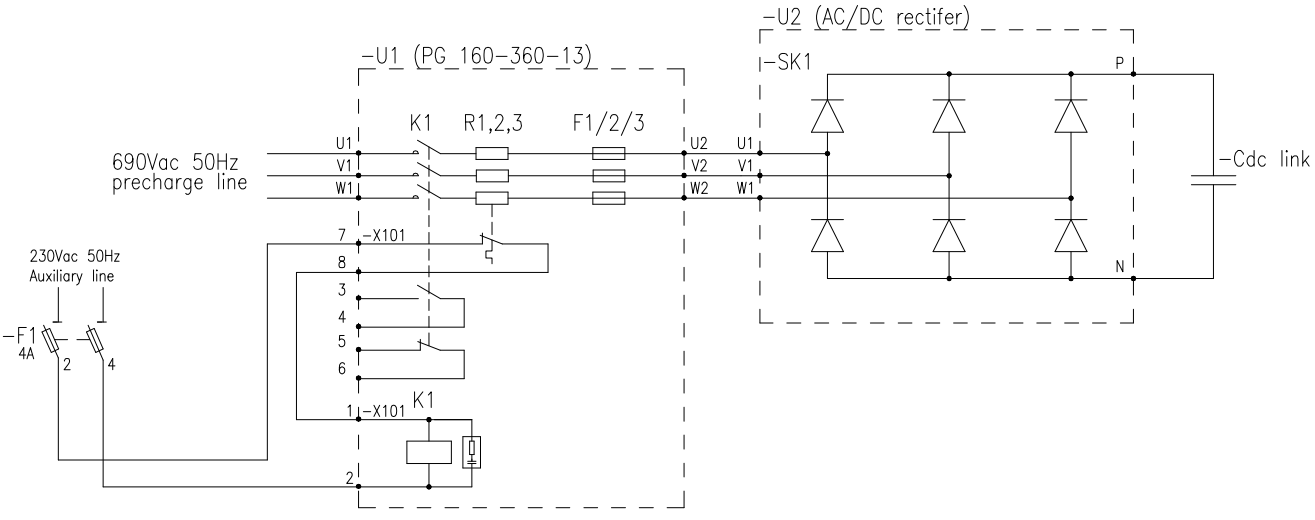
PRODUCT DESCRIPTION

The precharge DC link unit is a power device for using with a three phase diode AC/DC converter. Using the precharge DC link unit is possible to charge the capacitor present in the DC link inside the inverter, with a precharge time depending on the total amount of capacitor present in the DC link.
Inside each precharge unit, a 3 pole contactor is present, with a resistor series connected from input to output when the contactor is energized. A 3 pole fuse base is present for protect the internal contactor and the diode of the AC/DC rectifier outside the precharge unit.
Each model of the precharge unit can support a maximum peak current depending on the internal precharge resistor and AC voltage incoming line level, 3 different size of precharge unit are available, each one can be used in the 690 ac voltage line +- 15%.

The PG-125-90 precharge unit can be used with a total DC link capacitor from 20 mF to 40 mF, with a maximum peak current of 20 A during the precharge phase, this current is determined by the AC line level (690 V + 15%) and the internal precharge resistor of 30 Ohm. The 3 pole contactor has a current equal to 50 A in AC-1.
The precharge time for the model PG-125-90 is equal to 7.2 second when the DC link capacitor level is equal to 40 mF, and is equal to 3.6 second when the DC link capacitor level is equal to 20 mF.

The PG-125-180 precharge unit can be used with a total DC link capacitor from 40 mF to 80 mF, with a maximum peak current of 40 A during the precharge phase, this current is determined by the AC line level (690 V + 15%) and the internal precharge resistor of 15 Ohm. The 3 pole contactor has a current equal to 50 A in AC-1.
The precharge time for the model PG-125-180 is equal to 7.2 second when the DC link capacitor level is equal to 80 mF, and is equal to 3.6 second when the DC link capacitor level is equal to 40 mF.

The PG-160-360 precharge unit can be used with a total DC link capacitor from 100 mF to 200 mF, with a maximum peak current of 80 A during the precharge phase, this current is determined by the AC line level (690 V + 15%) and the internal precharge resistor of 7.5 Ohm. The 3 pole contactor has a current equal to 100 A in AC-1.The precharge time for the model PG-160-360 is equal to 9 second when the DC link capacitor level is equal to 200 mF, and is equal to 4.5 second when the DC link capacitor level is equal to 100 mF.
The AC contactor coil voltage is available at X101:1,2 terminal strip.
The AC contactor status is available at terminal strip X101:13,14 (NO contact) and X101:15,16 (NC contact),
the thermal protection of the resistors is available at terminal strip X101:11,12, with the proposed connection is possible to enable the precharge only if this contact is closed.
Below is possible to see the internal and external connection of the precharge unit. As is possible to see, the internal precharge contactor power supply has to be wired in series to the internal contact X101:11-12, in this way when the internal temperature of precharge resistor is to high the contact X101:11-12 will open and the precharge is disabled until the resistor temperature decrease. With the described connection is possible to perform only one precharge in 120 seconds and the internal resistors are protected.



Precharge unit PG connection

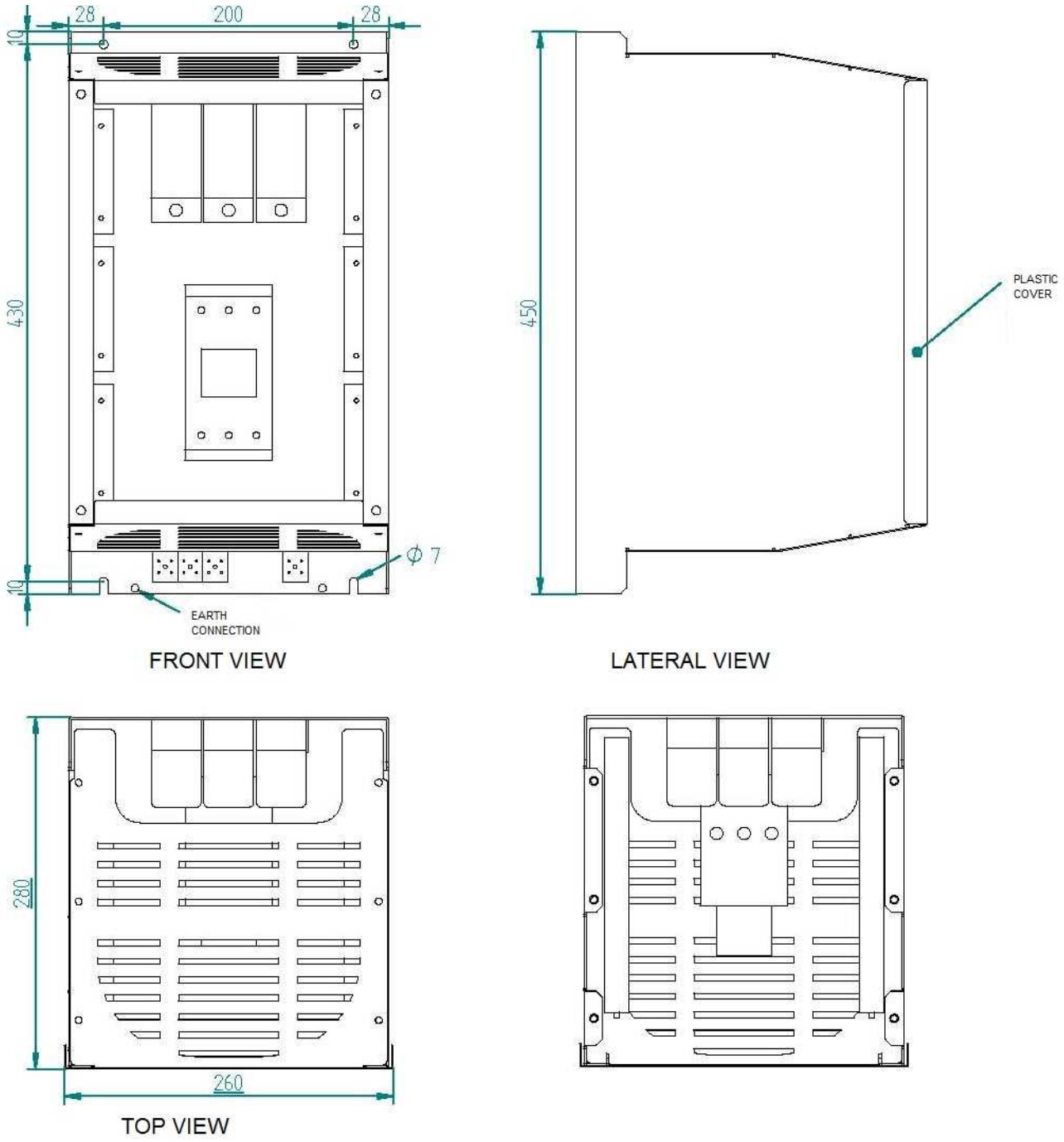
TECHNICAL FEATURES

The following technical features are valid for precharge DC link unit PG type

MODEL	max ac voltage	AC-1 Current	max Peak current	Min-Max DC link capacitor	Min-Max Precharge time (s)	Internal resistor for each phase	Maximum energy during precharge (kJ)	Internal fuse gG	Time (s) between each precharge
PG-125-90	800	50	20	Min=0.02 F, Max=0.04 F	Min=3.6 sec Max=7.2 sec	30 Ohm 500W	25.5	25A	120
PG-125-180	800	50	40	Min=0.04 F, Max=0.08 F	Min=3.6 sec Max=7.2 sec	15 Ohm 600W	51	40A	120
PG-160-360	800	100	80	Min=0.1 F, Max=0.2 F	Min=4.5 sec Max=9 sec	7.5 Ohm 1200W	127	63A	120

The maximum AC input voltage is equal to 800 Vac (690Vac + 15%), the maximum peak current of each precharge DC link unit is calculated with the max ac voltage and with DC link capacitor discharged.
For each model is specified the DC link capacitor range and the corresponding precharge time level at minimum and maximum dc link capacitor value. The dimensions of each Precharge unit model are listed below:
Width: 260 mm, height: 450mm, depth: 280 mm. The weight is 18 Kg for the PG-160-360 unit, the degree of protection is IP20.

For the model PG-125-90-xx, the precharge time is equal to 180*C, with C equal to the DC link capacitor value,
For the model PG-125-180-xx, the precharge time is equal to 90*C, with C equal to the DC link capacitor value,
For the model PG-160-360-xx, the precharge time is equal to 45*C, with C equal to the DC link capacitor value.
The total maximum energy during precharge for the internal resistors are reported in the previous table for each PG model.
For each model is possible to choose the following coil voltage
xx=21 Coil 24..60V 50/60Hz / 20..60 DC
xx=12 Coil 48..130V 50/60Hz - DC
xx=13 Coil 100..250V 50/60Hz -DC
xx=14 Coil 250..500V 50/60Hz -DC
For each model are available the fuse status in series with the internal thermal contact NC free contact and the contactor status NO free contact.



Precharge unit PG external dimension

As is possible to see in the previous figure, the PG precharge unit has to be installed with the fuse in the lower part of the switchboard, the main input cable and output contact has to be wired in the lower part of the device.
The output cable has to be connected in the upper part of the PG unit.