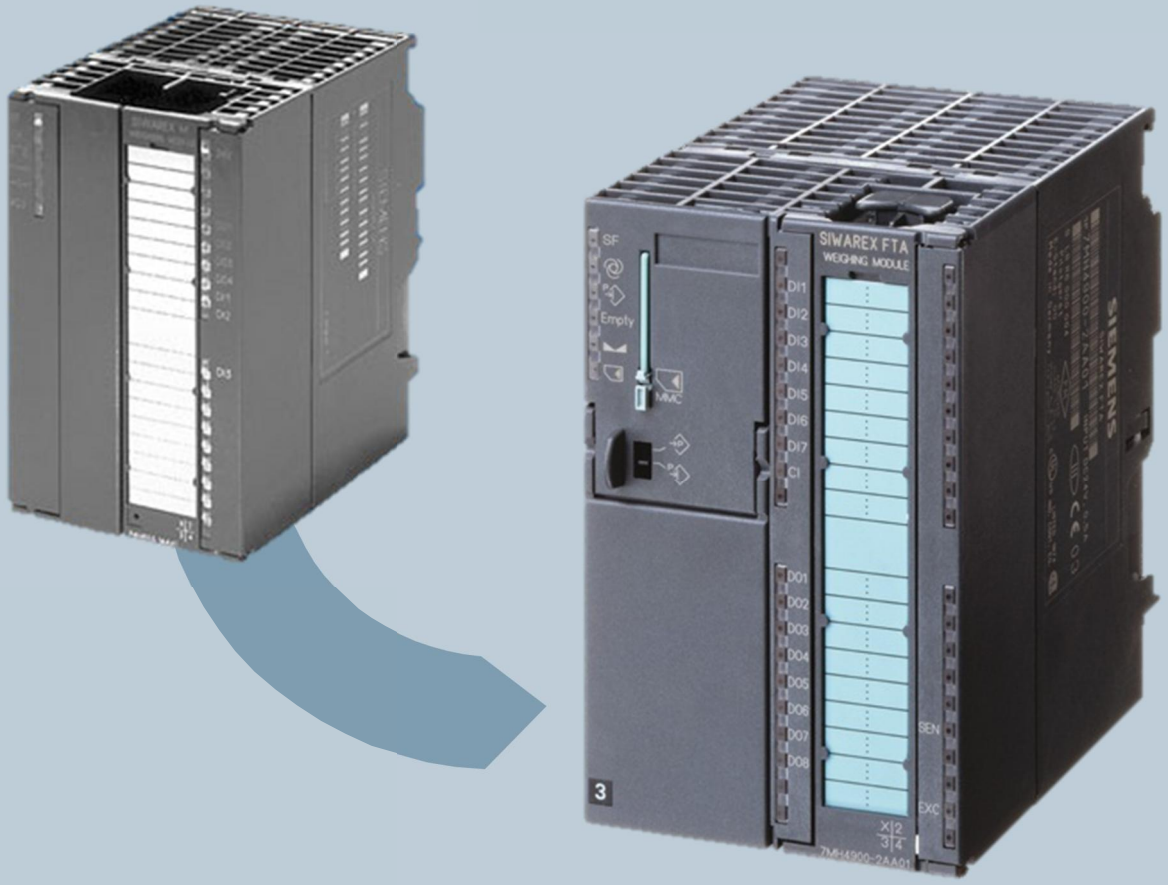
SIEMENS



Weighing Technology

Replace SIWAREX M with SIWAREX FTA

Unrestricted

www.siemens.com/weighing

General

This document describes the technical differences between SIWAREX M with SIWAREX FTA and is aimed to help upgrading from SIWAREX M to SIWAREX FTA.

Contents

1 Hardware

	SIWAREX M	SIWAREX FTA
Digital inputs	3	7
Digital outputs	4	8
Analog outputs	1	1
Resolution	+/- 524288	16 Millions
Update time	20 ms	10 ms
MMC	-	Yes(legal for trade)
R_{Lmin}	>60 Ω	>56 Ω
R_{Lmax}	<4010 Ω	<4010 Ω

2 Software

2.1 Communication between CPU and SIWAREX M

The communication of SIWAREX M is about:
- 1 Application to send commands
- 2 Application to write data
- 2 Application to read data

2.1.1 Send commands to SIWAREX M

SIWAREX M uses DBx.DBW88 (DS2) to send commands codes. For the transfer of commands or DS2, command codes are sent to address DBx.DBW88, and bit DBx.DBX47.0 is set to “1” once.
This bit DBx.DBX47.0 will be automatically reset by FC41.

Execution of the commands can be checked in DBx.DBB48:

DBx.DBX 48.0	Command running
DBx.DBX 48.1	Command finished without error
DBx.DBX 48.4	Command finished with error

2.1.2 Write data at SIWAREX M

A record is written to SIWAREX M as follows:

1.
The corresponding record number is written (e.g. „3“) in the byte:
- DBx.DBB21 (= application 1 to write)
  Or
- DBx.DBB29 (= application 2 to write)

2.
The trigger bit is set to TRUE once:
- DBx.DBX23.0 (= trigger bit of application 1)
  Or
- DBx.DBX31.0 (= trigger bit of application 2)

The trigger bit is automatically reset at the end of the command processing by FC41.

3.
Execution of the commands to write for application 1 can be checked in DBx.DBB24:

DBx.DBX 24.0	Command running
DBx.DBX 24.1	Command finished without error
DBx.DBX 24.4	Command finished with error

Execution of the commands to write for application 2 can be checked in DBx.DBB32:

DBx.DBX 32.0	Command running
DBx.DBX 32.1	Command finished without error
DBx.DBX 24.4	Command finished with error

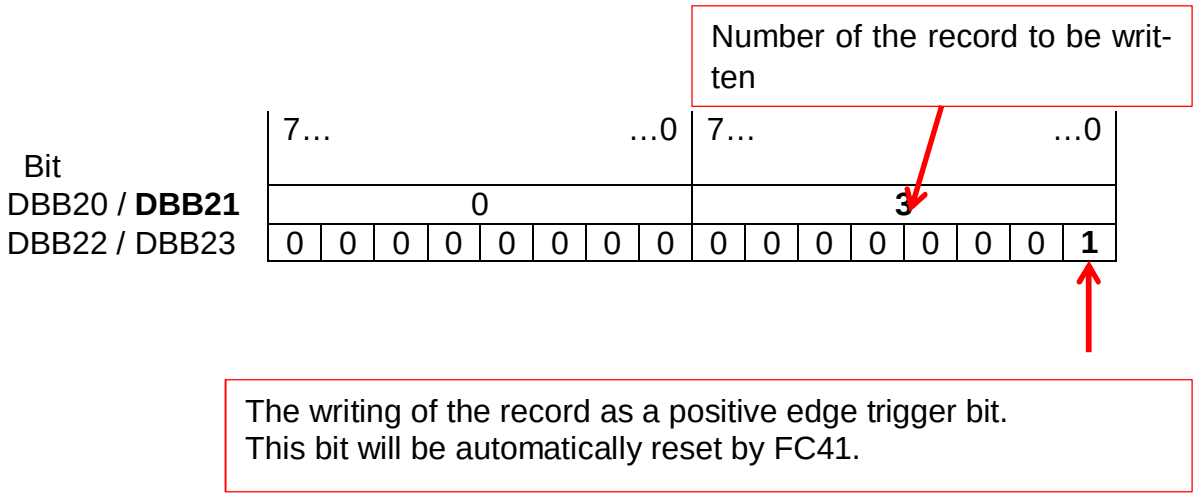
NOTES:
It is possible to write several Data Records at the same time to SIWAREX M, with help of the bit field DBx.DBW22 (= bit field of application 1) or DBx.DBW30 (= bit field of application 2), more bits are set to trigger bits.
These additional bits build an offset to the data record number, which are entered in byte DBx.DBB21 (= application 1 to write) or DBx.DBB29 (= application 2 to write).
The corresponding records are written to SIWAREX M.
See also the following 2 examples for the application 1.

1. Example for **application 1**:

The record 3 should be written to SIWAREX M:

1.
Number “3” enters in the byte DBx.DBB21.

2.
The trigger bit DBx.DBX23.0 is set to TRUE once.



3.
Execution of the commands to write for application 1 can be checked in DBx.DBB24:

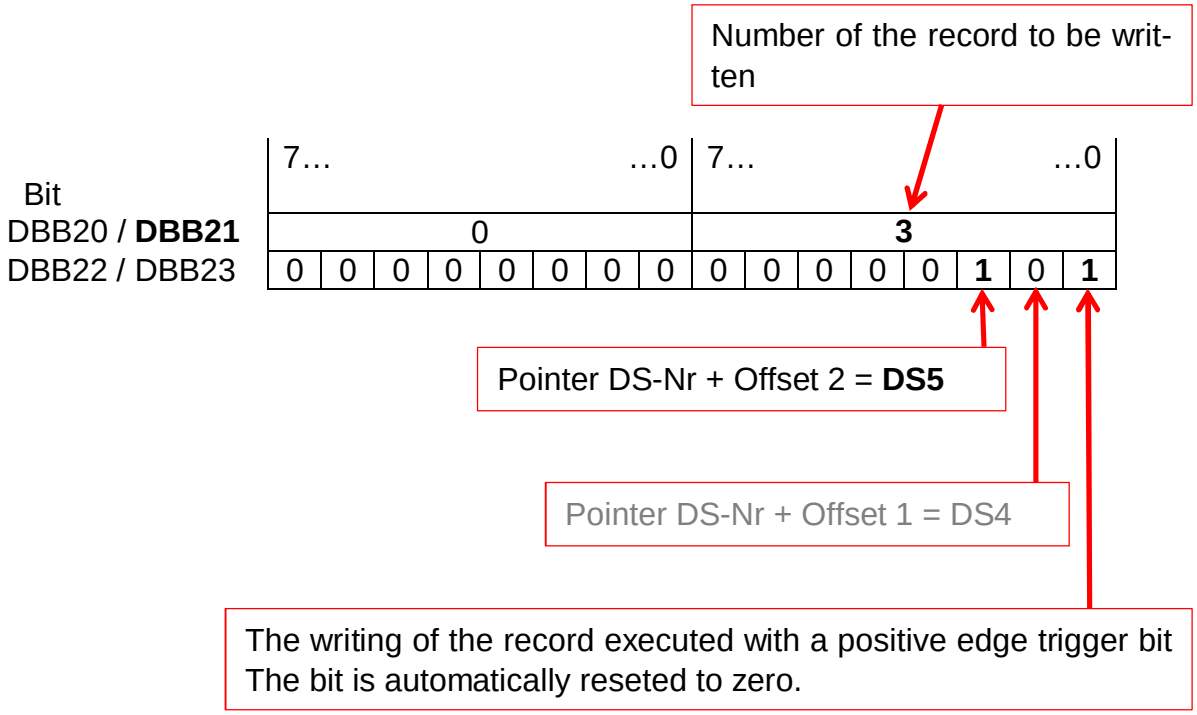
DBx.DBX 24.0	Command running
DBx.DBX 24.1	Command finished without error
DBx.DBX 24.4	Command finished with error

2. Example for **application 1**:

The record 3 and 5 should be written to SIWAREX M:

1.
Number “3” enters in the byte DBx.DBB21.

2.
The trigger bit DBx.DBX23.0 as well as offset-bit DBx.DBX23.2 (here: to write the record 5) is set to TRUE once.



3.
Execution of the commands to write for application 1 can be checked in DBx.DBB24:

DBx.DBX 24.0	Command running
DBx.DBX 24.1	Command finished without error
DBx.DBX 24.4	Command finished with error

2.1.3 Read data in SIWAREX **M**

How to read Data Record in SIWAREX M:

1.
The corresponding record number is read (e.g. „3“) in the byte:
- DBx.DBB53 (= application 1 to read)
  Or
- DBx.DBB61 (= application 2 to read)

2.
The trigger bit is set to TRUE once:
- DBx.DBX55.0 (= trigger bit of application 1)
  Or
- DBx.DBX63.0 (= trigger bit of application 2)

The trigger bit is automatically reset at the end of the command processing by FC41.

3.
Execution of the commands to read for application 1 can be checked in DBx.DBB56:

DBx.DBX 56.0	Running commands
DBx.DBX 56.1	Command finished without error
DBx.DBX 56.4	Command finished with error

Execution of the commands to read for application 2 can be checked in DBx.DBB64:

DBx.DBX 64.0	Running commands
DBx.DBX 64.1	Command finished without error
DBx.DBX 64.4	Command finished with error

NOTES:
It is possible to read several Data Records at the same time to SIWAREX M, with help of the bit field DBx.DBW54 (= bit field of application 1) or DBx.DBW62 (= bit field of application 2), more bits are set to trigger bits.

These additional bits build an offset to the data record number, which are entered in byte DBx.DBB53 (= application 1 to read) or DBx.DBB61 (= application 2 to read).
The corresponding records are read by SIWAREX M.

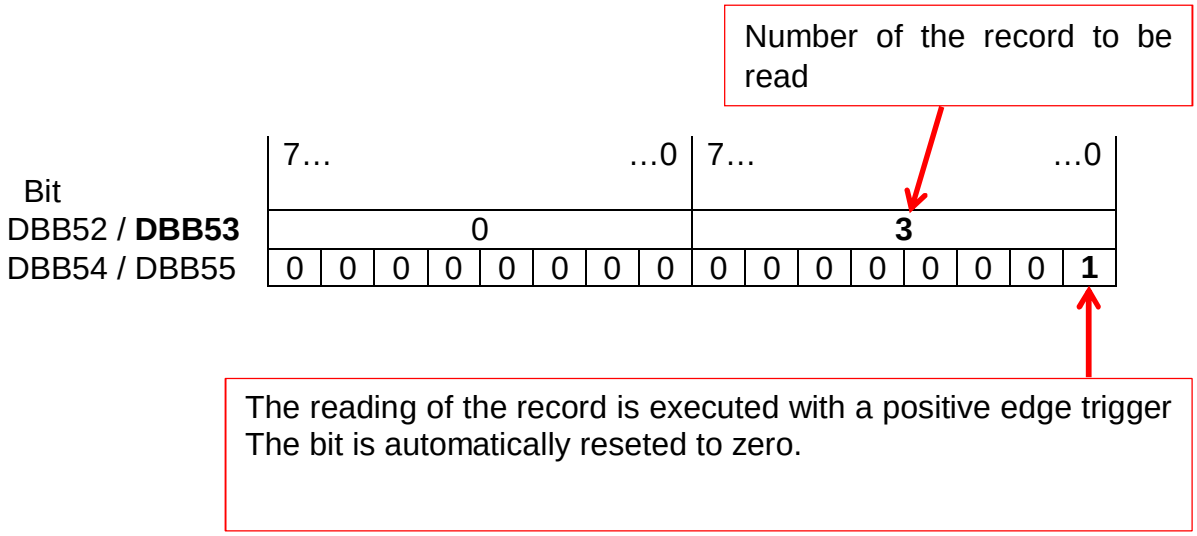
See also the following 2 examples for the application 1.

1. Example for **application 1**:

The record 3 should be read by SIWAREX M:

1.
Number “3” enters in the byte DBx.DBB53.

2.
The trigger bit DBx.DBX55.0 is set to be TRUE once.



3.
Execution of the commands to read for application 1 can be checked in DBx.DBB56:

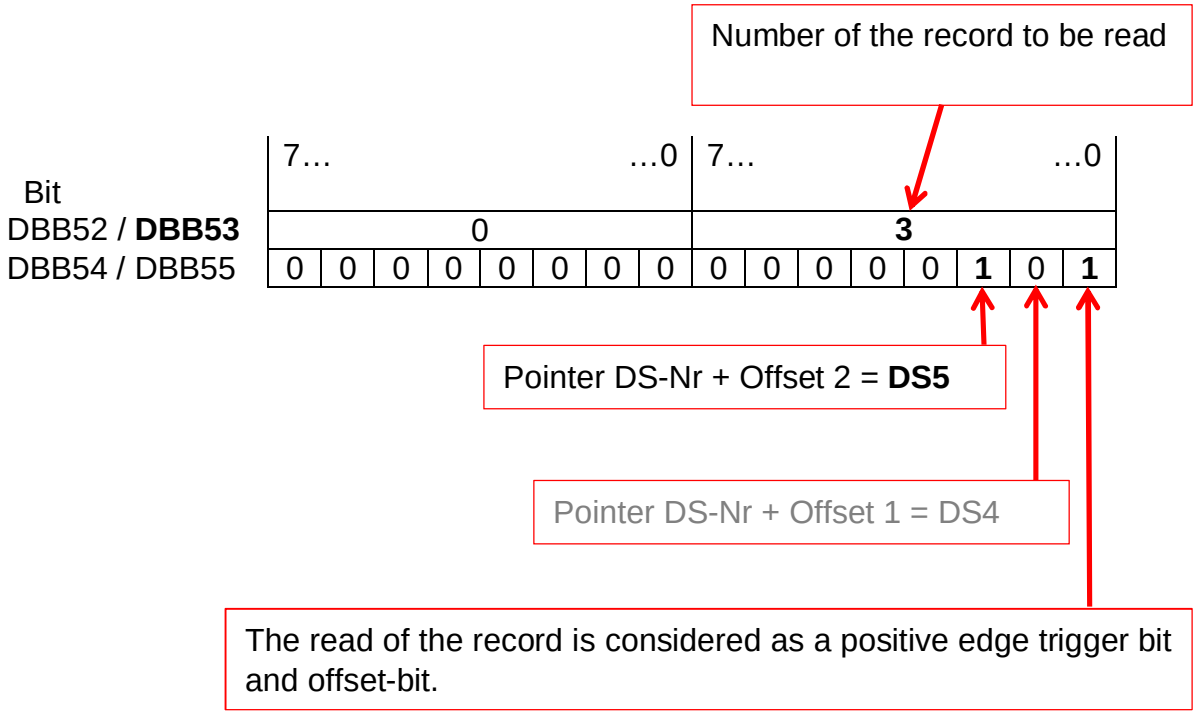
DBx.DBX 56.0	Running commands
DBx.DBX 56.1	Command finished without error
DBx.DBX 56.4	Command finished with error

2. Example for **application 1**:

The record 3 and 5 should be read by SIWAREX M:

1.
Number “3” enters in the byte DBx.DBB53.

2.
The trigger bit DBx.DBX55.0 as well as offset-bit DBx.DBX55.2 (here: to read the record 5) is set to TRUE once.



3.
Execution of the commands to read for application 1 can be checked in DBx.DBB56:

DBx.DBX 56.0	Command running
DBx.DBX 56.1	Command finished without error
DBx.DBX 56.4	Command finished with error

2.2 Communication between CPU and SIWAREX FTA

Commands to write and read Data Record of the SIWAREX FTA are written in the CMD-trays from the DB_Scale.:
- CMD1
- CMD2
- CMD3

2.2.1 Send orders and write/read data to SIWAREX FTA

The command **CMD1** has the highest priority and is ususally reserved for the step7-programmer.

The command **CMD2** has the medium priority and is reserved for commands from HMI-Panel.

The command **CMD3** has the lowest priority and is reserved for OB35. The OB35 is called by default, every 100ms and reads record DR30, DR31, DR34 and DR35 (Process values …) from SIWAREX FTA in the DB_Scale.

The command with the highest priority will be processed first.

Command codes to execute commands are written to the address:
- CMD1: DBx.DBW40 (for Step7-Programmer)
- CMD2: DBx.DBW44 (for HMI-Panel)
- CMD3: DBx.DBW48 (for OB35)

In addition, the trigger variable „*CMDx_TRIGGER*“of each tray must be set once.
The trigger variable „*CMDx_TRIGGER*“is automatically reset by FC30.
- CMD1: DBx.DBX42.0 (for Step7-Programmer)
- CMD2: DBx.DBX46.0 (for HMI-Panel)
- CMD3: DBx.DBX50.0 (for OB35)

Excerpt of the DB-Scale of the SIWAREX FTA with the three command blocks:

40.0	s_CMD1.i_CMD1_Code	INT	0	0	Command code
42.0	s_CMD1.bo_CMD1_Trigger	BOOL	FALSE	FALSE	Command trigger
42.1	s_CMD1.bo_CMD1_InProgress	BOOL	FALSE	FALSE	Command in progress
42.2	s_CMD1.bo_CMD1_FinishedOk	BOOL	FALSE	FALSE	Command finished ok
42.3	s_CMD1.bo_CMD1_FinishedError	BOOL	FALSE	FALSE	Command finished with error
44.0	s_CMD2.i_CMD2_Code	INT	0	0	Command code
46.0	s_CMD2.bo_CMD2_Trigger	BOOL	FALSE	FALSE	Command trigger
46.1	s_CMD2.bo_CMD2_InProgress	BOOL	FALSE	FALSE	Command in progress
46.2	s_CMD2.bo_CMD2_FinishedOk	BOOL	FALSE	FALSE	Command finished ok
46.3	s_CMD2.bo_CMD2_FinishedError	BOOL	FALSE	FALSE	Command finished with error
48.0	s_CMD3.i_CMD3_Code	INT	0	0	Command code
50.0	s_CMD3.bo_CMD3_Trigger	BOOL	FALSE	FALSE	Command trigger
50.1	s_CMD3.bo_CMD3_InProgress	BOOL	FALSE	FALSE	Command in progress
50.2	s_CMD3.bo_CMD3_FinishedOk	BOOL	FALSE	FALSE	Command finished ok
50.3	s_CMD3.bo_CMD3_FinishedError	BOOL	FALSE	FALSE	Command finished with error

The command codes are made up as following:

- Commands according to the list, see Chapter 6 of the SIWAREX FTA manual
- Read record: 200 + DR-Nr. (e.g. read DR30 = 230)
- Write record: 400 + DR-Nr. (e.g. write DR3 = 403)

It is not distinguished in the processing of command codes between records and commands (e.g. command „zero“= command-No. 21).

Example for **command CMD1**: DR3 should be read.

1.
The number „203“is entered in the word DBx.DBW40.

2.
The trigger bit DBx.DBX42.0 is set to TRUE once.

Execution of the commands to for **command CMD1** can be checked in DBx.DBB42:

DBx.DBX 42.1	Command running
DBx.DBX 42.2	Command finished without error, bit is set **only for a SPS-cycle**.
DBx.DBX 42.3	Command finished with error, bit is set **only for a SPS-cycle**.

2.3 Dosage and weight data in SIWAREX **M** and SIWAREX FTA

In SIWAREX M, all weight data (gross weight, net weight, setpoint weight, coarse, fine, tolerances…) are in DINT-format.
In SIWAREX FTA, all weight data (gross weight, net weight, setpoint weight, coarse power, fine power, tolerances…) are in REAL-format.

Description	**SIWAREX M** (value in DINT-format)	**SIWAREX FTA** (value in REAL-format)
Setpoint	DBx.DBD194 (DS22)	DBx.DBD526 (DS20)
Coarse flow	DBx.DBD206 (DS23)	DBx.DBD542 (DS22)
Fine flow/ trailing weight	DBx.DBD210 (DS23)	DBx.DBD538 (DS22)
Settling time/ Stand still time 3	DBx.DBD214 (DS3)	DBx.DBD210 (DS3)
Gross weight	DBx.DBD320 (DS30)	DBx.DBD676 (DS30)
Net weight	DBx.DBD324 (DS30)	DBx.DBD680 (DS30)
Tare weight	DBx.DBD328 (DS30)	DBx.DBD684 (DS30)

2.4 Cyclic process value of SIWAREX FTA

There are three parameters of FB41 of SIWAREX, at which process values of SIWAREX FTA (every 10ms on the peripheral interface) are automatically updated.
This has the advantage that the data are directly available at output if the FB and must not be read separately.
These parameters are:
- PROC_VAL1
- PROC_VAL2
- SC_STATUS

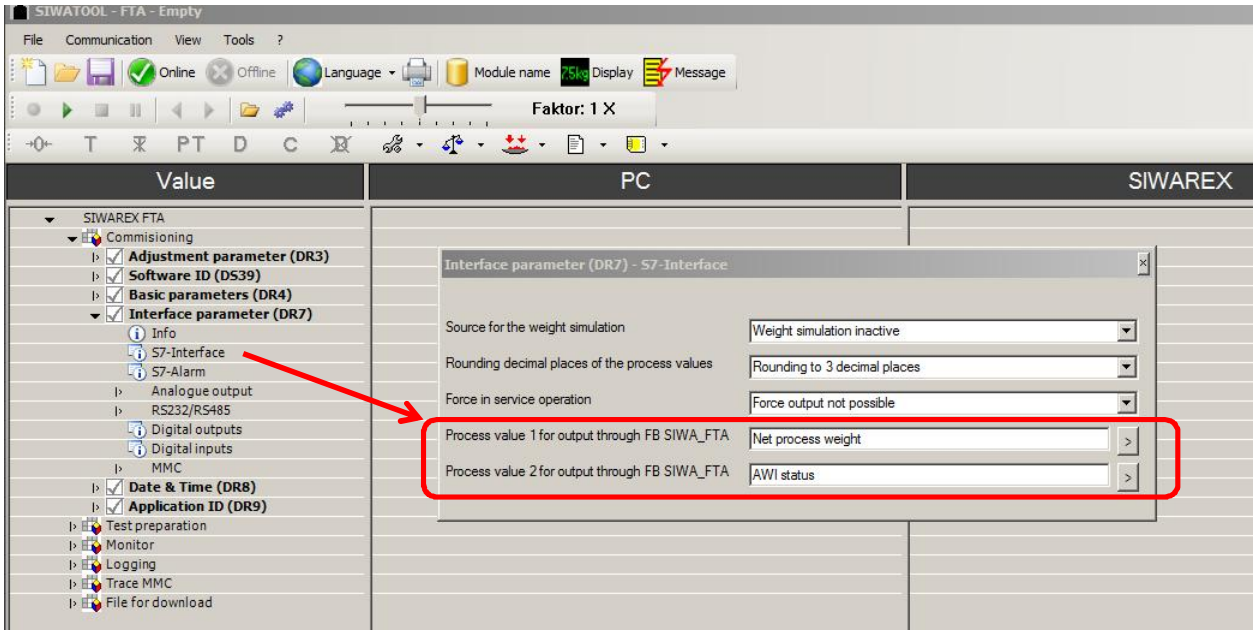
FB41-Call:

```
CALL  FB    41 , DB10
 ADDR         :=256
 DB_SCALE     :=12
 DB_VECTOR    :=11
 CMD_IN       :=DB12.DBW6
 SIM_VAL      :=DB12.DBD10
 ANA_OUT      :=DB12.DBD14
 DO_FORCE     :=DB12.DBB19
 TRANSITION   :=DB12.DBB18
 CMD_INPR     :=DB12.DBX8.1
 CMD_FOK      :=DB12.DBX8.2
 CMD_ERR      :=DB12.DBX8.3
 CMD_ERR_C    :=DB12.DBB9
 REF_COUNT    :=DB12.DBB20
 PROC_VAL1    :=DB12.DBD22
 PROC_VAL2    :=DB12.DBD26
 SC_STATUS    :=DB12.DBD30
 ERR_MSG      :=DB12.DBX34.0
 ERR_MSG_TYPE:=DB12.DBB35
 ERR_MSG_C    :=DB12.DBB36
 FB_ERR       :=DB12.DBX37.0
 FB_ERR_C     :=DB12.DBB38
 START_UP     :=DB12.DBX39.0
 CMD_EN       :=DB12.DBX8.0
 ERR_MSG_Q    :=DB12.DBX34.1
```

The NAWI-status is shown on the parameter „SC_STATUS“(e.g. Standstill, MMC plugged, scale empty, operating errors …).

Selected process values through the peripheral interface can be read via process value 1 (PROC_VAL1) and process value 2 (PROC_VAL2).
The selection for PROC_VAL1 and PROV_VAL2 are defined in DR7 via Siwatool-Software or via the Step7-Programm.

Siwatool-Software:



The following bytes are used to select PROC_VAL1 and PROV_VAL2 with Step7-Programm:
Process value 1 (PROC_VAL1): DBx.DBB129
Process value 2 (PROC_VAL2): DBx.DBB130

You can find the accurate selection of possibilities in SIWAREX FTA manual. The most important bytes for the selection are shown in the following table:

Number	**Process value**
1	Gross weight (Process value)
2	Net weight (Process value)
30	AWI-Status

The factory setting for PROC_VAL1 and PROC_VAL2 is:

- PROC_VAL1 = net process value
- PROC_VAL2 = AWI-Status

The addresses for PROC_VAL1 and PROC_VAL2 are:

- PROC_VAL1 = DBx.DBD22
- PROC_VAL2 = DBx.DBD26

The most important bits from FB41-Parameters SC_STATUS (NAWI Status in DBD30) and (AWI-Status in DBD26 PROC_VAL2 are:

Description	**SIWAREX FTA**
Empty message	DBx.DBX 30.1
Stand still 1	DBx.DBX 32.3
Stand still 2	DBx.DBX 26.0
Stand still 3	DBx.DBX 26.1
Error (hardware error)	DBx.DBX 30.7
Limit value 1	DBx.DBX 33.3
Limit value 2	DBx.DBX 33.4
Limit value 3	DBx.DBX 33.5
Coarse signal	DBx.DBX 28.1
Fine signal	DBx.DBX 28.2
Empty signal	DBx.DBX 28.4
Tolerance Plus (TO1)	DBx.DBX 27.3
Tolerance Minus (TU1)	DBx.DBX 27.5
Tolerance Plus (TO2)	DBx.DBX 27.2
Tolerance Minus (TU2)	DBx.DBX 27.6
Dosing runs	DBx.DBX 29.1 - 29.7
Dosing canceled	DBx.DBX 27.0
Dosing finished	DBx.DBX 26.6

The complete collection of NAWI- Status-Bits (=SC_STATUS) and AWI-Status-Bits can be found in SIWAREX FTA manual under „DR30 process values“.

The process values and status information can be evaluated alternatively with DR30. A permanent reading of DR30 is required to update the data in DB_Scale.
This happens by command 601 (= read DR30 and DR31) in getting started sample program in OB35.
OB35 is called every 100ms in Getting Started sample program.

The most significant bits of DR30 are:

Description	**SIWAREX M**	**SIWAREX FTA**
Empty message	DBx.DBX 332.0	DBx.DBX 668.1
Still state 1	DBx.DBX 332.1	DBx.DBX 670.3
Still state 2	--	DBx.DBX 672.0
Still state 3	--	DBx.DBX 672.1
Collective fault (hardware error)	DBx.DBX 332.7	DBx.DBX 668.7
Limit value 1	DBx.DBX 333.5	DBx.DBX 671.3
Limit value 2	DBx.DBX 333.6	DBx.DBX 671.4
Limit value 3	DBx.DBX 333.7	DBx.DBX 671.5
Material flow defects (coarse)	DBx.DBX 334.3	--
Material flow defects (fine)	DBx.DBX 334.4	--
Coarse signal	DBx.DBX 335.0	DBx.DBX 674.1
Fine signal	DBx.DBX 335.1	DBx.DBX 674.2
Empty signal	--	DBx.DBX 674.4
Tolerance Plus (TO1)	DBx.DBX 335.2	DBx.DBX 673.3
Tolerance Minus (TU1)	DBx.DBX 335.3	DBx.DBX 673.5
Tolerance Plus (TO2)	--	DBx.DBX 673.2
Tolerance Minus (TU2)	--	DBx.DBX 673.6
Dosing runs	DBx.DBX 335.4	DBx.DBX 675.1 - 675.7
Dosing canceled	DBx.DBX 335.6	DBx.DBX 673.0
Dosing finished	DBx.DBX 335.7	DBx.DBX 672.6

2.5 Cut-off point (coarse/fine) of SIWAREX **M** and SIWAREX FTA

SIWAREX M

The cut-off point for coarse flow and fine flow are formed at SIWAREX M as follows:

Cut-off point coarse flow = setpoint value - Cut-off point fine flow - Cut-off point coarse flow

Cut-off point **fine flow = target value - Cut-off point fine flow**

Setpoint value: DBx.DBD194 (DS22)
Cut-off point coarse flow: DBx.DBD206 (DS23)
Cut-off point fine flow: DBx.DBD210 (DS23)

SIWAREX FTA

The cut-off point for coarse flow and fine flow are formed at SIWAREX FTA as follows:

Cut-off point coarse flow = setpoint value – trailing weight – fine weight

Cut-off point **fine flow = setpoint value – trailing weight**

Setpoint value: DBx.DBD526 (DS20)
Trailing weight: DBx.DBD538 (DS22)
Fine weight: DBx.DBD542 (DS22)

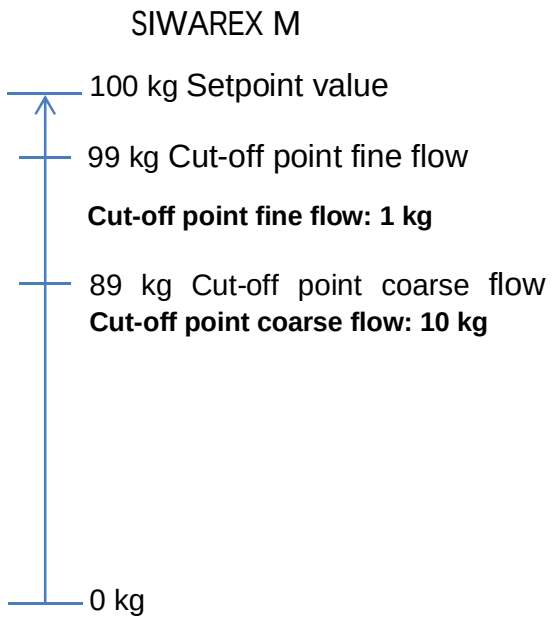
Example for a dosage:

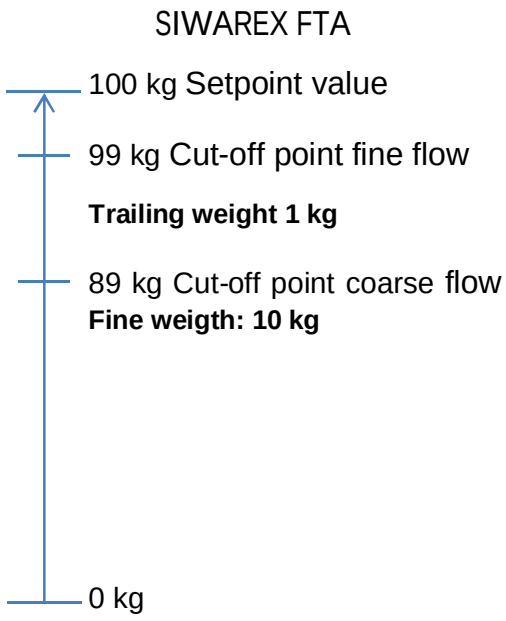
Dosage specifications for SIWAREX M:

Setpoint value =	100 kg	DBx.DBD194 (DS22)
Cut-off point coarse flow: =	10 kg	DBx.DBD206 (DS23)
Cut-off point fine flow =	1 kg	DBx.DBD210 (DS23)

Dosage specifications for SIWAREX FTA:

Setpoint value =	100 kg	DBx.DBD526 (DS20)
Fine weight =	10 kg	DBx.DBD542 (DS22)
Trailing weight =	1 kg	DBx.DBD538 (DS22)

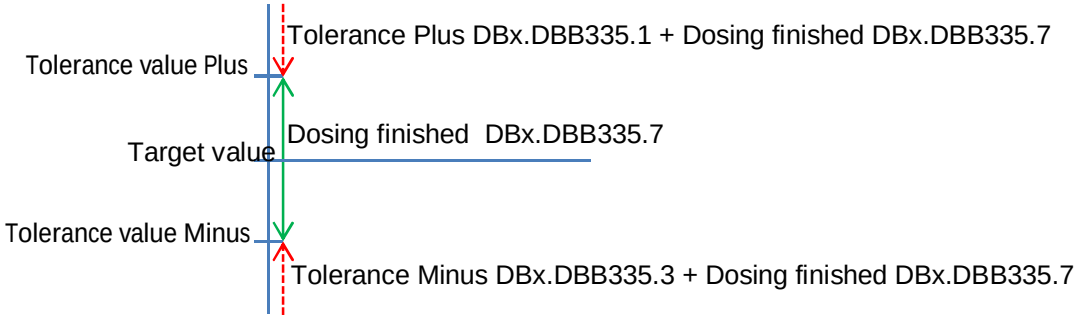




2.6 Tolerance plus / minus at SIWAREX M and SIWAREX FTA

SIWAREX M

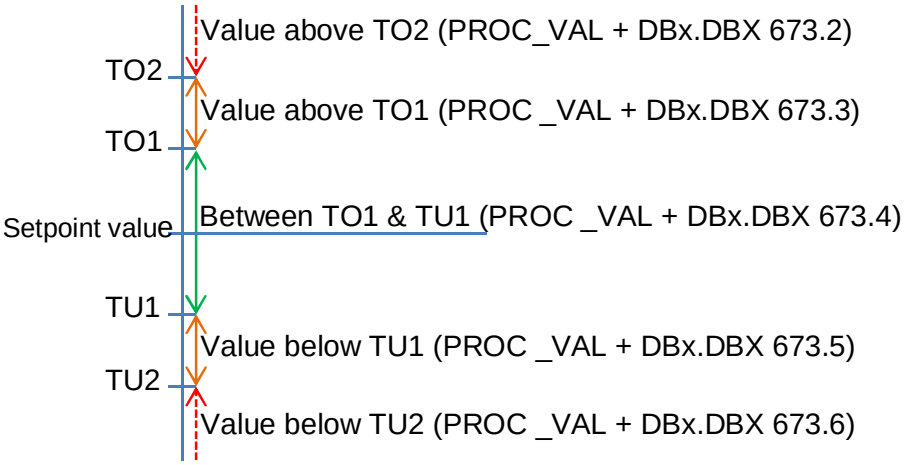
Setpoint value: DBx.DBD194 (DR22)
Tolerance value plus: DBx.DBD198 (DR23)
Tolerance value Minus: DBx.DBD202 (DR23)



SIWAREX FTA

SIWAREX FTA hast two tolerance bands. The span of tolerance band 2 must be selected greater than that of tolerance band 1. Thus more diagnostic messages are available.

Setpoint: DBx.DBD526 (DR20)
TO1: DBx.DBD554 (DR22)
TU1: DBx.DBD558 (DR22)
TO2: DBx.DBD562 (DR22)
TU2: DBx.DBD566 (DR22)



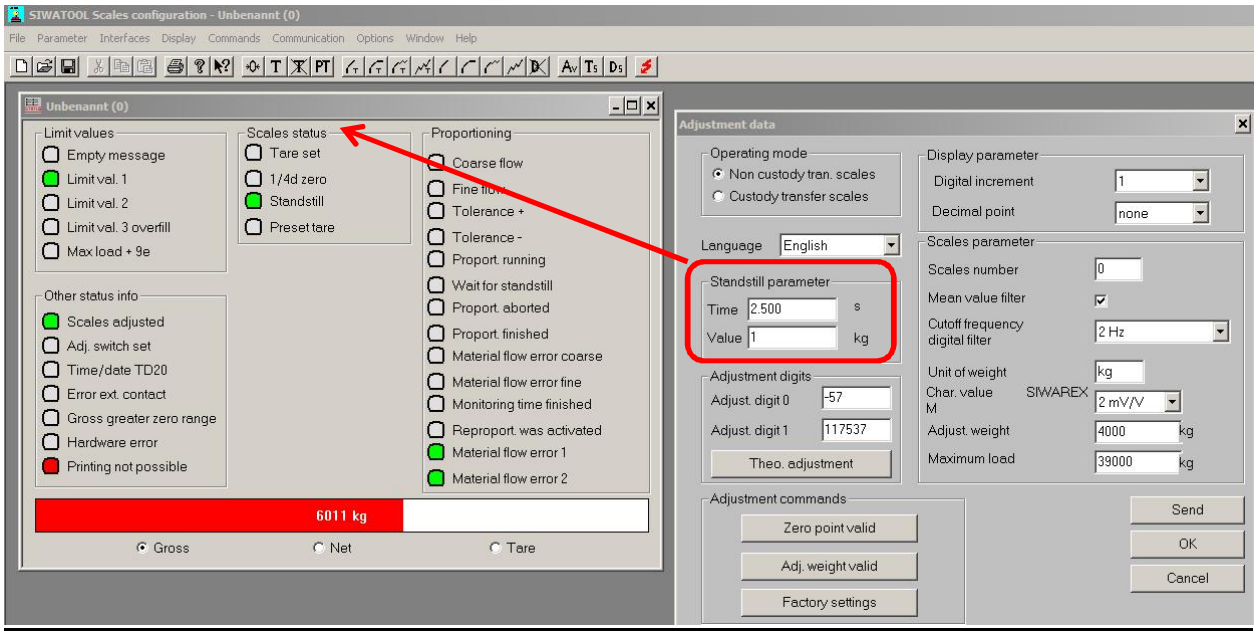
2.7 Standstill-detection in SIWAREX M and SIWAREX FTA

SIWAREX M

SIWAREX M detects only one stand still state.

This stand still state is used for:
- Taring
- Zeroing
- taring before starting dosing

The stand still state is definite in Data Record 3 at Adjustment data of SIWAREX M:



The stand still state is detected (= the bit „Stand still“is set to TRUE), if the weight change less than a specified range (stand still value) in a given time (stand still time).

SIWAREX FTA

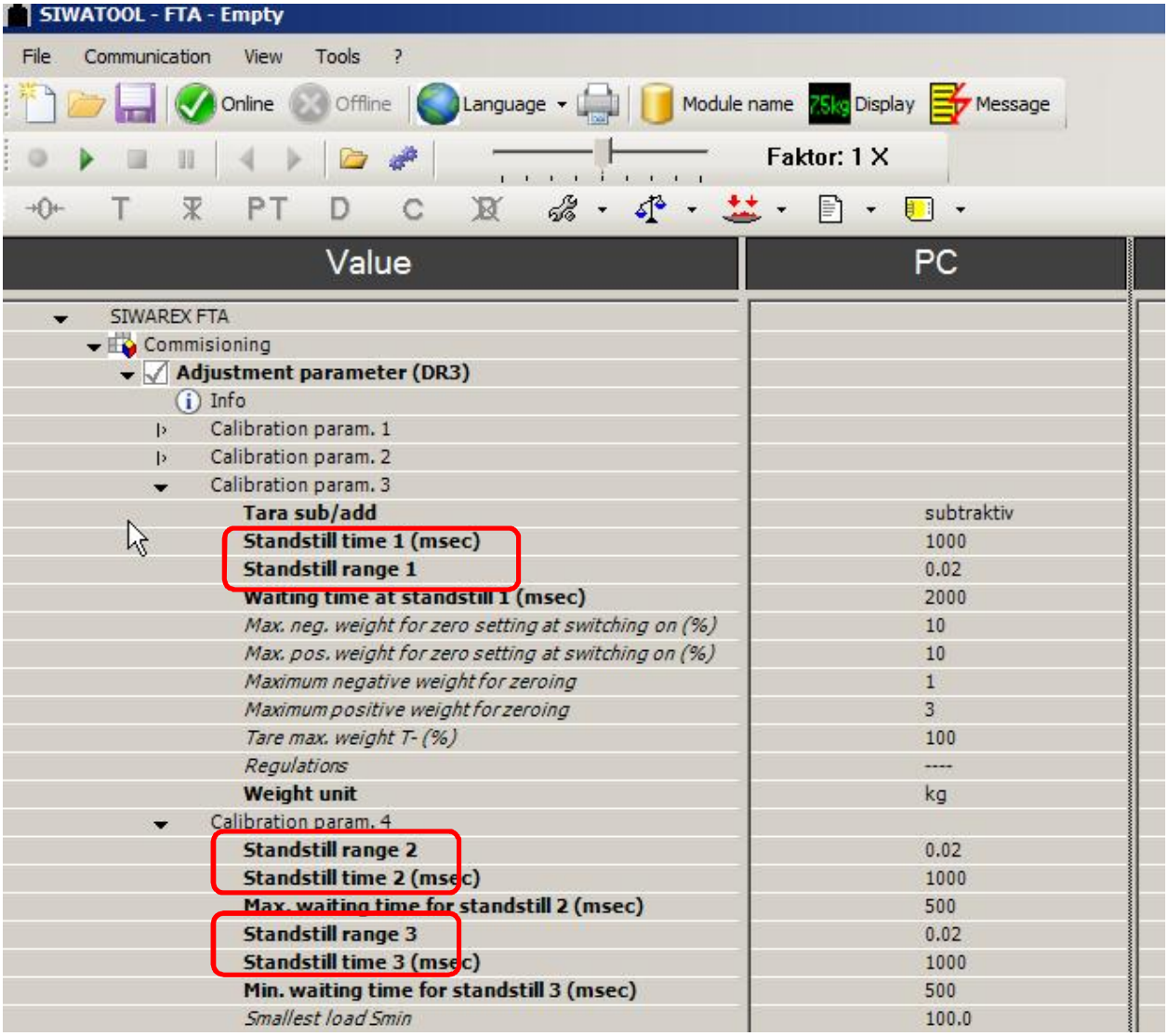
SIWAREX FTA recognizes three stand still states.
These are used as follows:

Stand still 1:
- Taring
- Zeroing
- Protocol distributing

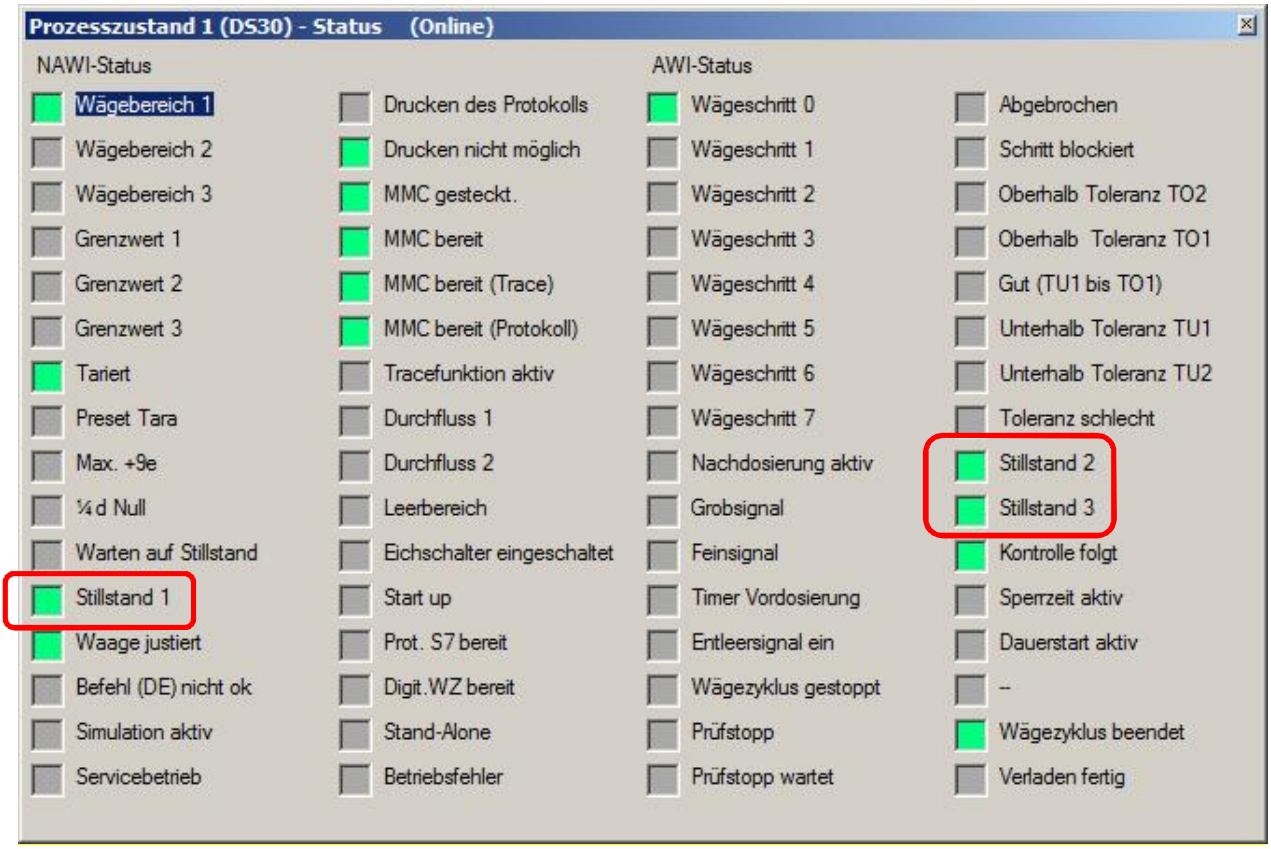
Stand still 2:
The still stand monitors weight stability of the scale after the start of dosing to automatically tare and zero.

Stand still 3:
The still stand monitors the stable position after the cutoff of fine signal.

These three stand still states are defined in Data Record 3, Adjustment Parameter:



The actual states are shown in Data Record 30:



The stand still state is detected (= the corresponding bit „Still state “is set to TRUE), if the weight changed less than a specified value (still state value) in a given time (still state time).

2.8 Commands at SIWAREX M and SIWAREX FTA

Overview of the most important commands:

Description	SIWAREX M	SIWAREX FTA*
Zero point valid (calibration commend)	1	3[2]
Calibration weight valid (calibration commend)	2	4[2]
Taring	3	22
External tare valid	4	24
Zeroing	5	21
Start dosing with tare	10	100
Stop dosing	11	105[1]
Start dosing without tare	12	101
Tara delete	15	23
Start inching mode with taring	20	1. 100 2. 105 3. 104[3]
Start inching without taring	22	1. 101 2. 105 3. 104[3]
More information	Manual SIWAREX M page 3-43	Manual SIWAREX FTA page 6-128

To [1]:

Command 105 (= „Stop Dosing“) simply holds the weighting cycle. Afterwhile one of the following command can be selected:

Command 103 – Next
Command 104 – More weighing with inching operation
Command 108 – Cancel
Command 110 – Rest weighting

To [2]:

The commands can only be executed in the service mode:

Command 1 – Switch on service mode (system may not be dosing)
Command 2 – Switch off service mode

To [3]:

Command 104 keep the dosing process after a stop (command 105) in inching operation.

NOTES:

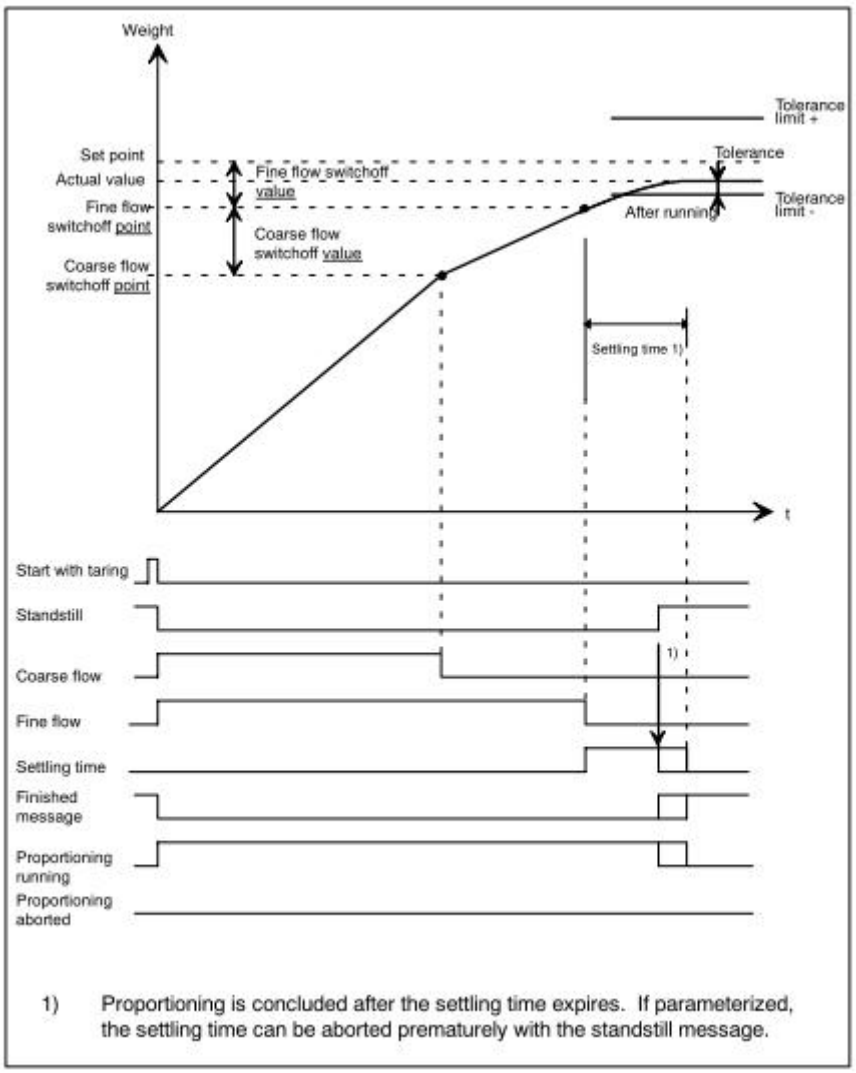
SIWAREX M and SIWAREX FTA have differently behavior after a tare command of a negative gross weight value:

Case	SIWAREX M	SIWAREX FTA
Tare command Gross weight less than „0“ **not** in legal for trade (OIML) mode	The tare command is executed.	The tare command is **not** executed. The zeroing command is executed for it.
Tare command Gross weight less than „0“ in legal for trade (OIML) mode	The tare command is **not** executed. The zeroing command is executed for it.	The tare command is **not** executed. The zeroing command is executed for it.

2.9 Dosing sequence of SIWAREX **M** and SIWAREX FTA

SIWAREX M

The dosing process is as following scheme.
The current state of the dosing can be examinated in DR30 & DR31.



1) Proportioning is concluded after the settling time expires. If parameterized, the settling time can be aborted prematurely with the standstill message.

SIWAREX FTA

The dosing process is divided into weighting steps at SIWAREX FTA in contrast to M:
- Weighing step 0: Waiting
- Weighing step 1: Taring or zeroing
- Weighing step 2: Coarse/ fine dosing
- Weighing step 3: Post dosing
- Weighing step 4: Tolerance control
- Weighing step 5: Emptying
- Weighing step 6: End control AWI (Automatic Weighing Instrument)
- Weighing step 7: Reserve

Different weighting steps are run depending on the type of dosing (with or without subsequent emptying, subtractive, additive etc.).
An easy dosing with weighting step 1 … 5 are shown as following example:

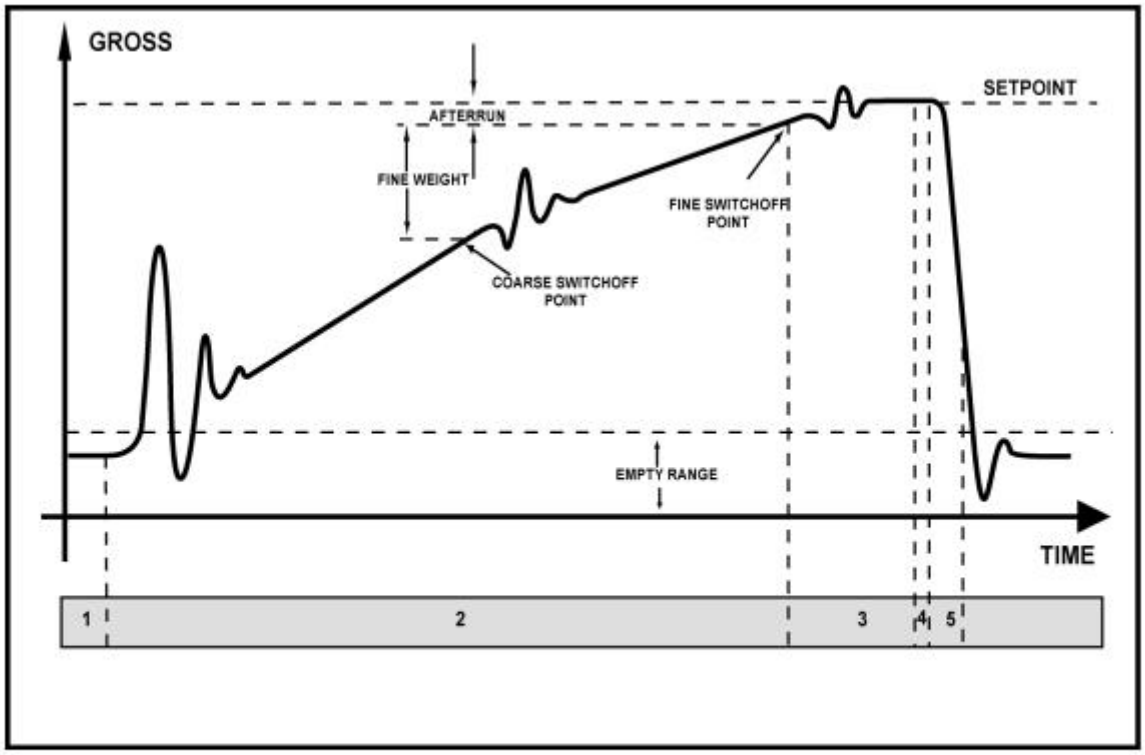


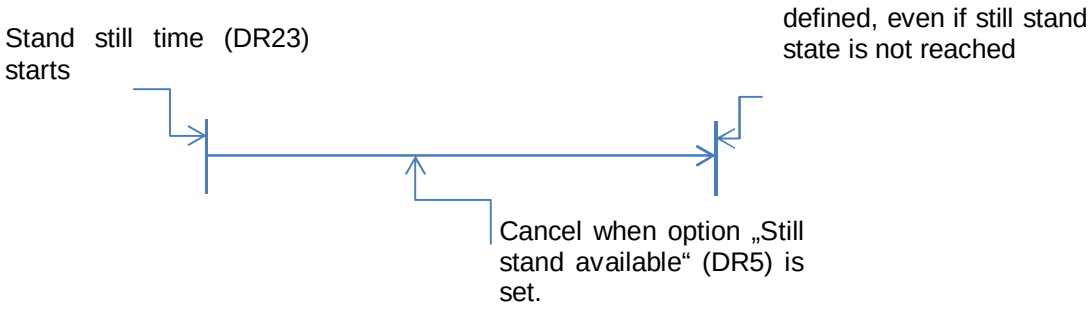
Image 5-5 Weighing steps in automatic filling operation AWI

2.10 Stand still time/ Dosing completed at SIWAREX M and SIWAREX FTA

SIWAREX M

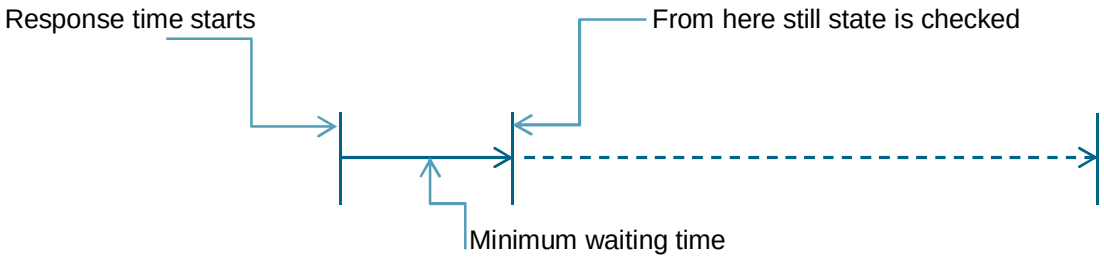
The message „Proportioning finished“ is issued after standstill time is elapsed when fine flow is switched off. A vibration or a change of weight does no reboot the response time

The stand still state monitor can be used to cancel response time, if this is parameterized in DBx.DBB167 (DS5).
If the weight value lies beyond tolerance tolerance + or tolerance –, a message is issued.



SIWAREX FTA

A stand still state is checked in specified area of DBx.DBD206 (DR3) after a minimum waiting time for stand still 3 DBx.DBD14 (DR3) at SIWAREX FTA. If this value is not reached, for example through strong fluctuation of weight value, the FTA remains in stand still state checking.



2.11 Application examples

For the examples below, it is assumed that the related FB of SIWAREX FTA and SIWAREX M is called cyclically in OB1.

Set dosing process

SIWAREX M

Setpoint value: 110 kg
Coarse flow cut-off value: 99 kg
Fine flow cut-off value: 109 kg
Tolerance value-Plus: 5 kg
Tolerance value-Minus: 3 kg
Other values are left to factory setting.

```
L     110
T     "DB_SIWAREX".SOLL                      DB10.DBD194       --  DS22: Sollwert
L     10
T     "DB_SIWAREX".DOSI_DAT.GROB_WERT        DB10.DBD206       --  Grobstromabschaltwert
L     1
T     "DB_SIWAREX".DOSI_DAT.FEIN_WERT        DB10.DBD210       --  Feinstromabschaltwert
L     5
T     "DB_SIWAREX".DOSI_DAT.TOL_WERT_PLUS    DB10.DBD198       --  Toleranz-Plus-Wert
L     3
T     "DB_SIWAREX".DOSI_DAT.TOL_WERT_MINUS   DB10.DBD202       --  Toleranz-Minus-Wert
```

The application to *WRITE_DATA_1* is used for transmission.
The record number (DR22) is entered in *APPL_WR_DT1_DSNR*.
The records to write are selected via the bit field.
APPL_WR_DT1.BITFELD = 2#11 (0000_0000_0000_0011)
Here: DS22 & DS23

```
L     22
T     "DB_SIWAREX".APPL_WR_DT1.DSNR          DB10.DBB21        --  Datensatz-Nummer (DS3 - DS81)
L     2#11
T     "DB_SIWAREX".APPL_WR_DT1.BITFELD       DB10.DBW22        --  Bitfeld
```

It is transmitted by cyclical call of *FC_SIWA_M*.
The bit field is reset after processing of application.

```
CALL  "FC_SIWA_M"                            FC41              -- Standard-Funktion für die SIWAREX M
 INST:=10
 IND :=MW18
```

SIWAREX FTA

The values are loaded in corresponding records. When tolerance limits are entered, *TO2>TO1* and *TU2>TU1* must be awared.

```
L     1.100000e+002
T     "DB_SCALE".s_DOSING_SET_POINT.r_SET_POINT_VALUE    DB12.DBD526       -- Set point for dosing cycle
L     9.900000e+001
T     "DB_SCALE".s_DOSING_PARA.r_FINE_VALUE              DB12.DBD542       -- Fine value
L     1.090000e+002
T     "DB_SCALE".s_DOSING_PARA.r_IN_FLIGHT_VALUE         DB12.DBD538       -- In flight value, after run value

L     5.500000e+000
T     "DB_SCALE".s_DOSING_PARA.r_TOL_VAL_TO2             DB12.DBD562       -- Second tolerance band plus
L     3.500000e+000
T     "DB_SCALE".s_DOSING_PARA.r_TOL_VAL_TU2             DB12.DBD566       -- Second tolerance band minus
L     5.000000e+000

T     "DB_SCALE".s_DOSING_PARA.r_TOL_VAL_TO1             DB12.DBD554       -- First tolerance band plus
L     3.000000e+000
T     "DB_SCALE".s_DOSING_PARA.r_TOL_VAL_TU1             DB12.DBD558       -- First tolerance band minus
```

The command to write records in SIWAREX (here write DR20 thrue command 420 CMD_1 and write DR22 thrue command 422 CMD_2)

This applies to write the records of*400 + DR-Nr.*

```
L     420
T     "DB_SCALE".s_CMD1.i_CMD1_Code                      DB12.DBW40        --  Command code
L     422
T     "DB_SCALE".s_CMD2.i_CMD2_Code                      DB12.DBW44        --  Command code
```

The transmission is triggered with command *CMDx_TRIGGER* of respective CMD compartment.

```
S     "DB_SCALE".s_CMD1.bo_CMD1_Trigger                  DB12.DBX42.0      --  Command trigger
S     "DB_SCALE".s_CMD2.bo_CMD2_Trigger                  DB12.DBX46.0      --  Command trigger
```

Start and observe dosing

SIWAREX M

The application *WRITE_COMMAND* is used to trigger a weighing command. The corresponding command is entered in DR2: *DB_SIWAREX.BEFEHL*. By cyclical call of *FC_SIWA_M*, it is checked whether the bit DBB47.0 is. In this case (if no STOP-command in *DB_SIWAREX.COMMAND* is stored) after the application *WRITE_DATA_1* and *WRITE_DATA_2* f, *WRITE_COMMAND* is sent.

In the following, the command zeroing is entered in the DR2.

```
L     5
T     "DB_SIWAREX".BEFEHL         DB10.DBW88         --  DS2: Befehle
L     2#1
T     DB10.DBB   47
```

Start of dosing with automatic tare (command: 10).

```
L     10
T     "DB_SIWAREX".BEFEHL         DB10.DBW88         --  DS2: Befehle
L     2#1
T     DB10.DBB   47
```

SIWAREX FTA

The procedure to give a weighing command is analog to the transfer of records.
Following the zeroing by command 21.
In CMD1.

```
L     21
T     "DB_SCALE".s_CMD1.i_CMD1_Code                    DB12.DBW40         --  Command code
```

The transmission is triggered with command *CMDx_TRIGGER* of respective CMD compartment and dealt by FC30.

```
S     "DB_SCALE".s_CMD1.bo_CMD1_Trigger                DB12.DBX42.0       --  Command trigger
```

Start of dosing with automatic tare (command 100)

```
L     100
T     "DB_SCALE".s_CMD1.i_CMD1_Code                    DB12.DBW40         --  Command code
```

The transmission is analog as for the previous command.

```
S     "DB_SCALE".s_CMD1.bo_CMD1_Trigger                DB12.DBX42.0       --  Command trigger
```

SIWAREX M

Two applications are used to read the measured values (DR30) and status information (DR31) (READ_DATA_1 & READ_DATA_2).

The data number (DR30) is entered in *APPL_RD_DT1_DSNR*. The data records to read are selected by bit field. *APPL_R*
D_DT1.BITFELD = 2#11 (0000_0000_0000_0011).
Here: DR30 & DR31

```
L     30
T     "DB_SIWAREX".APPL_RD_DT1.DSNR       DB10.DBB53        --  Datensatz-Nummer (DS3 - 1
L     2#11
T     "DB_SIWAREX".APPL_RD_DT1.BITFELD    DB10.DBW54        --  Bitfeld
```

The transmission is here cyclically called by FC_SIWA_M.
The bit field is reset after processing of applications.

```
CALL  "FC_SIWA_M"                         FC41              -- Standard-Funktion für d
 INST:=10
 IND :=MW18
```

SIWAREX FTA

The peripheral process „PROC_VAL1“ , „PROC_VAL2“and „SC_STATUS“ can be directly used without sending a command to SIWAREX FTA. This values in order to read the current weight value and states information.
Alternatively these information as well as other records of SIWAREX can be read and written by command to and from SIWAREX.
CMD 1, 2 and 3 are used to read data records.

The following schema is to read the data records: *200 + DR-Nr.*

For examples to read DR30 with CMD_1 and DR31 with CMD_2.

```
L     230
T     "DB_SCALE".s_CMD1.i_CMD1_Code                DB12.DBW40        --  Command code
L     231
T     "DB_SCALE".s_CMD2.i_CMD2_Code                DB12.DBW44        --  Command code
```

The data are obtained after triggerimg.

```
S     "DB_SCALE".s_CMD1.bo_CMD1_Trigger            DB12.DBX42.0      --  Command trigger
S     "DB_SCALE".s_CMD2.bo_CMD2_Trigger            DB12.DBX46.0      --  Command trigger
```

Special commands in FTA, are used to read or write several records at the same time. (Manual page 6-137).

Com-mand	**Description**
601	Read DR30 & DR31
602	Read DR34 & DR35
610	Read DR20 & DR22
649	Read all data record

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: hotline.siwarex@siemens.com

Website: www.siemens.com/siwarex