

Approved Grid Protection Relays



Part of the Energy Queensland Group

This document provides a list of approved grid protection relays (GPR) for embedded generation systems to comply with the IEC Standards and ANSI/IEC device functions as outlined in STNW1174 and STNW1175. Specific settings for the required functions are not considered in this document, please refer to the relevant standard for this detail.

Suppliers who wish to have an item approved for use that is not currently on the approved product list may make a written application to the following email addresses:

tech.enquiries@ergon.com.au or tech.enquiries@energex.com.au

Level 1 approved relays for use in STNW1174 and STNW1175 applications are for Inverter Energy Systems compliant to IEC 62116 for anti-islanding. The eligibility of these relays is based on acceptance of the certified compliance to relevant standards and functional compatibility of ANSI device functions 27, 59, 81U, 81O and 81R in a single device that can be set to the recommended initial settings for systems with full export. It is the Proponent's obligation to ensure that the design of the EG system would support the correct functional use of the GPR of their choice. Function 32 or a Power Export Limit (PEL) function is required for partial- or non-export systems that does not utilise the "soft limit" capability within the inverters as defined in AS/NZS 4777.2.

The Power Export Limit Function may be achieved with a 4 quadrant power meter, or external CT input feeding a PLC or inverter controller to ramp inverter output power.

Table 1 - High Priority Functions - Level 1

Item	Protection Functional Description	ANSI/IEEE Standard C37.2 Code
1	Under voltage (UV)	27P
2	Over voltage (OV)	59P
3	Under frequency (UF)	81U
4	Over frequency (OF)	81O
5	Rate of change of frequency (ROCOF) #	81R
6	Directional power (for inverter export limiting)	32 (can be a separate device)

ROCOF is mandatory for IES and rotating machine systems.

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Level 2 approved relays are for rotating machine generation that is parallel with the network for purposes other than bumpless transfer or for periodic load testing. These relays all meet the Level 1 requirements and also include the function 59N (or 59G) required for export systems greater than 24 hours per annum making them eligible as a GPR for rotating machine EG systems. Alternative relays or combinations of relays can be used that satisfy protection requirements.

Table 2 - Level 2 Function

Item	Protection Functional Description	ANSI/IEEE Standard C37.2 Code
7	Neutral voltage displacement (NVD)*	59N (59G)
8	Auxiliary supply scheme or relay fail	--

* Neutral voltage displacement is used to detect earth faults on the delta side of the transformer

Table 3 lists approved general protection relays that have been reviewed that perform the required ANSI code device functions and that meet the stipulated IEC standards as listed in STNW1174 and STNW1175. For systems requiring power limiting protection through the GPR, the compliance to IEC 60255-12 or IEC 60255-132 is exempted until further notice. The sources are listed along with the review date for each relay. Some of the relay compliance to standards may not necessarily refer to third party testing certification.

Table 3 – Approved Relay list

Manufacturer	Model	Approval		Review Date
		Level 1	Level 2	
ABB	CM-UFD.M33	Yes	No	04/06/19
Woodward	MFR300	Yes	No	04/06/19
SEG – Woodward	easYprotec-1410	Yes	No	04/06/19
Woodward	MRA4	Yes	Yes	04/06/19
ComAp	MainsPRO	Yes	No	04/06/19
Ziehl	UFR1001E	Yes	No	11/06/19
Woodward	MRU4	Yes	No	27/06/19
Bender	VMD460-NA	Yes	No	30/08/19
ComAp	Intelipro	Yes	Yes	04/10/19