

Overview



In-situ verification tool SITRANS Verificator

The SITRANS Verificator is the next generation in-situ verification device for use with a variety of SITRANS FM flow meters. The battery-powered device carries out a complex verification and performance check of the entire flowmeter system. The whole verification test is fully automated and can be controlled using a mobile software application via the Bluetooth interface.

Key features

- In-situ check of performance without interrupting the flowmeter installation
- Simple method of checking product health
- Easy-to-use connection to your device
- Automated input/output tester
- Field-replaceable battery
- Full verification test with one click
- Generation of verification test certificate
- Fast feedback of device condition
- Easy emailing of verification test certificate in the field
- Condition monitoring for predictive maintenance to optimize asset reliability
- Full traceability – Annual certification of verification system insures complete documentation for regulatory and ISO standards compliances
- Always up to date through periodic recalibration and service checks

The software application SITRANS mobile IQ gives you easy access to the SITRANS Verificator via your smartphone or tablet.

Download the software application SITRANS mobile IQ for free and activate the verification license to provide the best possible check of measurement accuracy, without stopping your process. The validation device verifies the condition and performance of the device under test. With the mobile IQ software, test reports can be generated and stored locally for further analysis on the mobile device.

License model

To perform a verification, a token-based license (pay-per-use) must be purchased and activated for the Verificator. This is a hardware-locked license that can only be assigned to one SITRANS Verificator at a time. After activation the license validity is 12 months (plus 2 months grace period). Various license packs are available:

Overview (continued)

- Basic 1 (20 tokens)
- Basic 2 (50 tokens)
- Pro 100 (100 tokens)
- Pro 200 (200 tokens)
- Pro 300 (300 tokens)
- Premium (unlimited tokens)

Supported products

The SITRANS Verificator confirms accurate performance for the following SITRANS FM products:

- FMS500 flow sensor
- FMT020 flow transmitter

Flow Measurement

SITRANS FM (electromagnetic)

Field device verification / SITRANS Vericator

Benefits

External verification

The inspection of the flowmeter is carried out by an external verification device. During the entire testing process, the verification device is connected to the flowmeter via test interfaces, and a functional test is carried out by simulating calibrated reference signals and observing system response.

- Traceable check of entire electromagnetic flowmeter by performing functional tests using injected reference signals for flow simulation
- Qualitative assessment based on a pass-fail criterion
- Vericator calibration concept according to ISO 17025 standards ensuring long term stability of the external test system
- Metrologically traceable factory references for user confidence
- Annual calibration of verification system to meet ISO 9001 quality regulations

Test coverage

- Signal input processing - Linearity of the amplifier
- I/O processing - Current and digital output
- Crosstalk measurement
- Insulation resistance
- Coil boost time ("Fingerprint")
- Coil resistance

Device status

The verification device itself includes LED indicators to advise operation status:

- Bluetooth connection
- Instrument detected
- Under test (verification in progress)
- Device power ON indicator
- Battery condition

Mobile software application

The SITRANS Vericator is designed to be connected to the software application SITRANS mobile IQ running on an Android and iOS mobile device in order to communicate information and data via the Bluetooth interface.

- Easy to operate testing of product performance and maintenance needs
- Detailed certificate printing for regulatory and quality system management
- Move from reactive to predictive maintenance planning with historical data analysis
- Local data storage capabilities

Verification test certificate

The test certificate generated by the SITRANS mobile IQ software application contains:

- Test result with passed or failed
- Detailed measurement results for all verification tests
- Customer and operator information

Benefits (continued)

- Flowmeter specification and configuration
- Vericator specification with date of calibration ensuring traceability to international standards.

The screenshot shows a 'Verification Certificate' form from Siemens. It is divided into several sections: 'Customer Information' (Name, Address, Contact Information), 'Device Information' (Device Name, Model, Serial Number, etc.), 'Verification Results' (Pass/Fail status for various tests), and 'Test Results' (Detailed data for each test). The form includes a 'Verification Results' section with a 'Pass/Fail' indicator and a 'Test Results' section with a table for 'Test Results'.

This screenshot shows a different section of the 'Verification Certificate' form, focusing on 'Test Results'. It includes a table for 'Signal Input Processing' with columns for 'Measurement Value', 'Deviation', and 'Tolerance'. Below this, there are sections for 'Insulation Resistance' and 'Coil Resistance', each with a 'Measurement Value' field and a 'Tolerance' field. The form also includes a 'Comments' section at the bottom.

Application

The SITRANS Vericator can be used in:

- New applications: to approve new installations with valid certificate for handover
- Existing applications: to ensure correct product quality and continuous accuracy
- To confirm that a flowmeter fulfills certain technical requirements of functionality as defined by the manufacturer
- As assessment tool to produce a qualitative statement about the product stability

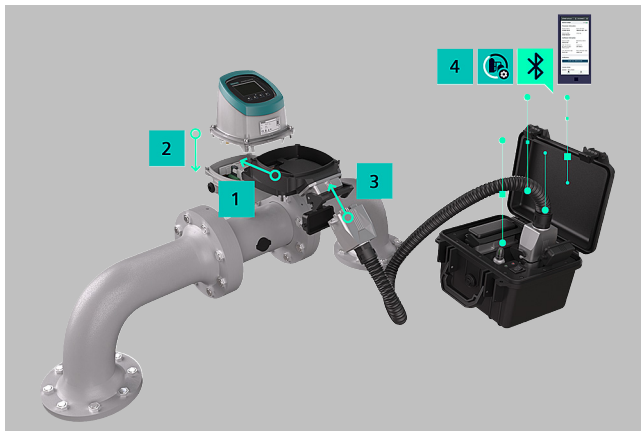
Mode of operation

Test functions

Transmitter test

The transmitter verification checks the whole electronic system from signal input to output. Using a traceable calibrated precision network, the Verificator simulates flow signals to the transmitter input. By measuring the transmitter outputs, the Verificator calculates its accuracy against defined factory values.

- Signal function from signal input to output
- Signal processing – gain, offset, and linearity
- Test of current and digital output



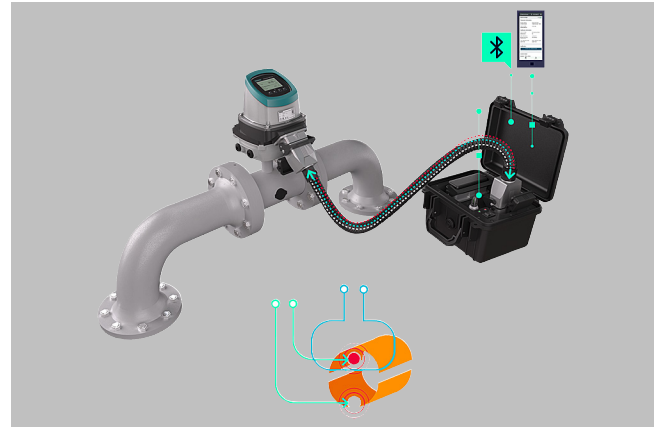
Transmitter test: Steps for connecting SITRANS Verificator to SITRANS FMx20

Insulation test

The verification test of the flowmeter insulation is a "crosstalk" test of the entire flowmeter and installation, which ensures that the flow signal generated in the sensor is not affected by any external influences. By generating dynamic disturbances close coupled to the flow signal, the flowmeter is tested for noise immunity to a maximum level.

- EMC influence on the flow signal
- Moisture in sensor, connection and terminal box
- Non-conductive deposit coating the electrodes
- Missing or poor grounding, shielding and cable connection

Mode of operation (continued)



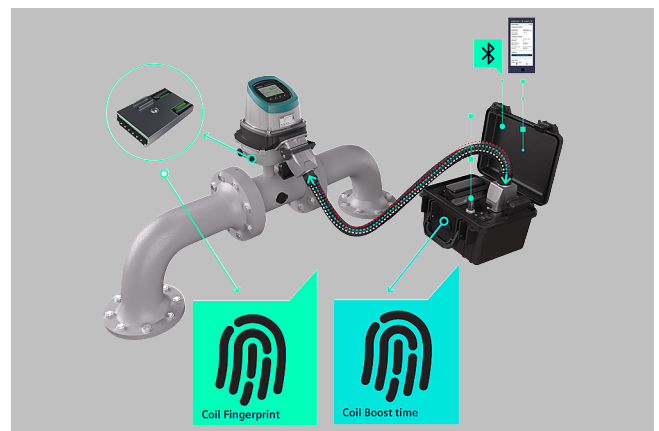
Flowmeter insulation test

Coil circuit test

The verification of the coil circuit is an integrity check of the sensor magnetic field coil. The test ensures that the magnetism behavior is like the first time, by comparing the current sensor magnetism with the "fingerprint" (coil boost time) which was determined during initial calibration and stored in the SENSORPROM memory unit.

In the "Coil Boost Time" test the Verificator changes the magnetic field in certain pattern and with high voltage to get quick stable magnetic condition. This unique test is performed without any interference or compensation of surrounding temperature or interconnecting cabling.

- Changes in dynamic magnetic behaviour
- Magnetic influence inside and outside the sensor
- Missing or poor coil wire and cable connection



Fingerprint test

Flow Measurement

SITRANS FM (electromagnetic)

Field device verification / SITRANS Verificator

Selection and ordering data

Description	Article No.	
SITRANS Verificator Validation device for in-situ performance check of magnetic flow meters without process interruption. Scope of supply: Protective case with Verificator test unit, connection cable, battery charger, batteries (2 pcs.), SITRANS FMT020 adapter, snap hook	7ME6900-1AA10-....	

SITRANS Verificator	Article No.
	7ME6900-1 A A 1 0 - 1 • • 1
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
License	
Without license	A
Basic 20 (token quantity 20, license validity 12 months after activation)	C
Basic 50 (token quantity 50, license validity 12 months after activation)	D
Pro 100 (token quantity 100, license validity 12 months after activation)	F
Pro 200 (token quantity 200, license validity 12 months after activation)	G
Pro 300 (token quantity 300, license validity 12 months after activation)	H
Premium (token quantity unlimited, license validity 12 months after activation)	P
Premium 10 (token quantity unlimited, license validity 10 years after activation)	T
Battery charger	
Type A, CEE7/7 mains connector (Europe)	A
Type C, AS3112 mains connector (Australia)	B
Type D, BS1363 mains connector (United Kingdom)	C
Type K, NEMA 5-15P mains connector (United States)	D
Type L, SEV1011 mains connector (Switzerland)	E
Type J, JIS8303 mains connector (Japan)	F

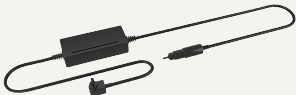
Additional information	Order code
Please add "-Z" to Article No. and specify Order code(s) and plain text.	
Device options	
Car charger for battery	J01

Licenses SITRANS Verificator

Description	Article No.	
Token-based license type (pay-per-use) License validity 12 months (plus 2 months grace period) after activation		
• License pack – Basic 20 (Token quantity 20)	7ME6901-1AA10-1LB0	
• License pack – Basic 50 (Token quantity 50)	7ME6901-1AA10-1LB1	
• License pack – Pro 100 (Token quantity 100)	7ME6901-1AA10-1LE0	
• License pack – Pro 200 (Token quantity 200)	7ME6901-1AA10-1LE1	
• License pack – Pro 300 (Token quantity 300)	7ME6901-1AA10-1LE2	
• License pack – Premium (Token quantity unlimited)	7ME6901-1AA10-1LU0	
• License pack – Premium 10 (Token quantity unlimited, license validity 10 years after activation)	7ME6901-1AA10-1LU3	

Selection and ordering data (continued)

Accessories SITRANS Verificator

Description	Article No.	
Battery charger License validity 12 months (plus 2 months grace period) after activation • Type C (AS3112) for Australia • Type D (BS1363) for U.K. • Type J (JIS8303) for Japan • Type K (NEMA 5-15P) for United States • Type L (SEV1011) for Switzerland • Type A (CEE7/7) for Europe	7ME3940-4PS00 7ME3940-4PT00 7ME3940-4PQ00 7ME3940-4PU00 7ME3940-4PV00 7ME3940-4PR00	
Car adapter	A5E50441092	

Spare parts SITRANS Verificator

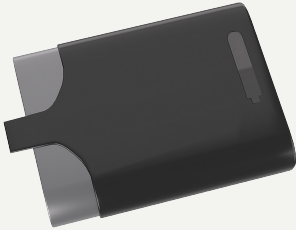
Description	Article No.	
SITRANS FMT020 adapter (serial number of SITRANS Verificator must be specified when ordering)	7ME6901-1AD10	
Connection cable	7ME6901-1CA10	
Portable protective case including foam padding	A5E50441009	

Flow Measurement

SITRANS FM (electromagnetic)

Field device verification / SITRANS Verificator

Selection and ordering data (continued)

Description	Article No.	
Rechargeable battery 1 pc.	A5E50441091	
Shoulder strap	A5E50441096	
Gasket for SITRANS FMT020 adapter	A5E50441094	
Snap hook	A5E50441093	

Technical specifications

FM Verificator	
Test capability	
Transmitter test	- Signal input - Current output - Digital output
Coil circuit test	- Coil boost time (Fingerprint) - Coil resistance
Insulation test	Signal immunity
Verification accuracy	
Current output (active/passive)	
• 4 ... 20 mA signal	±0.1 %
Digital output (active/passive)	
• 0.5 ... 10 kHz signal	±0.02 %
Signal input	
• 0.5 m/s (1.6 ft/s)	±0.05 %
• 1.0 m/s (3.3 ft/s)	±0.05 %
• 3.0 m/s (9.8 ft/s)	±0.05 %
Fingerprint (coil boost time)	±0.5 %
Coil resistance	±0.2 %
Insulation	Threshold = 12.5 mm/s
Operating conditions	
Ambient temperature	
• Operation (Humidity max. 90 %)	-20 ... +50 °C (-4 ... +122 °F)
• Storage (without battery) (Humidity max. 90 %)	-40 ... +70 °C (-40 ... +158 °F)
• Storage with battery	-20 ... +50 °C (-4 ... +122 °F)
Environmental class	4M11
Altitude	Up to 2000 m (6560 ft)
Pollution degree	3
Overvoltage category	II
Design	
Material	
• Enclosure	Polycarbonate
• Interface adapter	Aluminum
Degree of protection	IP54
Mechanical load	
• Vibration resistance	Vibration, sinusoidal according to EN 60068-2-6 / IEC 60068-2-6
• Shock resistance	Shock, half-sine according to EN 60068-2-27 / IEC 60068-2-27
EMC performance	
• Emission	EN 300328
• Immunity	IEC/EN 61326-1
Dimensions	See dimensional drawings
Weight	See dimensional drawings
Power supply	Battery-powered, battery capacity allows for 10 hours continuous use
Battery pack	Lithium-ion battery, 14.4 V DC, 3800 mAh
Charger for battery pack	External battery charger, AC-Adapter: 100 ... 240 V AC, 60 Hz, 1.7 A
Connectivity	
Bluetooth interface	BLE 4.2
• Range	Class 2; approx. 10 m depending on mounting position

Technical specifications (continued)

FM Verificator	
Certificates and approvals	
General purpose	CE (LVD, EMC, RoHS) UL certified per standard IEC 61010-1
Radio approvals	RED (EU, UK) FCC (US) IC (Canada) RCM (Australia)

SITRANS Mobile IQ

Device connectivity	Manages connection with SITRANS Verificator to enable data sharing
Device cockpit	Indicates useful information about the connected devices, and license status
License management	Activation and management of verification licenses
Test result analysis	Documentation and management of past test results
Charts	History of selected test results and diagnostic values

Download app



SITRANS mobile IQ App in App Store



SITRANS mobile IQ App in Google Play Store

Dimensional drawings

Dimensions of SITRANS Verificator

Portable protective case

Size: 603 × 470 × 230 mm (23.8 × 18.5 × 9.1 inch)

Weight: 15.25 kg (33.1 lb)

Verificator test unit

Size: 269 × 245 × 175 mm (10.6 × 9.6 × 6.9 inch)

Weight: 4.1 kg (8.8 lb)