



FAME LPIT

Test system for low-power signal sensors in medium and high-voltage switchgear

FAME LPIT

The innovative plug-in test system for low-power signal sensors

FAME LPIT is the first plug-in test system within the proven FAME series that has been specially developed for the requirements of low-power signal sensors in medium and high-voltage switchgear. This system enables precise and reliable testing of the sensors that are essential for recording and monitoring electrical variables in modern power distribution grids.



Your advantages



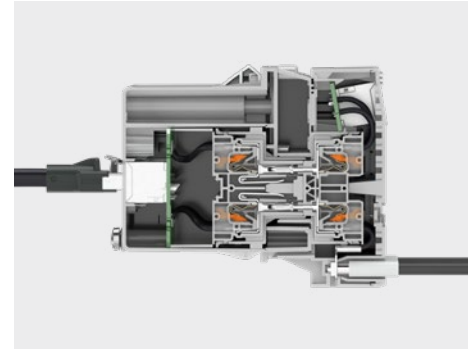
High level of safety

The sophisticated design of the plug-in test system enables direct installation in the switch cabinet door. This creates the conditions for safe and convenient testing with the door closed. In addition, the plug-in test system brings a high degree of flexibility because it is also designed for installation in 19" racks, meaning that it can be integrated easily into different plant and system concepts.



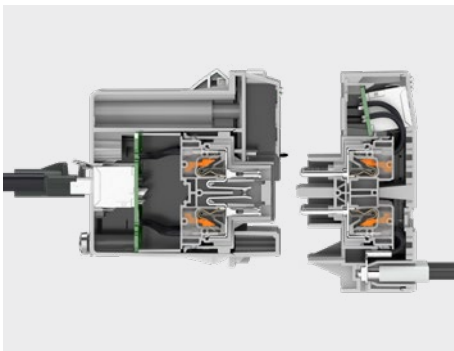
Maximum security

The plug-in test sockets are equipped with an integrated slider that reliably protects the contacts and prevents unauthorized access. The flap attached to the slider can be sealed or locked with a lock, providing an additional level of security.



Quick and easy testing

The plug-in test system enables quick and easy testing, because neither test-specific wiring nor a serial switching sequence is required. Tests can be carried out immediately, which significantly reduces the time required and increases the efficiency of the testing process.



Maximum reproducibility

The rapid and standardized creation of test scenarios enables multiple lines to be tested reproducibly at any time. The constant test conditions ensure consistent measurement results and make repeated tests considerably easier.



Extensive testing options

Full access to all eight sensor-side signals via the RJ45-based interface enables extensive testing. In addition to measuring current, voltage, and frequency, the grid quality can also be analyzed reliably, allowing a holistic evaluation of the sensor signal and the connected grid.



Complete shielding

The robust die-cast metal housing ensures seamless and reliable shielding. The integrated, separate shield contact means that no additional wiring of the shielding is required, which reduces the installation effort and, at the same time, ensures a high level of EMC safety.

FAME LPIT | Grid quality

What is FAME LPIT?

FAME LPIT is an innovative solution for testing low-power signal sensors in medium and high-voltage switchgear. The system enables the fast, safe, and convenient testing of modern protection systems and features far more than just the basic functions: In addition to measuring current, voltage, and frequency, FAME LPIT also enables the grid quality to be monitored, which is crucial for a stable and reliable power supply. With the compact design, all test-relevant signals can be made accessible directly on the switch cabinet door, on the front panel, or in 19" plug-in units, without having to make any changes to the system wiring.

The robust metal housing with separate grounding contact provides reliable protection against electromagnetic interference and ensures particularly high operational safety. FAME LPIT stands for "Low Power Instrument Transformer" and includes both plug-in test sockets and test plugs.

The plug-in test sockets offer full access to all eight signal contacts of the RJ45 interface, which enables flexible and efficient handling.



FAME LPIT – plug-in test socket and test plug

Why is measuring the grid quality becoming increasingly important?

Integration of renewable energies

Photovoltaics and wind turbine generators do not feed in a constant supply of electricity very often, rather one that fluctuates greatly.

These fluctuations lead to voltage changes, harmonics, and flicker, which affect the grid quality.

Increasing power electronics

Frequency converters, chargers for electric vehicles, and other electronic loads generate non-linear currents that cause harmonics.

This can cause transformers, cables, and motors to overheat.

Security of supply and stability

Grid operators must ensure that the voltage and frequency remain within narrow tolerances.

Poor grid quality can lead to the malfunction of protective devices, failures, and even blackouts.

Regulatory requirements

Standards such as IEC 61000-4-30 and EN 50160 define limit values for the grid quality.

Power providers must monitor and document these values.

Grid quality

What makes up grid quality?

Grid quality comprises several parameters that go beyond current, voltage, and frequency:

Voltage quality

- Voltage level (deviations from the setpoint)
- Voltage dips and voltage failures
- Overvoltages (swells)

Frequency quality

- Deviations from the target frequency (e.g., 50 Hz in Europe)
- Critical for the stability of the overall grid

Harmonics

- Distortion of the sine wave caused by non-linear loads
- Typical values: THD (Total Harmonic Distortion) for voltage and current

Flicker

- Short-term voltage changes that cause lights to flicker, for example
- Particularly relevant in the case of large load changes and wind turbine generators

Asymmetry

- Uneven loading of the three phases
- This leads to neutral-conductor currents and overloads

Transients

- Short-term voltage peaks caused by switching operations and lightning strikes

What is this data important for?	
Parameter	Why is it important?
Voltage level	Operational safety of devices, compliance with standards
Frequency	Grid stability, load-frequency control
THD (Total Harmonic Distortion)	Protection of transformers, motors, prevention of overheating
Flicker	Convenience for consumers, compliance with standards
Asymmetry	Protection of three-phase motors, prevention of neutral-conductor overload
Transients	Protection of sensitive electronics, prevention of failures

Medium-voltage version

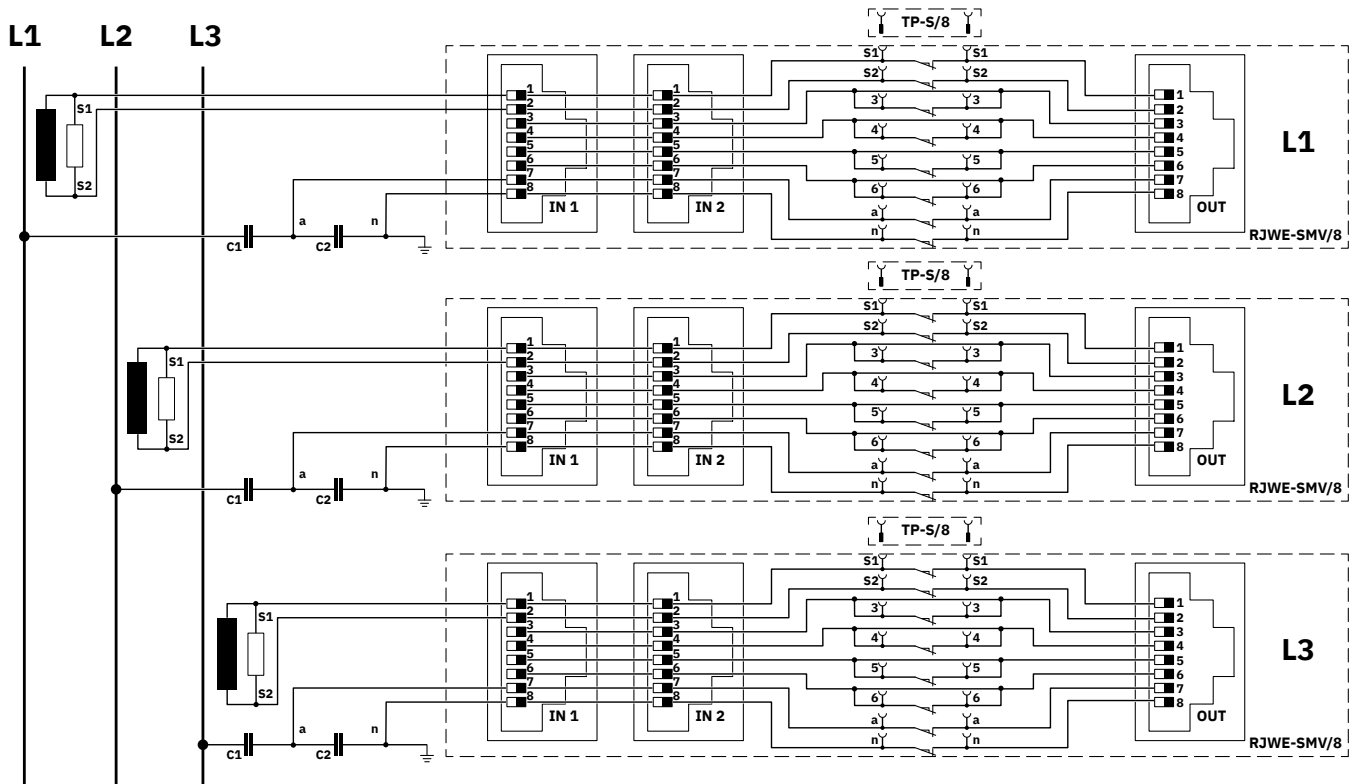
Medium-voltage (MV) version

The FAME LPIT (Low Power Instrument Transformer) series was developed to facilitate the quick and convenient testing of low-power signal sensors in MV switchgear. The plug-in test sockets in this series are installed in control cabinet doors, front panels, or 19" racks, so that all relevant signals for testing can be accessed without interfering with the internal wiring of the switchgear. In addition, the FAME LPIT series has a robust metal housing with separate grounding contact, which protects the measurements against electromagnetic interference. The plug-in test socket provides access to all eight signal contacts of the RJ45 protective device interface and two separate RJ45 plug-in connections for combined or separate U/I medium-voltage (MV) sensors.



FAME LPIT – medium-voltage version of the plug-in test socket

Circuit diagram



High-voltage version

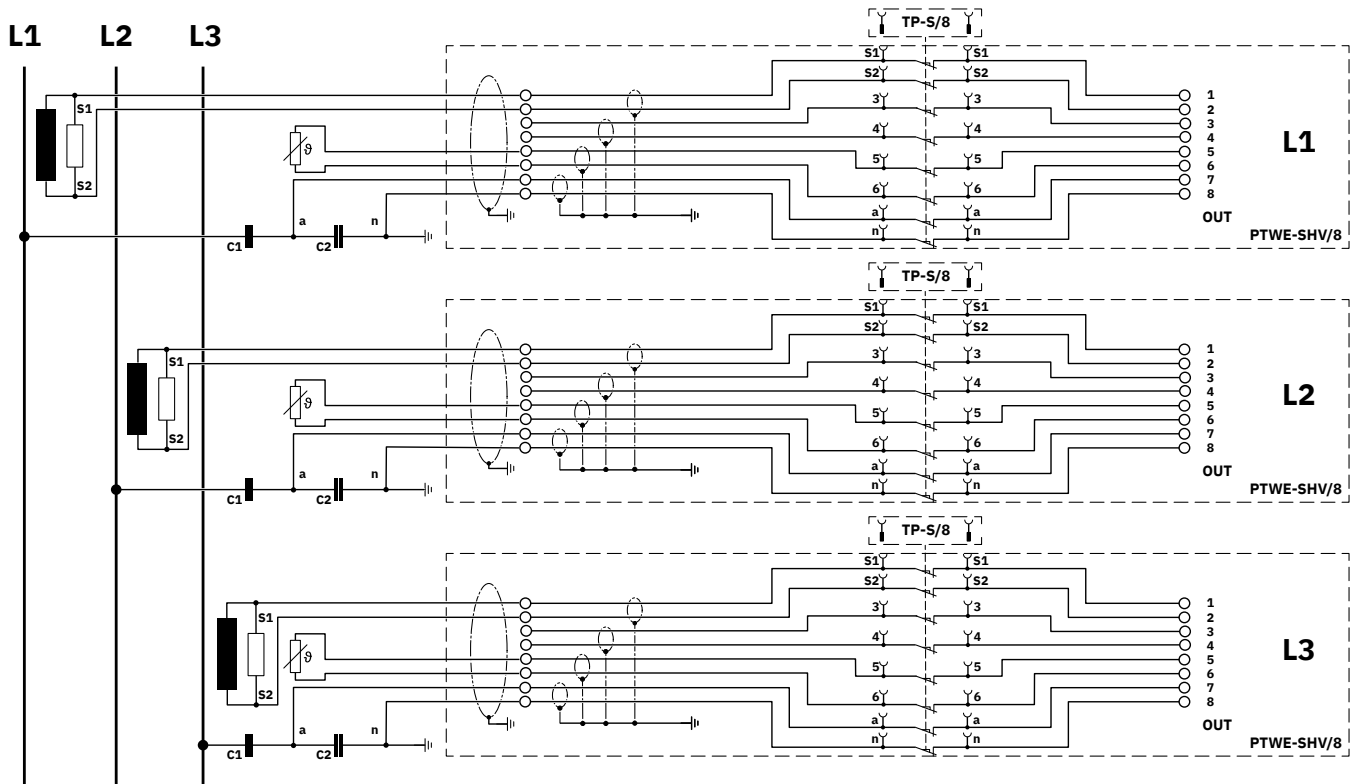
High-voltage (HV) version

The FAME LPIT (Low Power Instrument Transformer) series was developed to facilitate the quick and convenient testing of low-power signal sensors in HV switchgear. The plug-in test sockets in this series are installed in control cabinet doors, front panels, or 19" racks, so that all relevant signals for testing can be accessed without interfering with the internal wiring of the switchgear. A special feature is the surge voltage resistance of the plug-in test sockets for HV applications up to 5 kV. In addition, the FAME LPIT series has a robust metal housing with separate grounding contact, which protects the measurements against electromagnetic interference. The plug-in test socket provides access to all eight signal contacts of the RJ45 protective device interface and direct wiring for the sensors in the high-voltage (HV) range.



FAME LPIT – high-voltage version of the plug-in test socket

Circuit diagram



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