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1 General

1.1 Safety information

Definition of signal words and warning symbols

Safety notes contain important information on safety issues. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results.

Safety notes are marked with the following signal words and warning symbols:

| | | |
|------------------------|---|---|
| Signal word | NOTICE | A hazardous situation with low risk, resulting in damage to the instrument, other material damage, malfunctions and erroneous results, or loss of data. |
| Warning symbols |  | Notice |

1.2 Intended use

- The weigh module is a precision instrument for the detection of weight, which is provided as electronic output signals to the connected device.
- It is intended for indoor use in non-explosive atmospheres only.
- Any other type of use and operation beyond the limits of technical specifications is considered as not intended and might impair the system's protection.
- Use the product only for weighing in accordance with this manual and only in combination with accessories and peripheral devices recommended by METTLER TOLEDO.

1.3 This document

This installation manual contains all information needed to install and operate the SPE weigh module. Only qualified personnel shall install and operate this device.

- Read this document carefully before use.
- Keep this document for future reference.
- Pass this document to any further owner or user of the product.

1.4 Further documents

In addition to this installation manual, more information is available in the following documents which can be downloaded from ► <https://www.mt.com/ind-spe-documents>.

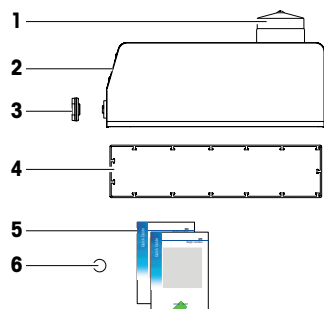
- SPE Safety information 30915573
- SPE Quick Guide 30850591
- SPE Data Sheet 30599398
- MT-SICS Manual 11781363 (description of all MT-SICS commands)
- SAI User Guide (generic "Standard Automation Interface" description)
- SAI Manual - APW Products (product specific "Standard Automation Interface" command description)
- APW Handbook (tips and tricks for the weighing process)



2 The SPE weigh module

2.1 Scope of delivery

The SPE weigh module is delivered with the following items:



| | | | |
|---|--|---|--------------|
| 1 | Protection cover load introduction | 2 | Weigh module |
| 3 | Protection cover M12 | 4 | Gasket |
| 5 | Documentation (Safety information, Quick Guide, DoC, Production certificate) | 6 | Magnet |

Note

The weighing pan and other accessories must be ordered separately.

- 1 Check the completeness of the delivery.
- 2 Immediately inform your METTLER TOLEDO representative if you have any complaints or parts are missing.



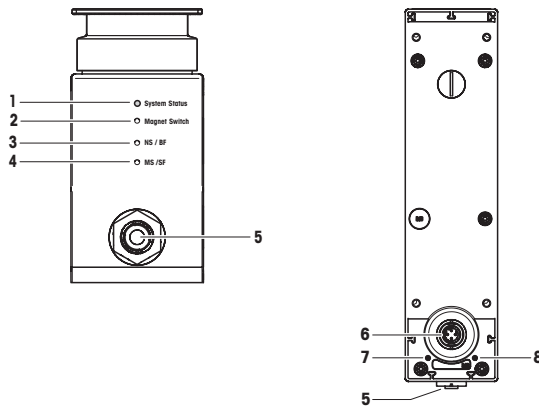
NOTICE

Damage to the product during transport

The weigh module must only be shipped in the original packaging. The cover (1) protects the weigh module from damage due to ingress of dust and dirt.

- Keep original packaging and protection cover.

2.2 Connectors and LEDs



| No. | Description | Comment |
|-----|---|--|
| 1 | LED System Status | |
| 2 | Magnet Switch | Resetting the IP address to default IP (192.168.0.55) or factory reset |
| 3 | LED NS/BF (Network Status / Bus Failure) | Industrial Ethernet status |
| 4 | LED MS/SF (Module Status / System Failure) | Industrial Ethernet status |
| 5 | PoE2 | Connection of a computer or PLC, Power-over-Ethernet |
| 6 | PoE1 | |
| 7 | DA (Deaeration) | Deaeration connection for washdown function |
| 8 | AI (Air in) | Air connection for washdown function |

2.3 Type designation code



| | Designation | Values | Example |
|------------|--------------------------------------|--------------------------|---|
| SPE | METTLER TOLEDO internal designation | | |
| y | Nominal capacity = $y \times 10$ [g] | any number of characters | y = 40 Capacity = 40×10 g = 400 g |
| z | Readability = 10^{-z} g | 1 ... 9 | z = 3 Readability = 10^{-3} g = 0.001 g |
| - C | METTLER TOLEDO internal calibration | | |

2.4 Technical data

Environmental conditions

| | |
|-------------------------------|--|
| Compensated temperature range | 10 °C to 30 °C |
| Operating temperature range | 5 °C to 40 °C |
| Storage temperature range | -20 °C to 70 °C |
| Relative air humidity range | 20 % to 80 %, non-condensing |
| Overvoltage category | II |
| Pollution degree | 2 |
| Means of protection | Class III |
| IP protection | IP54 (IP66 with washdown module during cleaning) |
| Height above sea level | max. 4000 m |

Electrical connection

| | |
|--------------|-----------------------------------|
| Power supply | PoE IEEE 802.3af (35 ... 57 V DC) |
|--------------|-----------------------------------|

Mechanical data

| | | |
|-----------------------|---------------------------------|------------------------------|
| Dimensions (L x W xH) | Short base plate | 244.5 x 59 x 120.7 (122*) mm |
| | Long base plate | 268 x 59 x 124.7 (126*) mm |
| Weight weigh modules | SPE404-C, SPE403-C | approx. 3000 g |
| | SPE2003-C, SPE4002-C, SPE7002-C | approx. 3700 g |
| Accessories weight | Weighing pan | approx. 100 g |
| | Long base plate | approx. 420 g |
| | Washdown module | approx. 40 g |

*with installed weighing pan (accessory)

Further technical data

For further technical data and accessories refer to the SPE Data Sheet.

2.5 Accessories

Refer to the SPE Data Sheet for the complete accessories list.

3 Installation

The weigh module is designed to record weights very quickly and accurately under stable conditions and communicate the result via the integrated interface to a PC or PLC.

Obey the following installation notes to achieve the best weighing performance.

3.1 Required tools

- Torx screw driver: T6 / 0.4 Nm, T10 / 1.3 Nm, T25 / 1.8 Nm
- Allen key: 1.5 mm
- Wrench: Size 21

3.2 Ambient conditions

In practice, ambient conditions (vibration, oscillations, shocks, air movements and temperature changes) affect weighing time and achievable accuracy. Therefore, be sure to note the following:

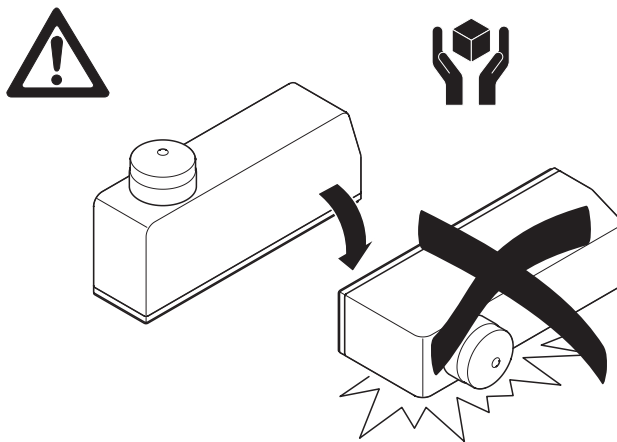
- The location of the weigh module should not be in areas that are exposed to drafts, direct sunlight, or temperature fluctuations.
- Make sure that any vibrations in the building are not transferred through the floor to the weigh module.
- The weighing object must not be electrostatically charged.

You can adjust various parameters on the weigh module. We recommend to adjust the settings to the levels needed for your application; higher accuracy requirements increase the weighing time (period between the placement of the weight and the availability of a stable result). Filter settings must be stricter to compensate for unfavorable ambient conditions, this also has a negative impact on weighing time, see [Weighing parameters ▶ Page 23].

Start with the default parameters, introduce environmental variables one at a time while testing with the new parameters until the application demands are met. An iterative approach is the most efficient and effective way to meet your application needs.

Mechanical isolation is recommended.

3.3 Mechanical installation



NOTICE

Damage to the weigh module

The weigh module can be damaged even by tipping over.

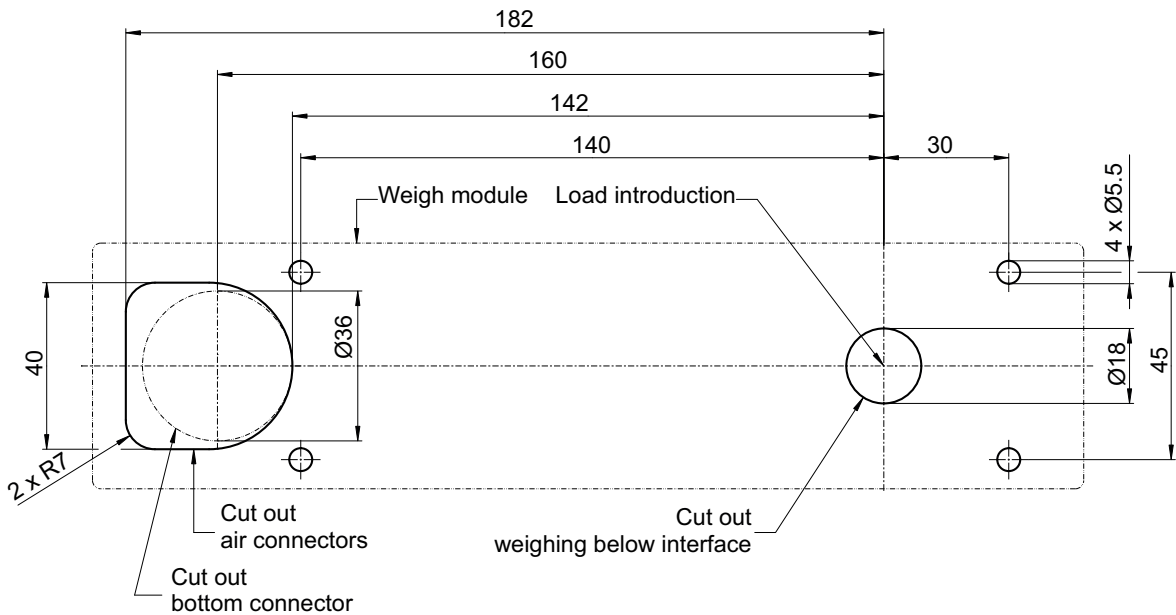
- 1 The weigh module must not fall over.
- 2 Put the weigh module always on a stable surface.

3.3.1 Support surface

For designing a support surface observe the following guidelines:

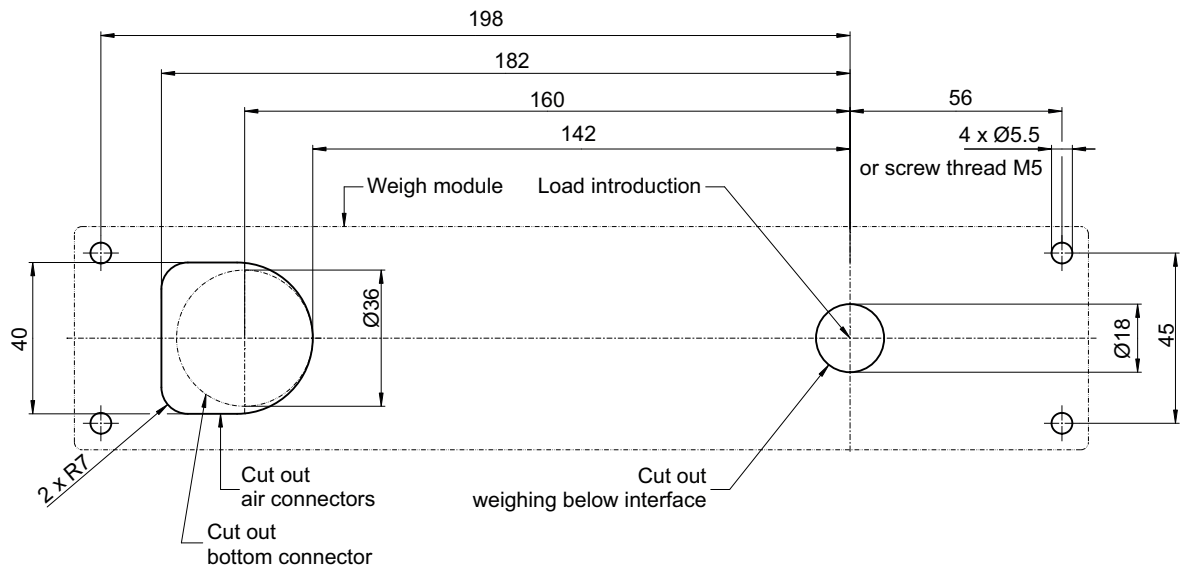
- Ensure that the support surface is mechanically decoupled from the system, and therefore free from shock and vibration.
- Make sure that no building oscillations are transferred to the support surface via the floor.
- The support surface must be absolutely level to prevent the weigh module from deformation and stiff to achieve precise and fast weighing results.
- The maximum permissible slope (angle from horizontal) of 0.5 % must not be exceeded.
- Take care that no vibrations are transmitted via the connecting cable.
- The weigh modules can be installed multi-line, therefore consider minimum center distances described in the following drilling / milling pattern.

Drilling / milling pattern: Standard base plate



Dimensions in mm

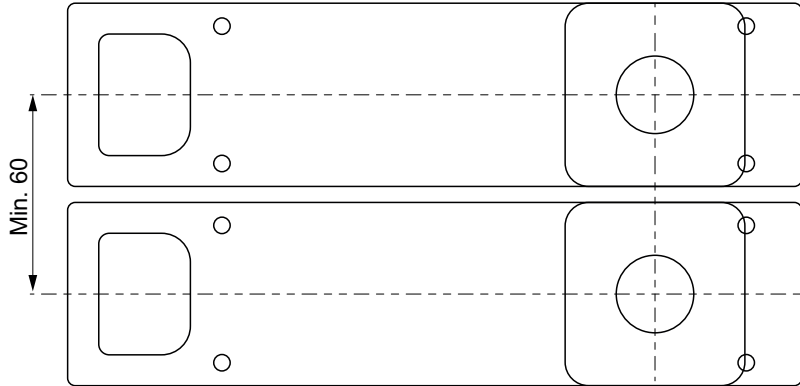
Drilling / milling pattern: Long base plate



Dimensions in mm

Multi-line installation

It is possible to connect up to 9 weigh modules in daisy chain.

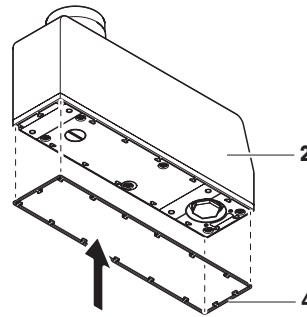


Dimensions in mm

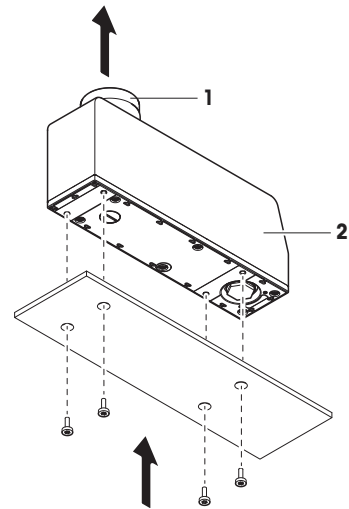
- Ensure that there is a minimum distance from center to center of the weigh modules of 60 mm.

3.3.2 Mounting the weigh module

- 1 Attach gasket (4) to weigh module (2).



- 2 Install weigh module (2) on support surface.
- 3 Remove protection cover (1) and keep it in a safe place.



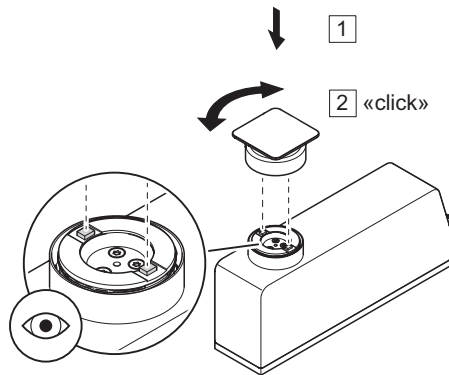
4 x M5 x (6 mm + surface)
1.8 Nm

3.3.3 Installing the weighing interface

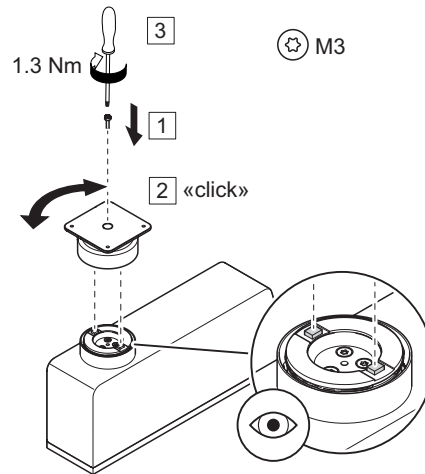
3.3.3.1 Standard weighing pan (accessories)

There are two standard weighing pans available which have to be ordered separately.

Weighing pan, snap-in
(Material: 30840642)



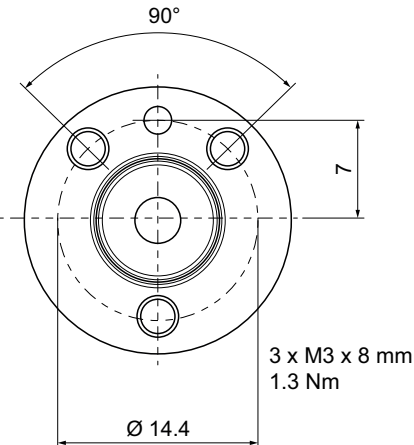
Adapter weighing pan, snap-in, screw, threaded holes
(Material: 30840643)



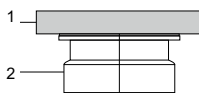
3.3.3.2 Custom weighing pan

Custom weighing pans can be placed on following interfaces:

| Interface | Picture |
|----------------------|---------|
| Adapter weighing pan | |
| Weighing pan support | |

| Interface | Picture |
|----------------------|--|
| Load application pin |  <p style="text-align: center;">90°</p> <p style="text-align: center;">7</p> <p style="text-align: center;">3 x M3 x 8 mm 1.3 Nm</p> <p style="text-align: center;">Ø 14.4</p> |

Custom weighing pan design notes



| | | | |
|---|--|---|---|
| 1 | Preload: Possible preload weight to maintain the entire weighing range, internal adjustment | 2 | Adapter weighing pan (approx. 92g) + weighing pan support (approx. 18g): Total weight approx. 110 g |
|---|--|---|---|

- Use only non-magnetic material for your custom weighing pan (e.g. nickel-chromium steel with permeability of 1.05 μ , titanium, brass, aluminum etc.).
- For designing a custom weighing pan, keep in mind, that a minimum deadload (weight adapter weighing pan + set up) is required to properly start up the weigh module (see table below).
- If the deadload of the adapter weighing pan + set up is exceeded (see SPE Data Sheet) the weighing range will be reduced accordingly.

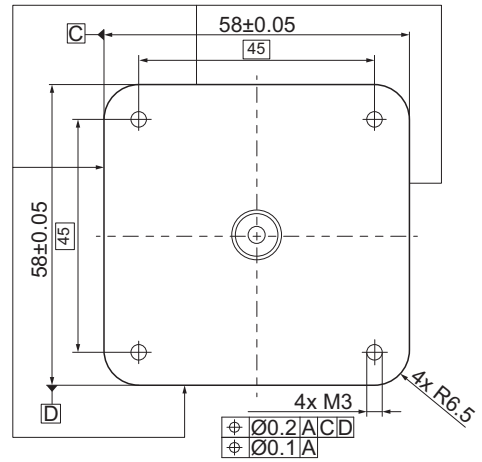
| Model | Minimum deadload |
|---------------------------------|--|
| SPE404-C, SPE403-C | 80 g (on top of weighing pan support - Option 2) |
| SPE2003-C, SPE4002-C, SPE7002-C | 0 g (on top of load application pin - Option 3) |

Please refer to the recommendations in the APW handbook in order to achieve the best weighing performance.



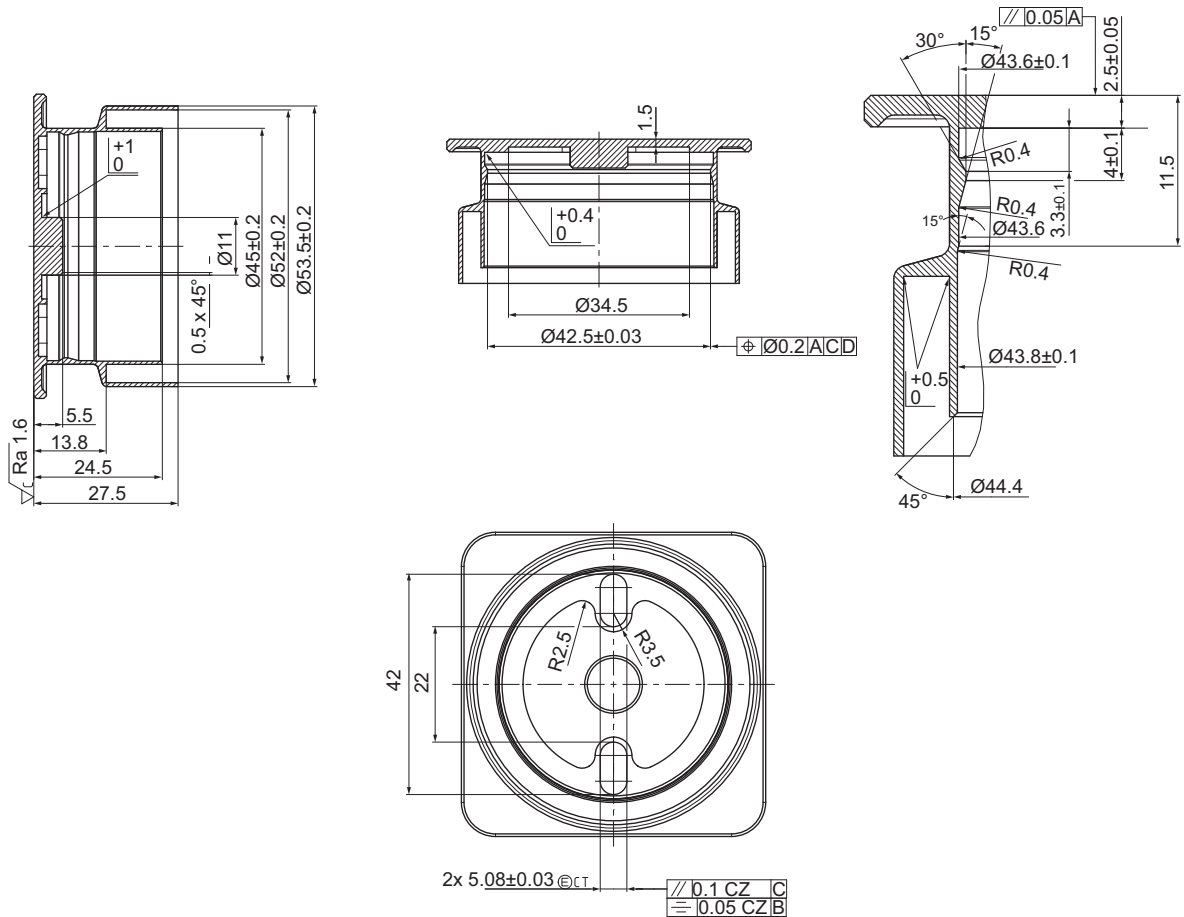
Option 1: Adapter weighing pan, snap-in, screw, threaded holes (Material: 30840643)

- Use the threaded holes to fix your set up to the adapter weighing pan.
- or -
- Slide the set up on the adapter weighing pan.



Option 2: Weighing pan support

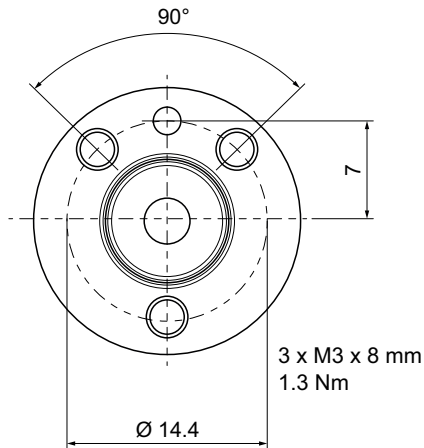
A customized adapter weighing pan can be designed which is placed directly on the weighing pan support according to the existing design.



Option 3: Placement on load application pin

A custom weighing pan can be attached directly to the load application pin which comes with three M3 x 8 mm threads. It is recommended to use the weigh module's existing labyrinth or washdown design.

For adaptation to the load application pin and labyrinth system, please refer to the design stated in option 2 respectively the SPE step file.



NOTICE

Insufficient IP protection

The specified IP protection was tested with standard weighing pan design. The version with center screw has a special O-Ring to seal the connection.

- For customized weighing pan designs it is important to consider the relevant dimensions, mechanical fit as well as the sealings. In critical cases it is recommended to test the design according to the application.



NOTICE

Preload limit exceeded

There is a preload limit to use the internal test or adjustment function which has to be considered for customized weighing pan designs.

- Consider specified pre-load for internal testing or adjustment.

3.3.4 Weighing from below

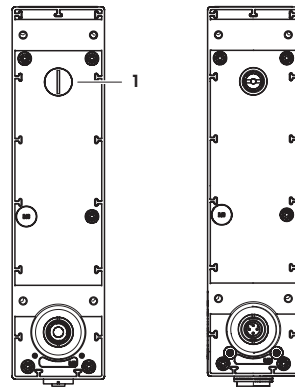
Weighing below the module is used as an alternative if it is difficult or not possible to feed the weighing object onto the weighing platform above.

The weighing object is not placed on the weighing pan, instead it is held by an application-specific supporting device that is located below the module and permanently connected to it. The upper opening has to be closed with a cover so that no extraneous objects or dirt can penetrate into the interior of the module. There is no weighing platform, and hence no basic load. If your supporting device is the same weight as the basic load, the entire weighing range is available to you with no restrictions, see general notes on weighing interface and required deadload.

Design guidelines

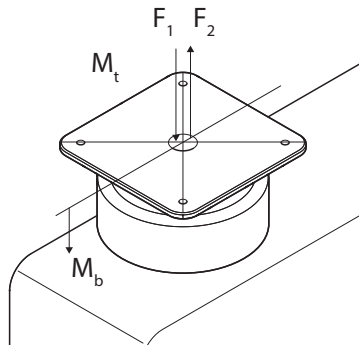
- Try to position the center of gravity of the supporting device as close to and vertically below the attachment point.
- The supporting device must hang freely from the attachment point without touching any fixed parts of the module or the system (max. diameter or cross section of the supporting device immediately next to the attachment point: ≤ 8 mm).
- If possible, restrict the vertical and horizontal movement of the supporting device with mechanical stops to avoid overloading the module.
- Avoid oscillations and vibrations in the supporting device and the weighing object to achieve a short weighing duration.

- 1 Remove screw (1) from the bottom side of the weigh module.
- 2 Use the M4 thread to attach the supporting device (max. penetration: 8 mm, max. torque: 1 Nm).



3.3.5 Overload protection

The SPE weigh module has an overload protection. The following limit values must not be exceeded:



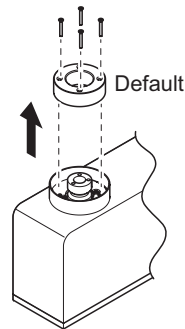
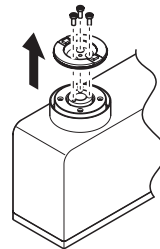
| | | SPE404-C / SPE403-C | SPE2003-C / SPE4002-C / SPE7000-C |
|----------------|--------------------------------|---------------------|-----------------------------------|
| F ₁ | Vertical static load downwards | 40 N | 700 N |
| F ₂ | Vertical static load upwards | 40 N | 200 N |
| F ₃ | Lateral static load | 20 N | 350 N |
| M _t | Torsion | 1 Nm | 2 Nm |
| M _b | Bending | 3.9 Nm | 3.9 Nm |

3.3.6 Installing the washdown module

The washdown function (accessory 30827014) can be used if the weigh module is to be cleaned with a water spray.

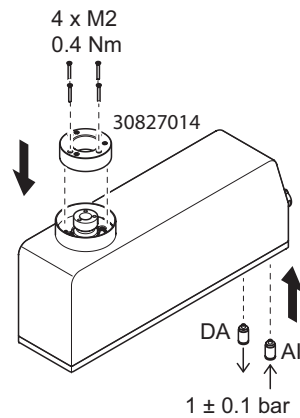
Removing the labyrinth sealing of the SPE weigh module

- 1 Remove the 3 screws of the weighing pan support with a T10 screwdriver and remove the weighing pan support.
- 2 Remove the 4 screws of the labyrinth sealing with a T6 screwdriver and remove the labyrinth sealing.

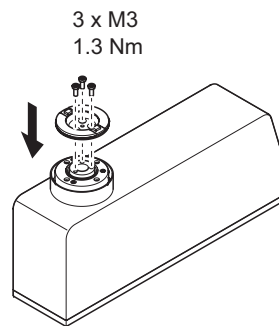


Installing the washdown module

- 1 Place the washdown module on the flange and tighten the 4 M2 screws with a T6 screwdriver and 0.4 Nm.



- 2 Remove the grub screws with an Allan key 1.5 mm and install the air connectors DA and AI on the weigh module base plate.
- 3 Place the weighing pan support on the load introduction and tighten the 3 M3 screws with a T10 screwdriver and 1.3 Nm.

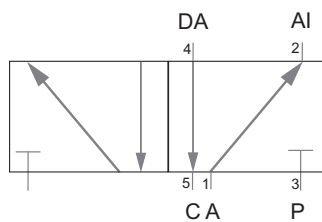


i Note

During cleaning, the air connector AI should be supplied with 1 ± 0.1 bar air pressure and the deaeration plug (DA) should be left open to transfer the air to the outside in case there is an air leakage from the washdown bellow.

In normal operation, the deaeration plug DA should be closed to prevent any air circulation inside the weigh module.

Exemplary presentation with a a 5/2 way valve.

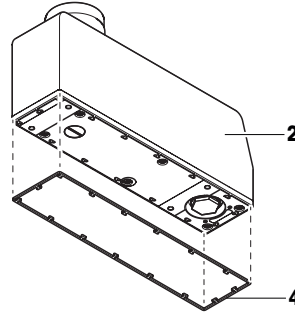


- AI** Air in for washdown
- DA** Deaeration for washdown
- P** Pressure (1 ± 0.1 bar)
- A** Atmospheric pressure (ambient)
- C** Closed (blind bolt)

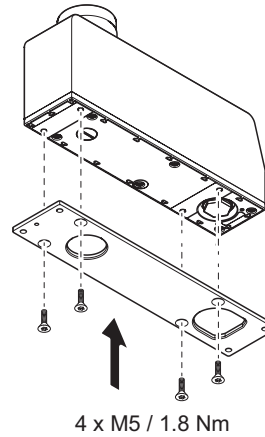
3.3.7 Installing the long base plate

The long base plate (accessory 30840644) can be used for top mounting.

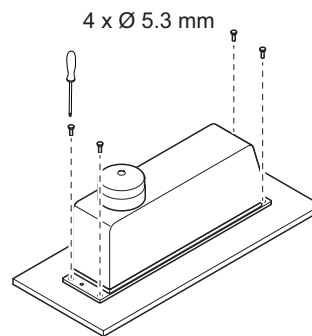
- 1 Attach gasket (4) to weigh module (2).



- 2 Attach long base plate to weigh module (2) using 4 M5 screws.



- 3 Mount weigh module (2) on the support surface with 4 M4 screws.



3.4 Electrical installation

3.4.1 Connecting the cable



NOTICE

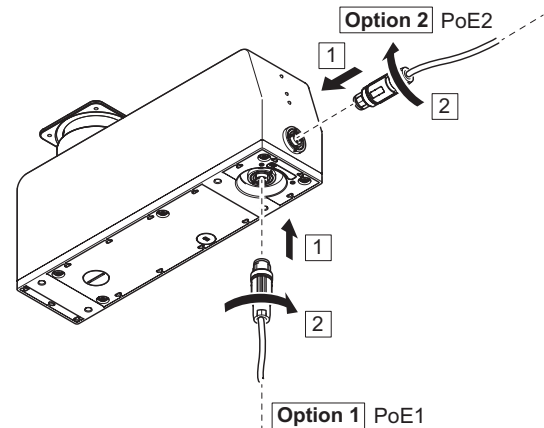
Damage to the weigh module

Hot-plugging the weigh module might lead to damage.

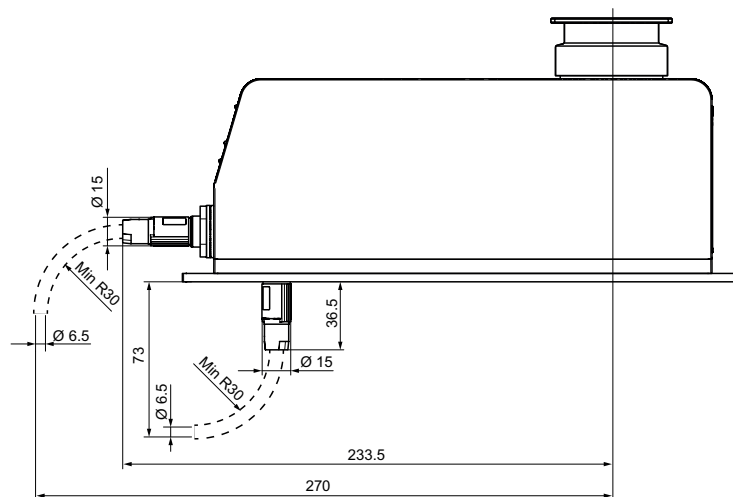
- Always make sure that the power is switched off before connecting or disconnecting the weigh module.

The weigh module has two M12 connectors with equal function: on the bottom and on the front.

- 1 Chose the connector, either PoE1 or PoE2.
- 2 If applicable, remove the protection cover M12 with a wrench size 21.
- 3 Align the connector cable according to the pin assignment.
- 4 Close the unused connector with the protection cover.

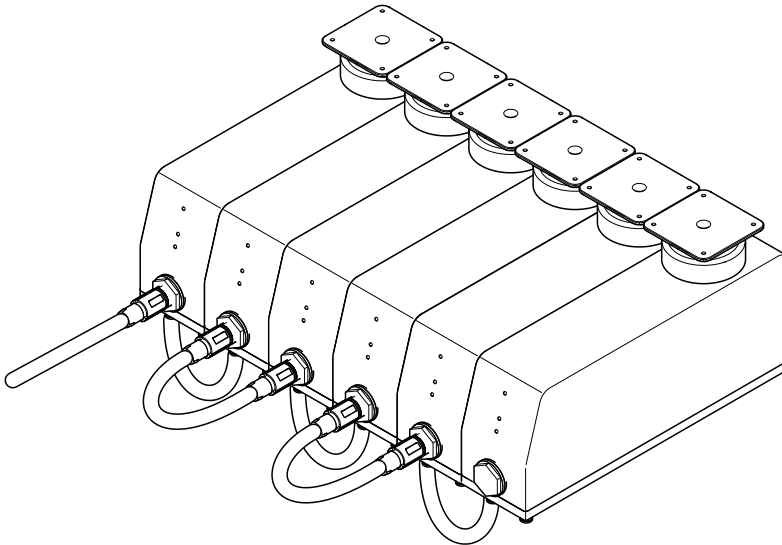


Maximum bending radius



3.4.2 Daisy chain

In multi-line installations it is possible to connect up to 9 weigh modules in daisy chain. The weigh modules have to be configured via APW-Link to be used in daisy chain.



NOTICE

Damage to components!

- 1 Observe the maximum number of 9 weigh modules in daisy chain.
- 2 Do not connect any other device than SPE weigh modules after each other.
- 3 The SPE daisy chain option is not intended to have full redundancy, but to reduce cabling efforts. The daisy chain must end after the last module in the chain. Do not power the daisy chain from both sides.
- 4 All SPEs must be set to different IP addresses before they are daisy chained.
- 5 Power forwarding must be activated with command M124 (APW-Link).

3.4.3 Power supply

The weigh module was developed in accordance with the IEEE 802.3af standard.

Permissible PoE input voltage range = 37.0 – 57.0 V

The weigh module can be connected via a PoE switch to the PLC or via a PoE injector to a computer.

4 Establish connection

The following chapters show how to communicate with the weigh module.

Note

The weigh module should be powered with a weighing interface installed in order to ensure the minimum deadload to properly start up the weigh module.

4.1 IP address factory settings

The weigh module is delivered with the following default settings:

- IP address: 192.168.0.55
- Port number 1: 23
- Port number 2: 80 (recommended for web server usage)

If you cannot connect the weigh module, the IP address might have been changed, please refer to chapter [Temporarily activate the service IP address ▶ Page 21].

4.2 Update rate

The SPE weigh module supports update rates of up to 122 weight values per second via TCP/IP ports.

The SPE weigh module supports the "Fast Weight Update Channel" in which data can be read via Industrial Ethernet with up to 488 weight values per second.

Via the "Fast Weight Update Channel", the SPE weigh module can receive data from the PLC with up to 244 weight values per second.

Note

- To achieve the best performance via TCP/IP communication it is required to operate the SPE weigh module with the default stack (PROFINET).
- If data-intensive commands are used in parallel on both ports (e.g. SIR command to permanently retrieve the weight values), the update rate on both ports can be reduced, respectively samples can be lost.
- A weighing system response delay of up to 100 ms can occur between closing and reopening a TCP/IP connection.
- After each system reboot, the MT-SICS command "I4" must be handled.

Important implementation note

TCP packet segmentation may occur. A MT-SICS command line is completed once a carriage return and line feed is sent (<CR><LF>). See MT-SICS manual for more details

4.3 Web server

The SPE weigh module has an integrated web server where the actual weight value as well as system parameters are displayed.

- Enter the weigh module IP (factory settings: 192.168.0.55; port 80) in the web browser to access the web server.

Note

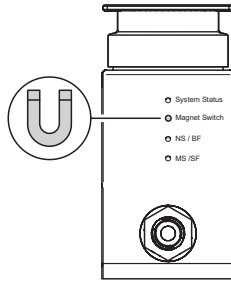
Firewall and proxy settings as well as connections to other networks can block the connection to the web server.

If the connection to the web server is not possible, switch off the proxy server and disconnect all open network connections such as WLAN or LAN.

4.4 Reset function

The weigh module is equipped with a reed switch, which is an electrical contact, activated by a commercial magnet. By this it is possible to perform IP address reset or factory reset.

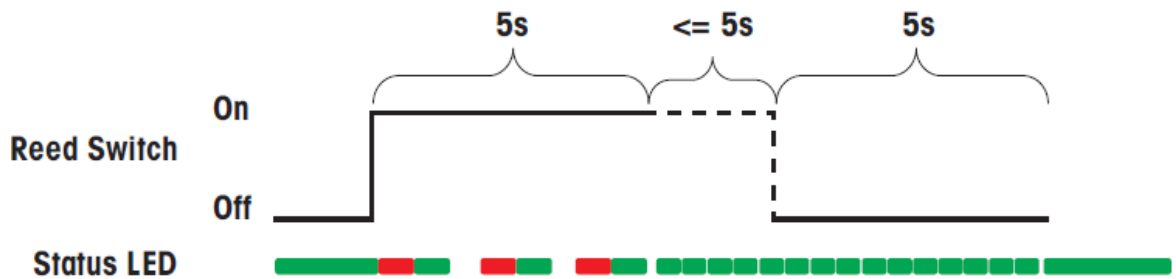
The switch is located between the System Status LED and the NS / BF LED. Its position is marked with a dot.



4.5 Temporarily activate the service IP address

If the customer IP (set via MT-SICS command: M70) is not known, the service IP (192.168.0.55; port 23) can be activated at any time to connect to the weigh module. The temporary service IP remains active until the next restart (MT-SICS: R01) or until the power supply is disconnected. Then the customer settings are active again.

- 1 Activate the magnet switch with a commercial magnet for 5 seconds and release it.
- 2 Wait at least 5 seconds



Note

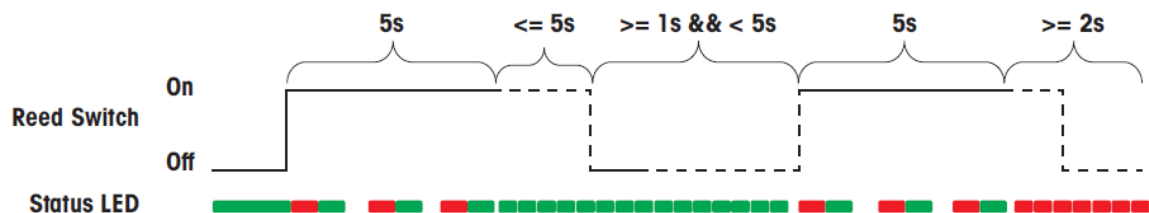
- The IP address can be managed by the weigh module itself or by the customer PLC. See the M109 command in the MT-SICS Manual for more information.
- Pay attention to this setting if you cannot connect to the user IP address after a power cycle.

4.6 Factory reset

All customer settings except the date and time are reset to the factory settings (including the communication parameters and any customer adjustments).

After resetting, the weigh module can be reached via the factory default IP address 192.168.0.55 and port 23.

- 1 Activate the magnet switch with a commercial magnet for 5 seconds and release it.
- 2 Wait at least 1 second.
- 3 Activate the magnet switch again for 5 seconds and release it.



5 Configuration

After installation, the weigh module must be configured according to the weighing process needs.

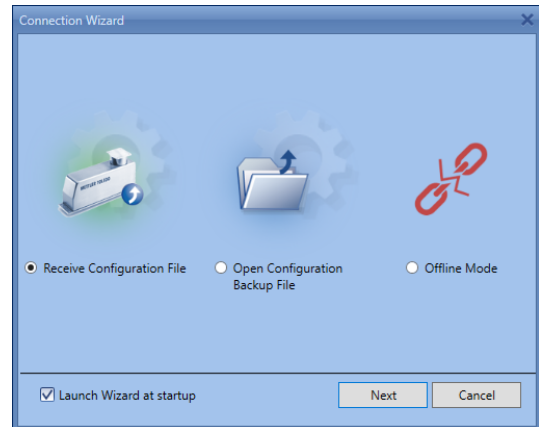
The most efficient way for this is by using the METTLER TOLEDO software APW-Link (Version 2.9 or higher). It can be downloaded free of charge from ► <https://www.mt.com/apw-link>.

Alternatively, the configuration can be carried out via the interface with MT-SICS commands (TCP/IP mode) or SAI commands (Industrial Ethernet mode).

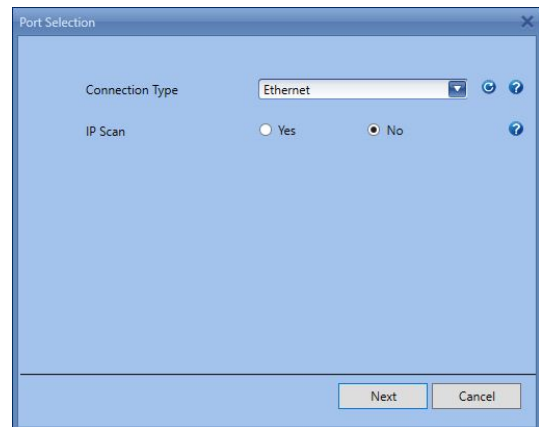
This chapter explains how to establish a connection with APW-Link and explains the basic functions that are often used. Further information on the configuration options can be found in the MT-SICS and SAI manuals. All documents can be downloaded from ► <https://www.mt.com/ind-spe-documents>.

5.1 Establish an APW-Link connection

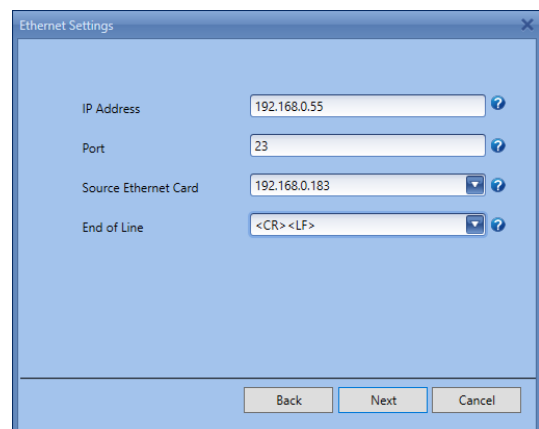
- 1 Open APW-Link (Version 2.9 or higher) and select "Receive Configuration File".

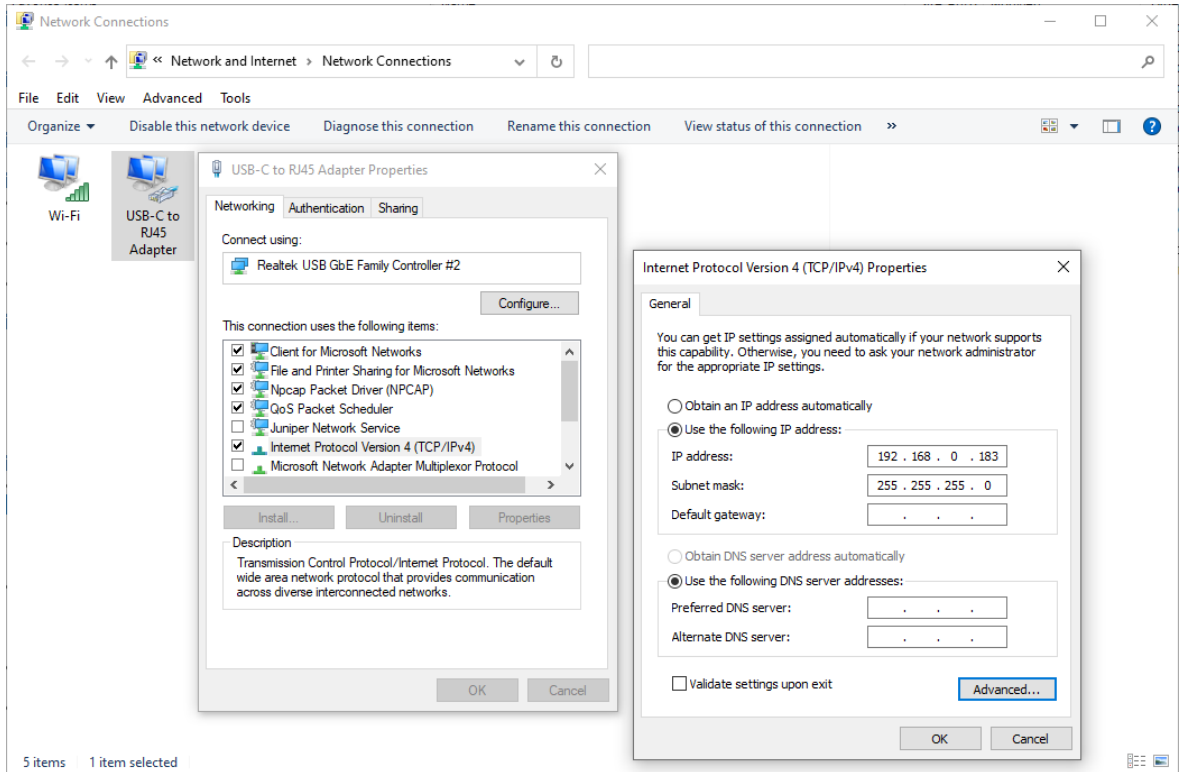


- 2 Select the Connection Type "Ethernet".
 - ➔ An IP scan is not needed if you know the IP address of your weighing system.



- 3 Enter the SPE weighing system IP (factory settings: 192.168.0.55) and port 23.
- 4 Select the "Source Ethernet Card" in the same IP range (e.g. 192.168.0.xxx)
 - ➔ If no "Source Ethernet Card" in the same IP range is available, configure your computer Ethernet port accordingly with a fixed IP.
- ➔ The connection will be established. In case you encounter connection problems, see [IP address factory settings ► Page 20] and [Temporarily activate the service IP address ► Page 21].





5.2 Weighing parameters

In the APW-Link tab "Weighing" you will find the most important settings to adapt the behavior of your weigh module. The most important settings are explained below.

Weighing Mode – Normal Weighing

If "Normal Weighing" is selected, an adaptive weighing signal filter is active. The adaptive filter can be adjusted in 5 levels from "very stable" (little filtering, fast) to "very unstable" (a lot of filtering, slower) using the "Environment" setting.

"Normal weighing" is recommended for processes in which the weighing result should be output as quickly as possible and no linear filter behavior is required.

Weighing Mode – Sensor Mode

If "Sensor Mode" is selected, a low pass filter with a selectable cut-off (limit) frequency is applied on the weighing signal. The limit frequency can be selected between 0.001 and 20.0 Hz.

Note

If the limit frequency is set to <0.001 Hz, a predefined limit frequency from the "environment" setting is used. The "Sensor Mode" is particularly recommended for processes that require a linear filter behavior (for example controlled filling applications).

5.3 Industrial Ethernet protocol

In the APW-Link tab "Communication", the Industrial Ethernet Protocol can be selected. Factory default setting is PROFINET.

5.4 Stability criteria

In the APW-Link tab "Weighing" you will find the settings for "Stability Criteria".

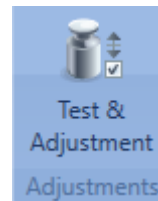
The stability criteria is an additional information that can be used in combination with the weight value. The behavior of the stability criteria can be parameterized via the "tolerance" (in digits) and the "time" (in seconds). The weighing value is interpreted as "stable" as soon as the weighing value no longer leaves the defined "tolerance-time tunnel".

Note

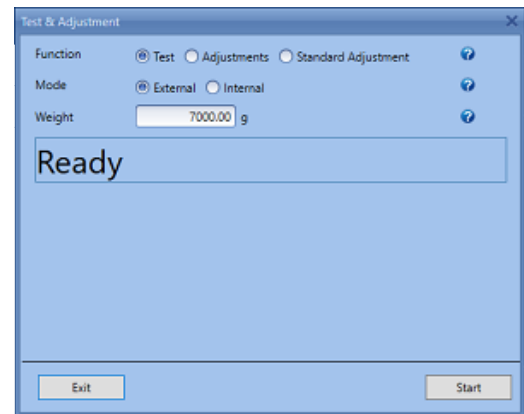
For further details please refer to the APW Handbook, chapter "Process optimization".

5.5 External adjustment

- 1 Select "Test & Adjustments" in the APW-Link "Home" menu.
- 2 Make the following settings:



| | |
|---------------------|--|
| Function | Select "Adjustments" |
| Mode | Select "External" |
| Step Control | Select "On" |
| Weight | Enter the weight value of your test weight |



- Place and remove the test weight on the weigh module according to APW-Link's guidance.

6 Cleaning and maintenance

To ensure that your weighing system remains reliable, accurate and functional for many years to come, the individual components must be cleaned and maintained periodically as appropriate for the intensity of use and the risk of contamination with debris. Ask your METTLER TOLEDO office about service packages. The device cannot be repaired.

General cleaning

- Clean the weighing pan and the weigh module housing regularly with a damp cloth.

Cleaning with water spray

- Make sure that the washdown protection mechanism is activated when cleaning the weigh module by water spray, see [Installing the washdown module ▶ Page 15].

7 Spare parts

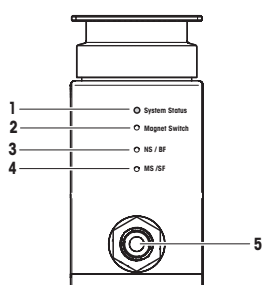
The SPE weigh module cannot be repaired. In case of a defect we recommend to contact METTLER TOLEDO in order to check the system.

The following parts are available as spare parts:

| Part | Description | Part number |
|----------------------|--|-------------|
| Gasket base plate | Gasket to seal the base plate against the mounting surface | 30840646 |
| Protection cap | Stainless steel cap for protecting the M12 connector | 30840658 |
| Packaging SPE | Packaging including insert | 30888532 |
| Weighing pan support | Adapter to mount snap-in weighing pans | 30840647 |

8 Error handling

8.1 LED description



| System Status LED (1) | | |
|---------------------------|--|--|
| Green permanent | No error | – |
| Green/red flashing (1 Hz) | The temperature of the weigh module is out of the compensated range (10 ... 30 °C ambient temperature). Weighing values can no longer be guaranteed. | – Bring the weigh module within the compensated temperature range. |
| Red flashing (1 Hz) | The temperature of the weigh module is out of the permissible operating range (5 ... 40 °C ambient temperature). The weigh module can be damaged. | – Bring the weigh module within the permissible temperature range. |
| Red permanent | EEPROM read/write error Other error | 1 Try to reboot the weigh module. 2 Replace the weigh module. |
| Off | The weigh module is not powered or defect. | – Supply the weigh module with power or replace it. |

| NS (Network Status) / BF (Bus Failure) LED (3) | | | |
|---|---|---|---|
| LED Status | Ethernet/IP mode (NS) | PROFINET mode (BF) | Note |
| Green-red-off (1x) | Self test The device is performing its power-up testing. | — | |
| Green flashing (1 Hz) | No connections An IP address is configured, but no CIP connections are established, and an Exclusive Owner connection has not timed out. | — | |
| Green permanent | Connected An IP address is configured, at least one CIP connection (any transport class) is established, and an Exclusive Owner connection has not timed out. | — | |
| Red flashing (1 Hz) | Connection timeout An IP address is configured, and an Exclusive Owner connection for which this device is the target has timed out. | — | |
| Red flashing (2 Hz) | — | <ul style="list-style-type: none"> No Industrial Ethernet data exchange | Normal status is PROFINET TCP/IP connection mode |
| Red permanent | Duplicate IP The device has detected that its IP address is already in use. | <ul style="list-style-type: none"> No configuration Low speed physical link No physical link | |
| Off | Not powered No IP address | Not powered No error | EtherNet/IP mode <ul style="list-style-type: none"> Configure the IP address and establish a connection. Make sure M109 is set to "...managed by this device". |

| MS (Module Status) / SF (System Failure) LED (4) | | | |
|---|--|--|---|
| LED Status | Ethernet/IP mode (NS) | PROFINET mode (BF) | Note |
| Green-red-green (1x) | Self test The device is performing its power-up testing. | – | |
| Green flashing (1 Hz) | Standby The device has not been configured. | – | EtherNet/IP mode <ul style="list-style-type: none"> • Configure the IP address and establish a connection. • Make sure M109 is set to "...managed by this device". |
| Green permanent | Device operational the device is operating correctly. | – | |
| Red flashing (1 Hz) | Major recoverable fault (e.g. incorrect configuration) | – | |
| Red flashing (1 Hz, 3 s) | – | DCP signal service is initiated via the bus. | |
| Red permanent | Major unrecoverable fault | <ul style="list-style-type: none"> • Watchdog timeout • Channel, generic or extended diagnosis present • System error | |
| Off | Not powered | Not powered No error | |

8.2 MT-SICS error description

For MT-SICS error description, consult the MT-SICS Manual which can be found at

► <https://www.mt.com/ind-spe-documents>

In case you cannot solve the problem causing the error, contact the helpdesk.

Use MT-SICS commands E02 to get more detailed information of the actual error or E03 for the list of the most recent errors since the last power cycle.

8.3 IP address unknown

If you do not know the IP address of your weighing system, you can activate the temporary service IP, see [Temporarily activate the service IP address ► Page 21].

8.4 Other connection problems

If the weighing system cannot connect to APW-Link (or other programs) despite the correct network settings:

- 1 Disconnect the weighing system from the power supply.
- 2 Wait 5 seconds and reconnect the weighing system.

9 Disposal

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE), this equipment may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this equipment in accordance with local regulations at the collecting point specified for electrical and electronic equipment. If you have any questions, please contact the responsible authority or the distributor from which you purchased this equipment. Should this equipment be passed on to other parties, the content of this directive must also be passed on to the other party.



To protect your product's future:

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