



SIWAREX[®] U

Device manual

Version: 01/2012

For modules with order number 7MH4950-1AA01 and 7MH4950-2AA01



3 Product overview

3.1 General information

SIWAREX U is a versatile and flexible weighing module, which can be used wherever static scales are to be used in the SIMATIC S7 automation system.

The function module (FM) SIWAREX U takes full advantage of all the features of the modern automation system, including the integrated communication, the diagnostic system and the configuration tools.

SIWAREX U is not designed for legal-for-trade within the meaning of OIML-R76.

Customer benefits:

SIWAREX U distinguishes itself by virtue of decisive advantages:

- o Uniform design technology and consistent communication via the use in SIMATIC S7
- o Uniform configuration with SIMATIC Manager
- o Use in the peripheral system concept in ET 200M (PROFIBUS, PROFINET)
- o Measurement of weight or force with high resolution of 16 bits
- o High accuracy 0.05 %
- o High measurement rate of 50 Hz
- o Monitoring of limit values
- o Flexible adaptation to different requirements with SIMATIC control
- o Simple setting of the scale with the program SIWATOOL U via the RS 232 port
- o Theoretical adjustment possible without adjustment weights
- o Replacement of the module possible without a new adjustment of the scale
- o Use in Ex-zone 2 / ATEX approval.
- o Intrinsically safe load cell powering for the Ex area Zone 1 (option with SIWAREX IS)
- o Diagnostic functions integrated in SIMATIC S7

3.2 Area of application

SIWAREX U is the optimal solution wherever the aim is to detect signals from strain gauge sensors or load cells. As weighing electronics, SIWAREX U offers good accuracy with a measuring time of 20 ms.

SIWAREX U is optimally equipped for the following applications:

- o The fill-level monitoring of silos and bunkers

3.4 Function

The primary task of SIWAREX U consists in the measurement of the current weight value. By means of the integration in SIMATIC, there is the option of processing the weight value directly in the PLC.

SIWAREX U is already pre-adjusted in the factory. This makes possible the theoretical adjustment of the scale without adjustment weights as well as module replacement without a new adjustment of the scale.

SIWAREX U possesses two serial ports. The TTY port is for the connection of digital remote displays. A PC can be connected to the RS 232 port for the setting of SIWAREX U.

The weighing module SIWAREX U can also be used in areas with a risk of explosion (Zone 2). Via an optional Ex interface SIWAREX IS, the load cells are securely connected for Zone 1 applications.

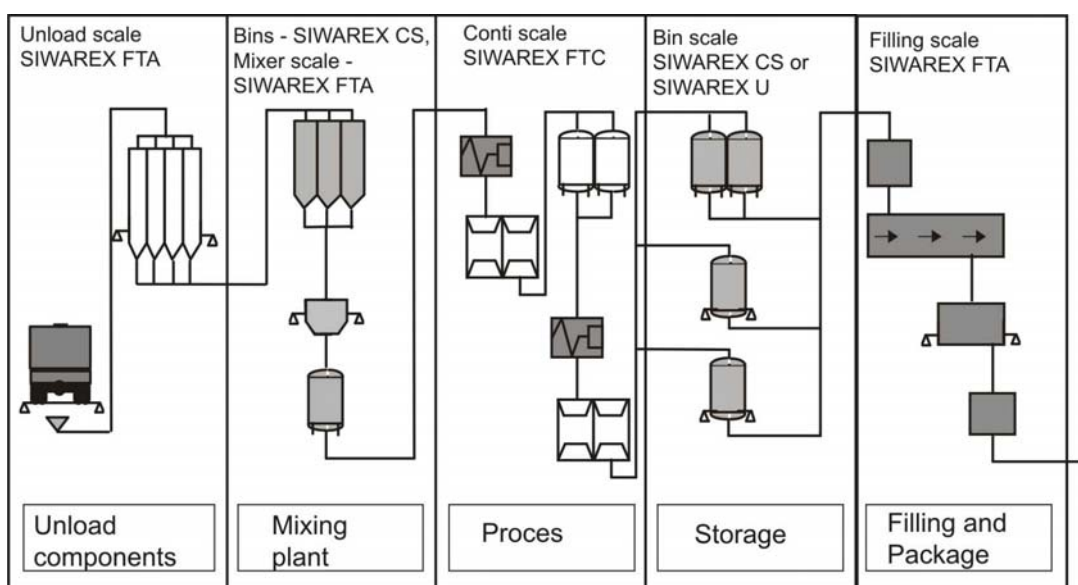


Figure 3-2 Areas of application of SIWAREX modules in the production chain

3.5 System integration in SIMATIC

SIWAREX U is a module of SIMATIC S7 300. The user is fully free in the configuration of the automation solution, including the weighing application. By means of a relevant combination of the SIMATIC modules, optimal solutions can be found for small, medium-sized, and large systems. With the aid of the configuration package and sample applications for SIMATIC, customer-specific/sector-specific solutions can be developed very quickly. The following picture shows a typical combination for a medium-sized system.

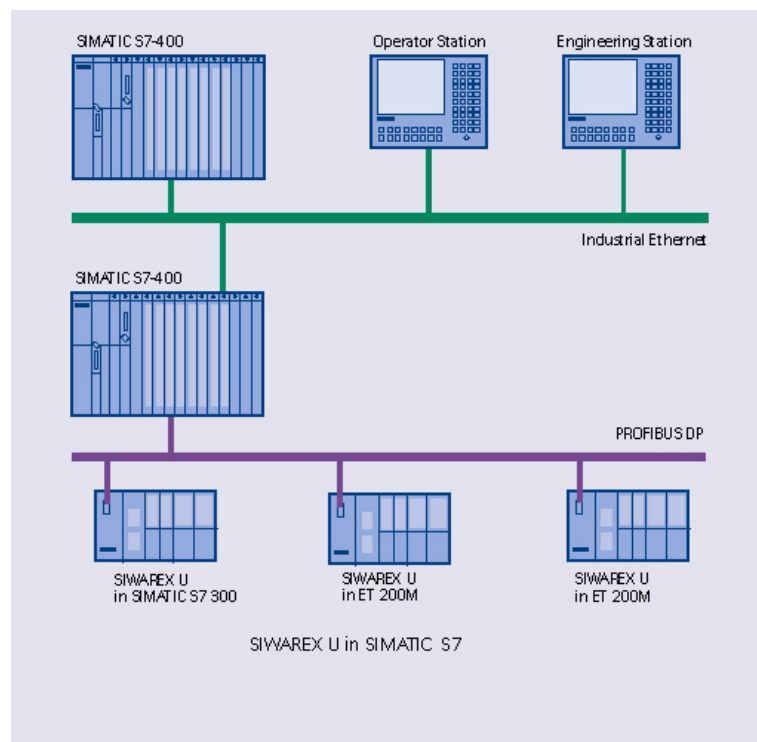


Figure 3-3 Typical configuration SIMATIC S7 with SIWAREX U

13 Technical data

13.1 24 V power supply

SIWAREX U weighing modules are designed for operation with SELV (Safety Extra Low Voltage). Accordingly, only SELV (Safety Extra Low Voltage) power supply connections may be connected in accordance with IEC950/EN60950/VDE0805.

An isolated function low voltage (in accordance with EN60204-1) is to be ensured by the system power supply.

Rated voltage	DC 24 V input via the front connector (reverse polarity protection)
Upper/lower limits static	DC 20.4 V/28.8V
Upper/lower limits dynamic	DC 18.5 V/30.2 V
Non-periodic excess voltage	DC 35 V for 500 ms with a recovery time of 50 s.
Maximum current consumption (with rated voltage)	150 mA(single-channel)/240 mA (double-channel)
Starting current surge at 25°C (typical)	2.4 A
Power loss of the module typical	3.6W (single-channel)/5.8W (double-channel)

Table 13-1 Data: Power supply 24 V

13.2 Power supply from the S7 backplane bus

Current consumption (5 V) from the -backplane bus	< 100 mA
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Table 13-2 Data: Power supply from the S7 backplane bus

13.3 Load cell activation

Error limit in accordance with DIN1319-1 from measurement range end value at 20 °C ± 10 K	≤ 0.05 %
Update rate	50 Hz
Resolution internal	65,535 parts
Display range of the weight values	-32,768 to 32,767
3 measurement ranges	0 to 1 mV/V 0 to 2 mV/V 0 to 4 mV/V
Temperature coefficient range	$\leq \pm 10$ ppm/K v. E.
Adjustment zero temperature coefficient	$\leq \pm 0.3$ μ V/K
Max. distance of LC	500 m *