# **SIEMENS**

# SIWAREX FTA Weighing Module

Weighing Module for High Accuracy Requirements Calibrating SIWAREX FTA with SIWATOOL FTA

### **Quick Guide**

For modules with order number 7MH4900-2AA01



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#### Introduction

SIWAREX FTA is a calibratable and versatile weighing electronics for SIMATIC S7, C7 and PCS7. It can be used for automatic and non-automatic weighing, e.g. for the production of mixtures, filling, loading, monitoring and bagging.

#### Purpose of this document for functional safety

This programming manual contains all information that you will require to commission and use the device.

It is aimed at persons who install the device mechanically, connect it electrically, parameterize and commission it, as well as at service and maintenance engineers.

#### Notes on warranty

The contents of this programming manual shall not become part of or modify any prior or existing agreement, commitment or legal relationship. All obligations on the part of Siemens AG are contained in the respective sales contract, which also contains the complete and solely applicable warranty conditions. Any statements on the device versions described in the programming manual do not create new warranties or modify the existing warranty.

The content reflects the technical status at the time of printing. We reserve the right to make technical changes in the course of further development.

#### Validation of this document

This documentation is only valid in conjunction with the manual SIWAREX FTA. This manual is available on the Siemens homepage.

http://support.automation.siemens.com/WW/view/en/17831309/133300

#### 1 Hardware Requirements

Following hardware parts and software are requested to integrate a scale in SIMATIC. 24V Power supply, S7-300 CPU or ET200M Station, memory card for CPU, SIWAREX FTA front connector for SIWAREX FTA, SIWATOOL FTA software, RS232 cable, computer with Windows XP or higher and a calibration weight bigger than 5% of the sum of the nominal value of all load cells.





SIWATOOL RS232 Cable 7MH4607-8CA



Configuration Package for SIWAREX FTA 7MH4900-2AK01



The operating environment shown below includes the following: PS207 2A power supply, ET200M station or CPU3xx, SIWAREX FTA weighing module, MPI communication card, SIWATOOL cable



## 2 Connections



#### Load Cell Connection:

Termination Clamp	Signal	Remark
35	SEN+	Sensor Line +
36	SEN-	Sensor Line -
37	SIG+	Measuring Line +
38	SIG-	Measuring Line –
39	EXC+	Load Cells Feeding Voltage +
40	EXC-	Load Cells Feeding Voltage –

# 3 Start SIWATOOL FTA



On the SIWATOOL FTA interface select the interface COM1 used on your computer.

File Communication View Tools ?		
Choose interface	Language Prof. Display Message Wigard	
Offine		
E Receive all data		
Basis parameter (DR4)	No element is selected	
Application 10 (0K9)     Test preparation		
Monitor  Process status 1 (DR30)  Process status 2 (DR31)  Statistics (DR32)		
	Interface settings	
🗄 🊈 Firmware download	COM1	
	C com2	
	COM3	
	C COM4	
		Abort
	Send Receive Poling Accept Abort	

#### Click "Online"



When the communication is established "Online" turns into grey.



# **4 Resolution of SIWAREX FTA**

The Siwarex FTA electronics converts the weight into a 24 bit value.

The value is comprised between approx. 1.4 Mio ... 15.4 Mio Digits. That internal digits value is taken for further calculations, e.g. gross weight. These numbers are then transmitted as real values to the SIMATIC PLC.

# 5 Type of Filters (Limit frequency: Low-pass filter (0.05 Hz ~ 20 Hz))

3 types of filters are available to choose for suppressing interferences.

If it is set to 5 Hz, the scale will respond quickly to the weight change; if it is set to 0.05 Hz, the scale will "move slowly".



The average value filter is used to calm the weighing value compensating for random interferences. The weight is measured according to the average value of n weight values.

If n = 10, 10 weight values will be used for calculating the average value. The earliest value is discarded every 10 milliseconds and the latest value will be added for the calculation.



# 6 Calibration

Before calibrating, set the "Service mode on (1)".



Click "Adjustment parameter (DR3)"

Communication View Tools ?				_
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a Ober Save over our		BT D C I		
Commissioning		PI D C )		
💭 Software ID (DS39)	Adjustment par	rameter (DR3)		
Interface parameter (DR7)	Info	Calibration param. 1 Cal	en param. 2 Ce	altration param. 3 Calibration param. 4
- 1 Date & Time (DR8) - 2 Application ID (DR9)	Fiter	Adjustment Theore	t. Adju ment 1	
Test preparation Monitor				
Process status 1 (DR30)	Adjustment digits for zero	1396101		
Relistics (DR32)	Adjustment digits 1	15379113	Adjustment weight 1	100,0
Process status int. 2 (DR27)	Adverturest darks 7	6	Adverture of works 7	6.0
Cogging MMC	Augustinen uges a	٣	regionners megas z	les.
Tim Firmware download	Adjustment digits 3	p	Adjustment weight 3	0,0
	Adjustment digits 4	0	Adjustment weight 4	0,0
	Characteristic value	2mV/V •		
	range Turn af laaf out	Analysis had call		
	The state of	The study state cast		
	Timeout digtal load cell	240		
		1		

Enter the "Adjustment weight" (e.g. "150.0") and set the "Characteristic value range".

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Interface parameter (DR7)	• • • Y	C. H			C Harling and	
Date & Time (DR8)		Calibration param. 1	Calibration param. 2	Calibration param. 3	Calibration param. 4	
Application ID (DR9)	Filter	Adjustment	Theoret. Adjustment 1			_
🗄 🛅 Test preparation						
Monitor	Adjustment digits for	1398101				
Process status 1 (DR30)	zero	1350101				
Statistics (DR32)		45070440				
Process status int. 1 (DR26)	Adjustment digits 1	153/9113	Adjustment we	eight 1 150,0		
Process status int. 2 (DR27)		-				
🕀 🛅 Logging	Adjustment digits 2	0	Adjustment weig	<i>ht 2</i> 0,0		
E-mail Logging MMC						
+ ··· III Firmware download	Adjustment digits 3	0	Adjustment weig	<i>ht 3</i> 0,0		
	Adjustment digits 4	0	Adjustment weig	<i>ht 4</i> 0,0		
				,		
	Characteristic value	2mV/V	▼			
	range					
	Type of load cell	Analog load cell				
	Timogut digital laad call	240				
	nineoor ogranoao reii	210				

Set parameters "Min/Max weight for weighing range 1" and the "Resolution range 1" in register "Calibration parameter 2".

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File Communication View Tools ?	
Mew Open Save Online Offline	A - Display Message Wizard
E SIWAREX FTA	+0+ T T PT D C T A A + ++++ + + + + + + + + + + + + +
Commissioning     Adjustment parameter (DR3)     Software ID (D539)     Software ID (D54)	Adjustment parameter (DR3)
Interface parameter (DR7)	Filter Adjustment Theoret. Adjustment 1
Application ID (DR9)	Info Calibration param. 1 Calibration param. 2 Calibration param. 4
Test preparation	
Monitor     Process status 1 (DR30)     Process status 2 (DR31)	Minimum weight for weighing range 1         1,0         Minimum weight for weighing range 3         0,0
Process status int. 1 (Di 26)	Maximum weight for 100,0 Maximum regist for 0,0 weighting range 1
Process status int. 2 (DR.	Resolution range 1 0.02 Resolution ange 2 0.0
Logging     Logging MMC	
	Minimum-egy-
	weighing range 2
	Maximum weight for 0,0
	Resolution range 2
	0,0

**"Resolution range 1"**: It is the minimum change of the displayed weight. The unit is the same as the **"Weight unit"** selected under the **"Calibration parameter 3"** tab (see below).

Examples:

SIWAREX FTA	0+ T T PT D C V & & · · · · · · · · · · · ·	
	Adjustment parameter (DR3)	
Date & Time (DR8)	Filter Adjustment Theoret. Adjustment 1	
Application ID (DR9)	Info Calibration param. 1 Calibration param. 2 Calibration param. 3 Calibration param. 4	
Test preparation		
Monitor Nonitor Nonit	Minimum weight for weighing range 1     1,0     Minimum weight for weighing range 3     0,0       Maximum weight for usyming range 1     100.0     Maximum weight for weighing range 3     0,0       Resolution range 1     0,05     Tesolution range 3     0,0       Minimum weight for weighing range 2     100.0     100.0       Maximum weight for weighing range 2     100.0     100.0	
	Actual values	
	B 2.65kg	

"Resolution range 1" is set to 0.05 kg, so the minimum change is 0.05 kg.

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SIWAREX FTA	→0+ T T	PT D		🕂 r 🚢 r	<b>-</b>	
Adjustment parameter (DR3)     Software ID (DS39)     Basis parameter (DR4)	Adjustment pa	rameter (DR3	5)			
Interface parameter (DR7)	Filter	Adjustment	Theoret. Adjustment 1	)		
Application ID (DR9)	Info	Calibration param. 1	Calibration param. 2	Calibration param. 3	Calibration param. 4	
Test preparation						
Process status 1 (DR30)     Process status 2 (DR31)	Minimum weight for weighing range 1	1,0	Minimum weight I weighing range 3	for 0,0		
✓ Statistics (DR32)     ✓ Yercess status int. 1 (DR26)     ✓ Process status int. 2 (DR27)	Maximum weight for weight <sub>ag</sub> range 1	100.0	Maximum weight weighing range 3	for 0,0		
⊕ * ∰ Logging     ⊕ * ∰ Logging MMC	Resolution range 1	1,0	esolution range	0,0		
⊞ rimware download	Minimum weight roi weighing range 2					
	Maximum weight for weighing range 2	0,0	Actual values			
	Resolution range 2	0,0	в		169kg	

Whether the **Resolution range 1**" is set to 1.0 kg the minimum change is 1 kg.

Note: the resolution is related to the weight display and is independent from the weight precision.

E- III SIWAREX FTA	-0+ T <u></u> T PT	T D C 🕱 % · 📣 · 🚢 · 🗈 · 🗉 ·		
Adjustment parameter (DR3)  Software ID (DS39)  Adjustment (DR4)	Adjustment param	neter (DR3)		
Interface parameter (DR7) Filter Adjustment Theoret. Adjustment 1				
Date & Time (DR8)	bration param. 1 Calibration param. 2 Calibration param. 3 Calibration param. 4			
Test preparation				
Monitor	Standstill time 1 (msec)	1000 Regulations		
Statistics (DR32)	Standstill range 1	0,02 Weight unit kg		
Process status int. 2 (DR27)	Waiting time at standstill 1 (msec)	1 2000		
<ul> <li>Im togging MMC</li> <li>Im Firmware download</li> </ul>	Max, neg, weight for zero setting at switching on (%)	10		
	Max. pos. weight for zero setting at switching	10 Actual values		
	on (%)	B 0.00kg		
	Maximum negative weight for zeroing			
	Maximum positive weight for zeroing	3		
	Tare max, weight T- (%)	100 Tara sub/add subtraktiv		
	Send Receive	Polling Accept Abort		

Set parameter "Weight unit" in register "Calibration parameter 3" and then click "Send".

Ensure the scale is empty (not loaded) and click "Adjustment zero valid (3)".

StWAREX FTA	→O+     T     St.       Adjustment par       Filter       Info         Minimum weight for       weighing range 1       Minimum weight for       weighing range 2       Maximum weight for       weighing range 2       Resolution range 2       Resolution range 2	PT D C  ameter (DR3)  Adjustment Calibration param. 1  1.0  100,0  0,05  0,0  0,0  0,0  0,0  0,0	Actual val	Image: Service mode of (2)         Image: Service mode of (1)         Im	
	Send Rec	eive Poling	Accept	Abort	

Afterwards the displayed value is as follows:

Actual values	
в	0.00kg

Load the scale with the calibration weight 1 (the display may show a different weight value) and then click "Adjustment weight 1 valid (4)".

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E-I SIWAREX FTA	+0+ T T		
🖻 🏣 Commisioning			
Adjustment parameter (DR3)			Service mode on (1)
Software ID (DS39)	Adjustment pa	rameter (DR3	.5) Service mode off (2)
Johanis parameter (DR4)			@"Adjustment zero valid (3)
Date & Time (DR8)	Info	Calibration param. 1	1 Calibration g <sup>ra</sup> Adjustment weight 1 valid (4)
Application ID (DR9)	Filter	Adjustment	Theorem 29 Adjustment weight 2 valid (5)
Test preparation			g/#Adjustment weight 3 Valid (6)
🖻 🊈 Monitor			
Process status 1 (DR30)	Adjustment digits for	1526948	Acknowledge error (9)
Process status 2 (DR31)	2010		Bun impedance check (10)
Process status int. 1 (DB26)	Adjustment digits 1	2979877	Adj Set impedance reference (11)
Process status int. 2 (DR27)		,	Stand-Alone mode on (12)
E Ma Logging	Adjustment digits 2	0	Adji 🖉 Stand-Alone mode off (13)
🕀 🎢 Logging MMC		1	Delete slave pointer (14)
🗄 🊈 Firmware download	Adjustment diaits 3	0	Adit Characteristic curve shift (15)
		1	Digit.Load cell send on (40)
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	Aujustinan uigits i	ľ	Actual values
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		1	
I	Send Re	ceive Pollin	Ing Accept Abort

The display shows the "Adjustment weight 1". The adjustment is completed now.



If the corresponding weight is now changed it will be according to the actual weight and exact accuracy will be achieved.

#### Please set "Service mode off (2)"

Finally you may save the calibration data's into a file. **"Receive all data"** from the SIWAREX FTA to the PC

Untitled - SIWATOOL FTA -							
File	Communication	View	Tools ?				
	Choose interface						
	Online		l or				
	Offline						
	Receive all data						
	Send all data		ameter (				
l '	שיי אין אר Sortware בע						

During the transmission from the Siwarex FTA module to the PC the following message appears:

Com	munication status	×			
	Receive all records f	rom the SIWAREX FTA			
	Request data record				
	ок	Abort			

"Save as" a Siwatool FTA File:



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l	Dateiname:	Untitled.fta		Speichern
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If you have any issues or suggestions regarding the related products or documents, please feel free to contact:

Technical support for SIWAREX:

Siemens AG Industry Automation (IA) Sensors and Communication Process Instrumentation D-76181 Karlsruhe Germany

Tel: +49 721 595 2811 Fax: +49 721 595 2901

E-mail: siwarex.hotline.aud@siemens.com

Website: www.semens.com/siwarex

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