

GCS400 SERIES

Table 1 Available Models

Model Number	Nominal Voltage	Adjustment Range	Programmable Range†	Output Current	Output Power
GCS400J	12V	8 – 16V	5 – 16V	0 – 30A*	400W max.*
GCS400L	24V	21 – 30V	10 – 30V	0 – 16.7A	400W max.
GCS400N	48V	32 – 56V	20 – 56V	0 – 8.4A	400W max.

* GCS400J limited to 360W at 12V output. Output power increases linearly with output voltage to a maximum of 400W at 15V output.

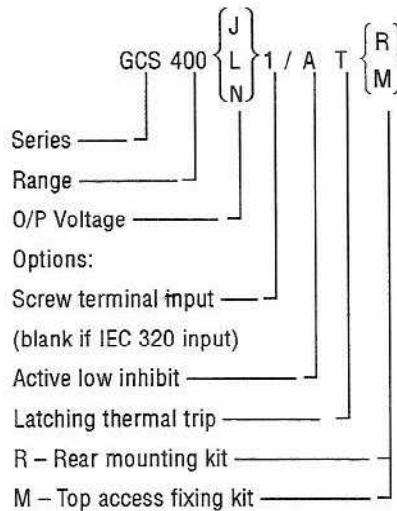
† It is possible to programme all output voltages down to 2.6V, but below the minimum specified voltage the a minimum output load is required which increases linearly from 0 at the minimum specified voltage to 10W at 2.6V.

FEATURES

- 400W continuous output power**
- Power factor corrected, universal input**
- Convection cooling**
- IEC or screw terminal input connections**
- CE marked to LVD, EMC compliant**
- Current limit, overvoltage and thermal protection**
- Comprehensive signals and indicators**

ORDERING INFORMATION

The order code consists of up to 7 fields as follows:



INTERNATIONAL SAFETY APPROVALS

The GCS400 range of units have been designed, tested and approved to the following safety specifications.

- CE marked to the low voltage directive EN60950
 - UL1950
 - CSA 22.2 No. 234
- } Approved by CSA under the NRTL scheme

GUARANTEE

All Advance 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.

INPUT SPECIFICATION

Voltage Range

100 – 264 V a.c. for full specification. Units will operate down to 85V a.c. but for continuous operation below 100V a.c. input increased cooling air may be required.

Frequency

45 – 66Hz.

Supply Type

Single phase TN-S systems (as defined in IEC364).

Input Current

7.2A maximum at 100V input, 400W output
3.0A maximum at 198V input, 400W output.

Inrush Current

13A maximum, hot or cold start.

Power Factor

Greater than 0.95 at 400W output power, 100 to 264V input voltage.

Efficiency

Typically 85% at 400W output power, 230V input.

Harmonic Distortion

Complies with the requirements of EN61000-3-2.

TURN ON AND TURN OFF CHARACTERISTICS

Start-up Time

Output is above D.C. OK threshold within 600ms of application of input power at 240V, 2.4s at 85V.

Start-up Characteristic

The output voltage rise is monotonic with no overshoot.

Hold Up

>17ms at 400W output power at any input voltage within the specified range. This is sufficient energy storage to ride through a missing mains half cycle at 45Hz.

OUTPUT SPECIFICATION

Voltage

Nominal output voltages and adjustment ranges are shown in Table 1. Adjustment is by means of a front panel potentiometer. Outputs are preset to within $\pm 1\%$ of nominal. For output voltage programming see auxiliary functions.

Current

Recommended maximum continuous current ratings (I_{MAX}) are shown in Table 1. At higher output voltages, the current is limited by the maximum power rating of 400W. All maximum current ratings are applicable up to 50°C.

Power

400W continuous up to 50°C ambient.
360W continuous up to 50°C ambient for GCS400J set to 12V output voltage increasing linearly to 400W at 15V output voltage.

Regulation

0.1% V_{NOM} maximum for an output current variation of 0 to 100% I_{MAX} and an input variation from 85V to 264V a.c.

Dynamic Regulation

0.5V typical (3V maximum) deviation, recovering to 1% of nominal within 1ms when the load varies 50% to 100% or 100% to 50% of I_{MAX} .

Temperature Coefficient

Typically $\pm 0.02\%/^{\circ}C$ for temperatures within the operating range.

Ripple and Noise

<50mV pk-pk over a 30MHz bandwidth measured differentially with the output loaded to the maximum rated output current.

PROTECTION

Input Fuse

Internally fitted fuse rated at 10A T. 250V.

Output Current Limit

The current limit point is set to 105% – 120% of I_{MAX} . The characteristic is constant current and is non-latching.

Output Overvoltage

GCS400J, <18V;
GCS400L, <32.5V;
GCS400N, <59.9V.

Overvoltage protection is latching and is reset by removing the input power from the power supply. An overvoltage condition is indicated by a red LED.

Overtemperature

In the event of thermal overload, the unit will be disabled. Output power will be restored when the unit temperature drops to a safe level. Latching thermal trip is also available when option T is specified. An overtemperature condition is indicated by a red LED.

AUXILIARY FUNCTIONS

Remote Sense

Compensates for load lead drops of up to 3V per lead subject to the power supply terminal voltage not exceeding the maximum rated output voltage and power. It is recommended that when using remote sense, a capacitor is fitted at the load as detailed in the design considerations.

Parallel Operation

The output may be connected in parallel with the output of any number of units set to the same output voltage. If using remote sense, all parallel connected units should be connected to a common negative sense point.

Active current share: Current sharing can be achieved by linking the current share pins of linked outputs. The -Sense connections must also be linked. See page 11. Voltages must be set to within 1% of each other for active current share to operate correctly.

Series Operation

Outputs may be connected in series to provide higher output voltages up to 120V.

SIGNALS

All signals are referenced to Signals Common. Logic outputs are open collector and can sink up to 16mA at 0.5V; open circuit voltage, 30V maximum.

Inhibit

TTL compatible input. The output power of a power supply may be inhibited by a logic signal applied to this input. Removal of the logic signal reinstates the output voltage. The sense of the signal is high to inhibit as standard, but specifying option A will provide an active low inhibit.

Power Fail Signal

A logic output providing warning of impending output failure due to loss of input. At least 5ms warning of output power loss is provided. Output is high for power O.K.

DC OK

A logic output indicating that the output voltage is above the DC OK threshold. Signal is high for outputs O.K.

Model	DC OK threshold
GCS400J	9.5 – 11V
GCS400L	19 – 22V
GCS400N	38 – 44V

Overtemperature Warning Signal

A logic signal providing at least 200ms warning of unit shutdown due to an overtemperature condition. Output is low for warning.

Auxiliary +5V

This +5V supply is provided by a standard 78L05 I.C. regulator and is capable of delivering up to 100mA. It has integral thermal overload and short circuit protection. The 0V of this supply is connected to Signals Common. This output remains available even if the main output is inhibited.

Signals Common

Common terminal for signals. Isolated from the power output and sense.

Voltage Programming

The output voltage may be programmed within the programming range by use of a resistor connected between Prog and +Sense. Remove the link between Prog and Int for voltage programming.

ISOLATION

Primary to Secondary

Reinforced insulation in accordance with the requirements of EN60950.

Primary to Earth

Units are tested to 2.1kV d.c. from input to earth.

Secondary to Earth

Units are tested to 700V d.c. from output to earth, with all output and signal ports connected together.

Earth Leakage Current

Earth current under normal operating conditions does not exceed 1.5mA.

Operating Voltages

The maximum operating voltage between any output (power or signal) and earth or between signals and output must not exceed 120V d.c.

ELECTROMAGNETIC COMPATIBILITY

Emission

Conducted 0 to 2kHz: Units comply with EN61000-3-2.

Conducted 0.15 to 30MHz: Units comply with EN55022B.

Radiated 0.03 to 1GHz: Units comply with EN55022B.

Immunity

General: Units comply with EN50082-1

Fast transients: Units comply with IEC1000-4-4-B.

ESD: Units comply with IEC1000-4-2-A.

RF field: Units comply with ENV50140-A at 3V/m.

Conducted RF: Units comply with ENV50121-A.

Surge: Units comply with ENV50142-B.

GCS400 SERIES MECHANICAL SPECIFICATION

OUTLINE DRAWING

All dimensions are nominal and are in mm [inches].

DC Output studs: M5

All customer mounting holes: M3

Maximum screw penetration : 5.0mm (0.2)

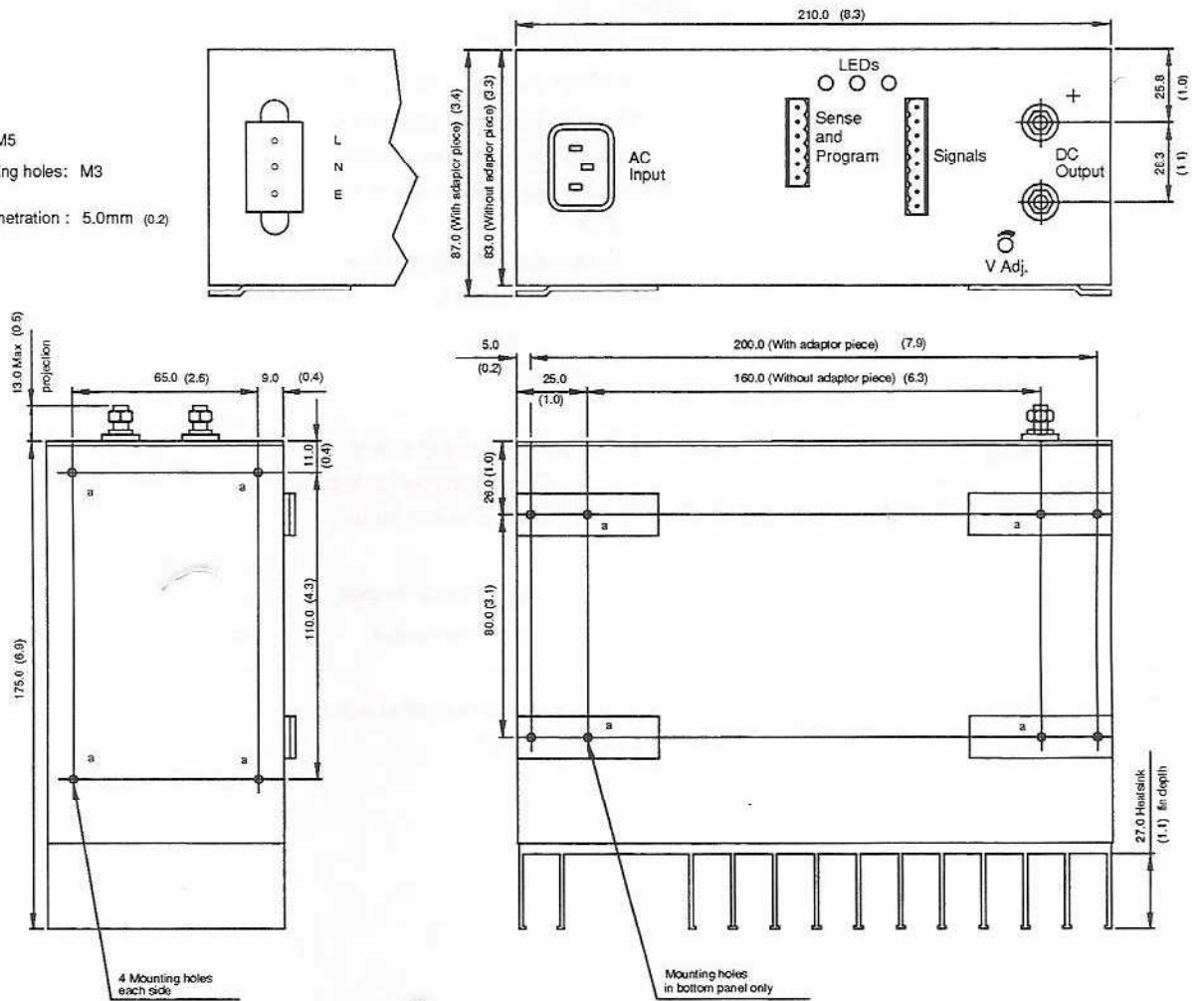


Figure 1 Outline Drawing and Adaptor Brackets