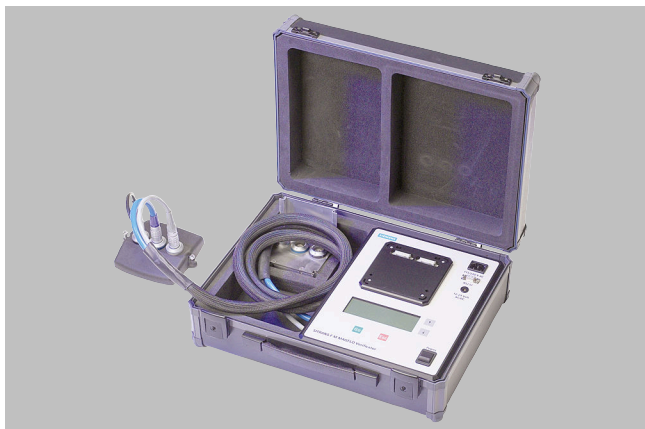


### Overview



The SITRANS FM Verificator is an external tool designed for MAG 5000 and MAG 6000 with MAG 1100, MAG 1100 F, MAG 3100, MAG 3100 P or MAG 5100 W sensors to verify the entire product, the installation and the application.

The goal is to improve operation, reduce downtime and maintain measurement accuracy as long as possible.

The SITRANS FM Verificator is highly advanced and carries out the complex verification and performance check of the entire flowmeter system, according to unique SIEMENS patented principles. The whole verification test is automated and easy to operate so there is no opportunity for human error or influence. The system is traceable to international standards and tested by WRc (Water Research Council).

- Stand alone Verificator to measure a number of selected parameters in the flow sensor and a transmitter which affects the integrity of the flow measurement.
- Up to 20 measurements can be stored in the Verificator.
- The Verificator can be connected via a serial cable to a PC enabling download of the data. A Windows program enables printing and management of vericator reports.

### Mode of operation

#### Verification - Steps

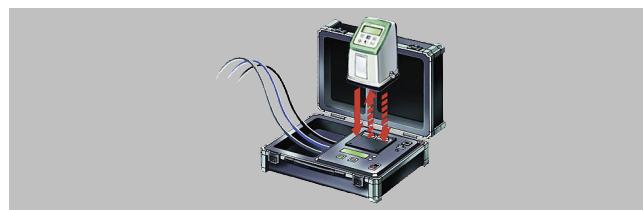
##### Transmitter test

Verification of a SITRANS FM flowmeter consists of the following test routines:

1. Transmitter test
2. Flowmeter and cable insulation test
3. Sensor magnetism test

##### 1. Transmitter test

The transmitter test is the traditional way of on-site testing on the market and checks the complete electronic system from signal input to output.

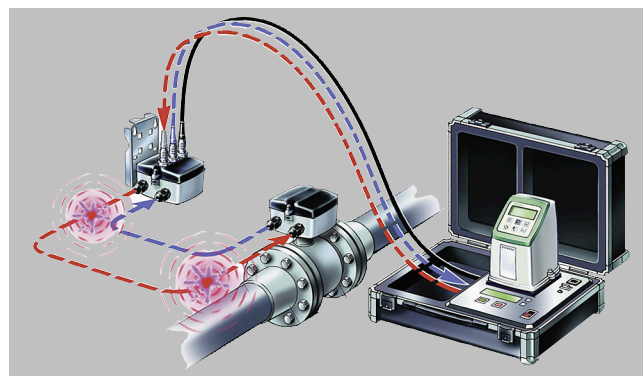


Transmitter test

Using the excitation power output, which is generated to drive the magnetic field of the sensor, the vericator simulates flow signal to the transmitter input. By measuring the transmitter outputs the vericator calculates its accuracy against defined values. The test includes:

- Excitation power to drive the magnetic field
- Signal function from signal input to output
- Signal processing – gain, offset and linearity
- Test of analogue and frequency output

##### 2. Insulation test



Flowmeter insulation test

The verification test of the flowmeter insulation is a "cross-talk" test of the entire flowmeter which ensures that the flow signal generated in the sensor is not affected by any external influences. In the "cross-talk" test the vericator generates a high voltage disturbance within the coil circuit and then looks for any "cross-talk" induced in the flow signal circuit. By generating dynamic disturbances close-coupled to the flow signal, the flowmeter is tested for noise immunity to a maximum level:

## Flow Measurement

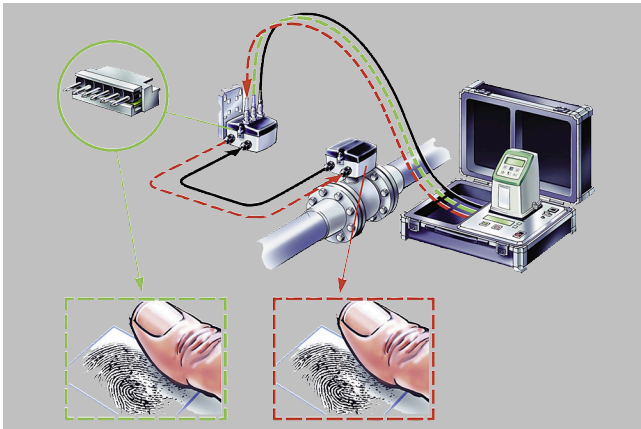
### SITRANS FM (electromagnetic)

#### Field device verification / SITRANS FM Verificator

#### Mode of operation (continued)

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

#### 3. Sensor magnetism test



Sensor magnetism test

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

In the "boost" test the verificator changes the magnetic field in certain pattern and with high voltage to get quick stable magnetic condition. This unique test is fulfilled 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

#### Certificate

The test certificate generated by a PC contains:

- Test result with passed or failed
- Installation specification
- Flowmeter specification and configuration
- Verificator specification with date of calibration ensuring traceability to international standards

#### Mode of operation (continued)

MAGFLO® Verification Certificate						
<b>Customer:</b>			<b>MAGFLO® Identification:</b>			
Name			TAG No./Name	0		
Address			Sensor Code No.	7ME634		
			Sensor Serial No.	057701H142		
			Transmitter Code No.	7ME692		
Phone			Transmitter Serial No.	109418N080		
Email			Location			
<b>Results:</b>						
Verification file name or No.			FT-103FT2801			
Transmitter			Passed			
Sensor			Passed			
Insulation			Passed			
Magnetic Circuit			Passed			
<b>Velocity</b>		<b>Current Output</b>		<b>Frequency Output</b>		
Theoretical	Theoretical	Actual	Deviation	Theoretical	Actual	Deviation
0.5m/s	4.800mA	4.802mA	0.25%	0.500kHz	0.501kHz	0.11%
1.0m/s	5.600mA	5.601mA	0.08%	1.000kHz	1.001kHz	0.07%
3.0m/s	8.800mA	8.804mA	0.08%	3.000kHz	3.004kHz	0.14%
Current Output 4-20mA			Frequency Output 0-10kHz			
<b>Transmitter Settings:</b>			<b>Sensor Details:</b>			
Basic	Qmax.	2 00000 m <sup>3</sup> /h		Size	DN 15 1/2 IN	
	Flow Direction	Positive		Cal. Factor	0.16531426	
	Low flow Cut-off	1.50%		Correction Factor	1.0	
	Empty Pipe	ON		Excitation Freq.	12.5Hz	
Output	Current Output	ON (4-20mA)		<b>Verificator Details (083F5060)</b>		
	Time Constant	5.0 Sec.		Serial No.	107920N490	
	Relay Output	Error Level		Device No.	94683	
	Digital Output	Pulse		Software Version	1.40	
	Frequency Range	N/A		PC-Software Version	5.01	
	Time Constant	1.0 /p		Cal. date	2015.10.26	
	Volume/pulse	0.51999998 sec.		ReCal. date	2016.10.26	
	Pulse width	Positiv				
	Pulse polarity					
Totalizer 1 value before test	819442.932131					
Totalizer 1 value after test	819458.923341					
Totalizer 2 value before test	693.875791					
Totalizer 2 value after test	693.881451					
Operating time in days	1068					
<b>Comments:</b>						
These tests verify that the flowmeter is functioning within 5% deviation of the original test parameters.						
Verification is traceable to National and International Standards.						
Date and signature						
2016.10.26						

#### Note:

It is mandatory to have the Verificator returned to the factory once a year for check and re-verification.

#### Selection and ordering data

Description	Article No.
<b>SITRANS FM Verificator</b>	
11 ... 30 V DC, 11 ... 24 V AC, 115 ... 230 V, 50 Hz	FDK:083F5060
11 ... 30 V DC, 11 ... 24 V AC, 115 ... 230 V, 60 Hz	FDK:083F5061