REF 550

Distribution Feeder & Subtransmission Line Protection and Control

REF 550

High Impedance Fault (HIF) Detection

The ABB REF 550 is equipped with the latest High Impedance Fault (HIF) Detection technology including detection algorithms allowing the relay to identify downed conductors on soil, gravel, concrete, sand, and other surfaces.

Benefits:
Increases the overall safety of your electrical system.

Reduce the risk of bodily harm to employees during maintenance activities on electrical equipment.

Improved system reliability through better outage management control.

Increased customer satisfaction due to quicker response times during an outage.

Flexible setting capabilities to detect and operate under various conditions.

REF 550 HIGHLIGHTS

The REF 550 is the most advanced solution to fit your Distribution Feeder and Subtransmission Line protection, monitoring and automation needs.

Fastest Processing Platform in the Industry…

Provides the fastest processing speed in the industry allowing for quicker response times and expandable functionality to meet future needs.

Point-N-Click Programming Logic…

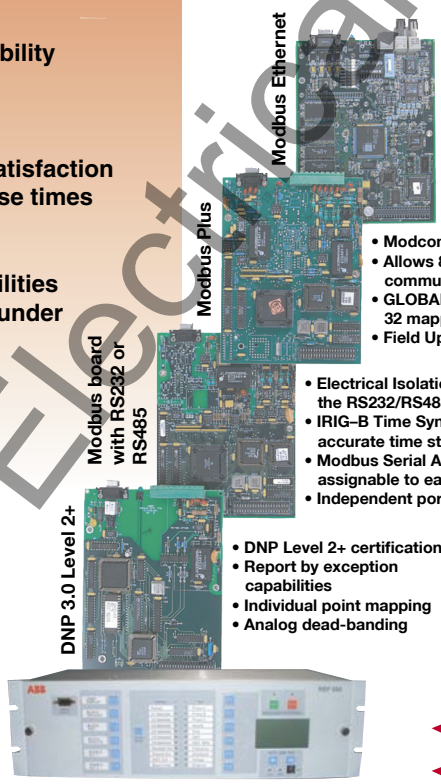
Allows users to easily and quickly generate custom Boolean Logic equations to fit their specific protection applications without any of the typing errors.

Enhanced Features Standard…

DNP Level 2+ Certified, IRIG-B Time Synchronization, Digital Fault Recorder (DFR), Load Profile and Programmable Curves.

ABB EZ-USE Communication Suite…

ABB now offers the latest solutions in communication technology delivering the highest efficiency, reliability and best performance for utility and industrial applications.



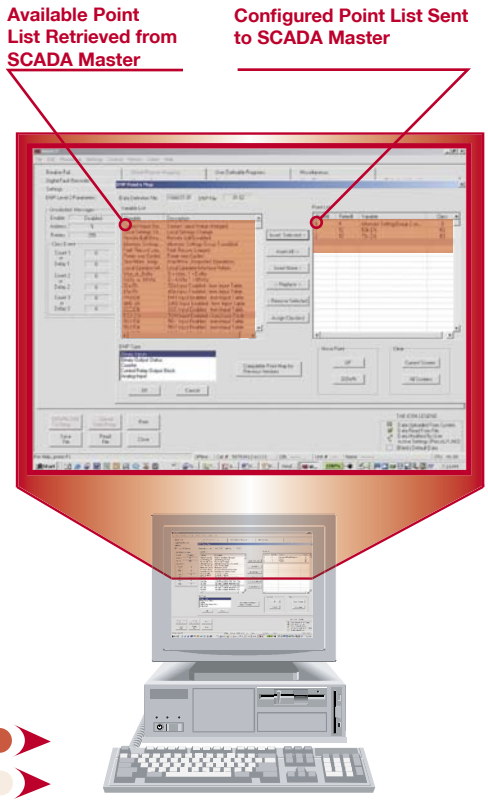
- Multiple protocols offered in one processor
- Allows for 4 Ethernet sessions on one port
- Simple Time Network Protocol (SNTP) time synchronization
- Access fault records, operation records and oscillographics via a web browser with FTP

- Modconnect Certified
- Allows 8 simultaneous communication sessions
- GLOBAL data transfer for 32 mappable points
- Field Upgradeable

- Electrical Isolation of over 2.5kV on both the RS232/RS485 ports
- IRIG–B Time Synchronization for accurate time stamping
- Modbus Serial ASCII or RTU emulations assignable to each port
- Independent port configuration flexibility

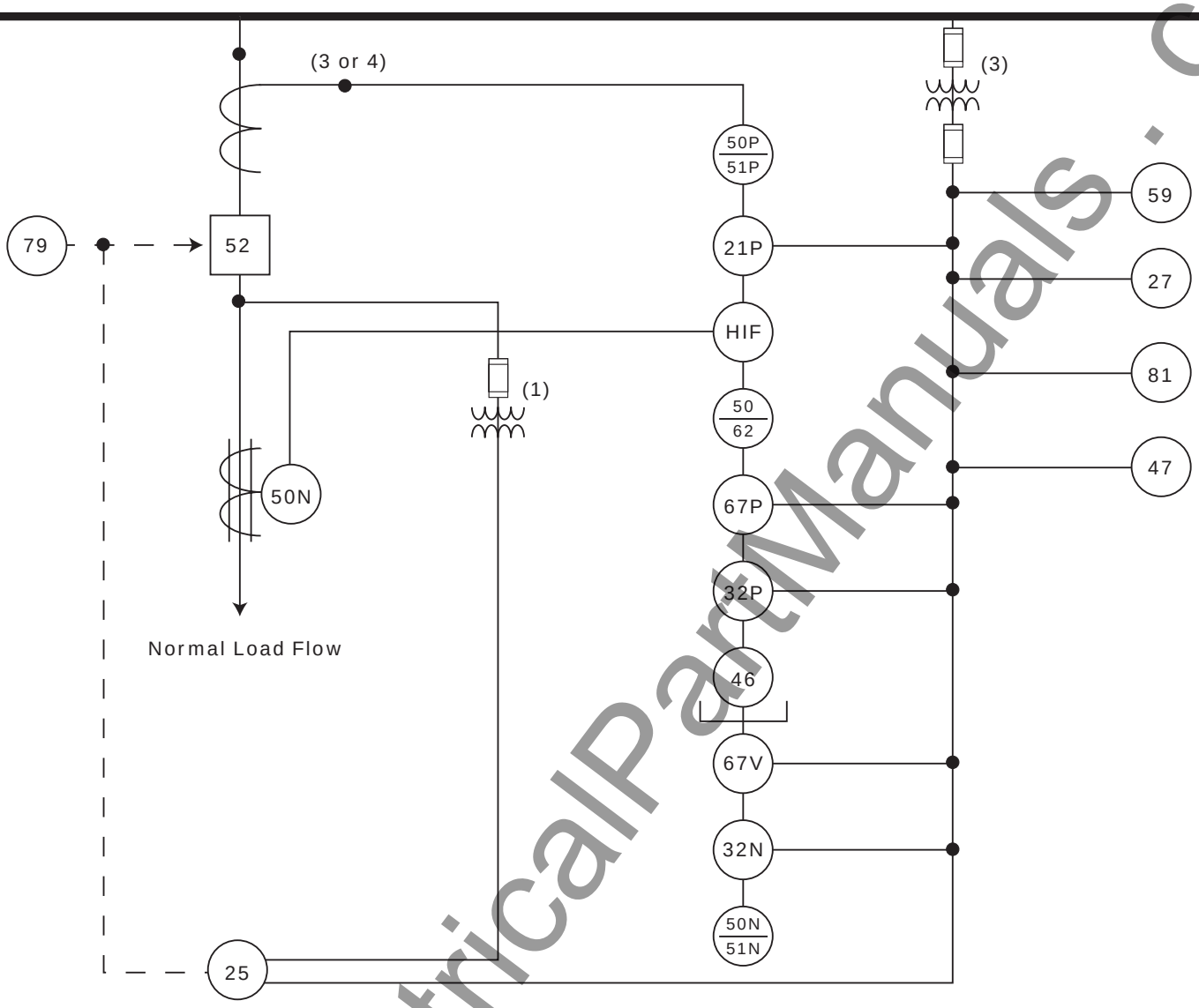
- DNP Level 2+ certification
- Report by exception capabilities
- Individual point mapping
- Analog dead-banding

REF550



HMI Interface

Advanced Functionality for Unparalleled Results



Protection, Automation, Metering and Control

Advanced Protection:
- high impedance fault (HIF) detection
- phase overcurrent
- ground overcurrent
- under/over voltage
- under/over frequency
- synchronism check
- phase step distance
- breaker failure
- load shed/restoration
- sensitive earth fault (SEF) detection

Metering/Records:
- currents and voltages
- power and energy
- power factor
- frequency
- load profile
- substation battery monitor
- detailed fault records
- expandable digital fault recorder
- sequence of events recorder
- load/demand values
- operations records/summary
- fault location
- trip circuit monitoring

Control:
- expandable I/O
- breaker trip/close
- automatic reclosing
- enhanced programmable logic
- programmable curves
- breaker failure logic
- slow breaker logic
- breaker health
- cold load pickup
- zone sequence coordination
- blown VT fuse

Automation:
- Modbus TCP/IP 10/100MB Cu, 10FL
- DNP 3.0 Level 2+
- Ethernet UCA 10/100MB Cu, 10FL

Specifications

Current Input Circuits

- 5A input rating, 16 A continuous and 450 A for 1 second
- 1A input rating, 3 A continuous and 100 A for 1 second
- Input burden at 0.245 VA at 5 A (0.4 - 12A range)
- Input burden at 0.014 VA at 1 A (0.08 - 2.4A range)
- Frequency 50 or 60 Hz

Voltage Input Circuit

Voltage ratings based on the VT connection setting.

Burden

- 0.04VA for V(A-N) at 120 Vac

Voltage

- Wye Connection: 160V continuous and 480V for 10 seconds
- Delta Connection: 260V continuous and 480V for 10 seconds

Contact Input Circuits

- 2.10 VA at 220 Vdc and 250 Vdc
- 0.52 VA at 125 Vdc and 110 Vdc
- 0.08 VA at 48 Vdc
- 0.02 VA at 24 Vdc
- Voltage range 24 to 280 Vdc for 48/110/125/220/250 Vdc
- Voltage range 12 to 140 Vdc for 24 Vdc model

Control Power Requirements

- 24 Vdc models, range = 18 to 40 Vdc
- 48/125 Vdc models, range = 38 to 185 Vdc
- 220/250 Vdc models, range = 176 to 280 Vdc

Output Contact Ratings

125 Vdc	220 Vdc
• 30 A tripping	• 30 A tripping
• 6 A continuous	• 6 A continuous
• 0.25 A break inductive	• 0.1 A break inductive

Operating Temperature

- –40° to + 85° C

Ordering Information

REF550H071A–60000

Configuration:	**Base** H = Standard (with Sync. Check, HIF)
Current Range:	**Included** 0 = Phase (0.4–12 A); Ground (0.4–12 A); SEF (0.005–0.4 A) 2 = Phase (0.08–2.4 A); Ground (0.08–2.4 A); SEF (0.005–0.4 A)
Control Voltage:	**Included** 7 = 48/125 VDC **Optional** 5 = 220/250 VDC 9 = 24/32 VDC
Operator Control Interface (OCI):	**Included** 0 = Enhanced OCI, horizontal mounting without Hot Line Tag (HLT) **Optional** 1 = Enhanced OCI, horizontal mounting with Hot Line Tag (HLT)
Automation Ports:	All units offer front RS-232 port. All ports use standard ABB ten-byte and specific protocol specified. **Included** A = (1) RS-485 port & (1) RS-232 port with DNP3.0 Level 2+ protocol B = (1) RS-485 port & (1) RS-232 port with Modbus protocol **Optional** C = Dual RS-485 ports with DNP 3.0Level 2+ protocol D = Dual RS-485 ports with Modbus protocol E = Ethernet 10/100 baseT and 10 FL with Modbus/TCP F = Ethernet 10/100 baseT and 100 FX with Modbus/TCP G = (1) Modbus Plus Port & (1) RS-232 Port with Modbus Plus protocol H = (1) Modbus Plus Port & (1) RS-485 Port with Modbus protocol
Frequency:	**Included** 5 = 50 Hertz 6 = 60 Hertz
Options:	**Included** 0 = Reserved 0 = Reserved 0 = Reserved 0 = Reserved
Notes:	**(1) Digital Fault Recorder, Load Profile and User Programmable Curves are included standard.**
Accessories:	**A panel mounting kit consisting of bezel and a clear plastic cover is available. For horizontal units order 604513-K1**

Date Issued 09/04

THE NEW INDUSTRY STANDARD

ABB is focused and committed to delivering the innovative solutions you need at the highest standard of quality and reliability in the industry. We show this commitment by proudly offering:

- **Industry best 12-year warranty**
- **Mean time failure rate of over 150 years**
- **Multiple Environmental Overstress Testing (MEOST) from –65 ° C to +140 ° C**

ABB Inc.
7036 Snowdrift Road.
Allentown, PA 18106
Phone: (610) 395-7333
Toll Free: (800-634-6005
Fax: (610) 395-1055
www.abb.com/substationautomation

DB41-902 Rev. C October 2004