

DLF4

Data logger with data remote transmission for general applications
Operating manual BA12.20



Technical modifications reserved.

1 Safety instructions

The operating manual is part of the device and must be kept always accessible nearest its installation location.
Installation, electrical connection, commissioning, operation, dismantling and disposal of the device must be made by a qualified and authorized expert according to the information's in this Operating Manual and the relevant standards and rules.
This expert must have read and understood this Operating Manual and especially the safety notes. Complementary the Technical Information TI has to be adhered to, that can be ordered by the manufacturer or downloaded from the homepage.

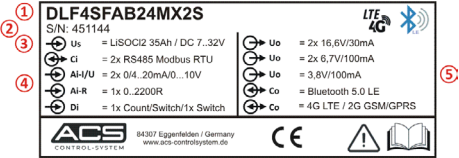
1.1 Operational safety

The device is safely built and tested according to state-of-the-art technology.
The device meets the legal requirements of all relevant EU directives. This is confirmed by attaching the CE mark. The associated EU-Declaration of Conformity can be ordered or downloaded from the homepage.

1.2 Intended use

The device is an electronic data logger with integrated data remote transmission 4G/2G, for autonomous recording of different measurands.
The device may only be used within the permitted operation limits. Every use besides these limits as agreed can lead to serious dangers.
The materials of the device must be checked for compatibility with the respective application requirements (contacting materials, process temperature) before use, otherwise this can lead to abnormal behavior, damage or destruction of the device and to the resulting dangers.
The sensors may not be used as sole device for prevention of dangerous conditions in machines and plants.
The device may not be used in areas where the using of mobile phones is not allowed, e.g. in hospitals or explosive hazardous areas.
Electromagnetically sensitive devices can be interfered in their operation because of the high energetic radio waves at the moment of data transmission.
The operational reliability of the device is ensured only at the intended use.
An inappropriately use, disregarding the Operating Manual and the technical rules, using under-qualified personnel, making unauthorized alterations as well as damage of the device releases the manufacturer from liability for any resulting damage. This renders the manufacturer's warranty null and void.

2 Installation
2.1 Product label



- ① Type code
② Serial number
③ Power supply

④ Input signals
⑤ Output signals

2.2 Installation place

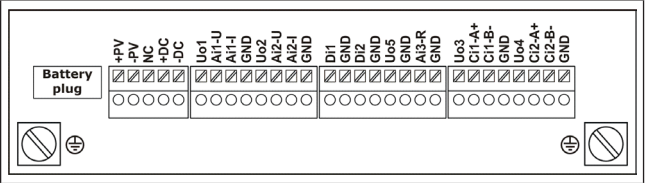
The correct function of the device within the specific technical data can only be guaranteed, if the permitted process and environmental conditions at the installation place (see Technical Information TI) will not be exceeded.
Before installation the signal strength of the mobile network must be checked (eventually see mobile display). At insufficient mobile network strength a data transmission can be impossible and there will be exhausted essentially more battery capacity. This will considerably reduce the run time of the device. Eventually another installation place must be chosen.
By use of an optimal mounted external antenna or eventually a directional antenna the signal strength can be substantially increased.

2.3 Installation notes

Do not remove packaging until just before mounting and check the device for any damage.
Note - At the installation a lateral minimum distance of 15cm at the left enclosure side must be kept, to allow a complete opening of the enclosure cover.
Note – For the installation at a mast a mast fixation for a diameter from 50...90mm is available.
Note - For connection of hydrostatic filling level sensors with reference air compensation an air pressure compensation element is installed at the side. This may not be damaged or polluted, otherwise this can lead to abnormal behavior, damage or destruction of the device and to the resulting dangers.
Note – To ensure the tightness of the enclosure, the enclosure cover must be fixed at the right side with the two screws. Subsequently the fastening bracket can be locked.
Note – After installing the device check if all cable glands, the enclosure tube and the antenna plug are tightly screwed.

3 Electrical connection

Danger – Install the device only when power supply is off. There is a risk of electric shock.
Note - When opening the device avoid the pollution of the internal area of the device with humidity or dirt, otherwise this can lead to abnormal behavior, damage or destruction of the device and to the resulting dangers.

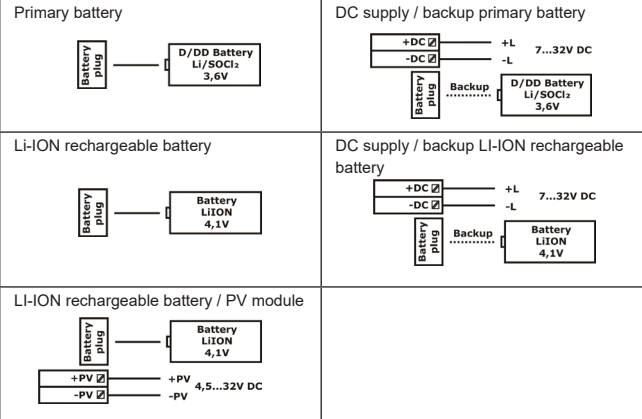


The terminals are suitable for connection of:

Single-wire / Fine-wire conductor	0,2...1,5mm²
Fine-wire conductor with ferrule	0,25...1,0mm²
Stripping length	8,5...9,5mm
Clamping range cable gland	5x 4,5...10mm

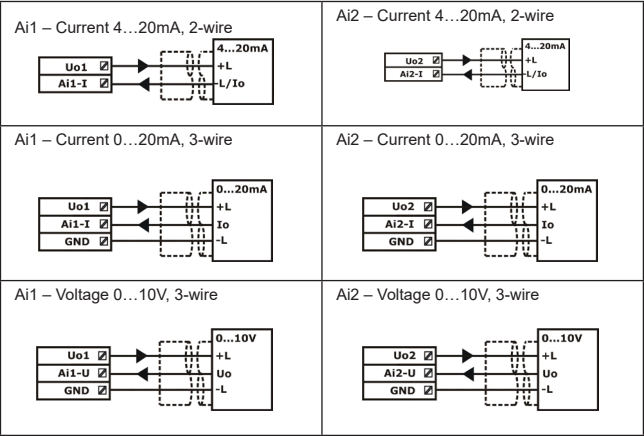
Note – The cable shielding of a connected sensor can be connected by one of the internal terminal blocks to PE by using a ring cable lug. Therefore the enclosure must be connected to PE by the screw contact at the enclosure exterior.
Note – To ensure the tightness of the enclosure, the enclosure cover must be fixed at the right side with the two screws. Subsequently the fastening bracket can be locked.
Note - The configuration of the inputs and output contributes significantly to the energy consumption of the device. An unfavourable configuration can reduce the runtime, especially at a device with battery.

3.1 Supply



The plug of the connection cable to the battery can be only pulled off after releasing the locking lever at the plug jack.
Danger – Only suitable batteries may be used, otherwise this can lead to abnormal behavior, damage or destruction of the device and to the resulting dangers.
Danger – The primary battery may not be charged. There is explosion or fire hazard.
Charging the rechargeable battery can be made:
• Internal devices by a connected suitable PV module.
• Internal devices by a connected suitable DC power supply
• External devices by a suitable DC power supply.
Note – For modification from primary to rechargeable battery the three retaining clips must be removed and the rechargeable battery clip must be screwed on (max. 0,2Nm).

3.2 Input analogue – Ai1/Ai2



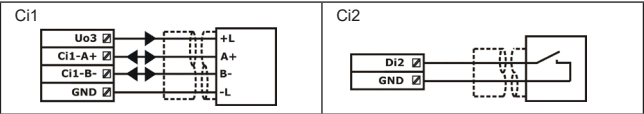
The connection diagrams apply to standard sensors. By the user specific sensor configuration the use of the current saving sensor supplies Uo3/Uo4/Uo5 for suitable sensors is possible.

3.3 Input analogue – Ai3



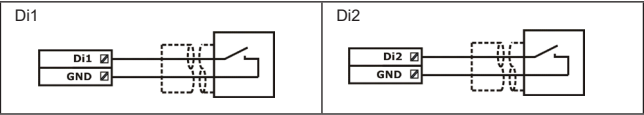
The input can be also used for temperature measurement by using a Pt100/Pt1000.

3.4 Input communication – Ci1/Ci2 – RS485 Modbus®-RTU



The connection diagrams apply to standard sensors. By the user specific sensor configuration the use of the current saving sensor supply Uo5 resp. the sensor supply with higher voltage Uo1/Uo2 for suitable sensors is possible.

3.5 Input digital – Di1/Di2



Notes - One of both inputs can be configured as control input (e.g. float switch) as well as impulse counter (e.g. flow meter). The other input can then only be used as control input.

3.6 Output analogue – Uo1...Uo5

Uo1 / Uo2	16,6V / 0...30mA
Uo3 / Uo4	6,7V / 0...100mA
Uo5	3,8V / 0...100mA

The outputs Uo1...Uo4 are used for temporally limited sensor supply.
The output Uo5 can be uses as control output in the alarming case or alternatively as continuously active output voltage, e.g. for continuous supply of an external device.
For energy saving always the sensor supply with the lowest possible voltage should be used.

4 Operation

Note – The operation device must be equipped with Bluetooth® version 4.1 and higher, recommended is version 4.2 and higher.
The configuration is made per mobile app ACS-SmartConnect, which must be loaded and installed from app stores.

Note – The password for the first access per mobile app ACS-SmartConnect is the device serial number. Due to safety reasons the assignment of an own safe password is suggested.
An activated communication connection is signaled internally the device by cyclic flashing of an LED.

Note - An unfavourable installation position reduces substantially the possible reach of the radio communication to the operation device.
Note - The configuration of the device contributes significantly to the energy consumption of the device. An unfavourable configuration can reduce the runtime, especially at a device with battery.
The most important factors for the runtime of the device are:

- Frequency of the mobile communication
- Quality of the mobile network
- Frequency of measuring value logging
- Supply current of the sensors
- On-time of the sensors

Note – In the case of a fail function, the device can be reset by an internal RESET pushbutton. The successful restart is signaled by a double flash of an LED.
Note – At the initial dial-up of the device at a provider in a non-german foreign country, the initial registration at the regional mobile network is necessary. Dependent on the country and the provider this can while up to several minutes. To reduce the energy load for the battery, the action "connection test" at the menu item "service" must be run by the mobile app ACS-SmartConnect.

5 Maintenance

For dismantling the device see chapter "Dismounting".
For battery change see chapter "Electrical connection" – section "Supply".

6 Dismounting

Use suitable protective clothing, e.g. goggles, gloves.
Danger - Dismount the device only when power supply is off. There is a risk of electric shock.

7 Troubleshooting / Repair

- In case of malfunction check:
- Enclosure >> Damage
 - Pressure compensation opening >> Pollution / Damage
 - Battery >> low charging stand / Contact / Damage
 - Supply voltage >> Polarity / Voltage / Load / Contact
 - Cable >> Short circuit / Wire break / Damage
 - Antenna >> Contact / Damage

For dismantling the device see chapter "Dismounting".
A repair may only be carried out by the manufacturer.

8 Return

- Enclose necessary information's for return:
- An exact description of the application.
 - The chemical and physical characteristics of the product.
 - A short description of the occurred error.
- Before returning the device, the following measures must be performed:
- Adhesive product residues e.g. caustic, toxic, radioactive etc. must be removed.
 - A returning must be refrained, if it is not possible by 100% to remove the unhealthy product completely.

9 Disposal

This instrument is not subject to the WEEE directive and the respective national laws. Hence, pass the instrument directly on to a specialized recycling company and do not use the municipal collecting points.