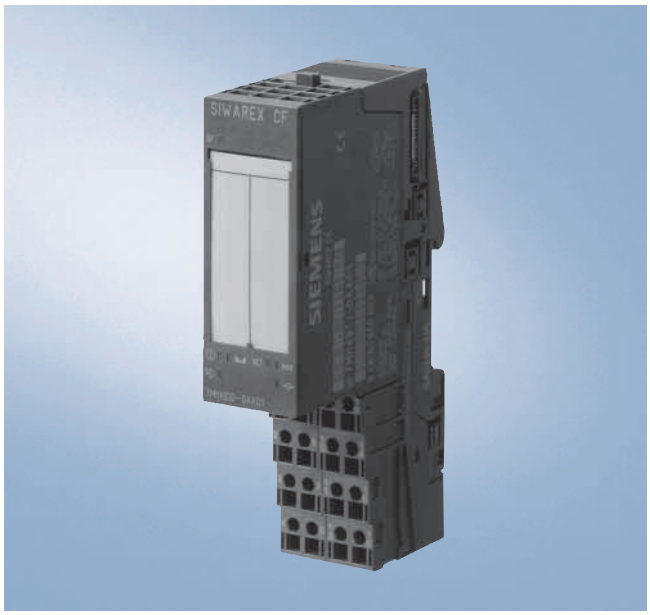
Overview



SIWAREX CF force transmitter

SIWAREX CF is a transmitter for connecting strain-gauge sensors for measuring force and torque, for example. The compact module is easy to install in all SIMATIC automation systems. Complete data access to the current measured values is then possible via the SIMATIC.

Benefits

SIWAREX CF offers the following key advantages:

- Uniform design technology and consistent communication thanks to integration into SIMATIC
- Uniform configuration with SIMATIC
- Use in distributed plant concept through connection to PROFIBUS DP via ET 200S
- Bidirectional measuring with a resolution of 16,000 parts and accuracy of 0.15%

Application

SIWAREX CF is the optimum solution wherever strain-gauge sensors, such as load cells, force sensors or torque measuring shafts, are used for measuring tasks. The following are typical SIWAREX CF applications:

- Monitoring of crane and cable loads
- Measurement of load of conveyor belts
- Overload protection in rolling mills
- Monitoring of belt tension
- Force measurement in testing machines
- Torque and pressure measuring

Design

SIWAREX CF is a compact function module (FM) of the SIMATIC S7 and can be snapped direct onto the ET 200S backplane bus. Assembly and wiring are also greatly simplified by using rails with snap-on technology.

The sensors and the power supply are connected via the standard connection block.

Function

SIWAREX CF provides the voltage supply required by the sensor. The force gives rise to the measuring signal that then undergoes further processing in the SIWAREX CF module.

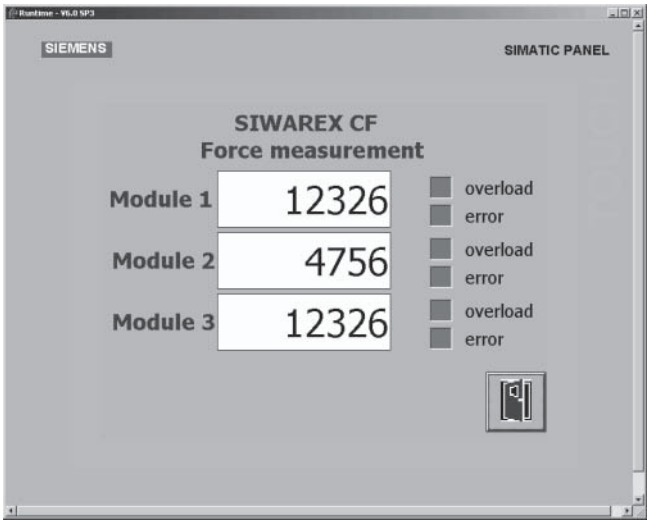
The signal is amplified, coarse-filtered, and then converted to a digital value. A connectable digital filter can additionally reduce noise on the measuring signal.

The digital value is available to the user internally in the SIMATIC and can be processed in the control program. It is possible, for example, to further suppress noise through averaging in the SIMATIC CPU or conversion to physical units. The result can be displayed on an operator panel according to requirements.

Consistent and uniform communication between all system components enables fast, reliable and cost-effective integration and diagnosis in industrial processes.

SIWAREX CF can be integrated into the plant software using the classic PLC programming languages; STL (Statement List), LAD (Ladder Diagram) FBD (Function Block Diagram) or SCL (Structured Control Language).

Integration into SIMATIC can result in freely-programmable, modular force measurement systems which can be modified according to operational requirements. To facilitate incorporation of the module into a STEP 7 program and as a basis for application programming, the ready-to-use SIWAREX CF software "Getting started" is available free-of-charge. With this, the measured values can be represented in a touch panel (TP/OP 170/270/370).



Measured values from three modules in the SIWAREX CF "Getting started" software

In contrast to analog or digitally connected transmitters, SIWAREX CF does not need costly additional modules to link it to SIMATIC.

After the module has been configured in SIMATIC and installed, it is ready for immediate operation. An additional tool for parameterizing is not required.

The current data are read into the SIMATIC via the I/O area.

SIWAREX CF

Technical specifications

SIWAREX CF	
Integration into automation systems	
• S7-400, S7-300, C7	Through ET 200S
• Automation systems from other vendors	Possible through ET 200S with IM 153-1
Communication interfaces	SIMATIC S7 (ET 200S backplane bus), 8 bytes, I/O area
Module parameterization	Not required (module is pre-parameterized)
Measuring properties	
• Error limit according to DIN 1319-1 of upper limit of effective range at 20 °C ± 10 K	≤ 0.15 %
• Signal resolution	14 bits plus 1 bit sign
Number of measurements/second	50
Low-pass filter	Without or 2 Hz
Sensors	In accordance with the principle of expansion measurement (full bridge) 4-wire connection
Sensor feed	
• Supply voltage, short-circuit-proof	6 V DC ± 5%
• Permissible sensor resistance	
- R_{Lmin}	> 250 Ω
- R_{Lmax}	< 4010 Ω
Permissible sensor cell coefficient	Up to 4 mV/V
Permissible range of the measuring signal	-25.2 to +25.2 mV
Supply voltage 24 V DC	
• Nominal voltage	24 VDC
• Max. current consumption	150 mA
Voltage supply from backplane bus	Typ. 10 mA
Certification	UL, CSA, FM
IP degree of protection to DIN EN 60529; IEC 60529	IP 20
Climatic requirements $T_{min\ (IND)}$ to $T_{max\ (IND)}$ (operating temperature)	
• Vertical mounting	0 ... +60°C
• Horizontal installation	0 ... +40 °C
EMC requirements according to	NAMUR NE21, Part 1 89/386/EEC

Selection and Ordering Data

	Order No.
SIWAREX CF Force module for strain-gauge sensors in SIMATIC ET 200S (SIWAREX CF configuring package not required)	**7MH4920-0AA01**
SIWAREX CF manual • German, English Free download on the Internet at: http://www.siemens.com/weighing-technology	
SIWAREX CF "Getting started" Sample software for easy acquaintance with programming in STEP 7. Free download on the Internet at: http://www.siemens.com/weighing-technology	
Installation material (mandatory)	
Terminal module TM-E 30 mm wide (required for each SIWAREX module)	**6ES7193-4CG20-0AA0** **or compatible**
Shield contact element Contents 5 items, sufficient for 5 cables	**6ES7193-4GA00-0AA0**
Shield terminal element Contents: 5 items, sufficient for 5 cables One shield terminal element is required per sensor cable	**6ES7193-4GB00-0AA0**
N busbar, galvanized 3 x 10 mm, 1.5 m long	**8WA2842**
Feeder terminal for N busbar	**8WA2868**
Accessories	
SIWAREX EB extension box for extending sensor cables	**7MH4710-2AA**
Cable (optional)	
Cable Li2Y 1 x 2 x 0.75 ST + 2 x (2 x 0.34 ST) - CY, orange sheath To connect SIWAREX U, M, P, FTA, FTC, CS and CF to the junction box (JB), extension box (EB) or Ex interface (Ex-I) or between two JBs, for fixed laying, occasional bending is possible, 10.8 mm outer diameter, for ambient temperature –40 to +80°C	**7MH4702-8AG**

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www.siemens.com/weighing-technology
Order No. E86060-K6401-E121-A1-7600
Printed in the Federal Republic of Germany
515137 KG 0205 5.0 SR En

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