Electricity Distribution

nationalgrid

Company Directive

ENGINEERING SPECIFICATION
EE SPEC: 98/13

Approved Protection, Voltage Control and Alarm Relays and Test Access Blocks

Summary
This document provides a list of protection relays, alarm relays, voltage control relays and test access blocks that are approved for use within National Grid Electricity Distribution's network.

Author: **Daniel Price**

Implementation Date: **April 2025**

Approved by

Craig Sharp
Engineering Policy Manager

Date: **28th April 2025**

Target Staff Group	**NGED staff, inclusive of Engineering Design, Local Planners, Engineering Specialists, Project Engineers and Procurement; contractors and Independent Connection Providers (ICPs) involved with the specification, design, installation and/or replacement of protection, alarm and voltage control schemes within National Grid Electricity Distribution's network.**
Impact of Change	**Amber – this document outlines changes to the approved protection, alarm and control relays that may be used within National Grid Electricity Distribution's network**
Planned Assurance checks	**12 months from the issue of the document the author will check CROWN records to confirm that newly installed relays comply with the relevant requirements.**

IMPLEMENTATION PLAN

Introduction
This document provides a list of protection relays, alarm relays, voltage control relays and test access blocks that are approved for use within National Grid Electricity Distribution's network.

Main Changes
As a result of manufacturer obsolescence and new approved protection relays being added for use on the NGED network, changes have been made to the schedule of approved relays. A detailed list of these changes has been included in the revision table.

As a result of obsolescence,

Impact of Changes
From the date at which this document is issued, all new relays purchased for use on National Grid Electricity Distribution's network shall comply with this document.

Target Staff Group	**NGED staff, inclusive of Engineering Design, Local Planners, Engineering Specialists, Project Engineers and Procurement; contractors and Independent Connection Providers (ICPs) involved with the specification, design, installation and/or replacement of protection, alarm and voltage control schemes within National Grid Electricity Distribution's network.**
Impact of Change	**Amber – this document changes the protection, alarm and control relays that may be used within National Grid Electricity Distribution's network**

Implementation Actions
Managers responsible for staff that are directly involved with the design, installation and operation of protection relays shall ensure that all relevant staff are briefed on and comply with the requirements of this document. As the updates to this document is to equipment listings only and not a change to any working practices no additional briefing content has been produced. Managers shall brief the updated approved relay schedule, and changes in the revision table, with their teams. Particular attention shall be directed to relays and devices whereby the hardware and firmware versions have been updated from previous versions of this document.

Implementation Timetable
This document shall be implemented on issue for new and substantially modified protection, alarm and voltage control relays, and test access blocks. Plant and equipment ordered before this document was issued and existing switchgear and/or control panel framework contracts that detail specific devices may utilise relays listed in the previous version of EE: 98 so long as this plant and equipment is put into commission within 2 years of being ordered.

In all other situations, device models/variants that are not listed in EE: 98/13 but were included in earlier issues of the document, may only be used for like-for-like relay replacements (i.e. to replace failed relays).

REVISION HISTORY

DOCUMENT REVISION & REVIEW TABLE		
Date	**Comments**	**Author**
April 2025	This document and the accompanying schedule have been reviewed and the following amendments made: • All references to GE Grid have been replaced with GE Vernova • Last order dates have been included where it has been formally confirmed by manufacturer that a specific relay model will be withdrawn from commercial sale within 36 months from the date of issue of this Standard Technique. • Guidance around the ordering process for a GE Vernova Micom P543 and Micom P545 with firmware version 57. These devices, while officially obsolete from the manufacturer, are available to purchase under an OPRA – Obsolete Product Request Agreement. This is a temporary agreement that will be withdrawn when the latest firmware version of both the Micom P543 and Micom P545 has undergone ENA assessment and an updated ENA Notice of Conformity has been issued by the ENA. • Confirmation that the Micom P543 with firmware version 61 is now available to procure once again from the manufacturer • The following relays have been added to the Approved Devices Schedule: o Schneider Electric P5U20 o Schneider Electric P5F30 o Schneider Electric P5V20 o GE Vernova Micom P54B o GE Vernova Micom P54C o GE Vernova Micom P54E o Fundamentals SuperTAPP SG - 2 Winding (Extended I/O version) o Fundamentals SuperTAPP SG - 3 Winding (Extended I/O version) o GE Vernova DIP.Net o Siemens 7SL86 o Siemens 7SD86 o Schweitzer Engineering Laboratories SEL-751 o Schweitzer Engineering Laboratories SEL-2595 o Arteche RF-4SYDI o Arteche RJ-8SYDI o Arteche RF-4R o Arteche RJ-8R o Arteche BF-4RP o Arteche BJ-8RP o Arteche TDJ-8 • The following relays have been removed from the Approved Devices Schedule due to obsolescence: o GE Vernova MRTP03 o Schneider Electric Micom P142 o Siemens 7SA52 (Siprotec 4) o Siemens 7SD52 (Siprotec 4)	Daniel Price

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The following relay variants updated as a result of manufacturer Hardware and/or Firmware Changes:

<table>
<tr><th>Model</th><th>EE98/12 Version</th><th>EE98/13 Version</th></tr>
<tr><td>GE Vernova Micom P142</td><td>P142811B4S0460J</td><td>P142811B4S0910P</td></tr>
<tr><td>GE Vernova Micom P142</td><td>P14281EB4S0460J</td><td>P14281FB4S0910P</td></tr>
<tr><td>GE Vernova Micom P145</td><td>P145811A4S0460J</td><td>P145811A4S0910M</td></tr>
<tr><td>GE Vernova Micom P445</td><td>P445811B4S0490J</td><td>P445811B4S0490P</td></tr>
<tr><td>GE Vernova Micom P642</td><td>P642811D4S0060J</td><td>P642811D4S0910P</td></tr>
<tr><td>GE Vernova Micom P643</td><td>P643811A4S0060K</td><td>P643811A4S0910M</td></tr>
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Variant code corrected for GE Grid Micom P445
Variant code corrected for Siemens 7SR1587
Variant code updated for A-Eberle REG-DP
Variant code updated for A-Eberle EOR-3DS

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<td>January 2024</td>
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This document and the accompanying schedule has been reviewed and the following amendments made:

All references to Western Power Distribution and WPD have been replaced with National Grid Electricity Distribution
Fundamentals SuperTAPP Tap Changer Control relay added for Three winding Transformer Applications
The following relays have been removed due to obsolescence:

GE DIP5000 Telecommunication Relay
GE MCAA13 Auxiliary Relay
GE Micom P544 Line Differential & Distance Protection Relay
GE Micom P842 Mesh Corner Auto Reclose Relay
Schneider Electric Micom P120 Overcurrent Relay
Schneider Electric Micom P122 Overcurrent Relay
Schneider Electric Micom P125 Overcurrent Relay
Schneider Electric Micom P127 Overcurrent Relay
Schneider Electric Micom P921 Voltage & Frequency Relay
Schneider Sepam S40 Overcurrent Relay

The following relay variants updated as a result of manufacturer Hardware Changes:

<table>
<tr><th>Model</th><th>EE98/11 Version</th><th>EE98/12 Version</th></tr>
<tr><td>Fundamentals SuperTAPP SG</td><td>FP1034-AGGG000PDS-L05-20-01</td><td>FP1034-AGGG000PDS-L06-20-01A</td></tr>
<tr><td>Fundamentals SuperTAPP SG</td><td>FP1034-AGGG00FPDS-L05-20-01</td><td>FP1034-AGGG00FPDS-L06-20-01A</td></tr>
<tr><td>GE Grid Micom P142</td><td>P142811B4M0460J</td><td>P142811B4S0460J</td></tr>
<tr><td>GE Grid Micom P142</td><td>P14281EB4M0460J</td><td>P14281EB4S0460J</td></tr>
<tr><td>GE Grid Micom P541</td><td>P541814A4M0300J</td><td>P541814A4S0300J</td></tr>
<tr><td>GE Grid Micom P541</td><td>P541814C4M0300J</td><td>P541814C4S0300J</td></tr>
</table>
</td>
<td>Daniel Price</td>
</tr>
</table>

GE Grid Micom P542	P542814A4M0300J	P542814A4S0300J
GE Grid Micom P542	P542814C4M0300J	P542814C4S0300J
GE Grid Micom P543	P543814A4M0570K	P543814A4S0570K
GE Grid Micom P543	P543814A4M0610M	P543814A4S0610M
GE Grid Micom P543	P543814C4M0570K	P543814C4S0570K
GE Grid Micom P543	P543814C4M0610M	P543814C4S0610M
GE Grid Micom P545	P545814A4M0570K	P545814A4S0570K
GE Grid Micom P545	P545814C4M0570K	P545814C4S0570K
GE Grid Micom P546	P546814A4M0710M	P546814A4S0710M
GE Grid Micom P546	P546814C4M0710M	P546814C4S0710M

- The following relay variants updated as a result of Manufacturer Firmware Updates:

Model	EE98/11 Version	EE98/12 Version
GE Grid Micom P145	P145811A4M0440J	P145811A4S0460J
GE Grid Micom P443	P44381xx4x0710M	P44381xx4S0910M
GE Grid Micom P445	P445811B4M0370J	P445811B4S0490J
GE Grid Micom P642	P642811D4M0040J	P642811D4S0060J
GE Grid Micom P643	P643811A4M0040K	P643811A4S0060K

- Notes and guidance provided for Siemens 7XG21 Capacitor Cone Adaptor Unit used for NVD Protection

June 2022	• Format amended, with the schedules moved into a Microsoft Excel workbook.
	• Function codes made consistent between schedules 1 and 2 with minor corrections to device approved functions.
	• GE P14D, P14N and P94V software updated to version 62
	• Various relays removed due to obsolescence:
	  • Fundamentals SuperTAPP n+ and RTMU
	  • Hawker Siddeley Switchgear Panacea
	  • Siemens 7PG27 (DDB)
	  • GE Grid Solutions MBCI 02
	  • Schneider ADVC2
	• GE Grid Solutions MVAW11 and MVAW21 removed: auxiliary relays are now specified in EE136 (as amended).
	• Schneider P123 for 30Vd.c. supplies removed as no remaining applications are known.
	• Restrictions on 3BBOC, REF and BEF relays amended to reflect scheme-dependent specification of stabilizing resistors and Metrosils.
	• Variant codes and restrictions added to approval of GE Grid Solutions DIP5000
		Stephen Quinn

	• New restrictions on application of NVD relays using measurements from capacitive cones or bushings • Variant code corrected for Schneider P142	
April 2021	• Auto-reclose functions clarified • GE P142 software version 46 is now specified • Agile P14DZ2 has been reinstated for use with Schneider Genie Evo switchgear • GE P14NB2 full model number has been corrected • GE P543, P544, P545 software version 47 has been removed as this is no longer available • GE P546 full model number has been corrected and software version 61 has been removed as this is no longer available • Schneider ADVC3 has been added • Schneider VIP300 has been removed • Siemens FR Series relays have been removed as they are no longer available • Siemens 7SR11 and 7SR12 software references have been updated.	Andy Hood

Contents

1.0 FOREWORD 8
2.0 SCHEDULES 8
2.1 SCHEDULE 1: APPROVED DEVICES 8
2.2 SCHEDULE 2: FUNCTION KEY 9
APPENDIX A SUPERSEDED DOCUMENTATION 10
APPENDIX B RECORD OF COMMENT DURING CONSULTATION 10
APPENDIX C ANCILLARY DOCUMENTATION 10
APPENDIX D KEY WORDS 10

1.0 FOREWORD

This document lists protection, alarm and voltage control relays and test access blocks that are approved for use on National Grid Electricity Distribution's network.

Alternative devices may be submitted to National Grid Electricity Distribution's Policy Section for evaluation in accordance with POL: TP25 (as amended).

Where an alternative application is proposed for an approved device that is not covered by the approved functions, the author shall be consulted.

2.0 SCHEDULES

The schedules are provided as sheets in a Microsoft Excel workbook, *EE98_13_schedule.xlsx*. It can be found here:

2.1 SCHEDULE 1: APPROVED DEVICES

Schedule 1 is a table of all protection, voltage control and alarm relays and test access blocks approved by National Grid Electricity Distribution. The following fields are included:

Field	Notes
Technology	The technology of the device (Numeric, Electronic or Electromechanical), where applicable.
Manufacturer	
Model	The model or model range of the device.
Variant	The variant within the model range, where required.
Hardware version	The hardware version or revision, where applicable. *Note that this may be implicit in the model or variant for some devices.*
Software/firmware version	The software and/or firmware version or revision, where applicable. *Note that this may be implicit in the model or variant for some devices.*
Functions	A comma delimited list of function codes (as defined in schedule 2) for which the relay may be used. *Note that some relays may not be capable of fulfilling all approved functions simultaneously.*
Auxiliary supply voltage	The nominal supply voltages for which the relay is approved, where specifically restricted. Where not specified, the manufacturer's documentation should be consulted. Where a relay is required for an auxiliary supply voltage other than that specified, the author shall be consulted.

Field	Notes
Restrictions	Restrictions that must be followed when supplying and using the device.
Further comments	Other useful information including applications guidance and functional descriptions to distinguish between similar devices.
Assessment type	The type of formal assessment undertaken, where applicable: • ENA assessment is undertaken by the Protection Assessment Panel (PAP) in accordance with ER G79 (as amended); • National Grid Electricity Distribution assessment is undertaken in accordance with POL: TP25 (as amended).
Assessment reference	A reference to the notice or documentation of the formal assessment, where applicable.
First approved issue	The issue of this directive at which the device was added to schedule 1.

In addition to the approved functions listed in *Functions*, a relay may also be used for the function **AI** (alarm indication) where all of the following conditions are met:

1. The *Technology* is “Numeric”;
2. The indicated condition relates to the same circuit or equipment that is protected and/or controlled by the numeric relay;
3. Sufficient binary inputs are available; and
4. Sufficient programmable LEDs of a colour suitable to the indicated condition are available. LED colours shall conform to ENA TS 50-18 (as amended) requirements for lamp colour where reasonably practicable.

2.2 SCHEDULE 2: FUNCTION KEY

Schedule 2 provides a key to the device function codes used in schedule 1.

APPENDIX A

SUPERSEDED DOCUMENTATION

This document supersedes EE: 98/12 dated January 2024 which has now been withdrawn.

APPENDIX B

RECORD OF COMMENT DURING CONSULTATION

N/A

APPENDIX C

ANCILLARY DOCUMENTATION

POL: TP25 (as amended): The Approval of Protection, Voltage Control and Alarm Relays

APPENDIX D

KEY WORDS

Approval, Approved Relays, Relay, Alarm, Protection, Voltage Control, Test Access Block.