

MANUFACTURER DOCUMENT PACKAGE

# Manufacturer's Manual

Reference package for procurement and maintenance review

SIEMENS

## 7MH4900-3AA01

SIWAREX FTC WEIGHING MODULE

Used with the applicable PLC System configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Selected official manufacturer pages follow this cover.

Source: Siemens official manufacturer documentation

# SIMATIC S7-300

## Function modules

### SIWAREX FTC

4

#### Overview



SIWAREX FTC weigh module

The SIWAREX FTC (Flexible Technology for Continuous Weighing) is a versatile and flexible weigh module for conveyor scales, differential proportioning weighers and bulk flow meters. It can also be used to record weights and measure force. The SIWAREX FTC function module is integrated in SIMATIC S7/PCS7, and uses the features of this modern automation system, such as integral communication, diagnostics and configuration tools.

#### Technical specifications

|                                                                       |                                                                            |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------|
| <b>SIWAREX FTC</b>                                                    |                                                                            |
| <b>Use in automation systems</b>                                      |                                                                            |
| • S7-300                                                              | Directly or via ET 200M                                                    |
| • S7-400 (H)                                                          | Via ET 200M                                                                |
| • PCS 7 (H)                                                           | Via ET 200M                                                                |
| <b>Communications interfaces</b>                                      | SIMATIC S7, RS 232, RS 485                                                 |
| <b>Module parameterization</b>                                        | Using SIMATIC S7                                                           |
|                                                                       | Using SIWATOOL FTC software (RS 232)                                       |
| <b>Measuring properties</b>                                           |                                                                            |
| • EC type approval as non-automatic weighing machine, trade class III | 3 x 6000 d<br>≥ 0.5 µV/e                                                   |
| • Internal resolution                                                 | +/- 8 million parts                                                        |
| • Internal/external updating rate                                     | 400/100 Hz                                                                 |
| <b>Several parameterizable digital filters</b>                        | Critically damped, Bessel, Butterworth (0.05 ... 20 Hz), mean value filter |
| <b>Weighing functions</b>                                             |                                                                            |
| • Non-automatic weighing machine, force measurement                   |                                                                            |
| • Conveyor scale                                                      |                                                                            |
| <b>Load cells</b>                                                     | Strain gages in 4-wire or 6-wire system                                    |
| • 3 characteristic value ranges                                       | 1, 2 or 4 mV/V                                                             |
| <b>Load cell powering</b>                                             |                                                                            |
| • Supply voltage $U_S$ (rated value)                                  | 10.3 V DC                                                                  |
| • Max. supply current                                                 | 184 mA                                                                     |
| • Permissible load cell resistance                                    |                                                                            |
| - $R_{Lmin}$                                                          | > 56 Ω                                                                     |
|                                                                       | > 87 Ω with Ex interface                                                   |
| - $R_{Lmax}$                                                          | ≤ 4010 Ω                                                                   |

|                                                                   |                                                          |
|-------------------------------------------------------------------|----------------------------------------------------------|
| <b>Max. distance of load cells</b>                                |                                                          |
| When using the recommended cable:                                 |                                                          |
| • Standard                                                        | 1000 m (500 m legal-for-trade)                           |
| • In hazardous area <sup>1)</sup>                                 |                                                          |
| - For gases of group IIC                                          | 300 m                                                    |
| - For gases of group IIB                                          | 1000 m                                                   |
| <b>Connection to load cells in Ex zone 1</b>                      | Optionally via SIWAREX IS Ex interface                   |
| <b>Ex approvals zone 2 and safety</b>                             | ATEX 100a, FM, UL, cUL-US Haz. Loc. (all available soon) |
| <b>Power supply</b>                                               |                                                          |
| • Rated voltage                                                   | 24 V DC                                                  |
| • Max. current consumption                                        | 500 mA                                                   |
| • Current consumption from backplane bus                          | Typ. 55 mA                                               |
| <b>Inputs/outputs</b>                                             |                                                          |
| • Digital inputs                                                  | 7 DI electrically isolated                               |
| • Digital outputs                                                 | 8 DO electrically isolated                               |
| • Counter input                                                   | Up to 10 kHz                                             |
| • Analog output                                                   |                                                          |
| - Current range                                                   | 0/4 to 20 mA                                             |
| - Updating rate                                                   | 100 Hz                                                   |
| <b>Approvals</b>                                                  |                                                          |
| For NAWI mode                                                     | EC type approval, OIML-R76                               |
| <b>Degree of protection to DIN EN 60529; IEC 60529</b>            | IP20                                                     |
| <b>Climatic requirements</b>                                      |                                                          |
| ( $T_{min}$ (IND) ... $T_{max}$ (IND))<br>(operating temperature) |                                                          |
| • Vertical installation                                           | -10 ... 60 °C                                            |
| • Horizontal installation                                         | -10 ... 40 °C                                            |
| <b>EMC requirements</b>                                           | EN 61326, EN 45501, NAMUR NE21, Part 1                   |
| <b>Dimensions in mm</b>                                           | 80 x 125 x 130                                           |
| <b>Weight</b>                                                     | 600 g                                                    |

1) For details, refer to SIWAREX IS data sheet

www.DataSheet4U.com

## SIMATIC S7-300

## Function modules

## SIWAREX FTC

4

## Ordering data

## Order No.

## Order No.

**SIWAREX FTC**

Weighing electronics for conveyor scales for S7-300 and ET 200M.

Applications: Force measurement, conveyor scales

**7MH4 900-3AA01****SIWAREX FTC Manual**

German, English, Italian, Spanish, French

Free download from the Internet at:  
[www.siemens.com/weighing-technology](http://www.siemens.com/weighing-technology)

SIWAREX FTC "Getting started"

Example software for easy acquaintance with scale programming in STEP 7.

Free download from the Internet at:  
[www.siemens.com/weighing-technology](http://www.siemens.com/weighing-technology)

**SIWAREX FTC configuration package for SIMATIC S7** on CD-ROM

- SETUP for S7 link with STEP 7 V5.2
- S7 function block
- SIWATOOL FTC commissioning software
- Manual

**7MH4 900-3AK01****SIWAREX FTC configuration package for PCS 7 V6.x** on CD-ROM

- SETUP for S7 link
- Function block for CFC
- Faceplate
- SIWATOOL FTC commissioning software
- Manual

**7MH4 900-3AK61**

**SIWATOOL cable** from SIWAREX FTC with serial PC interface, for 9-pin PC interfaces (RS 232)

- 2 m long
- 5 m long

**7MH4 702-8CA****7MH4 702-8CB****40-pin front plug with screw contacts**

(required for each SIWAREX module), alternatively with spring-loaded contacts

**6ES7 392-1AM00-0AA0****40-pin front plug with spring-loaded contacts**

(required for each SIWAREX module), alternatively with screw contacts

**6ES7 392-1BM00-0AA0****Shield contact element**

Sufficient for one SIWAREX FTC module

**6ES7 390-5AA00-0AA0****Shield connection terminal**

Contents: 2 units (suitable for cable with diameter 4 ... 13 mm)

Note:

one shield connection terminal is required each for:

- Scale connection
- RS 485 interface
- RS 232 interface

**6ES7 390-5CA00-0AA0****S7 DIN rail**

- 160 mm
- 480 mm
- 530 mm
- 830 mm
- 2000 mm

**6ES7 390-1AB60-0AA0****6ES7 390-1AE80-0AA0****6ES7 390-1AF30-0AA0****6ES7 390-1AJ30-0AA0****6ES7 390-1BC00-0AA0****PS 307 load power supply**

(only required if DC 24 V is not available)

120/230 V AC; 24 V DC

- PS 307-1B; 2 A
- PS 307-1E; 5 A
- PS 307-1K; 10 A

**6ES7 307-1BA00-0AA0****6ES7 307-1EA00-0AA0****6ES7 307-1KA00-0AA0****MMC memory**

for data recording up to 16 MB

**6ES7 953-8LF11-0AA0****Remote display (option)**

The Siebert S102 and S302 remote digital display can be directly connected to the SIWAREX FTC via an RS 485 interface. (not suitable for mode "Conveyor scale")

Siebert Industrie Elektronik GmbH  
P.O. Box 1180  
D-66565 Eppelborn  
Tel.: +49 6806/980-0  
Fax: +49 6806/980-999  
Internet: <http://www.siebert.de>

Detailed information available from manufacturer.

**SIWAREX JB junction box, aluminium housing**

for connecting up to 4 load cells in parallel, and for connecting several junction boxes

**7MH4 710-1BA****SIWAREX JB junction box, stainless steel housing**

for connecting up to 4 load cells in parallel

**7MH4 710-1EA****Ex interface, type SIWAREX Pi**

With UL and FM approvals, but **without ATEX approval** for intrinsically-safe connection of load cells, suitable for the SIWAREX U, M, FTA, FTC, CS and P weighing modules. Use in the EC is not possible.

**7MH4 710-5AA****Manual for Ex interface type SIWAREX Pi****C71000-T5974-C29****SIWAREX IS Ex interface**

With ATEX approval, but **without UL and FM approvals** for intrinsically-safe connection of load cells, including Manual, suitable for the SIWAREX U, M, FTA, FTC, CS and P weighing modules. Use in the EC is possible.

- With short-circuit current < 199 mA DC

**7MH4 710-5BA**

- With short-circuit current < 137 mA DC

**7MH4 710-5CA****Cable (optional)**

see SIWAREX U, page 4/183

# SIMATIC S7-300

## Function modules

SIWAREX M

4

### Overview



SIWAREX M is a legal-for-trade weighing module for exact weighing and proportioning, and can be used in SIMATIC automation systems without problem. The module controls the proportioning of individual setpoints independent of the cycle time of the automation system, and therefore achieves a high proportioning accuracy.

### Technical specifications

| SIWAREX M                                                                                       |                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Main applications</b>                                                                        | <ul style="list-style-type: none"> <li>Platform scales</li> <li>Fill level (containers/bins)</li> <li>Proportioning and batching scales</li> <li>Scales with verification capability</li> </ul> |
| <b>Intrinsically-safe load cell powering</b>                                                    | Optional (Ex-I)                                                                                                                                                                                 |
| <b>Stand-alone (without SIMATIC)</b>                                                            | Yes                                                                                                                                                                                             |
| Integration in:                                                                                 |                                                                                                                                                                                                 |
| • S5-90/-95U/-100U                                                                              | Via RS 232/TTY + CP                                                                                                                                                                             |
| • S5-95U/DP (PROFIBUS master)                                                                   | Via RS 232/TTY + CP                                                                                                                                                                             |
| • S5-115U/-135U/-155U                                                                           | Via ET 200M                                                                                                                                                                                     |
| • S7-300                                                                                        | Direct integration                                                                                                                                                                              |
| • S7-400                                                                                        | Via ET 200M                                                                                                                                                                                     |
| • PCS 7                                                                                         | Via ET 200M                                                                                                                                                                                     |
| • C7                                                                                            | Via IM or ET 200M                                                                                                                                                                               |
| • TELEPERM M (AS 388/488/TM)                                                                    | Via ET 200M                                                                                                                                                                                     |
| <b>Communication interfaces</b>                                                                 | SIMATIC S7 (P bus)<br>RS 232, TTY                                                                                                                                                               |
| <b>Process interfaces</b>                                                                       |                                                                                                                                                                                                 |
| • Digital inputs                                                                                | 3 (assignable)                                                                                                                                                                                  |
| • Digital outputs                                                                               | 4 (assignable)                                                                                                                                                                                  |
| • Analog output/analog input                                                                    | Yes / No                                                                                                                                                                                        |
| <b>Remote display connection (via serial interface)</b>                                         | Yes (verification capability)<br>Gross/net/setpoint<br>Remote display with operator control                                                                                                     |
| <b>Printer connection</b>                                                                       | Yes (verification capability)                                                                                                                                                                   |
| <b>Measuring properties</b>                                                                     |                                                                                                                                                                                                 |
| EU type approval for medium accuracy weighing machines Class III (with verification capability) | 6000 d                                                                                                                                                                                          |
| Error limit according to DIN 1319-1 of full-scale value at 20 °C ± 10 K                         | 0,01 %                                                                                                                                                                                          |
| $n_{ind}$ in acc. with EN 45 501                                                                | 6000                                                                                                                                                                                            |
| Min. measuring signal $\Delta u_{min}$ per d                                                    | 0.5 $\mu$ V                                                                                                                                                                                     |
| Internal resolution                                                                             | ± 524.288                                                                                                                                                                                       |
| Data format for weight values                                                                   | 4 byte (fixed-point)                                                                                                                                                                            |

| SIWAREX M                                                                     |                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Number of measurements/second</b>                                          | 50                                                                                                                                                                                                                                                    |
| <b>Filter</b>                                                                 | Exponent filter: 0.05 ... 5 Hz<br>Mean value filter                                                                                                                                                                                                   |
| <b>Weighing functions</b>                                                     |                                                                                                                                                                                                                                                       |
| • Weight values                                                               | Gross/net/tare                                                                                                                                                                                                                                        |
| • Limits                                                                      | 4 (min./max./empty/overflow)                                                                                                                                                                                                                          |
| • Scale standstill                                                            | Yes                                                                                                                                                                                                                                                   |
| • Zero setting function                                                       | Via command or automatically                                                                                                                                                                                                                          |
| <b>Proportioning functions</b>                                                | <ul style="list-style-type: none"> <li>Control of coarse/fine flow valves</li> <li>Tolerance monitoring</li> <li>Material flow monitoring</li> <li>Autom. proportioning optimization</li> <li>Autom. reproportioning</li> <li>Inching mode</li> </ul> |
| <b>Module parameterization</b>                                                | Via SIMATIC S5/S7/C7 or SIWATOOL M PC parameterization software                                                                                                                                                                                       |
| <b>UL/CSA/FM certification</b>                                                | Yes                                                                                                                                                                                                                                                   |
| IP degree of protection to DIN EN 60529; IEC 60529                            | In S7 frame: IP20<br>Stand-alone: IP10                                                                                                                                                                                                                |
| <b>Load cell powering</b>                                                     |                                                                                                                                                                                                                                                       |
| • Supply voltage $U_s$ (rated value)                                          | 10.2 V DC                                                                                                                                                                                                                                             |
| • Max. supply current                                                         | ≤ 180 mA                                                                                                                                                                                                                                              |
| • Permissible load resistance:                                                |                                                                                                                                                                                                                                                       |
| - $R_{Lmin}$                                                                  | > 60 $\Omega$                                                                                                                                                                                                                                         |
| - $R_{Lmax}$                                                                  | < 4010 $\Omega$                                                                                                                                                                                                                                       |
|                                                                               | <u>With Ex(i) interface:</u>                                                                                                                                                                                                                          |
| - $R_{Lmin}$                                                                  | > 87 $\Omega$                                                                                                                                                                                                                                         |
| - $R_{Lmax}$                                                                  | < 4010 $\Omega$                                                                                                                                                                                                                                       |
| <b>Permissible load cell characteristic</b>                                   | Up to 4 mV/V                                                                                                                                                                                                                                          |
| <b>Permissible range of measuring signal (at greatest set characteristic)</b> | -41.5 ... 41.5 mV DC                                                                                                                                                                                                                                  |
| <b>Max. distance of load cells</b>                                            | 1000 m<br>(300 m in Ex area <sup>1)</sup> )                                                                                                                                                                                                           |

1) Up to 1000 m, depending on the gas group. [www.DataSheet4U.com](http://www.DataSheet4U.com)