Electricity Distribution

nationalgrid

Company Directive

Engineering Specification: EE98/12

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: **January 2024**

Approved by

Carl Ketley-Lowe
Head of Engineering Policy

Date: **24th January 2024**

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 as a direct result of notice of relay obsolescence from OEMs**
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 end of life obsolescence notices, changes have been made to the list of approved relays, a detailed list of changes is included in the revision table.

The format of the document has also been amended, with the schedules moved into a Microsoft Excel workbook.

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 that are not listed in EE: 98/12 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

<table>
<tr><th colspan="3">DOCUMENT REVISION & REVIEW TABLE</th></tr>
<tr><th>Date</th><th>Comments</th><th>Author</th></tr>
<tr><td>January 2024</td><td>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:
o GE DIP5000 Telecommunication Relay
o GE MCAA13 Auxiliary Relay
o GE Micom P544 Line Differential & Distance Protection Relay
o GE Micom P842 Mesh Corner Auto Reclose Relay
o Schneider Electric Micom P120 Overcurrent Relay
o Schneider Electric Micom P122 Overcurrent Relay
o Schneider Electric Micom P125 Overcurrent Relay
o Schneider Electric Micom P127 Overcurrent Relay
o Schneider Electric Micom P921 Voltage & Frequency Relay
o 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><tr><td>GE Grid Micom P542</td><td>P542814A4M0300J</td><td>P542814A4S0300J</td></tr><tr><td>GE Grid Micom P542</td><td>P542814C4M0300J</td><td>P542814C4S0300J</td></tr><tr><td>GE Grid Micom P543</td><td>P543814A4M0570K</td><td>P543814A4S0570K</td></tr><tr><td>GE Grid Micom P543</td><td>P543814A4M0610M</td><td>P543814A4S0610M</td></tr><tr><td>GE Grid Micom P543</td><td>P543814C4M0570K</td><td>P543814C4S0570K</td></tr><tr><td>GE Grid Micom P543</td><td>P543814C4M0610M</td><td>P543814C4S0610M</td></tr><tr><td>GE Grid Micom P545</td><td>P545814A4M0570K</td><td>P545814A4S0570K</td></tr><tr><td>GE Grid Micom P545</td><td>P545814C4M0570K</td><td>P545814C4S0570K</td></tr><tr><td>GE Grid Micom P546</td><td>P546814A4M0710M</td><td>P546814A4S0710M</td></tr><tr><td>GE Grid Micom P546</td><td>P546814C4M0710M</td><td>P546814C4S0710M</td></tr></table></td><td>Daniel Price</td></tr>
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The following relay variants updated as a result of Manufacturer Firmware Updates:

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

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

</td><td></td></tr>
<tr><td>June 2022</td><td>

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
New restrictions on application of NVD relays using measurements from capacitive cones or bushings
Variant code corrected for Schneider P142

</td><td>Stephen Quinn</td></tr>
<tr><td>April 2021</td><td>

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.

</td><td>Andy Hood</td></tr>
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Contents

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_12_schedule.xlsx*. It can be found at:

- Internal users: *EE98_12 Schedule*
- External users: *EE98_12 Schedule*

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.*

Field	Notes
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.
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: 98/11 dated June 2022 which has now been withdrawn.

APPENDIX B

RECORD OF COMMENT DURING CONSULTATION

EE: 98/12 – Comments

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.