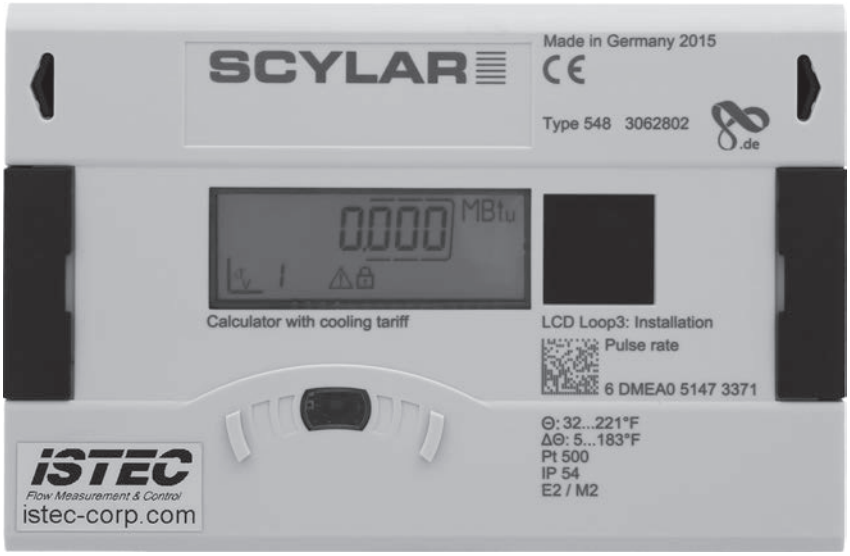
# Scylar Model 5202S
# Installation and User Guide




*Software version F02-002*

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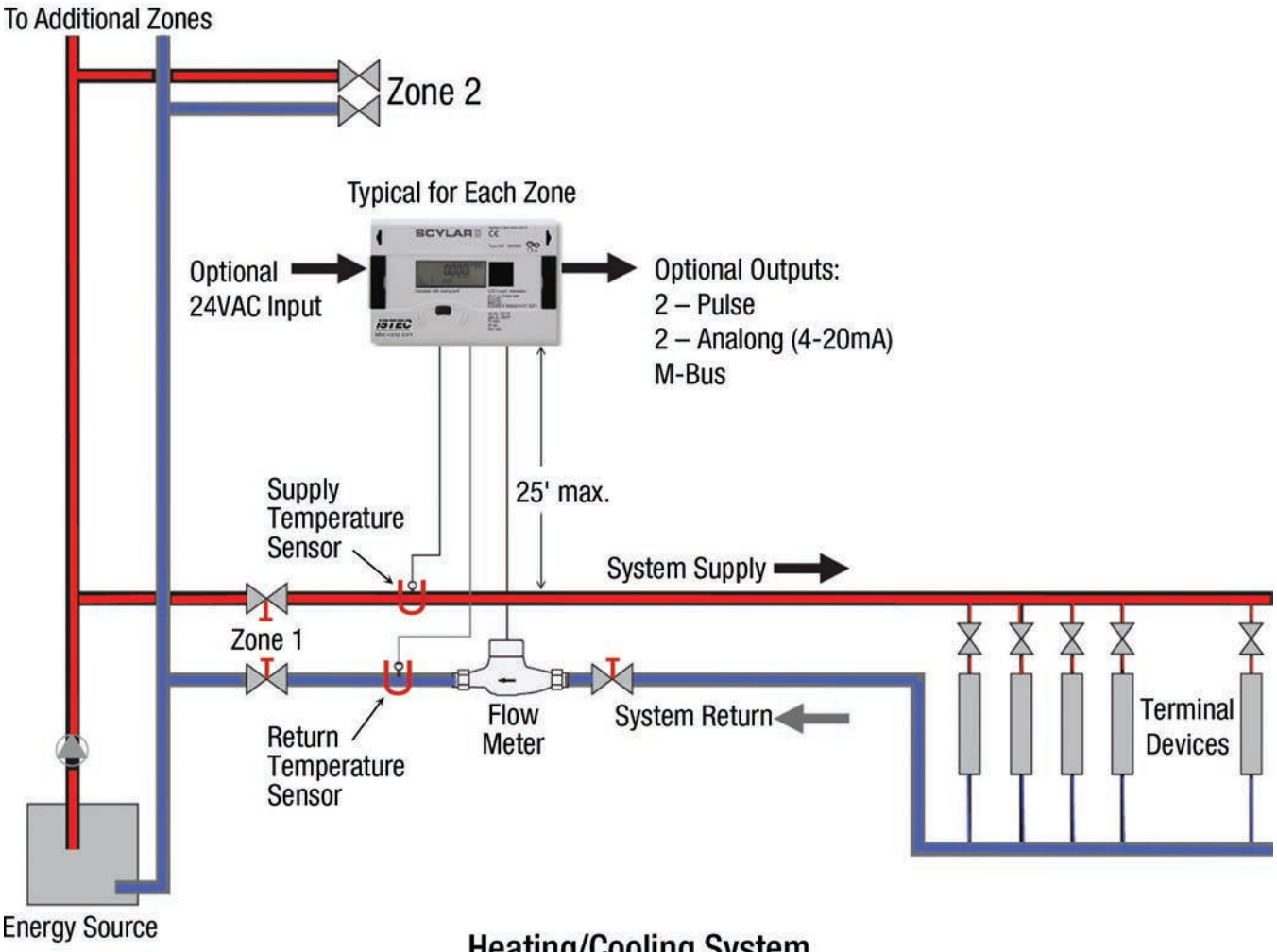
# Contents

# 5202S Installation Overview




Heating/Cooling System

# 1 General

## 1.1 About this Installation and User Guide

This Installation and User Guide refers exclusively to the SCYLAR SERIES MODEL 5202S ENERGY METER and is part of the product. It describes how to use this product safely for the intended purpose throughout the product life cycle.

### 1.1.1 Target Groups

Operators
The operator must ensure that personnel using the calculator read and observe the instructions given in this guide and all necessary associated documents, particularly the safety instructions and warning signs.

Trained Personnel / Users
Trained personnel must read, observe and follow the instructions given in this guide and the necessary associated documents, particularly the safety instructions and warning signs.

### 1.1.2 Subject to Change, Validity

The information contained in this Installation and User Guide is valid at the time of release of this version. The version number and release date of this Installation and User Guide are shown on the back of the document. Changes to this guide are possible at any time.

### 1.1.3 Completeness

This Installation and User Guide is only complete in conjunction with the relevant associated documents for the respective application.

### 1.1.4 Storage Location

This Installation and User Guide and all relevant associated documents for the respective application must be readily available and accessible at all times in the vicinity of the calculator or the overriding system.

### 1.1.5 Warning Signs

The warning levels indicated by the warning signs are explained below.

| Signal Word | Level of Danger | Consequences of Noncompliance |
|---|---|---|
| DANGER | Direct threat of danger | Death or serious injury |
| WARNING | Possible threat of danger | Death or serious injury |
| CAUTION | Possible dangerous situation | Slight injuries |

### 1.1.6 Symbols

The symbols used in this Installation and User Guide are explained below:

| Symbol | Meaning |
|---|---|
|  | This symbol is the safety sign. All measures marked with the safety sign must be observed. It is used on warning signs. |
|  | This symbol is a safety sign indicating that the ESD (electrostatic discharge) regulations must be observed. It is used on warning signs. |
|  | This symbol draws attention to information. |
|  | This symbol indicates a requirement that must be fulfilled before taking action. |
|  | This symbol shows the instructions for avoiding danger in a warning instruction or an individual step. |

## 1.2 Marking

### 1.2.1 CE Marking

This product bears the CE marking, the metrology marking and the identification number of the notified body. See Section 3, page 9.

### 1.2.2 EC Declaration of Conformity

The calculator complies with the directives and standards for MID-approved meters as stated in the EC Declaration of Conformity, which contains the number of the EC type examination certificate. A copy of the EC Declaration of Conformity can be found at the end of this document.

## 1.3 © 2015 ISTEC Corporation Sparta, NJ

# 2 Safety

**NOTE**
Observe the following requirements before carrying out work of any kind:

## 2.1 Intended Use

The calculator is used for recording all billing data for local and district heating and cooling.

### 2.1.1 Misuse

Operation of the calculator outside the specified operating and environmental conditions is not permitted.

## 2.2 Basic Safety Instructions

### 2.2.1 Product Safety

The calculator is produced to the latest state of the art and the recognized safety standards, but the possibility of danger to the user, adverse effects on the calculator itself or on other property cannot be ruled out.

- Use the calculator only for the intended purpose in a fault-free condition with due regard for safety and hazards and in compliance with this guide.
- Keep this guide and all associated documents in a complete and legible state and accessible to personnel at all times.
- Avoid any kind of work that endangers personnel, persons not involved or third parties.
- In addition to the complete documentation, observe all legal or other safety and accident prevention regulations and the applicable standards and directives in the respective country of operation.

### 2.2.2 Obligations of Operator

Safe Working
The operator of the system is responsible for ensuring that the calculator is used only for the intended purpose with due regard for safety and hazards and in compliance with this Installation and User Guide.
The operator must ensure and monitor compliance with the following:

- that the meter is used for the intended purpose
- legal and other safety and accident prevention regulations
- applicable standards and directives of the country of operation

The operator must provide safety equipment.

Personnel Qualifications
The operator must ensure that personnel working on the calculator have read and understood this Installation and User Guide and all associated documents, particularly safety and repair instructions, before commencing work.

All work must be performed only by technically-trained personnel:

- installation and repair work
- work on the electronic circuits

Safety Equipment

Safety equipment must be provided, if required, e.g., install stop valves before and after the connected flow sensor to simplify removal and installation.

Warranty

- Obtain the manufacturer's approval before carrying out modifications, repair work or changes during the warranty period.
- Use only genuine parts or parts approved by the manufacturer.

### 2.2.3 Obligations of Trained Personnel / User

- Observe all instructions in the Installation and User Guide and on the device that are relevant to handling the calculator.
- Use safety equipment if necessary.
- Always disconnect the calculator from the electrical supply before carrying out repair work.

## 2.3 Specific Hazards

**DANGER**

Do not touch live parts during installation work.

**Risk of serious injuries or death!**

The calculator installation is only to be performed by an installation and/or electrical contractor.

Personnel must be trained in the installation of medium-voltage electrical equipment (up to 1000 V).

**WARNING**

Electrostatic discharge.

**Risk of damage to calculator and particularly electronic components, for which no liability is accepted!**

Observe the relevant ESD (electrostatic discharge) regulations.

**CAUTION**

Electric and magnetic fields.

**Risk of interference with electronic components in the calculator!**

Do not install the calculator or the input/output cables near heavy electrical loads or their cables.

Maintain the exact separation. This depends on the magnitude of the voltage and current of these loads.

Consult a suitable expert in the event of doubt.

# 3 Product Description

## 3.1 Mechanical Design


*Fig. A – Design of Calculator*

*1 - LC Display*
*2 - Pushbutton*
*3 - Optical ZVEI Interface*
*4 - Laser Labelling*

## 3.2 Scope of Delivery

The scope of delivery for the standard version includes the following:

- Calculator
- Wall mounting set incl. fixing material
- Installation Guide

An Energy Meter consists of...

1 - Calculator
2 - Temperature Sensors
3 - Flow Meter

## 3.3 Labelling

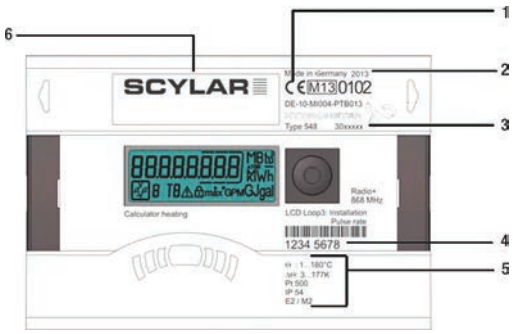



*Fig. B – Labelling (example) The meter is labelled using a laser.*

*1 - Conformity Mark*
*2 - Year of Manufacture*
*3 - Calculator Article Number*
*4 - Calculator Serial Number*
*5 - Calculator Data*
*6 - Product Name*

## 3.4 Functional Description

The calculator is a fully electronic measuring instrument. It is equipped with a data memory that enables comparison of the previous months' readings with the current readings. The data measured by the calculator are shown in the display. The display is provided with various windows as loop functions that can be called up in succession to display the system information assigned to each window (e.g., energy amounts, water amounts, current temperatures, maximum values).

The calculator has 6 display loops: main loop, accounting date loop, info loop, pulse input loop, tariff loop and monthly value loop. The individual loops are described in Section 8, page 26 "Operation." Some windows in a loop and whole display loops can be deactivated separately to make the window structure clearer.

Various display windows comprise up to seven displays that change at intervals of 2 – 4 s.

The loops in the display are numbered from 1 to 6 to help the user find his way around quickly.

The main loop is programmed with the current data as default setting, e.g., for energy, volume, flow rate and other parameters. It is not possible to change the order of the available data.

## 3.5 Power Supply

Possible power supplies:

- A Cell, 3.6VDC lithium battery with a lifetime of 11 years (standard version)
- D Cell, 3.6VDC lithium battery with a lifetime of 20 years (optional)
- Mains Unit 24VAC (optional)

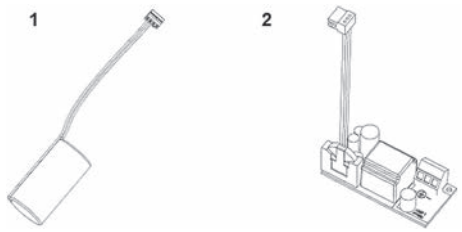



*Fig. C – Power Supplies*

*1 - A or D Cell, 3.6VDC Lithium Battery*
*2 - Mains Unit 24VAC*

**NOTE**

The calculator switches automatically to power save mode if the button is not pressed for approx. 4 minutes. The display is also switched off in this case, but can be switched on again by pressing the button. Communication is maintained, e.g., over the M-Bus or the optical interface. The calculator does not switch to power save mode if an error exists. The error is shown in the display as an error code.

Never connect between two phases if a mains unit is used, as this would destroy the mains unit. The protective safety cover must be installed at all times. The cable is to be fused at max. 6 A and protected against manipulation.

Used batteries must be disposed of at suitable collection points.

### 3.5.1 Battery

A 3.6VDC lithium battery is fitted in the standard version. The battery is not to be charged or short circuited. Ambient temperatures below 40°C extend the life of the battery.

**DANGER**
There is a risk of explosion if the battery is replaced with the wrong type of battery.

### 3.5.2 Mains Unit (24VAC)

The mains unit indicates to the calculator if mains voltage is present. If the mains unit fails, the backup battery (CR2032) in the mains unit provides the power supply for up to 1 year. This back-up battery can be replaced if necessary. The LCD readings (on pressing button) and the date and time are still updated, but none of the measuring functions work, including the flow rate measurement. Communication still functions over the optional M-Bus, RS485 and RS232 modules or the optical interface, but this reduces the life of the back-up battery. The integrated radio function is switched off in the event of mains failure.

### 3.5.3 Calculator Interfaces

The calculator is equipped as standard with a ZVEI optical interface. This is located on the calculator below the display (Fig. D). This interface can be used for communication with the calculator (using the IZAR@SET software) and for checking it.

Communication uses the M-Bus protocol, for which the Bluetooth IZAR OH BT opto head is suitable.

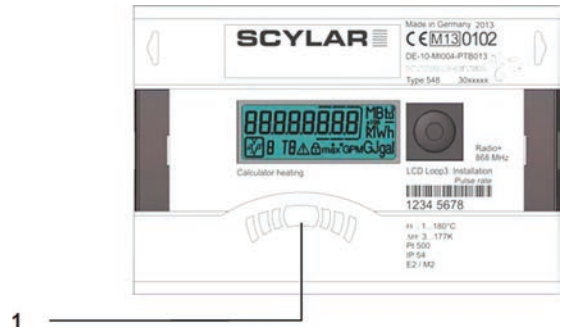



*Fig. D – Front of Calculator*

*1 - Optical ZVEI interface*

The calculator has two slots for extension modules, slot 1 and slot 2 (Fig. E).

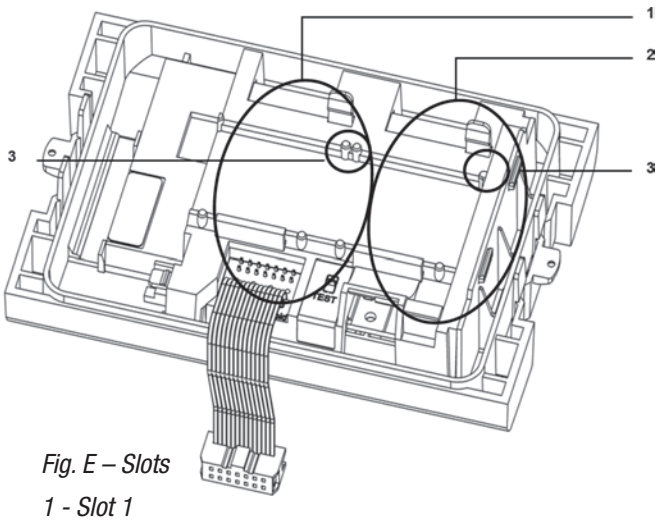



*Fig. E – Slots*

*1 - Slot 1*
*2 - Slot 2*
*3 - Fixing lugs*

**NOTE**
Inserting a module into slot 2 immediately disables the internal radio function.
The calculator recognizes automatically which module is inserted. This is shown in the display loop 3 based on a module code. See also point 6.2

**NOTE**
If other external devices are connected to the calculator, these must be of the safety extra-low voltage (SELV) type and comply with EN 60950-1.

## 3.6 Communication Modules

The calculator supports two communication channels over the same or different interfaces. An additional communication module can be used in radio operation.

The protocol is different for each of the two channels and is preset ex works, but can be set to customer-specific requirements using the IZAR@SET software. Each channel has its own primary address, but only one secondary address exists, which is set to the serial number ex works. The calculator is equipped with automatic baud rate detection. Default baud rate is 2400 baud.

### M-Bus Module

The M-Bus communication module is a serial interface for communication with external devices (M-Bus repeater), e.g., IZAR CENTER. A number of devices can be connected to a control centre. The M-Bus module is electrically isolated.

### 3.6.1 Function Module

#### Pulse Output Module

This module contains connections for two pulse outputs, which can be programmed as desired using the IZAR@SET software. The energy pulse output is marked as standard as “01-⊥” on the module and “Out1” in the display. The volume pulse output is marked as “02-⊥” on the module and “Out2” in the display. Both pulse outputs are electrically isolated.

#### Pulse Input Module

This module has 2 pulse inputs for connecting 2 additional pulse meters, such as water meters, gas meters or electricity meters. The possibility of programming the pulse value using the IZAR@SET software enables volume or energy values to be displayed and transmitted remotely over a suitable communication module. Initial meter counts can also be parametrized for these two pulse inputs. The pulse input module isn’t electrically isolated.

#### Combined Module

The combined module is equipped with two pulse inputs and a pulse output, which can be programmed as desired using the IZAR@SET software. Pulse input 1 is marked “I1-⊥” on the module and “IN1” in the display, pulse input 2 “I2-⊥” on the module and “IN2” in the display. The pulse output is marked “01-⊥” on the module and “Out1” in the display. The pulse output on this module isn’t electrically isolated.

### Analog Module

The analog module has the size of 2 standard modules and has two passive outputs with 4 to 20mA. If one analog module is mounted in the meter, no other module can be installed. The internal radio is still working. The connection cable between the main pcb board and the module has to be installed on Port 1 (left slot). By default, the two analog outputs are not programmed, the values can be programmed with the help of the software IZAR@SET (standard). The analog module is electrically isolated.

# 4 Technical Data

## 4.1 Dimensions

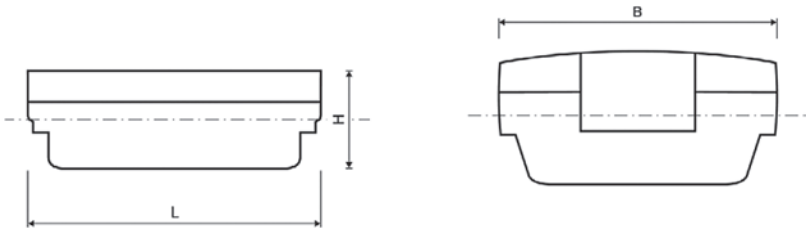



*Fig. F – Dimensions*

| SCYLAR SERIES MODEL 5202S | | |
|---|---|---|
| Overall Length | L | 150mm |
| Width of Calculator | B | 100mm |
| Height | H | 54mm |

## 4.2 General Data

- Volume pulse input:
  - 0,01…100 Gallons (other values possible)
  - 200Hz max. at pulse duration > 3ms
- Temperature sensor:
  - PT500/PT100 in 2/4 wire
- Ambient temperature: 5 … 55°C
- Application:
  - heating: 5 … 130°C (150°C)
  - cooling: 1 … 90°C
  - heating with cooling tariff: 1 … 105°C

## 4.3 Power Supply

External power supply
24VAC module (Fig. C-2, page 11)

- Terminals suitable for wires up to 2.5 mm²
- Electrical isolation
- Frequency 50 Hz
- Power consumption 0.12VA ±10%
- Soldered fuse (50mA)
- The cable is to be fused at max. 6A and protected against manipulation.

## 4.4 Calculator Interfaces

### 4.4.1 Communication Module

M-Bus

- M-Bus Module to EN 1434-3 Standard
- 2-pole Terminal Strip with Terminals Marked “24” and “25”
- Terminals Suitable for a Cable with 2 Wires of 2.5mm²
- Electrical Isolation
- Polarity Reversal Protection
- Maximum Voltage: 50VDC
- Current Drawn: One M-Bus Load
- Primary or Secondary Addressing
- Baud Rate 300 or 2400 bauds (Automatic Baud Rate Detection)
- Protocol: M-Bus
- Maximum Reading Interval at Battery Supply: Every 3 Minutes*
  at Mains Supply: Unlimited

* If the calculator is read more than every 3 minutes, the meter recognizes and doesn’t allow it. The display will show then the error code E-5. Also this error code will be shown in the header of the M-Bus telegram (to frequent reading via M-Bus).

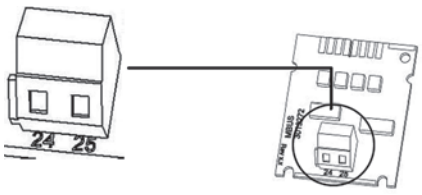



*Fig. G – M-Bus Module*

### 4.4.2 Function Modules

Pulse Output Module

- External Power Supply Vcc = 3-30VDC
- Output Current ≤20mA with a residual Voltage of ≤0.5V
- Open Collector (drain)
- Module consists of 2 Programmable Pulse Outputs
- Output 1:
  - Frequency: ≤4Hz
  - Pulse duration: 125ms ±10%
  - Pulse break: ≤125ms -10%
- Output 2:
  - Frequency ≤100Hz
  - Pulse duration/pulse break: ~1:1
- As a standard the output 1 will give an energy pulse, the output 2 will give a volume pulse (at calculator for heating or cooling)
- At a calculator for heating with cooling tariff the output 1 will give an heating energy impulse and the output 2 a cooling energy impulse (standard)
- The pulse value depends on the digits after the comma of the corresponding display unit. As a standard the value is always the last digit of the display
- The volume pulse value is freely programmable
- Floating contact (electrically isolated)
- The lifetime of the battery which is mounted on the module is 12 years.

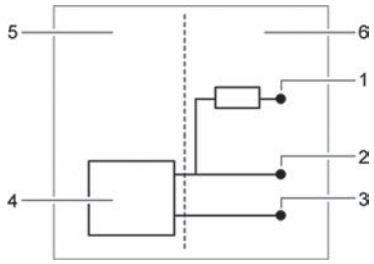



*Fig. H – Connection Diagram for Pulse Output*

*1 – VCC*
*2 – Pulse*
*3 – GND*
*4 – Pulse Output Module*
*5 – Calculator*
*6 – External Connecton*

To use the pulse output module an external power supply is necessary. Via a resistor the current has to be limited to max. 20mA. At point 2 in the diagram the pulse will be given.

The outputs are marked “01-⊥” and “02-⊥” on the terminal strip and “Out1” and “Out2” in the display.

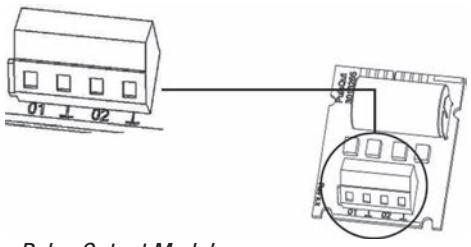


*Fig. I – Pulse Output Module*

## Analog Output Module

- 2 Passive Outputs
- External Power Supply: 10 … 30VDC
- Current Loop 4 … 20mA where 4mA = 0 Value; 20mA = Programmed Max. Value
- Overload up to 20.5mA, then Fault Current
- Errors are Generated at 3.5mA or 22.6mA (programmable)
- Output Values: Power, Flow Rate, Forward Temperature, Return Temperature, Difference Temperature
- Maximal Cable Length 10m (according to EN 1434)
- Electrical Isolated

To use the analog output module, an external power supply is necessary.
The outputs are marked “1” and “2” on the terminal strip with the respective polarity “+” and “-”.

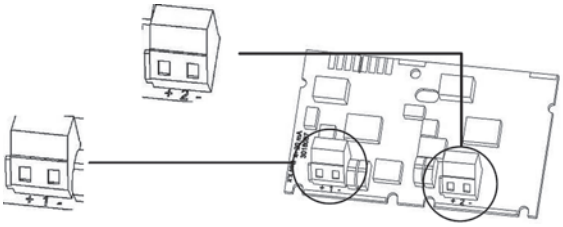
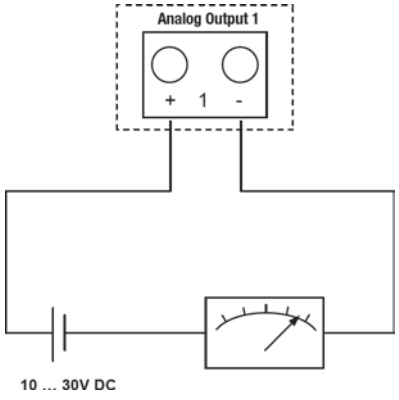


*Fig. J – Analog Module*




*Connection Diagram*

# 5 Transport, Storage

## 5.1 Unpacking the Calculator

Calculators are measuring instruments and must be handled carefully. To protect against damage and soiling, they should not be removed from the packaging until shortly before installation.

## 5.2 Transporting the Calculator

The calculator is only to be transported in its original packaging.

## 5.3 Storage of Calculator

- The meter must be stored in a dry place.
- Storage temperature -20°C ... +60°C
- Relative ambient humidity <93%

# 6 Installation

**NOTE**

This installation guide is intended for trained personnel and does not contain any basic working steps. The calculator may only be installed in dry and frost-free areas in buildings.

Avoid sharp edges (thread, flange, measuring tube). Only install and remove the meter when the system is not under pressure.

Important! The seal on the calculator (Fig. K, page 20) must not be damaged! A damaged seal immediately invalidates the factory warranty and the verification or declaration of conformity. The cables supplied with the meter must not be shortened or changed in any other way.

Live parts may be exposed when opening covers or removing parts. Connection points may also be live. The regulations covering the use of energy meters / calculators and electrical installations must be observed!

All instructions listed in the installation guide for the calculator must be observed.

The specified medium temperature is 5 ... 130°C (150°C). The temperature range depends on variant and application. The sealed variant of a connected flow sensor is to be used if condensation is expected. Only water without additives may be used as medium, used to AGFW leaflet FW510.

(Exception: Specifically programmed meter for medium Tyfocor LS). The calculator must be removed from connected flow sensor at a medium temperature over 90°C or if the water temperature is lower than the ambient temperature.

**DANGER**
Do not touch live parts during installation work.
**Risk of serious injuries or death!**

The calculator installation is only to be performed by an installation and/or electrical contractor.

Personnel must be trained in the installation of medium-voltage electrical equipment (up to 1000V).

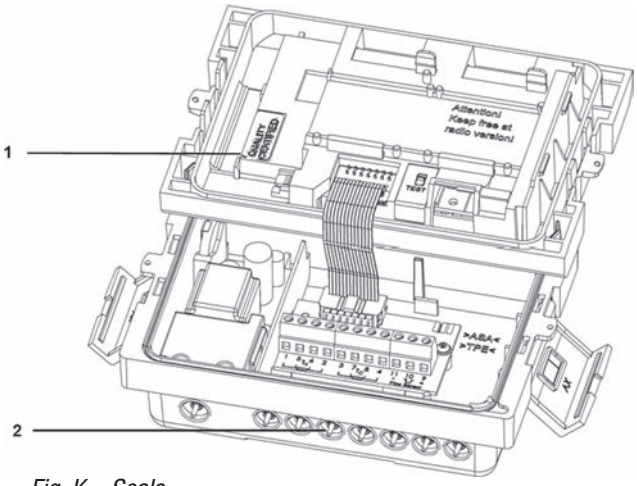



*Fig. K – Seals*

*1 – Seals*
*2 – Cable bushings*

## 6.1 Installation

**CAUTION**
If medium temperature is lower than ambient temperature!
Risk of damage to calculator due to condensation.

Use the sealed variant of a connected flow sensor

**NOTE**
Install the calculator in an accessible position for service and operating personnel.
It is recommended that stop valves be fitted before and after the calculator connected to the flow sensor to simplify removing the calculator.

### 6.1.1 Installing the Calculator

√ Make sure the calculator is sufficiently far away from possible sources of electromagnetic interference (switches, electric motors, fluorescent lamps, etc.).

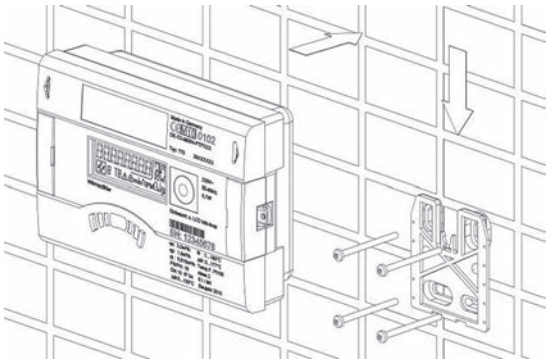
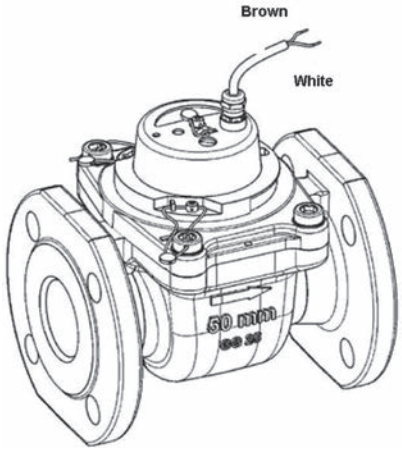


*Fig. L – Install the Calculator on the Wall*

➡ Install the calculator remotely at a sufficient distance (max. 25 feet) away from heat sources, e.g., on the wall (Fig. L above).

➡ Connection of Flow Sensors with Pulse Input to Calculator.

Example: Calculator with a remote mechanical flow sensor.




**Flow Meter Reed Switch**

| Switch (Reed) | Calculator Terminal |
|---|---|
| Pulse | 10 |
| Gnd | 11 (-) |

*Fig. M – Flow Meter with Reed Switch*

### 6.1.2 Connecting Temperature Sensors

**NOTE**

The calculator is operated with separately approved pairs of Pt 100 or Pt 500 temperature sensors. The type of sensor to be used is printed on the front of the calculator. Ensure that the approved temperature range of the temperature sensors is the same as the temperature range of the calculator!

- Handle the temperature sensors carefully!
- The 5601S sensor cables are fitted with colored type labels (red and blue)
- The 5602S/5603S are not color coded

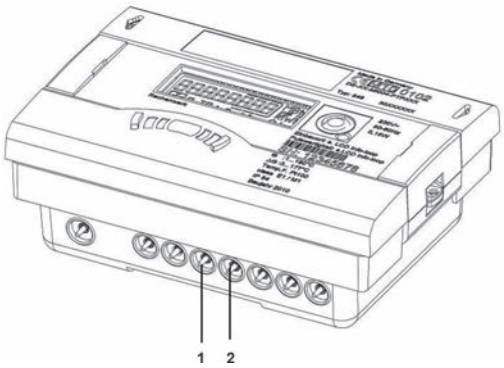



*Fig. N – Cable Entries*

*1 – Cable Entry for Terminal (5/6)*
*2 – Cable Entry for Terminal (7/8)*

### 6.1.3 Installing the Temperature Sensors

**NOTE**

The temperature sensors must be installed symmetrically in each zone supply and return line. Insure that they are inserted fully into the immersion well and fixed into position. The 5601S cables should not be shortened or lengthened. The 5602S/5603S supply and return temperature sensor wiring should be the same length and not exceed 25 feet. Do not install the temperature sensor wiring in the same conduit as any power supply, communication or other signal wiring. Maintain a minimum separation of at least 2 inches, along their entire length, from all other wiring.

| | | |
|---|---|---|
| (RED) TEMPERATURE SENSOR HEATING/COOLING SUPPLY OR SOLAR RETURN (HOT PIPE) MAXIMUM 25 FEET | 1 | |
| | 5 | TH |
| | 6 | TH |
| | 2 | |
| | 3 | |
| (BLUE) TEMPERATURE SENSOR HEATING/COOLING RETURN OR SOLAR SUPPLY (COOL PIPE) MAXIMUM 25 FEET | 7 | TC |
| | 8 | TC |
| | 4 | |
| FLOW SENSOR MAXIMUM 25 FEET | 11 | - |
| | 10 | PULSE IN |
| | 9 | + |

---------- FIELD WIRING

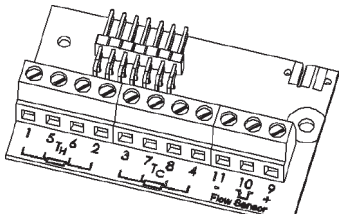


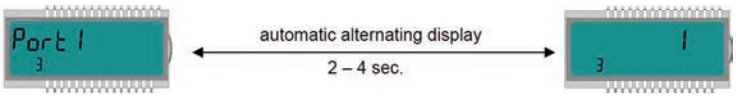
*Fig. O – Terminals for Temperature Sensors*

*1 – Feed the Sensor Cables through the Cable Enteries, see Fig N, page 21*
*2 – Connect the Sensors*
*3 – Press the Sensor Cables into the Strain Relief*

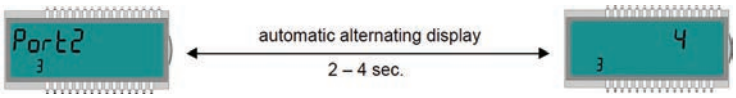
## 6.2 Display of the Module Configuration

The SCYLAR Model 5202S is equipped with an automatic detection of whatever module is mounted in which slot (port). This detection will be shown in the display in Loop 3 in two different sequences for Port 1 and Port 2. The two sequences will be shown alternating.

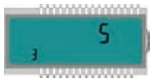
Example Slot 1:




Example Slot 2:




Module Detection:

| Module Type | Module Code in the Display |
|---|---|
| no module |   |
| M-Bus |   |
| Pulse Output |   |
| Analog Output |   |

## 6.3 Connecting Modules

### 6.3.1 Connecting Communication Modules

#### M-Bus Module

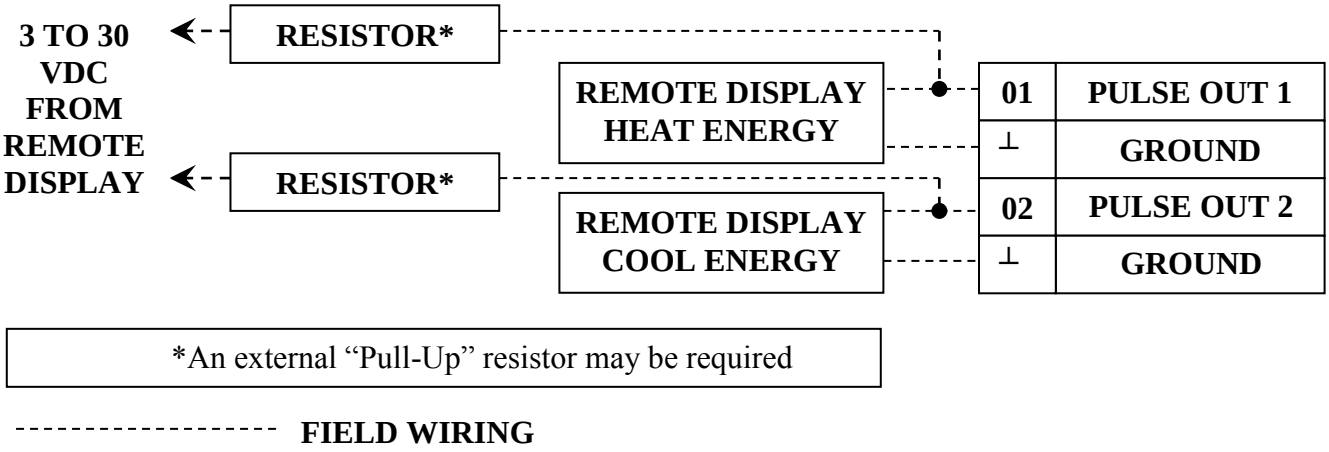
**NOTE**
The board contains a 2-pole terminal strip with terminals marked 24, 25 (Fig. G, page 16).

➡ Connect the M-Bus Master to the marked terminals.

### Pulse Output Module

**NOTE**
The board contains a 4-pole terminal strip with terminals marked "01,-⊥" and "02,-⊥" (Fig. J, page 18).

Connect the cable for pulse output 1 to terminals "01" and "⊥" and for pulse output 2 to terminals "02" and "⊥".




### Analog Output Module

**NOTE**
The board contains two 2-pole terminal strips for the two analogue outputs; output 1 is marked "+ 1, –" and output 2 "+ 2, –" (Fig. I, page 18).

Connect the cable for analog output 1 to the terminals marked "+" and "-" of terminal strip 1. Connect the cable for the second analogue output to the terminals marked "+" and "-" on terminal strip 2. Observe the correct polarity.

## 6.4 Connecting the Mains Voltage 24VAC

**DANGER**
Before you connect the mains cable, be sure that no mains voltage is existing.
**Risk of serious injuries or death!**
Please take care that the mains voltage corresponds to the mounted mains unit.

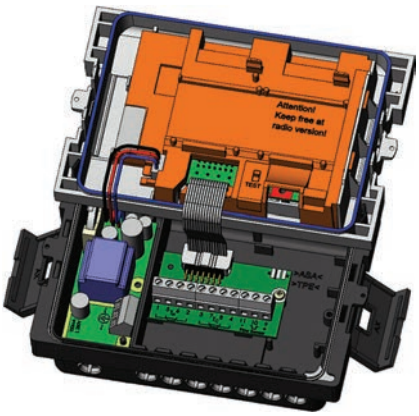


*Fig. P – Meter with Mains Unit*

*1 – Open the Calculator*
*2 – Remove the Terminal Cover of the Mains Unit*
*3 – Install the Mains Cable into the Bottom Part of the Calculator*
*4 – Connect the Cable according to the Labelling of the Terminal*
*5 – Reinstall the Terminal Cover*
*6 –Close the Calculator*
*7 –Turn on the Mains Voltage*


**ERROR E-8**
Disappears automatically from the display when the mains voltage is connected.

## 7 Taking Into Operation

The calculator can be taken into operation, once it has been installed. Proceed as follows:

- Open the Stop Valves
- Check the System for Leaks
- Carefully Bleed the System
- Check the Flow Rate and Temperature Displays for Plausibility
- Bleed the System until the Flow Rate Display is Steady
- Regulate the System using the Flow Rate Display
- Seal the Sensors
- Attach the Seals to the Calculator and Temperature Sensors
- Read the Meter Counts for Energy, Volume and Operating Hours

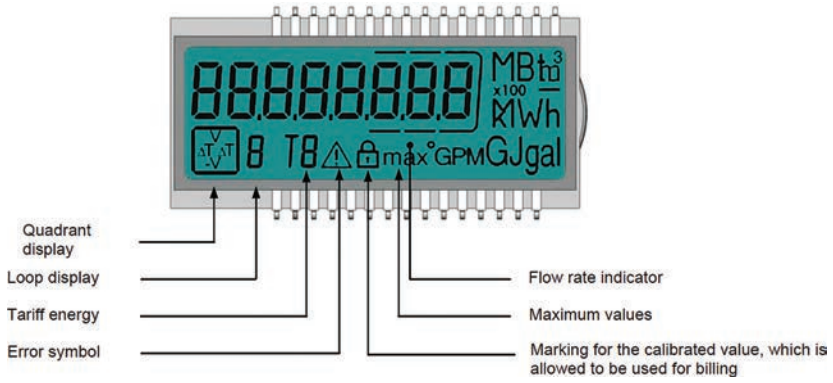
**ERROR E-3**
Temperature sensors reversed during installation or connection.

**NOTE**
If the system is idle, these error messages can appear even though the installation has been carried out correctly.

## 8 Operation

### 8.1 Display

The calculator readings are displayed with units and symbols on an 8-digit LCD.




### 8.2 Operation of Calculator

A pushbutton mounted on the front of the calculator is used to switch to the various displays.

To show the data read out by the integrator in the display, various windows have been created as loop functions that can be called up in succession to display the system information assigned to each window (e.g., amount of energy, operating hours, volume of water, current temperatures, …).

The calculator has 6 different display loops: main loop, accounting date loop, info loop, impulse loop, tariff loop and monthly value loop.

Some windows or entire loops may be switched off if they are not relevant to the application.

The window content of each loop is programmed with the standard information ex works. Various display windows comprise up to seven displays that change at intervals of 2 – 4 s. The loops in the display are numbered from 1 to 6 to help the user find his way around quickly (page 28). The main loop (1) is programmed with the current data as default setting, e.g., for energy, volume, flow rate.

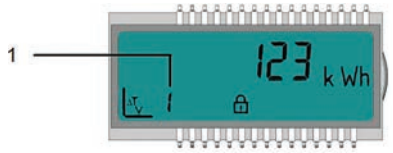



*Fig. Q – LC Display*

*1 – Loop Display (for Loop 1)*

The pushbutton is used to switch through the various displays. The button can be pressed for a short or long time.

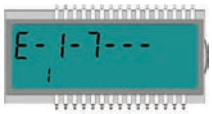
The following table shows the possible uses of the button:

| **Action** | **Result** |
|---|---|
| Short press ▼<br>(< 3 seconds) | Switches to the next display within a loop |
| Long press<br>(> 3 seconds) | Switches to the next display loop |
| Button not pressed for 4 minutes | Calculator switches off the display automatically (to save power, but only if no error exists) |
| Button pressed again | Calculator shows the basic display |

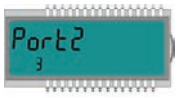
## 8.3 Display Indications (Default Settings)

### Main Loop (1)

| Sequence | Window 1 | |
|---|---|---|
| 1.1 |  Accumulated energy ▼ | (MBTU) |
| 1.2 |  Volume ▼ | (Gal) |
| 1.3 |  Accumulated energy (cooling) ▼ | (MBTU)<br>(Sequence only in a calculator for heating with cooling tariff) |
| 1.4 |  Flow rate ▼ | (GPM) |
| 1.5 |  power ▼ | (Energy Rate MBTU/H) |
| 1.6 |  Forward/- Return temperature ▼ | °F |
| 1.7 |  Temperature difference ▼ | °F |

| Sequence | Window 1 | Window 2 |
|---|---|---|
| 1.8 |  Operating days ▼ | |
| 1.9 |  Error code ▼ | |
| 1.10 |  Display test ▼ | |
| 1.11 |  Pulse input 0 ▼ |  Volume (Gal) |

## Info Loop (3)

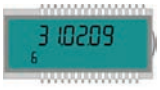
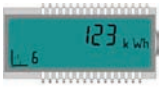
| Sequence | Window 1 | Window 2 |
|---|---|---|
| 3.1 |  Current date ▼ |  Current time |
| 3.2 |  ‚Sec_Adr.' ▼ |  Secondary address |
| 3.3 |  ‚Pri_Adr 1' ▼ |  Primary address 1 |
| 3.4 |  ‚Pri_Adr 2' ▼ |  Primary address 2 |
| 3.5 |  Installation position ▼ | |
| 3.6 |  ‚Port 1' ▼ |  No. of mounted module in Port 1 |
| 3.7 |  ‚Port 2' ▼ |  No. of mounted module in Port 2 |

## Others

## Info Loop (4)

| Sequence | Window 1 | Window 2 |
|---|---|---|
| 4.1 |  Pulse output 1 ▼ |  Value of pulse output 1 |
| 4.2 |  Pulse output 2 ▼ |  Value of pulse output 2 |

## Monthly Value Loop (6) (Calculator for Heating - Cooling)

| Sequence | Window 1 | Window 2 | Window 3 | Window 4 |
|---|---|---|---|---|
| 6.1 |  ‚LOG' ▼ |  Date of last month |  Energy |  Volume |
| 6.2 |  ‚LOG' ▼ |  Date of month - 1 |  Energy |  Volume |
| 6.3 |  ‚LOG' ▼ |  Date of month – 12 |  Energy |  Volume |

## 9 Removal

**NOTE**
The calculator contains a lithium battery. This must not be opened by force, come into contact with water, be short-circuited or exposed to temperatures above 85°C. Used batteries and electronic equipment or components no longer required are to be handled as special waste.

➡ Dismantle the calculator.

➡ Dispose of the individual parts of the calculator at a suitable waste collection point.

## 10 Error Analysis

The calculator continuously monitors its own operation and displays various error messages. The error code is displayed in the main loop if an error occurs. The permanent display shown corresponds to the "normal" display (e.g., a temperature sensor error is not shown in the flow rate display). In the basic display mode, the display changes between error codes and the basic display (exception: error display "C-1" is shown permanently). All the other windows can still be selected by pressing the button.

The error display disappears automatically as soon as the cause of the error has been cleared. All errors present longer than 6 minutes are saved in the error log.

The following table shows the error codes indicated in the display with their respective meaning:

| Error Display | Meaning |
|---|---|
| C – 1 | Basic parameter error in flash or RAM |
| E – 1 | Temperature measurement error<br>– Temperature range exceeded [-9.9 °C … 190°C]<br>– Sensor short-circuit<br>– Sensor break |
| E – 3** | Temperature sensors reversed in hot and cold lines |
| E – 5 | Reading too frequently<br>– M-Bus communication not possible for short time |
| E – 8 | No primary voltage (only if mains unit used)<br>– Powered by back-up battery |
| E – 9 | Warning: battery nearly exhausted |
| E – A* | Leakage: pipe break detected |
| E – b* | Leakage: leakage detected calculator |
| E – C* | Leakage: leakage pulse input 1 |
| E – d* | Leakage: leakage pulse input 2 |

* optional
** application-dependent

## 11 Declaration of Conformity

**EG KONFORMITÄTSERKLÄRUNG** **HYDROMETER**

***EC Declaration of Conformity***

| | |
|---|---|
| Dokument-Nr.<br>*Document-No.* | HYD-CE 145/1 |

HYDROMETER GmbH
Industriestr. 13
91522 Ansbach
GERMANY

Wir erklären hiermit, dass das Produkt
*We hereby declare that the product*

| | |
|---|---|
| Rechenwerk<br>*Heat Meter* | Typ 548 |
| Handelsnamen<br>*Trade names* | SCYLAR INT 8, classic S3 |
| EG-Baumusterprüfbescheinigung<br>*EC-type examination certificate number* | DE-10-MI004-PTB004 |
| Benannte Stelle Nr.<br>*Notified Body No.* | 0102 |

(Typ entsprechend des Angebotes, der Auftragsbestätigung, der Gerätekennzeichnung; Details in Montage- und/oder Bedienungsanleitung) konform ist mit folgenden Richtlinien des Europäischen Parlaments und des Rates, soweit diese auf das Produkt Anwendung finden:
*(Type according to the supply, the order confirmation, the equipment identification, Details in assembly and /or instruction manual) are concurring with the following guidelines of the European Parliament and the Council as far as these are applied on the product.*

| | |
|---|---|
| EMV – Richtlinie (2004/108/EG) | *EMC Directive (2004/108/EC)* |
| Niederspannungs – Richtlinie (2006/95/EG) | *Low Voltage Directive (2006/95/EC)* |
| Meßgeräte – Richtlinie (2004/22/EG) | *Measuring Instruments Directive (2004/22/EC)* |
| R&TTE – Richtlinie (1999/5/EG) | *R&TTE Directive (1999/5/EC)* |

Das Produkt entspricht ferner den folgenden angewendeten harmonisierten Normen bzw. normativen Dokumenten, Regeln und Technischen Richtlinien (Stand wie angegeben):
*Furthermore the product complies with the following used harmonised standards and normative documents respectively, rules and technical guidelines (level as indicated):*

| | |
|---|---|
| EN 55022:2006+A1:2007 | EN 301489-1 V1.8.1 |
| EN 60529:2000 | EN 301489-3 V1.4.1 |
| EN 61010-1:2001 | EN 300220-2 V2.3.1 |
| EN 1434:2007 | OIML R75:2006 |
| EN 60950-1:2006+A11:2009 | WELMEC 7.2:2009 |

Ansbach, 10.01.2013
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