Life Is On | Schneider Electric

Easergy Range
Flite 312, 315, 332, 335, 382, 385

Directional fault passage indicators for overhead networks

Advantages

- Directional detection of phase-to-earth faults
- Detection of phase-to-phase faults
- Fully user configurable
- Default settings fitting most applications

Standard applications

The Flite 3xx directional fault passage indicators are designed for overhead MV networks with isolated or compensated earthing.

They can also be used on overhead MV networks with impedant earthing. They provide a light indication allowing to localize the fault.

Flite 31x
Lithium battery power supply

Flite 33x
Solar panel power supply

Flite 38x
12 Vdc power supply

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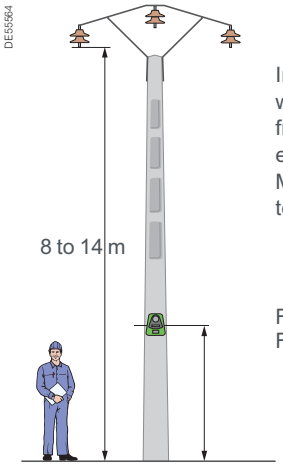
Description, Installation and detection

Installation



Installation on poles on which the electrical field is free of influence from the environment and other HV, MV or LV electrical lines or telephone lines.

Flite 3x2: 1.5 to 2.5 m
Flite 3x5: 4.5 to 5.5 m

Description

Flite 3xx fault passage indicators are made of ABS polycarbonate sealable box.

- **Detection system** using 3 embedded sensors:
  - Electric field sensor to measure the 3 V0 voltage,
  - Horizontal magnetic field sensor for phase-to-earth faults,
  - Vertical magnetic field sensor for phase-to-phase faults.

- **Operation mode and functions:**
  - Installation self-test when commissioning,
  - Various user configurable parameters: line voltage, height, and arrangement, detection parameters, reset functions and output contact behaviour,
  - Continuous self-adaptation to the changing electrical field environment,
  - Optional settings, test and reset functions by magnetic button.

- **Light indication**
Green, Red or alternate Green/Red blinking according to fault type and location.

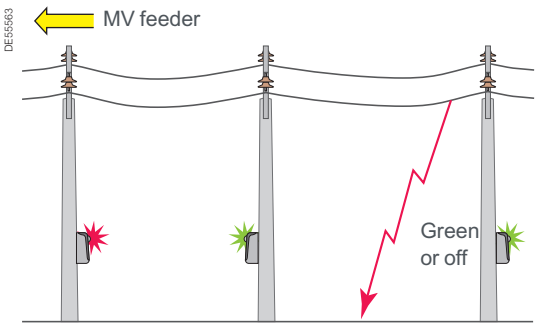
- **Fault counters**
Counting transient and permanent faults.

- **Display: 4x12.7 mm digits**
Displays fault counters and optional settings.

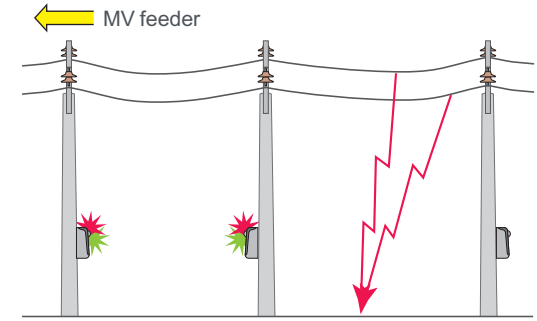
- **2 output contacts**
Indication of transient and/or permanent faults.

Light indication

- **Phase-to-earth fault**



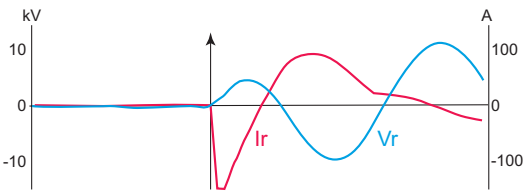
- **Phase-to-phase or double-phase-to-earth fault**



Detection principle

Flite 3xx detection principle is based on the analysis of transients of residual voltage Vr (= 3 V0) and residual current Ir (= 3 I0), in the next ms following the fault.

- At the time when the phase-to-earth fault occurs, the fault direction is determined according to phase comparison of Vr and Ir.



- The fault will be confirmed if Vr is still present after a configurable time delay (default 50 ms). Indication of transient fault (counter and optionally output contact) will follow.
- The fault will be confirmed as permanent (protection tripping or power presence under earth fault conditions) after the possible reclosing cycles before starting permanent fault indication (light indication and optionally output contact).

This detection algorithm allows detecting earth faults up to approximately 200 Ω.

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Technical characteristics

Application	
Network (kV)	5 to 25 (°)
Frequency (Hz)	50
Neutral	Compensated - isolated - impedant
Phase-to-earth fault detection	
Residual current detection threshold (A peak)	40
Residual voltage detection threshold (kV peak)	0.3 x Un (e.g.: 6 kV peak for Un = 20 kV)
Residual voltage required for fault confirmation (kV rms)	0.18 x Un (e.g.: 3.5 kV rms for Un = 20 kV)
Residual voltage rms minimum duration (ms)	50* to 500
Minimum total capacitive current required (A)	50
Minimum capacitive current for indication downstream fault (A)	30
Light indication	Green: earth fault to pole Red: earth fault opposite pole
Double phase-to-earth fault detection	
Tripping threshold (A)	100, 120, 140, 160*, 180, 200, 220, 240, 260, 280, 300
Time delay (ms)	50, 60, 70*, 80, 90, 100, 120,140, 160, 180, 200, 250, 300, 350, 400, 450, 500
Light indication	Alternate Red/Green
Phase-to-phase fault detection	
Tripping threshold (A)	200, 250, 300, 350, 400, 450, 500*
Time delay (ms)	50, 60, 70*, 80, 90, 100, 120,140, 160, 180, 200, 250, 300, 350, 400, 450, 500
Light indication	Alternate Red/Green
Time delays	
Before indication of transient fault (counter and output contact) (s)	1.1
Before indication of permanent fault (light indication and output contact) (s)	Off-10-40-70*-120-240
Duration of MV required for any fault detection (inrush restraint) (s)	5
Reset of fault indication	
By restoration of MV without fault for a duration (s)	5 (note: can be disabled)
After configurable time delay (h)	2, 4*, 6, 8, 12, 16
Manual	With a magnet
Light indication	
Total light flux (Lm)	7
Flashing period (s)	1
Dry output contact	
Breaking capacity	8 A/250 Vac; 5 A/30 Vdc
Environment	
Vibration withstand (IEC 68-2-6 & 68-2-29) (g)	2
Operating temperature (°C)	–25 to + 55
Storage temperature (°C)	–25 to + 70
Protection grade	IP 54 IK 9
Mechanical characteristics	
Dimension H x L x P (mm)	270 x 203 x 110
Weight (kg)	1.5

(°) Flite 315 also exists in variant Flite 315H (reference EMS58229), for networks from 25 to 45 KV.
(*) Default value.

Device	Power supply				Installation height	Reference
	Lithium Battery	Solar panel	Ext. 12 Vdc	Battery life duration		
Flite 312	•			> 7 years*	2 m	59940
Flite 315	•			> 7 years*	5 m	59941
Flite 332		•		> 8 years at 25 °C	2 m	59942
Flite 335		•		> 8 years at 25 °C	5 m	59943<s
Flite 382			•		2 m	59944
Flite 385			•		5 m	59945

(*) Including 200 hours blinking.

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