

**Long Term Parallel Protection Settings
Type A, Type B & Type C Power Generating
Modules as discribed in G99**



Disconnection			
Protection	Trip Setting Parameter		Trip Time (Maximum Value in seconds)
Under Voltage U/V (LV)	Nominal Volts '†' -20 %		2.5*
Over Voltage O/V Stage:1 (LV)	Nominal Volts '†' +14 %		1
Over Voltage O/V Stage:2 (LV)	Nominal Volts '†' +19 %		0.5
Under Voltage U/V (HV)	Nominal Volts '‡' -20 %		2.5*
Over Voltage O/V Stage:1 (HV)	Nominal Volts '‡' +10 %		1
Over Voltage O/V Stage:2 (HV)	Nominal Volts '‡' +13 %		0.5
Under Frequency U/F Stage:1	50Hz -5%	47.5 Hz	20
Under Frequency U/F Stage:2	50Hz -6%	47. Hz	0.5
Over Frequency O/F	50Hz +4%	52. Hz	0.5
Vector Shift Immunity / Stability Test	49.5Hz +50 degrees 50.5Hz - 50 degrees		Does Not Trip
Loss of Mains (RoCoF)#	1 Hz/s at 0.5s time delay		500ms Delay, SHALL not be achieved using cycle counts.

NOTES:

HV and LV Protection settings are to be applied according to the voltage at which the voltage related protection reference is measuring, eg:

If the EREC G99 protection takes its voltage reference from an LV source then LV settings shall be applied. Where a private non-standard LV network exists the settings shall be calculated from HV settings values.

If the EREC G99 protection takes its voltage reference from an HV source then HV settings shall be applied.

† value of 230 V shall be used in all cases for Power Generating Facilities connected to the GTC LV Distribution Network.

‡ value to suit the nominal voltage of the HV Connection Point.

* Might need to be reduced if auto-reclose times are <3 s.

Intertripping may be considered as an alternative to the use of a LoM relay.

- For voltages greater than 230 V +19% which are present for periods of <0.5s the Power Generating Module is permitted to reduce/cease exporting in order to protect the Power Generating Module.