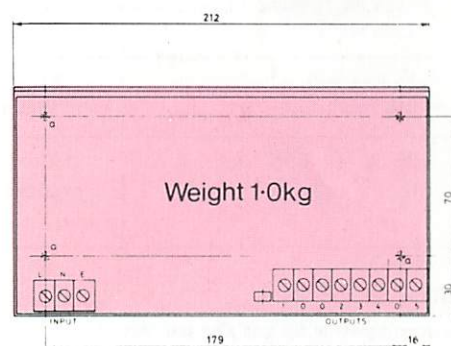
All dimensions in mm



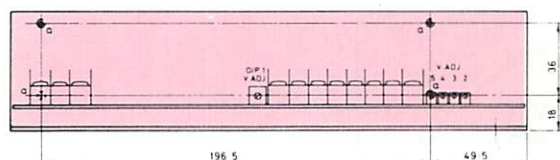
N90R models



N90R & N100



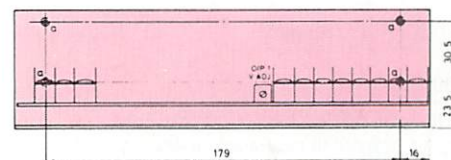
N100 models



NOTE  
1) CIRCUIT BOARD DIMENSIONS ARE 260x109  
2) TERMINAL BLOCKS USE No 6-32 x 1/4" BINDING HEAD SCREWS

3) CHASSIS MATERIAL 14s.wg ALUM FINISH MATT BLACK  
4) WITH OPTIONAL COVER DIMENSIONS 262 INCREASES TO 267.4 115 INCREASES TO 117.7

Ø 8 M3 CAPTIVE FIXINGS MAXIMUM SCREW PENETRATION 5mm



NOTE  
1) CIRCUIT BOARD DIMENSIONS ARE 208x109  
2) TERMINAL BLOCKS USE No 6-32 x 1/4" BINDING HEAD SCREWS

3) CHASSIS MATERIAL 14s.wg ALUM FINISH MATT BLACK  
4) WITH OPTIONAL COVER DIMENSIONS 212 INCREASES TO 217.4 115 INCREASES TO 117.7

Manufactured in England by:



We reserve the right to amend specifications without notification

POWER SUPPLIES DIVISION · SANDBECK WAY · WETHERBY · WEST YORKSHIRE LS22 4DH · TEL 0937 61961 · TELEX 557294 FARIST G