

LPC Aluminium Case Resistors (GL) Technical Information



Style GL –Dynamic Braking Resistors

Introduction

The GL range of LPC flatpack aluminium case resistors are IP55 rated. They are wire wound on mica plate, coated with cement, filled with quartzite sand and sealed with aluminium plugs. They are RoHS Compliant. Principal applications are in Dynamic braking and as Charge/discharge capacitors for the Industrial automation and energy markets.

Ordering Procedure

Dynamic Braking Resistors – Specify: Type, Resistance, Tolerance.

E.g. GL500 150R ±5%

/T denotes an internal thermal switch 160°C±5°C (rated voltage 250V; rated current 2.5A; leads single core conductor silicone rubber insulated cross section 0.25mm²; length 300mm)

E.g. GLT550 150R ±5%

/HS denotes Heat Sink & Metal Fixing Plate

E.g. GLHS550 150R ±5%

Electrical Characteristics

At room temperature 25°C

ID	Max Power	Rated Power	Rated power with heat-sink	Min Resistance	Max Resistance	Limit Voltage	thermal time constant
Unit	W	W	W	Ω	Ω	V	s
GL 250	250	90	250	0.43	6k2	1500	250
GL 350	350	175	350	1.3	18k	1500	300
GL 500	500	280	500	2.4	33k	1500	300

Product Details

Insulation resistance (1000VDC) ≥ 1000MΩ

Dielectric strength (50Hz; 60") 4000V

Active materials: calculations for min ohmic value are made considering the wire material CuNi44, whereas max ohmic value refers to wire material FeCrAl. Resistors can also be made with NiCr alloys. Temp. Coefficient Resistance depends on the alloy used, typically it is between 20 and 240 10⁻⁶/°C.

The standard version cable is single core with flexible conductor silicone rubber insulated with fiberglass braid. For cross section AWG14 and AWG16 the cable is classified 200°C – 600V and made according to UL style 3071. For cross section 1mm², 4mm² and 6mm² the cable is classified 180°C – 500V and made according to IEC EN 60228 cl. 5/CEI EN 50363-5. The tolerance on cable length is ±5mm. The choice of cross section to be used depends on the current that flows in the resistor.

The aluminium housing is extruded and it is normally oxidized to prevent corrosion.

Standard Tolerance on ohmic value is ±5%.

Max Power can be supplied to the resistor for not more than 60 minutes.

The picture above shows a representation of model GL500.

Installation & Handling

Warning – Units must never be mounted with the terminals uppermost. The resistors are packed in such a way as to avoid damage in transit. To avoid breaking the resistors never hold it by the cables and always handle with care.

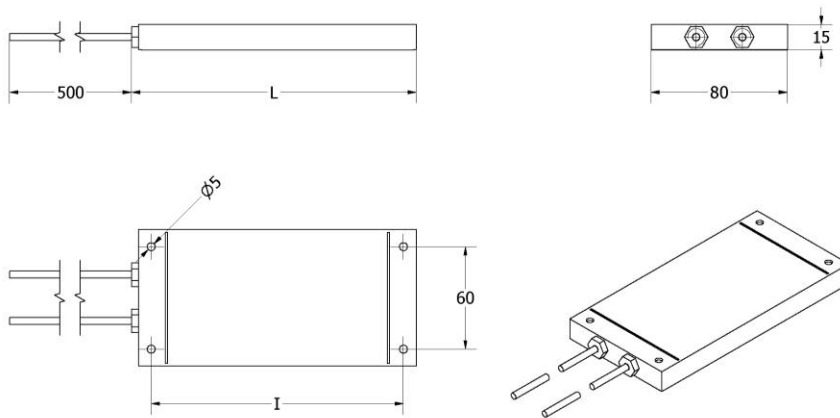
Mechanical Data

GL

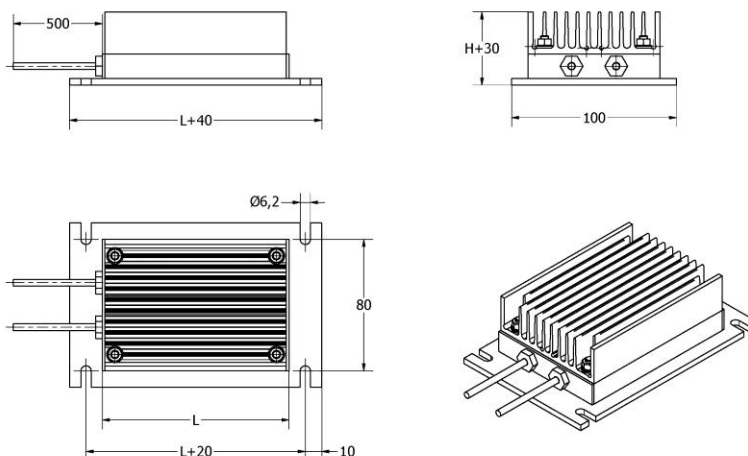
Dimensions (mm)	I	L	Weight (g)
GL 250	98	113	320
GL 350	148	163	500
GL 500	204	219	630

Unless otherwise specified, applicable standard of tolerances for linear and angular dimensions is ISO 2768-1 class C; applicable standard for aluminium profile is EN 755-9:2008.

Drawing



Drawing (GLHS 250, 350, 500)

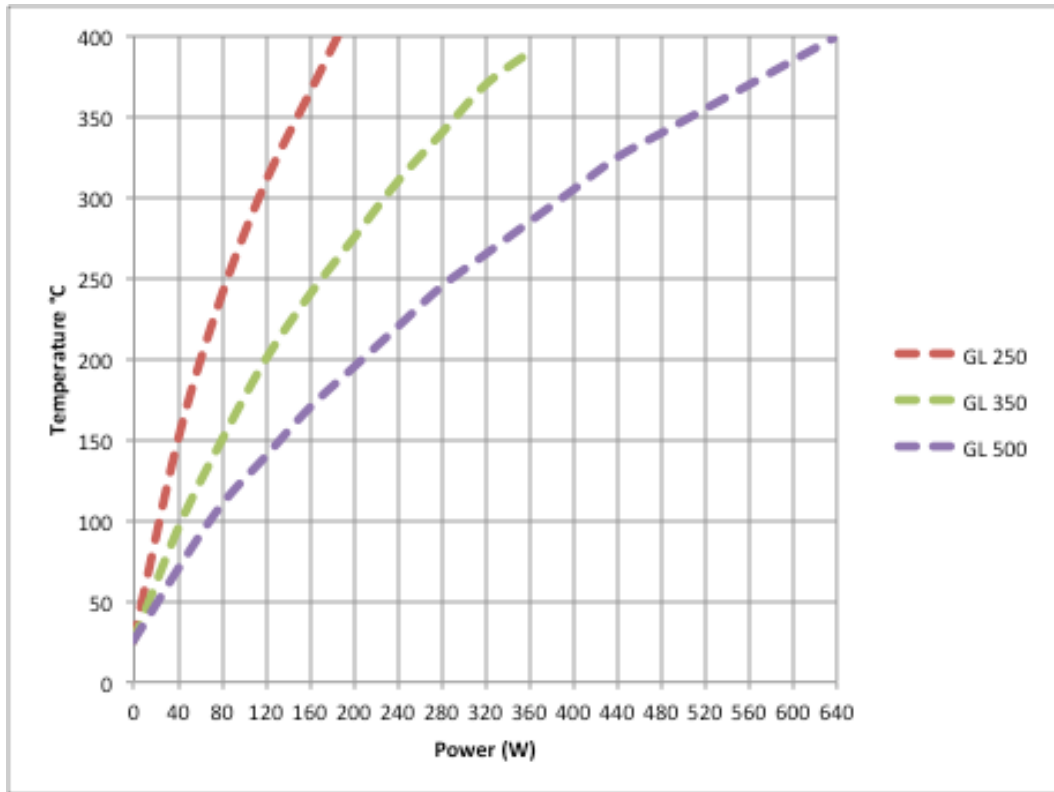


The rated power stated in this data sheet refers to the resistor mounted in a horizontal position (with no possibility to exchange heat in the downwards direction) at the ambient temperature of 25°C and 250°C on the external surface. The power dissipation is influenced by:

- Mounting position and arrangement (wall, heat-sink)
- Number of resistors mounted together (grouping)
- Ambient temperature (in free air or inside an enclosure)

Ask for the appropriate test reports for more details. See the following graph for the external temperature corresponding to a certain continuous power (graphs of GL with heat-sink are available on request).

Surface Temperature Characteristics



Overload Conditions

Case resistors are mostly used for overload operation, such as pre-charge of capacitors, dynamic braking of VFD, crowbar operations. We can usually distinguish between three typical overload conditions; one is the isolated single phase (emergency braking, pre-charge in case of short circuit or abnormal duty), the second one is the cyclic work load (i.e. braking of a lift), and the third one is a long overload (i.e. due to a fault in the system).

In all 3 cases we can state that for pulses of duration less than 60s, the mass of the wire must be taken into account to define the admissible overload. The mass of the wire depends on the ohmic value.

Unless the pulse is very short (<0.5s) the mass of the quartzite sand inside plays an important role for the calculation of the global thermal capacity. The longer the duration of the pulse, the higher the multiplier of the thermal capacity of the wire. The LPC technical office is at your disposal for further information.

For operation in the cyclic work load condition, we can easily calculate the admissible braking power in respect of the duty cycle (ton/total time): Braking power x (1/Duty cycle).

This is only valid if the period does not exceed 240s.