

7SG13 Delta

Protection and Control Relays

Document Release History

This document is issue 2010/02 The list of revisions up to and including this issue is:

Pre release

| | |
|---------|----------------------------------|
| 2010/02 | Document reformat due to rebrand |
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Software Revision History

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Documentation Set

Delta Protection and Control Relays
Complete Product Documentation set P1101

The following documents are both contained within the set and are available separately.

- Delta User Manual P20015
- Delta Common Features Tech. Ref. P20025
- Current Protections Tech. Ref. P20048
- Voltage Protections Tech. Ref. P20051
- Plant Supervision Tech. Ref. P20060
- Autoreclosing and Check Sync Tech. Ref. P20063
- Autoreclosing Tech. Ref. P20064
- FM1-111 Diagrams and Parameters P20202
- FM1-112 Diagrams and Parameters P20203
- FM1-211 Diagrams and Parameters P20204
- FM1-212 Diagrams and Parameters P20205
- FM1-213 Diagrams and Parameters P20206
- FM1-214 Diagrams and Parameters P20207
- FM1-215 Diagrams and Parameters P20208
- FM1-216 Diagrams and Parameters P20209
- FM1-223 Diagrams and Parameters P20210
- FM1-224 Diagrams and Parameters P20213
- FM1-225 Diagrams and Parameters P20214
- FM1-226 Diagrams and Parameters P20215

These documents can be directly downloaded from our website at www.siemens.com/energy.

Scope

This manual is applicable to the following relays:

| | | |
|---------|---------|---------|
| FM1-111 | FM1-213 | FM1-224 |
| FM1-112 | FM1-214 | FM1-225 |
| FM1-211 | FM1-215 | FM1-226 |
| FM1-212 | FM1-216 | |
| | FM1-223 | |

The Model Feature Table below indicates the features provided in this model.

| Model Feature Table | | 111 | 112 | 211 | 212 | 213 | 214 | 215 | 216 | 223 | 224 | 225 | 226 |
|--|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Measurements and Instrumentation | | | | | | | | | | | | | |
| Current | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Voltage | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Power | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Energy | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Protection | | | | | | | | | | | | | |
| Phase-fault overcurrent | 50/51 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Cold load pickup | CL | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Earth-fault overcurrent (residual calculation) | 50N/51N | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Earth-fault overcurrent (measured) | 50N/51N | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ |
| Sensitive earth-fault / Restricted earth-fault | 50G/64REF | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | | ✓ | |
| Thermal overload | 49 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Phase unbalance / broken conductor | 46BC | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Circuit breaker fail | 50BF | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Directional detection for phase-fault | 67 | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Directional detection for earth-fault (ZPS and NPS polarising) | 67N | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Directional detection for SEF (ZPS polarising) | 67G | | | | | ✓ | | ✓ | | ✓ | | ✓ | |
| Directional detection of measured earth-fault (ZPS polarising) | 67N | | | | | | ✓ | | ✓ | | ✓ | | ✓ |
| Voltage controlled overcurrent | 51V | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Neutral voltage displacement (NVD) | 59N | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| NPS overcurrent | 46DT | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Undervoltage and overvoltage | 27/59 | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| NPS overvoltage | 47 | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Underfrequency and overfrequency | 81 | | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| Control functions | | | | | | | | | | | | | |
| Autoreclose | 79 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Check synchronising | 25 | | | | | | | ✓ | ✓ | | | ✓ | ✓ |
| Supervision functions | | | | | | | | | | | | | |
| Trip circuit supervision | 74TCS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| CT supervision | 74CTS | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| VT supervision | 74VTS | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Structure of Document Set

