Technik für Umweltschutz
AFRISO
Messen. Regeln. Überwachen.

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Operating Manual

Digital pressure gauge

DIM 30

ID: 900.100.0843 Version: 10.2022.0

1. General and Safety-Related Information on This Operating Manual

This operating manual enables safe and proper handling of the product, and forms part of the device. It should be kept in close proximity to the place of use, accessible for staff members at any time.

All persons entrusted with the mounting, installation, putting into service, operation, maintenance, removal from service, and disposal of the device must have read and understood the operating manual and in particular the safety-related information.

The following documentsare an important part of the operating manual:

- *Data sheet*

For specific data on the individual sensors, please refer to the respective data sheet. Download these by accessing www.afriso.com or request them by e-mail: info@afriso.com.

In addition, the applicable accident prevention regulations, safety requirements, and country-specific installation standards as well as the accepted engineering standards must be observed.

1.1 Symbols used

Warning word	- Type and source of danger - Measures to avoid the danger

Warning word	Meaning
DANGER	- Imminent danger! - Non-compliance **will result in** death or serious injury.
WARNING	- Possible danger! - Non-compliance **may result in** death or serious injury.
Caution	- Hazardous situation! - Non-compliance **may result in** minor or moderate injury.

NOTE – draws attention to a possibly hazardous situation that may result in property damage in case of non-compliance.

✓ Precondition of an action

1.2 Staff Qualification

Qualified persons are persons that are familiar with the mounting, installation, putting into service, operation, maintenance, removal from service, and disposal of the product and have the appropriate qualification for their activity.

This includes persons that meet at least one of the following three requirements:

- They know the safety concepts of metrologyand automation technology and are familiartherewith as project staff.
- They are operating staff of the measuring andautomation systems and have been instructedin the handling of the systems. They arefamiliar with the operation of the devices andtechnologies described in this documentation.
- They are commissioning specialists or areemployed in the service department, and havecompleted training that qualifies them for therepair of the system. In addition, they areauthorized to put into operation, to ground, and to mark circuits and devices according tothe safety engineering standards.

All work with this product must be carried out by qualified persons!

1.3 Intended use

The devices are used to convert the physical parameter of pressure into an electric signal.

The DIM 30 digital pressure gauge is suited for mobile electronic pressure measurement.

The user must check whether the device is suited for the selected use. In case of doubt, please contact our sales department (info@afriso.com). AFRISO assumes no liability for any wrong selection and the consequences thereof!

The fluids that can be measured are gases and liquids that are compatible with the materials in contact with the fluids, described in the data sheet. For application, it must additionally be ensured that the fluid is compatible with the parts in contact with the fluid.

1.4 Limitation of Liability and Warranty

Failure to observe the instructions or technical regulations, improper use and use not as intended, and alteration of or damage to the device will result in the forfeiture of warranty and liability claims.

1.5 Safe Handling

NOTE - Treat the device with care both in the packed and unpacked condition!

NOTE - The device must not be altered or modified in any way.

NOTE - Do not throw or drop the device!

NOTE – Excessive dust accumulation (over 5 mm) and complete coverage with dust must be prevented!

The device is state-of-the-art and is operationally reliable. Residual hazards may originate from the device if it is used or operated improperly.

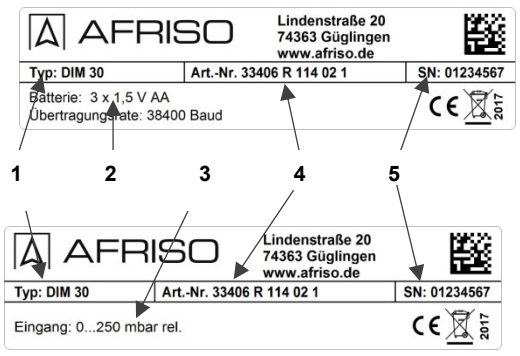
1.6 Scope of Delivery

Check that all parts listed in the scope of delivery are included free of damage, and have been delivered according to your purchase order:

The batteries have already been inserted. The electric circuit has been interrupted by an insulating foil. Please remove this prior to commissioning; to do so, refer to the “Battery Change” section.

2. Product Identification

The device can be identified by means of the type plate with order code. The most important data can be gathered therefrom.



1 Type designation
2 Supply
3 Inlet
4 Article number
5 Serial number

Fig. 1 Type plate

3. Mounting

3.1 Mounting and safety instructions

DANGER	- Airborne parts, leaking fluid, electric shock - Always mount the device in a depressurized and de-energized condition!

NOTE - Treat any unprotected diaphragm with utmost care; this can be damaged very easily.

NOTE - When installing the device, avoid high mechanical stresses on the pressure port! This will result in a shift of the characteristic curve or to damage, in particular in case of very small pressure ranges and devices with a pressure connection/port made of plastic.

NOTE - In hydraulic systems, arrange the device such that the pressure port points upwards (venting).

NOTE – If the device is installed with the pressure port pointing upwards, ensure that no liquid drains off on the device. This could result in humidity and dirt blocking the gauge reference in the housing, and could lead to malfunctions. If necessary, dust and dirt must be removed from the edge of the screwed joint of the electrical connection.

NOTE – Provide for a cooling section if the device is used in a steam line.

NOTE – Do not remove the packaging or protective caps of the device until shortly before the mounting procedure, in order to exclude any damage to the diaphragm and the threads!

Protective caps must be kept! Dispose of the packaging properly!

NOTE – The specified tightening torques must not be exceeded!

NOTE – Do **NOT** use the display module to tighten or loosen the mechanical connection of the pressure sensor module!

NOTE – Do **NOT** suitable for oxygen applications.

3.2 Mounting steps for connections according to DIN 3852

NOTE – Do not use any additional sealing material such as tow, hemp or Teflon tape!

✓ The O-ring is undamaged and seated in the designated groove.

✓ The sealing face of the mating component has a flawless surface. (R_Z 6.3).

1. Screw the device into the mating thread by hand.
2. Devices equipped with a knurled ring: only tighten by hand.
3. Devices with a wrench flat must be tightened using a suitable open-end wrench. Permissible tightening torques for digital gauge: Wrench flat made of steel: G¼: approx. 5 Nm; G½: approx. 10 Nm

3.3 Mounting steps for connections according to EN 837

✓ A suitable seal for the measured fluid and the pressure to be measured is available. (e.g. a copper seal).

✓ The sealing face of the mating component has a flawless surface. (RZ 6.3).

1. Screw the device into the mating thread by hand.
2. Then tighten the connection using an open-end wrench. Permissible tightening torques for digital gauge: G¼: approx. 20 Nm; G½: approx. 50 Nm

3.4 Mounting steps for NPT connections

✓ Suitable fluid-compatible sealing material, e.g. PTFE tape, is available.

1. Screw the device into the mating thread by hand.
2. Then tighten the connection using an open-end wrench. Permissible tightening torques for digital gauge:
   ¼ NPT: approx. 30 Nm; ½ NPT: approx. 70 Nm

4 Connection of display with pressure transmitter module

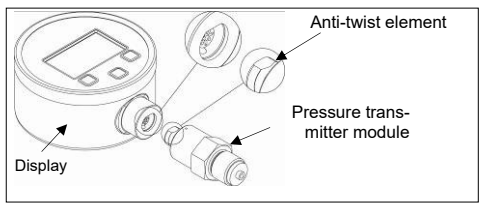


Fig. 2 Anti-twist element

1. Join the display and the pressure transmitter module.
2. Pay attention to the anti-twist element!
3. Push the display onto the pressure transmitter module until it snaps into place.

5. Power Supply / Battery Change

The device contains an alkaline-manganese battery Zn / MnO2 3 x 1.5V AA.

If the “battery” indication is shown in the display, perform the battery change as follows:

1. Remove the fastening screws using a suitable screwdriver.
2. Remove the cover and replace the 3 batteries (1.5V AA**) (remove the insulating foil prior to commissioning).**
3. Then fasten the cover again properly by means of the screws.

NOTE – If the batteries are used incorrectly, fluid may leak out and damage the digital pressure gauge.

NOTE – Do not combine batteries of different types or new and used batteries!

NOTE – Always insert the batteries into the dedicated battery compartment according to the indicated polarity.

NOTE – Do not recharge the batteries!

NOTE – Do not take the batteries apart!

NOTE – Do not short-circuit the batteries!

NOTE – Avoid the contact with heat or open flames!

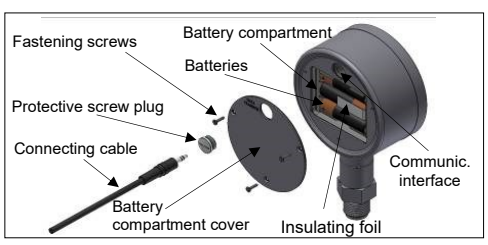


Fig. 3 : Battery compartment and communication

6. Data logger

The digital pressure gauge has an integrated data logger. The measured values stored in the device can be read out by software (included in the scope of delivery) via the communication interface.

6.1 PC Connecting

Connect the digital pressure gauge to a computer as follows:

1. Remove the protective screw plug of the communication interface by means of a suitable flat-tip screwdriver.
2. Insert the plug connector of the connection cable (included in the scope of delivery) into the interface socket of the digital pressure gauge. Connect the cable end with the USB connector to a free USB port on the computer.
3. Install the COM driver and data logger software which are available on CD (included in the scope of delivery).
4. After usage, disconnect and remove the connection and screw in the protective screw plug again properly.

7. Commissioning

✓ The device has been installed properly.

✓ The device does not have any visible defect.

Remove the insulating foil from the battery compartment!

8. Operation

8.1 Control and Display Elements

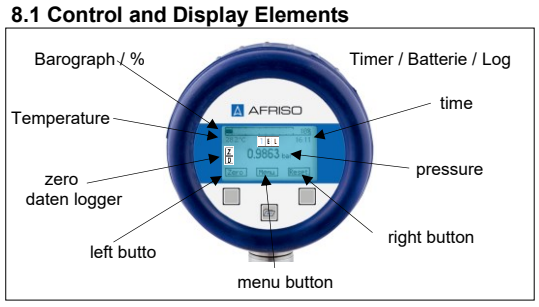
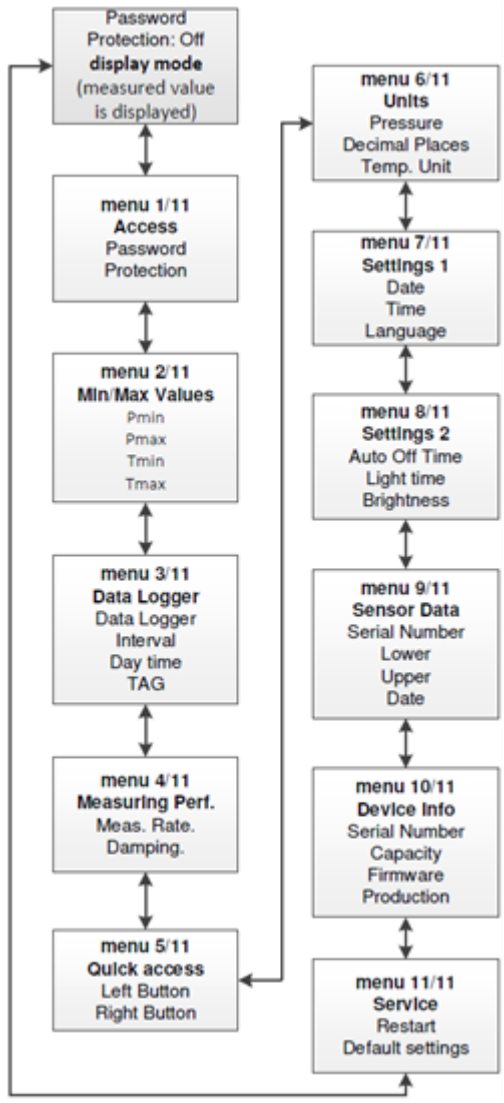


Fig. 4: Display and control panel

The display of the measured value and the configuration of the individual parameters is performed through the menu via an LCD that is capable of graphic representation. The individual functions can be set by means of three buttons arranged on the front of the device.

The menu system is a closed system. This enables scrolling both forth and back through the individual set-up menus to navigate to the desired setting item.

8.2 Structure of the menu system



8.3 Menu System

Switching on	**Switching on without status message**, with "Left button" and "Right button" key possible. **Switching on with status message**, only possible with button "Menu key" (middle button). Status message (appears in the display for approx. 2 seconds): - Memory usage: in percent - TAG: Measuring point designation in text form - Battery: Status of the battery charge - Firmware: installed version
Menu 1/11 **Access**	**Password:** **** (a four-digit, freely combinable statement consisting of numbers, letters and special characters) - Protection [Off]: unrestricted operation - Protection [On]: operation only possible after password input (Select menu item "Password" with "Edit" → Press "<<" or ">>" → Set value → continue with "Next". Set password and remember! → Press "Next" to "Protection" sub-item → Press "<<" or ">>" → Activate protection [On] or deactivate protection [Select] → confirm with "Next" and continue to menu bar.) **NOTE** - No connection to the evaluation software DAQ, if password is active! **NOTE** - If you have forgotten your password, contact the manufacturer!
Menu 2/11 **Min/Max Values**	**Display of min / max values** Pmin - Minimum pressure display: The minimum pressure applied during measuring is shown in the display. Pmax - Maximum pressure display: The maximum pressure applied during measuring is shown in the display. Tmin - Minimum temperature display: The minimum temperature during measuring is shown in the display. Tmax - Maximum temperature display: The maximum pressure applied during measuring is shown in the display. Possible options: reset value [Reset? Sure?] (Resetting of a value: select the menu point with "Edit" → button ">>" operate. There appears the question "Reset?" → once more operate the button ">>". It seems "Sure?" additional confirmation whether the value should be put back → repeated confirming with the button ">>" takes over topically adjoining pressure as a minimum value.)
Menu 3/11 **Data Logger**	**Data Logger configuration** the following settings are possible: linearly [Linear] (value admission to the counter level 600798 is reached), cyclically ([Loop] (after the value is reached in 600798, the data logger automatically begins the values once more to grasp and, besides, overwrite the old values) or [Off] (in the display appears "D", if the data logger is activated and goes out if the data logger is off). Intervals to the memory of the measuring values (pressure / temperature): Interval: second [1-99 sec.]; minute [1-99 min]; hour [1-99 h]; or day [1-99 days], the time of day is to be set additionally; Milliseconds [20 msec.], only possible if the sampling rate is set to 50 / sec. in menu 4/11 (measuring performance). Time of day: Measured value recording: at what time the value should be recorded (only effective for the interval setting "day"). TAG: Measuring point inscription, factory set BD|Sensors. The setting can be changed by the user. **NOTE** - While the data logger is active, the display and pressure sensor module must not be disconnected!
Menu 4/11 **Measuring Perf.**	**Sample rate:** Possible settings [1 / sec.], [2 / sec.] or [50 / sec.] only if the interval is set to [20 msec.] in menu 3/11 (Data Logger). **Damping:** Damping can be set in one-second increments between [1 sec.] and [10 sec.], or disabled by selecting [Off].
Menu 5/11 **Quick access**	**Button configuration: Left button / Right button** Left / Right button: configuration of functions: [Min], [Max], [Light], [Zero], [Reset], [Single], [Off] Description of the functions: - [Min] / [Max] minimum / maximum pressure value is shown in the display - [Light] The backlight will turn on only when the illumination time in the 8/11 menu is set to 1-10 s. - [Zero] the zero point is set automatically, the display shows "Z" - [Reset] the set zero point is reset, goes out - [Single] the measured values are recorded individually after pressing the button - [Off] switches off the display (standby), provided the data logger is deactivated.
Menu 6/11 **Units**	**Adjustment of pressure unit** adjustable units: [bar], [PSI], [mbar], [mH2O], [inHg], [cmHg], [mmHg], [hPa], [kPa], [MPa], [kg/cm2], [inH2O], [mmH2O] or [User] (the user-defined unit [User] can only be programmed using the software DAQ), all pressure-related parameters are converted **Setting the decimal places** settable decimal places: standard [Std], one decimal place [+1] or two decimal places [+2] **Setting the temperature unit** adjustable units: degrees Celsius [°C], degrees Fahrenheit [°F] or Kelvin [K] set (factory setting [°C])
Menu 7/11 **Settings 1**	**Setting the date, time and language** Adjustable options: The date in the format [T.M.JJJJ], the time in the format [hh: mm] and the language [German] or [English].
Menu 8/11 **Settings 2**	**Setting the switch-off time, the lighting and the brightness** Off time: Setting the automatic switch-off in minutes. The automatic shut-off can be configured in increments of [1 min], [2 min], [3 min], [4 min] or [5 min] (the timer is activated 30 sec. before switching it off) or disabled by the [Off] option. After deactivation, the precision digital pressure gauge is in continuous operation. Illumination: the illumination duration can be set in one-second increments between [1 s] and [10 s] and in ten-second increments between [20 s] and [120 s], or disabled by selecting [Off] and enabling [On]. Note: For continuous lighting [On] increased consumption of the battery charge. Brightness: The brightness can be adjusted in 10% increments between [0%] and [100%].
Menu 9/11 **Sensor Data**	**Overview of sensor data (pressure sensor module)** [SN:] Serial number (ten-digit number) [Lower:] Start of measuring range (value and unit) [Upper:] Measuring range end (value and unit) [Date:] Date of manufacture (dd.mm.yyyy) The values are set by the factory and cannot be changed. Automatic detection after connecting the sensor to the display
Menu 10/11 **Device Info**	**Overview of device information (display)** [SN:] Serial number (eight-digit number) [Cap:] Data logger capacity (occupied range 0-600798 / maximum acceptance 600798) [Firmware:] The installed firmware version is displayed. [Production:] Date of Manufacture (TT.MM.JJJJ) Note: The values are set by the factory and cannot be changed. The recorded value in the data logger can be reset. (Reset counter reading: menu point [Cap:] with "Edit" select → button "<<" or ">>" press. There appears the question "Reset?" → once more operate the button "<<" or ">>". It seems "Sure?" additional confirmation whether the value should be reset → repeated confirming with the button "<<" or ">>" reset the grasped measuring values. Display announcement "Counter: 0/600798")
Menu 11/11 **Service**	**Setting the service options** Device restart: [No] or [Yes] Switching off and switching on the device is carried out automatically. Required before firmware upgrade. Presets: Reset [No] or [Yes] to factory defaults
Error	Display "No sensor": Display and pressure sensor modules are disconnected. Indication "Inappropriate sensor": Sensor is not suitable for the sampling rate 50 / s and the interval of 20 ms.

- **Left button:** is a function button and can be configured in menu 5. Off, Min, Max, Light, Zero, Reset or Single function can be assigned to the button. The configured function is active in display mode. Hold the button for about 2 seconds to activate the preset function. In operating mode, move backwards in the menu system "<<" or reduce the setting value.
- **Right button:** is a function key and can be configured in menu 5. Off, Min, Max, Light, Zero, Reset or Single functions can be assigned to the key. Hold the button for about 2 seconds to activate the preset function. In operating mode, move forward in the menu system ">>" or increase the setting.
- **Menu-button:** pressing this "Menu" button will enter the operating mode; It also serves to select the individual menu items "Edit" or to confirm the set values "Next". When pressing the button for approx. 4 seconds, the operating mode is exited.

To configure the individual menu items, the desired menu item must be set with the help of the left key "<<" or the right key ">>". Then confirm this with the menu button "Edit". Menu item is highlighted and configuration can begin.

To save a set value the menu key "Next" must be pressed. To exit the menu, press the menu button for approx. 4 seconds. The operating mode is also left automatically after approx. 1 min.

☞ Changes are only effective after pressing the menu button "Next" and after leaving the menu item. When leaving the entire menu system, the set parameters are checked again in relation to each other and in relation to the characteristics of the device. When configuring the unit, the measuring range is converted into the new unit only after leaving the menu system. Depending on the pressure range, not all units may be used.

9. Maintenance

DANGER	- Airborne parts, leaking fluid, electric shock - Always service the device in a depressurized and de-energized condition!
Attention	- due to aggressive fluids - Wear suitable protective clothing, e.g. gloves, safety goggles.

In principle, the device requires no maintenance.

If necessary, clean the housing of the device using a moist cloth and a non-aggressive cleaning solution.

Cleaning of the diaphragm:

Deposits or contamination may occur on the diaphragm in case of certain fluids. It is recommended to establish appropriate maintenance intervals for checking purposes, combined with a functional check.

Clean the diaphragm cautiously using a non-aggressive cleaning solution and a soft paintbrush or sponge.

If the diaphragm is calcified, it is recommended to have the decalcification performed by AFRISO. Please note the chapter “Service/Repair” with regard to this.

NOTE - Wrong cleaning may damage the measuring cell beyond repair. Do not use any sharp or pointed item.

10. Troubleshooting

Caution	- Airborne parts, leaking fluid, electric shock - If malfunctions cannot be resolved, put the device out of service and proceed according to sections 8 and 10!

In case of malfunction, it must be checked whether the device has been correctly installed mechanically. Check the batteries if the display does not function.

11. Removal from Service

DANGER	- Airborne parts, leaking fluid, electric shock - Always dismount the device in a depressurized and de-energized condition!
Attention	- due to aggressive fluids. - Wear suitable protective clothing, e.g. gloves, safety goggles

NOTE – After dismounting, mechanical connections must be fitted with protective caps.

12. Service/Repair

Information on service / repair:

- www.afriso.com
- info@afriso.com
- service@afriso.de

12.1 Recalibration

The offset value or range value may shift during the life of the device. In this case, a deviating signal value in relation to the set lower or upper measuring range value is output. If one of these two phenomena occurs after extended use, a recalibration in the factory is recommended. Please note the chapter “Service/Repair” with regard to this.

12.2 Returning the device

Get in touch with us before returning your product (service@afriso.de).

A declaration of decontamination must be enclosed with the device for every return, regardless of whether it is for recalibration, decalcification, conversion or repair. Corresponding templates can be found on our homepage.

Devices without a declaration of decontamination will only be examined after receipt of a corresponding declaration in case of doubt regarding the medium used!

13. Decommissioning, diposal

Dispose of the product in compliance with all applicable directives, standards and safety regulations.

Electronic parts and batteries must not be disposed of with household waste.

1. Disconnect the product from mains.
2. Remove the battery (see chapter "Power supply / battery change").
3. Dismount the product (see chapter "Mounting", reverse sequence of steps).
4. Dispose of the product and the battery separately.

14. Warranty Terms

See our terms and conditions at www.afriso.com or your purchase contract for information on warranty.

15. EU Declaration of Conformity

AFRISO

Technik für Umweltschutz

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EU - Konformitätserklärung

EU Declaration of Conformity / Déclaration EU de conformité / Declaración de conformidad CE / Declaração de conformidade CE / Deklaracja zgodności UE

CE

Formblatt FB 27 - 03

Name und Anschrift des Herstellers: AFRISO-EURO-INDEX GmbH, Lindenstraße 20, 74363 Güglingen
Manufacturer / Fabricant / Fabricante / Nome e endereço do fabricante / Producent:

Erzeugnis: Präzisions-Digitalmanometer
Product / Produit / Producto / Produto / Produkt:

Typenbezeichnung: DIM 30
Type / Type / Tipo / Tipo / Typ:

Betriebsdaten: DC 4,5 V
Techn. Details / Caractéristiques / Características técnicas / Detalhes técnicos / Dane techniczne:

Wir erklären in alleiniger Verantwortung, dass das bezeichnete Erzeugnis mit den Vorschriften folgender Europäischer Richtlinien übereinstimmt:
We declare under our sole responsibility that the above mentioned product meets the requirements of the following European Directives:
Le produit mentionné est conforme aux prescriptions des Directives Européennes suivantes:
El producto indicado cumple con las prescripciones de las Directivas Europeas siguientes:
O produto indicado cumpre com as prescrições das seguintes Diretivas Europeias:
Wymieniony wyżej produkt spełnia wymagania następujących Dyrektyw Europejskich:

Elektromagnetische Verträglichkeit (2014/30/EU)
Directive Electromagnetic Compatibility / Directive compatibilité électromagnétique / Directiva compatibilidad electromagnética / Diretiva sobre compatibilidade eletromagnética / Dyrektywa kompatybilności elektromagnetycznej
EN 61326-1:2013

Druckgeräterichtlinie (2014/68/EU)
Pressure Equipment Directive / Directive équipements sous pression / Directiva equipos a presión / Dyrektywa obiektowa
Modul A
Die Anwendung dieser Richtlinie bezieht sich nur auf Geräte mit maximal zulässigem Überdruck > 200 bar.

RoHS-Richtlinie (2011/65/EU)
RoHS Directive / Directive RoHS / Directiva RoHS / Diretiva RoHS / Dyrektywa RoHS
EN IEC 63000:2018

Unterzeichner: Dr. Späth, Geschäftsführer Technik
Signed / Signataire / Firmante / Assinado por / Podpisał: Technical Director / Director Técnico / Dyrektor Techniczny

1. Oktober 2021
Datum / Date / Fecha / Data

Unterschrift / Signature / Firma / Assinatura / Podpis

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