ZLF

Distance Protection (ZIV e-NET flex family)

Subcycle Distance Protection suitable for lines of any voltage level with any configuration: **Overhead** or **Underground**, **Single** or **Parallel** circuits

General Characteristics

- ✓ Powerful programable logic.
- ✓ 2000 event log. Up to 100 oscillography seconds.
- ✓ Alphanumeric or graphic display.
- ✓ Up to 20 analog channels, 160 DI, 80 DO, and 22 LEDs.
- ✓ Bonding, RSTP, PRP and HSR Redundancy.
- ✓ IEC 61850 Ed. 2, DNP3, Modbus RTU and PROCOME protocols.
- ✓ 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, IEC 62443 and IEEE 1686-2013 standards. RBAC, secure keys, physical and logical port disabling, cybersecurity event log, securing of management protocols (PROCOME, HTTPS, SFTP, SSH), remote authentication (LDAP, RADIUS) and digital firmware securitization.
- ✓ Time synchronization by IRIG-B, SNTP and PTP (Ordinary Clock / Transparent Clock).

The **ZLF** includes all the protection, control and measurement functions for a power line, with or without **series compensation** 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

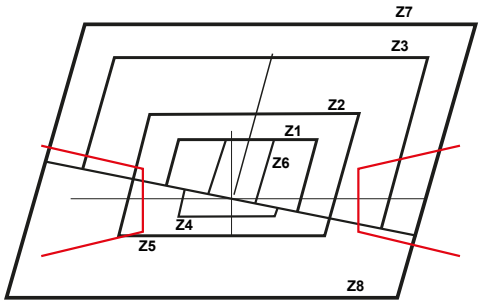
Distance algorithms based on half-cycle windows combined with robust solid-state trip outputs permit sub-cycle trip times for faults located within 75% of the zone.

Mutual Coupling Compensation

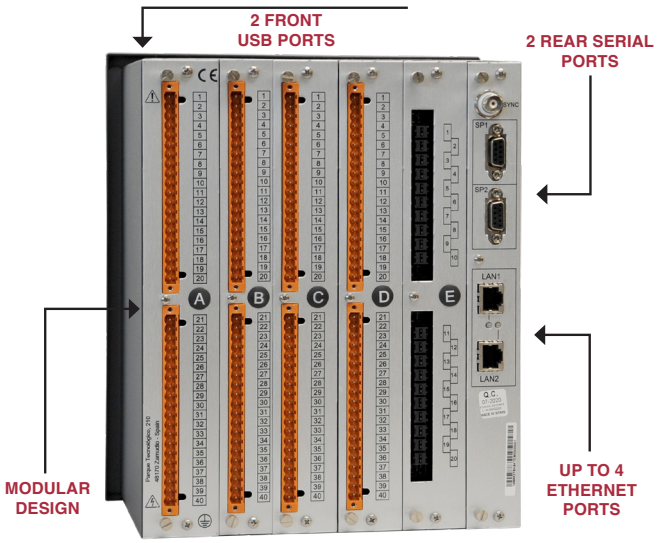
In parallel circuits is compensated by measuring the neutral current of the parallel line.

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



Protection Units

ANSI	Function	Uns.
21N	Ground Distance Zones (8 zones)	
21P	Phase Distance Zones (8 zones)	
50SUP	Phase Overcurrent for Distance Supervision	1
50FD	Fault Detector (sequence magnitudes)	1
	Load Encroachment	1
68/78	Power Swing Blocking / Out of Step Tripping	1
50OF	Close-Onto-a-Fault Detector	1
	Remote Open Breaker Detector	1
50/51	Phase Overcurrent	3/3
50N/51N	Neutral Overcurrent (calculated IN)	3/3
50G/51G	Ground Overcurrent (measured IG)	3/3
50Q/51Q	Negative Sequence Overcurrent	3/3
67	Phase Directional	1
67N	Neutral Directional	1
67G	Ground Directional	1
67P	Positive-Sequence Directional	1
67Q	Negative Sequence Directional	1
	Harmonic Blocking	1
	Phase Selector	1
27	Phase Undervoltage	3
59	Phase Overvoltage	3
59N	Neutral Overvoltage	3
64	Ground Overvoltage	3
47	Negative Sequence Overvoltage	1
49	Thermal Image	1
81M	Overfrequency	4
81m	Underfrequency	4
81D	Rate of Change of the Frequency	4
	Load Shedding	1
46	Open Phase	1
50BF	Breaker Failure Protection	1
	Distance Protection Schemes	1
	Overcurrent Protection Schemes	1
25	Synchrocheck	1
60VT	Fuse Failure Detector	1
60VT	VT Supervision	1
60CT	CT Supervision	1
79	Recloser	1
	Fault Locator	1
3	Coil Supervision (Depending on the Hardware Selection)	
	Breaker Supervision	1
2	Pole Discrepancy	1
	Trip Logic and Command	1
	Open Pole Detector	1
	Dead Line Detector	1
	Saturation Detector (for all current channels)	1
	Calendar	

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