

F-Link

INTELLIGENT SENSING OF
FUSE SWITCHES

DIFFERENTIALS



IoT sensor for electrical
distribution networks
(15 kV and 36 kV).



Designed to provide
reliability and proactive
network operation.



Monitor fuse link opening/closing
events, report tilt, current
presence, and location.

CERTIFICATIONS

Anatel: XXXX-XXXX-XXXX in process.
(Expected: February 2026)

Tests: IP rating, EMC, accelerated aging,
withstand voltage impulse/60 Hz dry and
wet, water absorption, dielectric strength.
(Expected: February 2026)


F-Link

FUNCTIONALITIES

- Detection of fuse switch opening/closing.
- Monitoring of current presence/absence in the fuse link.
- Heartbeat message (daily status) for continuous supervision.
- Remote configuration (network parameters, delta angle, periodicity).
- OTA firmware update (FOTA) with digital signature.
- Native integration with openMDX system (Neo Energia).
- Compatibility with Neo Energia standard fuse switches.

ALARMS AND REPORTS

- Fuse link opening.
- Current presence/absence in the fuse link.
- Sensor status (angle, uptime, stored energy).
- Signal level RSRP/SNR.
- Communication status (Up/Down).
- GNSS location.
- Temperature.
- TAC/Cell ID/PCI, IMSI/IMEI/ICCID.

COMMUNICATION



IoT – NTN (Rel.17)
Operating bands: S-band (B23/B256) and L-Band (B255)
Maximum radiated power: +23



Cat-M1(Rel.14)/NB- IoT (Rel.14)
Operating bands: public B1/B3/B5/B8/B20/B28 and private B28/B31/B87
Maximum radiated power: +23 dBm



LoRa
Protocol: LoRaWAN
Modulation: LoRa - Chirp Spread Spectrum
Security: AES 128 encryption (LoRa)
Carrier: 902 Mhz - 928 Mhz
Maximum Radiated Power +20 dBm



Bluetooth
Protocol: BLE 5.3
Modulation: GFSK
Operating frequency: 2.4GHz ISM (2402 - 2480 Hz)
Maximum radiated power: +9.5 dBm

PROTOCOLS

Network: UDP

Application: Reduced DLMS

SECURITY



Authentication via physical SIM (3FF) and eSIM (MFF2, eUICC compatible).



Secure credential storage.



Digitally signed firmware.



FOTA (OTA) updates.



Secure Boot.

TECHNICAL SPECIFICATIONS

Input Power	Solar Panel
Operating Temperature	-10 °C a 70 °C
Protection Grade	IP65
Humidity	95% Non-condensing
PCB Omnidirectional Antenna	≥ 1 dBi
Autonomy	7 days without sun with one daily status message
Service Life (without preventive maintenance)	≥ 10 years (including accumulator/battery)
SIM Slots	1× SIM 3FF and 1× eSIM MFF2 and UICC (SGP.02/SGP.32) with BIP/STK
Material	ABS
Dimensions	133 x 58 x 76 mm
Average Weight	145g

