Sieyuan

PRODUCT BROCHURE

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IES-311 FEEDER AND
OVERCURRENT PROTECTION

SIEYUAN ELECTRIC CO.,LTD.

Market Footprints
Office Bases

BRIEF DESCRIPTION

IES-311 is a microprocessor-based protection, control and monitoring device designed for various primary equipments (such as overhead line, underground cable and aulixiary transformer etc.) on solidly grounded, Peterson coil grounded, low impedance grounded and ungrounded system. With flexible and powerful configuration tool, IES-311 offers future-oriented system solutions with high investment security and low operating costs.

The device is freely programmable. Functional logic diagrams can be developed with the use of graphical programming tool which also supports the configuration of binary inputs and outputs, analog inputs, control buttons, LEDs, disturbance recorder, event recorder, and user interface. Freely programmable logic makes it possible to modify typical functional logic diagrams considering a peculiar nature of the protected object. Three basic types of standard 19"case help to choose the most appropriate solution.

View			
19"case type	1/3	1/2	Full
Analog inputs	4 CTs, 4 PTs 6 CTs, 6 PTs… (configurable)	4 CTs, 4 PTs 6 CTs, 6 PTs 9 CTs, 3 PTs… (configurable)	8 CTs, 8 PTs 12 CTs, 12 PTs 72 CTs… (configurable)
Binary inputs	Up to 34	Up to 59	Up to 209
Binary outputs	Up to 18	Up to 32	Up to 110
Front LEDs	20	20	20

FEATURES

- Together with flexible PLC logic, it can easily realize the automatic switch over of backup power supply.
- It has unique phase selection element. The phase is automatically determined according to the reliability of the element, avoiding wrong selection of multiple phases by using out-of-range phase selection elements.
- With special processing in CB failure protection, the dropout time of current criterion element is less than 12ms.
- Powerful GOOSE function helps to realize the simple busbar protection and shortens the busbar fault clearing time.
- Support multiple inverse-time characteristic curve in IEC and ANSI standard, also define the characteristic curve as desired. The dropout behaviors can be selected in inverse-time characteristic.
- The phase broken protection adopts the current ratio criterion, which is not affected by the load current. It can be used to monitor the line break fault and improve the safety of power supply.
- The single-ended fault location function can accurately locate the fault, and the error is less than 5%.
- Up to 10 remote-control outputs enable the device to control multiple breakers, switches and grounding switches.
- Device can restart in less than 10s, which helps to minimize the duration of protection failure caused by power failure.
- RAM supports ECC and parity check to achieve high reliability and security.
- It adopts dual AD real-time sampling. This reliable hardware structure helps to achieve mutual verification, and thus detect in time the abnormal problems in sampling circuit. This scheme further reduces the possibility of malfunction and failure to operate.

- The software and hardware apply modular design. It supports flexible configuration on input, output, panel buttons, and LEDs. A powerful analog programming function is also available.
- Secondary rated current support 1A & 5A.
- It can be equipped with high-capacity relay to achieve direct tripping.
- It adopts fully chassis structure to realize dust-proof and moisture-proof, protection grade of front panel is lP54.
- It works with various mounting methods, include flush mounting, semi-flush mounting, surface mounting, LCD separate mounting, wall mounting.
- CT/PT terminal is Phillips screw end AWG12 cold ferrule, 4mm² conductor.
- The configuration tool supports flexible configuration by users, with typical configurations for different system SLD to reduce user debugging workload.
- Decoupling of software and hardware enables rapid diagnosis of abnormal modules of the device.
- Supports multiple time-synchronization method, including IRIG-B, PPS, network SNTP, and IEEE 1588.
- Comply with requirements on IED cyber security in NERC CIP, IEC 62351-8, IEC 60442, and IEEE1686.
- Support large capacity data recording in COMTRADE format. The recording length is automatically adjusted according to the disturbance duration, which facilitates the fault analysis and fault playback. The recording frequency can be set from 1.2kHz to 10kHz.

FUNCTIONS

DIMENSION

▶Protection functions

- Phase Overcurrent Protection(50/51P)
- Directional and non-directional overcurrent protection(67P)
- Earth Fault Overcurrent Protection(50/51G)
- Negative-sequence Overcurrent Protection(50/51Q)
- Sensitive Earth Fault Protection (50/51SEF)
- Phase Overvoltage Protection (59P)
- Residual Overvoltage Protection(59G)
- Negative-sequence Overvoltage Protection(59Q)
- Positive-sequence Overvoltage Protection(59Pos)
- Phase Undervoltage Protection(27P)
- Overfrequency Protection (81O)
- Underfrequency Protection (81U)
- Undercurrent Protection (37)
- Breaker Failure Protection (50BF)
- Thermal Overload Protection(49)
- Restricted Earth Fault Protection(64REF)
- Current Unbalance Protection (60/50)
- Voltage Unbalance Protection (60/59)
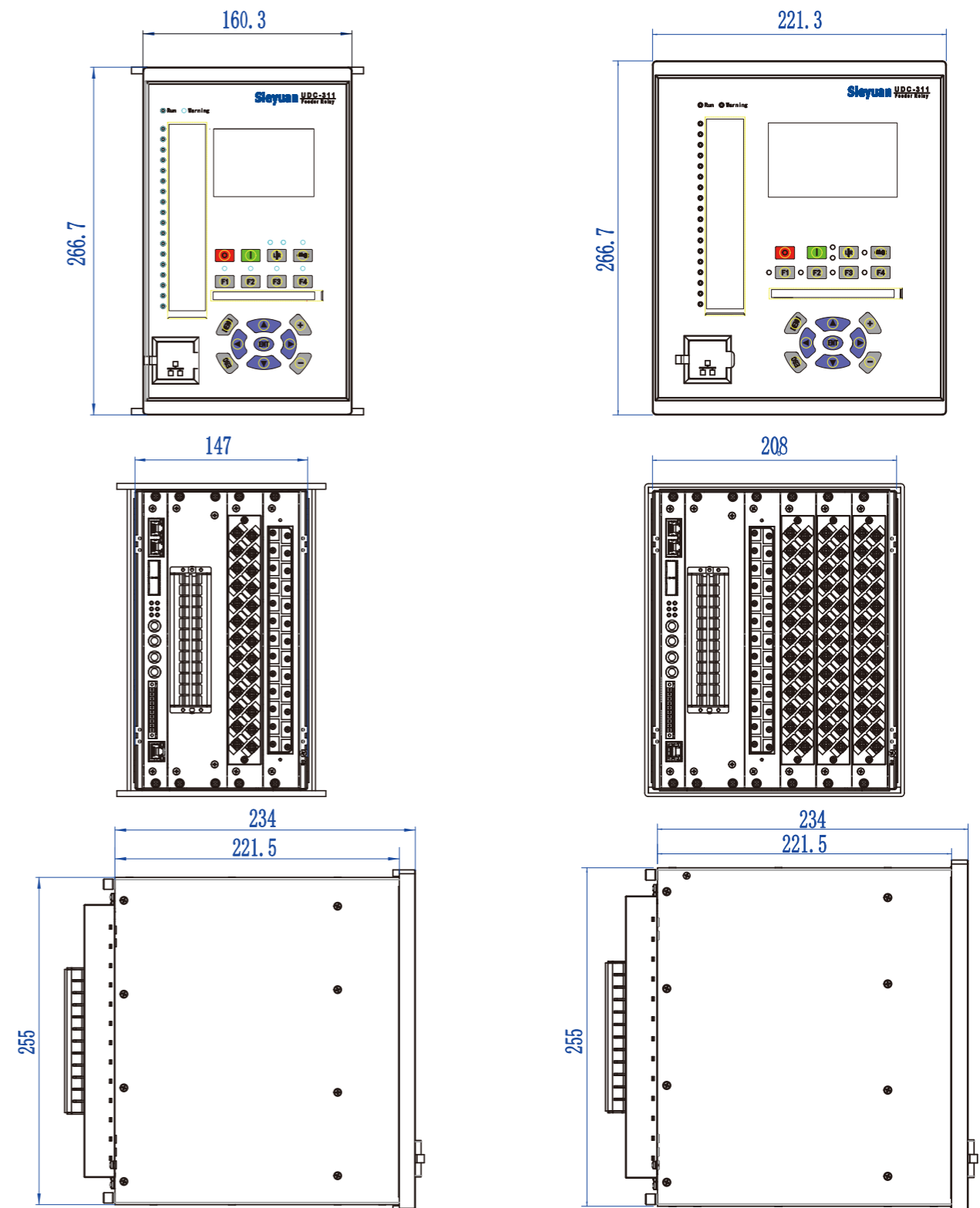- Automatic Reclosure (79)

▶Control Functions

- Switchgear control
- Double point status synthesis
- Remote/Local control mode switch
- Interlocking logic for control
- Direct control
- Closing synchronism check

▶User Interfaces

- Friendly HMI interface with LCD, easy-to -use keypad aids simple navigation and set-point adjustment
- Push buttons for open/close, switch for selection between local and remote control, and user's login and logout authority management
- 4 Programmable operator push buttons with user-configurable labels
- Up to 20 programmable target LEDs with user-configurable labels

▶Communication functions

- Modbus
- DNP3.0
- IEC 60870-5-103
- IEC 60870-5-104
- IEC 61850 ED1,ED2.0&ED2.1
- IEC 62439 Parallel redundancy protocol(PRP)
- IEC 62439 High-availability seamless ring(HSR)

- IEEE 802.1w rapid spanning tree protocol(RSTP)
- Support of IEC 61850 MMS server
- Support of IEC 61850-8-1 GOOSE
- Support of IEC 61850-9-2LE SV
- Up to four 10Base-T/100Base-TX copper ethernet ports
- Up to four 100Base-FX optical ethernet ports
- Two RS-485 serial ports

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