

ZLF

Distance Protection (ZIV e-NET flex family)



General characteristics

- ✓ Powerful programmable logic
- ✓ 2000 event log. Up to 100 oscillography seconds
- ✓ Alphanumeric or graphic display
- ✓ Easy HW expansion without FW updates
- ✓ Unused protection elements can be hidden
- ✓ Custom mapping of physical current and voltage inputs to protection elements
- ✓ Can be used to protect multiple bays
- ✓ Up to 20 analog channels, 160 DI, 80 DO, and 22 LEDs
- ✓ Bonding, RSTP, PRP and HSR redundancy
- ✓ IEC 61850 ed. 1 & ed. 2 protocols, DNP3.0, Modbus RTU and PROCOME
- ✓ Native process bus. Analog input cards operate as Merging Units for the CPU. Synchronized samples at 4800 Hz (as per IEC 61869-9)
- ✓ Cybersecurity in accordance with IEC 62351 and IEEE 1686-2013 standards. RBAC, secure keys, physical and logical port disabling, cybersecurity event log, and securing of management protocols (PROCOME, HTTPS, SFTP, SSH)
- ✓ Time synchronization by IRIG-B, SNTP and PTP (Ordinary Clock / Transparent Clock)

Subcycle distance

protection suitable for lines of any voltage level with any configuration: **overhead** or **underground**, **single** or **parallel** circuits

The **ZLF** includes all the protection, control and measurement functions for a power line, with or without **series compensation**, **single** or **double breaker**, and **single pole** or **three pole** tripping.

Eight distance zones with **Mho** or **quadrilateral** characteristic, complemented with **load encroachment** and **power swing**, **fuse failure**, **close onto fault**, and **saturation detectors** provide great security and dependability even in the most adverse conditions.

The distance and overcurrent units can operate according to the following schemes: **DTT**, **PUTT**, **POTT**, **DCUB** and **DCB**. **Weak infeed logic** and **current inversion blocking** are also included.



Characteristics

Subcycle Operation

Distance algorithms based on half-cycle windows combined with robust solid-state trip outputs permit sub-cycle trip times for faults located within 75% of the zone.

Mutual Coupling Compensation

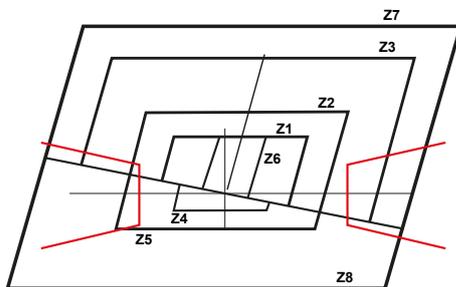
In parallel circuits is compensated by measuring the neutral current of the parallel line.

Double Breaker Protection and Control

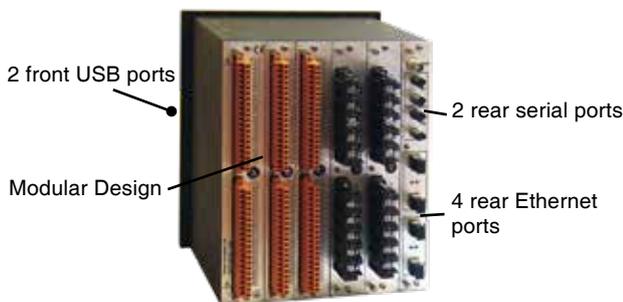
The breaker failure, synchrocheck and recloser units are designed to supervise two circuit breakers.

Communication between IEDs

- Up to 4 ports: Communication without redundancy with up to 4 remote ends or with redundancy with up to 2 remote ends.
- Selectable speed: from 1 x 64 kbit/s up to 2 Mbit/s.
- Multimode or single mode FO interfaces (optional SFPs).
- Communication with SDH multiplexers via C37.94 or via ZIV model F2MUX optical-electric converter that integrates G703 and V35 output interfaces.
- Up to 16 digital signals can be exchanged between terminals to implement teleprotection schemes.



Distance zones with quadrilateral characteristic and load limiters



Three sizes: Full 19" rack, 1/2 rack, or 1/3 rack with 6U high

Protection units

ANSI	FUNCTIONS	
21P	Phase distance	(8 zones)
21N	Ground distance	(8 zones)
50SUP	Distance overcurrent supervision	1
50FD	Fault detector	1
68 / 78	Power swing blocking / Tripping	1 1
50	Instantaneous phase overcurrent	3
51	Time phase overcurrent	3
50N	Instantaneous neutral overcurrent	3
51N	Time neutral overcurrent	3
50Q	Instantaneous negative-sequence overcurrent	3
51Q	Time negative-sequence overcurrent	3
50G	Instantaneous ground overcurrent	3
51G	Time ground overcurrent	3
50STUB	Stub bus protection	1
50V	Instantaneous voltage restrained overcurrent	1
51V	Time voltage restrained overcurrent	1
67	Phase directional overcurrent	1
67N	Neutral directional overcurrent	1
67G	Ground directional overcurrent	1
67P	Positive-sequence directional overcurrent	1
67Q	Negative-sequence directional overcurrent	1
49	Thermal image	1
50OL	Instantaneous overload	1
51OL	Time overload	1
27	Phase undervoltage	3
59	Phase overvoltage	3
59N	Neutral overvoltage	3
64	Ground overvoltage	3
81M	Overfrequency	4
81m	Underfrequency	4
81D	Frequency rate of change	4
59V/Hz	Overexcitation	4
25	Synchrocheck	2
50BF	Breaker failure	2
85-21	Teleprotection schemes for distance units	1
85-67	Teleprotection schemes for overcurrent units	1
60VT	Fuse failure detector and VT supervision	1
60CT	CT supervision	1
3	Coil supervision (Up to 12 coils)	
2	Pole discrepancy	2
79	Recloser	2
	Additional functions(1): Cold load, Harmonic blocking, Load Shedding, Load Encroachment, Phase selector, Dead line detector, Fault locator	1
	Additional functions(2): Breaker supervision, Open pole detector, Saturation detector, Trip logic	2