# Mains operated UNILOG 300

**Wigersma & Sikkema**

All the figures and descriptions in this installation, operating and maintenance manual have been compiled only after careful checking. Despite this, however, the possibility of errors cannot be completely eliminated. Therefore, no guarantee can be given for completeness or for the content. Also, the manual cannot be taken as giving assurance with regard to product characteristics. Furthermore, characteristics are also described that are only available as options.

The right is reserved to make changes in the course of technical development. We would be very grateful for suggestions for improvement and notification of any errors, etc.

**With regard to extended product liability the data and material characteristics given should only be taken as guide values and must always be individually checked and corrected where applicable. This particularly applies where safety aspects must be taken into account.**

Further support can be obtained from the branch or representative responsible for your area. The address is printed on the back of this manual or simply enquire at Wigersma & Sikkema B.V.

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# Preface

- This manual provides important information on the use of UNILOG 300. Read this manual carefully.
- Various observations and warnings are marked in this manual by means of symbols. Read these carefully and take measures if necessary.

The symbols used have the following meaning:

| | | |
|---|---|---|
|  | **OBSERVATION** | Suggestions and recommendations to facilitate tasks. |
|  | **PLEASE NOTE** | An observation alerts the user to possible problems. |
|  | **WARNING** | If the action is not implemented correctly, data or settings may be lost. |
|  | **ESD** | An observation alerts the user to take measures for Electrostatic discharge (ESD). |

The guarantee becomes invalid if the product described here is not handled properly, repaired or modified by unauthorized persons or if replacement parts are used which are not genuine parts from Wigersma & Sikkema B.V.

# Table of contents

# 1    Introduction

Mains operated UNILOG 300 is available in three models:

- N33: GSM – GPRS modem
- N34: GSM – GPRS modem with an AA backup battery
- N35: GSM – GPRS modem with an NiHM backup battery

Mains operated UNILOG 300 is available in three versions:

1. *Serial*; as a transparent GSM - GPRS modem suitable for reading an EVCD's of the UNIGAS type
2. *Encoder and Pulse*; as data logger for reading a gas meter or registering two pulse contacts/pulse outputs
3. *Serial, Encoder and Pulse*; as a combination of the above mentioned versions.

The version is marked on a label on the PCB inside the casing. Depending on the version, the relevant functions are factory programmed. Mains operated UNILOG 300 is delivered with the data logger functions deactivated. This includes the interval logger, historical logger and the internal FTP function.

These functions should be activated after installation and start-up only for use as data logger. This takes place automatically if the clock of UNILOG 300 is set, for example when a central system reads the mains operated UNILOG 300 for the first time.

Mains operated UNILOG 300 is equipped with an internal GSM antenna. An external antenna can be connected. This may be of any arbitrary type and as far as explosion safety is concerned there are no restrictions on the manner in which the antenna is mounted or on possible grounding of the antenna or coaxial cable.

Wigersma & Sikkema has four external antenna models in the programme: three omni directional antenna and one directional antenna (Chapter 8; *External Antennas*). The coaxial cable may be extended.

Mains operated UNILOG 300 can also be powered by low voltage (12 VAC or 12 - 15 V DC), thus also enabling supply with a contact-safe AC voltage or from a small solar system with a 12 V lead battery. When using a 12 V lead battery as supply, variant N35 cannot be used.

Mains operated UNILOG 300 is equipped with explosion-safe barriers. These explosion-safe barriers are implemented on basis of galvanic separation; no explosion-safe grounding is required.

There are two internal system connections to which a module can be connected. The following modules are available:

- Pulse-out module, order no. NN2671: module with 4 galvanically separated pulse outputs that can be configured freely, based on two inputs.
- G485B module, order no. NN3655: module extending UNILOG 300 with an RS485 master or slave function to connect to a local meter network. This local network must be placed in the explosion-safe area.

Mains operated UNILOG 300 is double isolated and therefore all electronics are galvanically separated from (mains) ground. When used with the RS485B module, the RS485 bus is also galvanically separated from the (mains) ground which prevents disturbances from ground loops. In the case of supplying UNILOG 300 with a low voltage, it must be taken into account that UNILOG 300 could be connected to (mains) ground via the low voltage supply and ground loops could exist. When a RS485B module is used in UNILOG 300, the use of a galvanically separated low voltage supply is preferred.

Mains operated UNILOG 300 is equipped with a local bus connection. A maximum of 4 ISC230B devices can be connected to this connection, with a maximum total cable length of 50 m. This allows for easy addition of a number of mains operated UNIGAS 300 devices, which can be read via the GSM/GPRS connection of the mains operated UNILOG 300.

Other characteristics of the mains operated UNILOG 300:

- Easy to install and connect
- Suitable for outdoor use
- Ambient temperature: -25°C to +55°C
- Can be read remotely by GSM data, GPRS TCP (pull) or FTP (push)

# 2    Explosion safety instructions (Ex)

See **DDN3800CVML** EU-Declaration of Conformity and Safety instructions.

# 3    Type label

The type label is placed at the left side of UNILOG 300.

**UNILOG 300**

Manufacturer: Wigersma & Sikkema
Address: NL-6983 BP 4  DOESBURG
Type: **N33**31000
Year of manufacture: 2017
Serial number: 31000300
IMEI number: 353943044528242
IP Class:  IP65
ta: -25 ℃ - +55 ℃
Um: 253 VAC
Un: 230 V, 50 Hz
Pn: 12 W
ZELM 14ATEX0523 X

CE 0344 ⟨Ex⟩ II(1)G [Ex ia Ga] IIC
Electrical data see
operating manual.
-

IB33 0031000300 17

Manufacturer Wigersma & Sikkema

Operating conditions:

Ambient temperature range:  -25 °C to
+55 °C

Data regarding approval explosion safety
ATEX

# 4    Functions

The functions are presented in the figures below.
The serial and pulse functions are equipped with indicator led's.



*Figure 1. Schematic presentation of the functions*



*Figure 2. Schematic presentation of the pulse-out module functions*

# 5 Opening and closing the casing

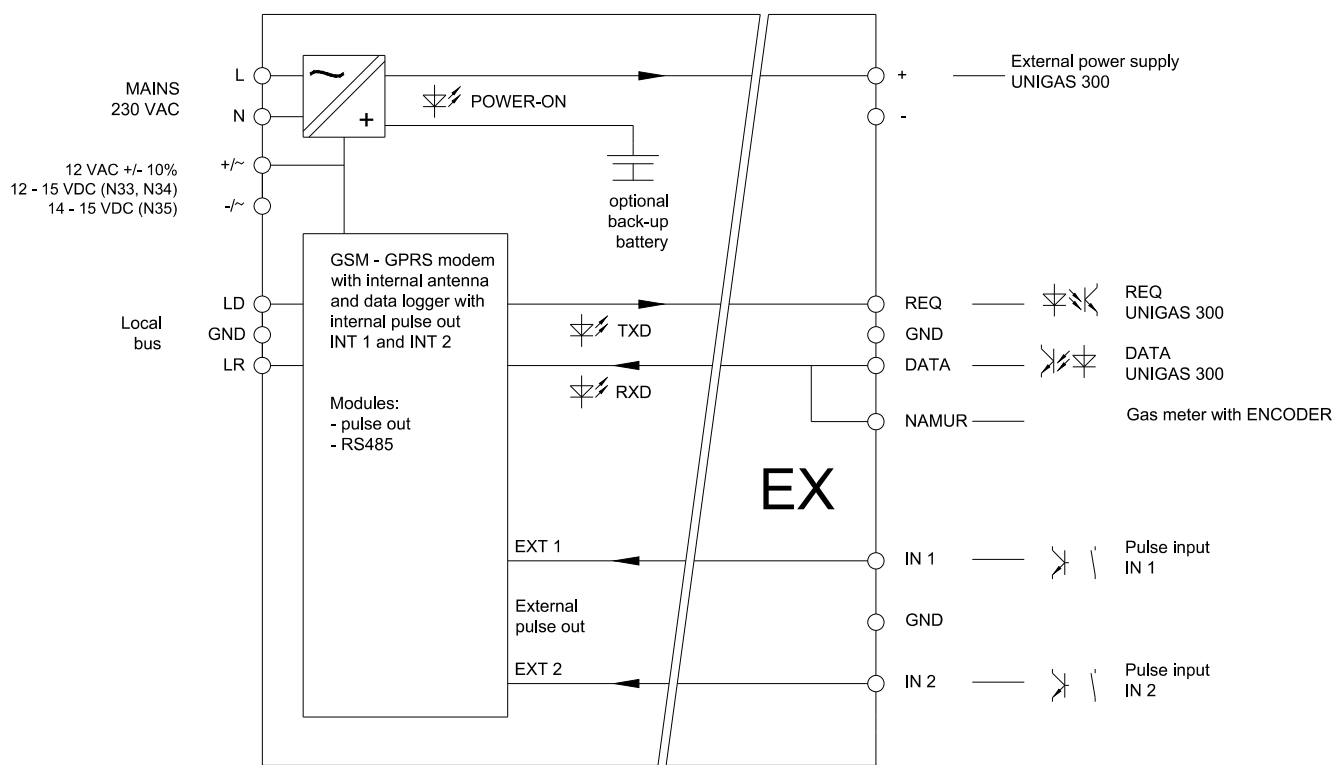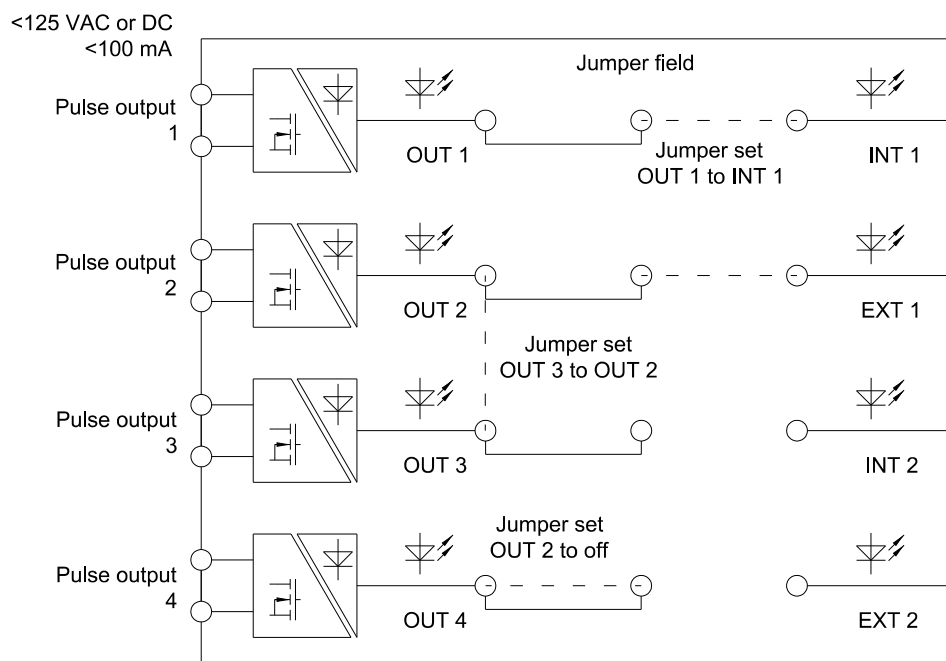Before closing the casing, check to see that the sealing edge of the cover is clean over the entire circumference, that the sealing rests against the casing properly and over it's entire length, and that all (six) screws are in place. Place the cover on the casing with the text ***This side up*** (inside of the cover) facing up. First tighten the screws hand tight and then screw them tight crosswise.

UNILOG 300 is fitted with two sealable screws that can be used to seal the cover if applicable.

# 6 Installation and use

The casing of the mains operated UNILOG 300 is protected according protection class IP65 in conformity with EN60529. Mains operated UNILOG 300 may be installed outdoors.

Read first chapter 2, *Explosion safety instructions (Ex)*.

Depending on the function and configuration of UNILOG 300, the inputs may have been configured at the factory and it is possible that cable(s) are already installed.

**ESD** Electrostatic discharges (ESD) can cause damage to internal electrical components if no precautions are taken. ESD is caused by static electricity and the damage caused is usually permanent.

## 6.1 Installation

UNILOG 300 is equipped with installation brackets. UNILOG 300 does not have to be opened before installation. The installation brackets have installation holes with M6 thread so UNILOG 300 can also be installed via the other side of a wall.

**PLEASE NOTE** Prevent contact of the casing with drilling, cutting or threading oil. Always install UNILOG 300 with the cable glands pointed down.

## 6.2 Dealing with mains voltage

Read first chapter 2, *Explosion safety instructions (Ex)*.

Only qualified service personnel may handle installation and adaptations.

**PLEASE NOTE** Before doing any maintenance disconnect the mains voltage.

Only connect the mains voltage if all cables are connected.
If connections are changed, check to make sure no mains voltage is present and that it has been seen to that the mains voltage cannot be switched on.
Always place the EX protective cover over the mains connection.

## 6.3 Components
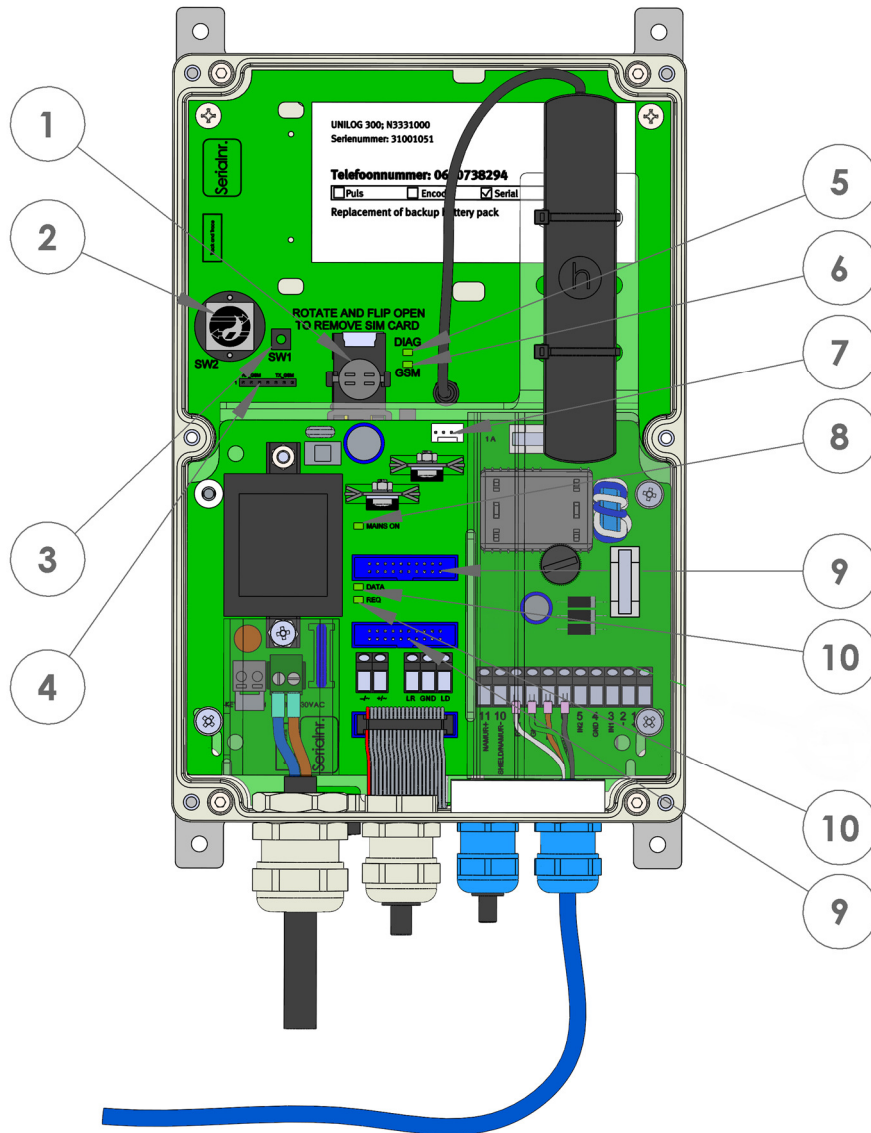


*Figure 3. Opened UNILOG 300*

1. SIM card holder
2. Sealable programming protection switch *SW2*
3. Switch SW1
4. Connection for local read-out*
5. System status LED (DIAG)
6. GSM status LED (GSM)
7. Connection for NiHM back-up battery
8. Mains voltage live indicator (red)
9. Connection for modules
10. Indicators for serial communication to meter (REQ) and from meter (DATA)

⚠️ **PLEASE NOTE**

*The use of the UNILOG-adapter (N2406) for local readout disrupts the on and off switching of the modem. It is advised to use the adapter if the modem is off or if the modem is on and the GSM-statusled flashes (modem is then logged on).
Do **not** use the adapter if the GSM statusled flashes rapidly (modem is communicating).

## 6.4  Connections for power supply and local bus
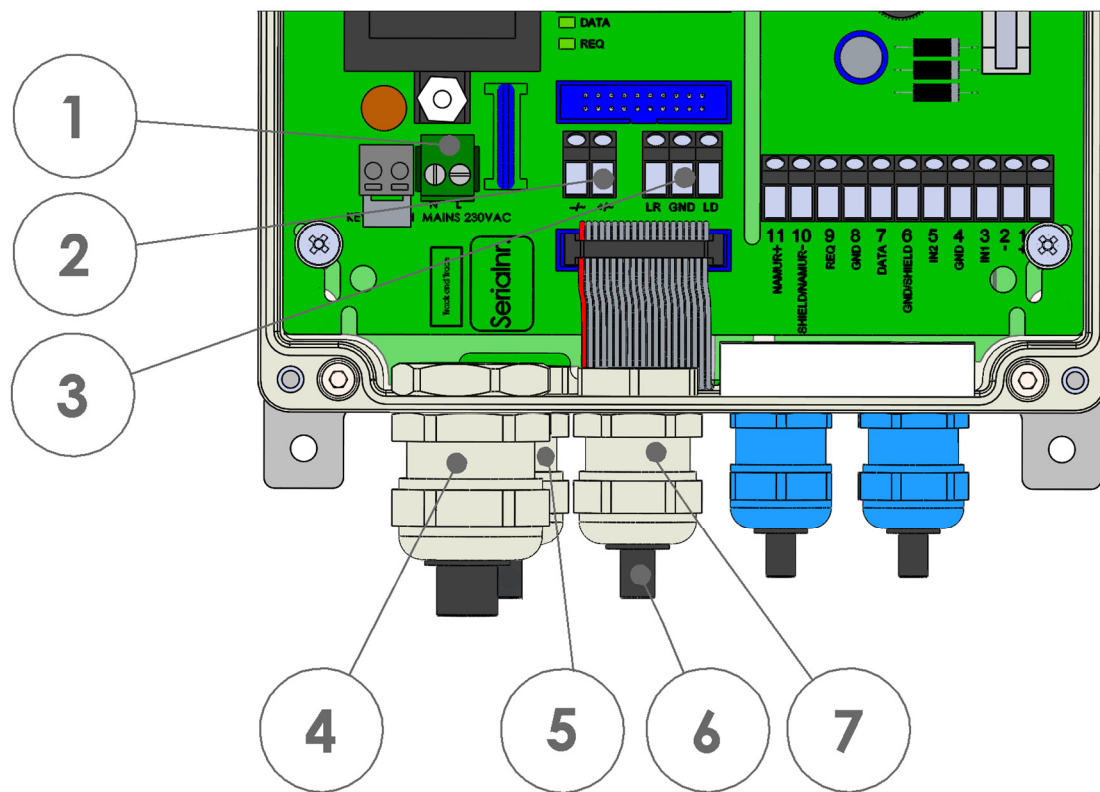


*Figure 4. Opened UNILOG 300*

1.  Mains voltage connection
2.  Screw terminal for low-voltage supply
3.  Screw terminal for local bus
4.  Cable gland for mains voltage connection
5.  Cable gland for an external antenna
6.  Cap to seal an unused cable gland
7.  Cable gland for wiring to a module or low-voltage power supply or local bus terminal

⚠ **PLEASE NOTE**   Cable glands that are not used should be sealed with the caps included in the delivery

## 6.5  Connecting to mains voltage

⚠ **PLEASE NOTE**   Make sure the mains voltage connection is not live.

Push the mains cable through the cable gland to the screw terminal inserted in the 230 VAC connection. Tighten the screw connection of the plug and tighten the gland properly.

Install the protective cover.

## 6.6  Input connections

UNILOG 300 has 5 inputs and a power supply connection for UNIGAS 300. The terminal numbers and names are listed at the terminals in UNILOG 300 (figure 5). The inputs are numbered in sequence from 1 through 11 (see table 1).
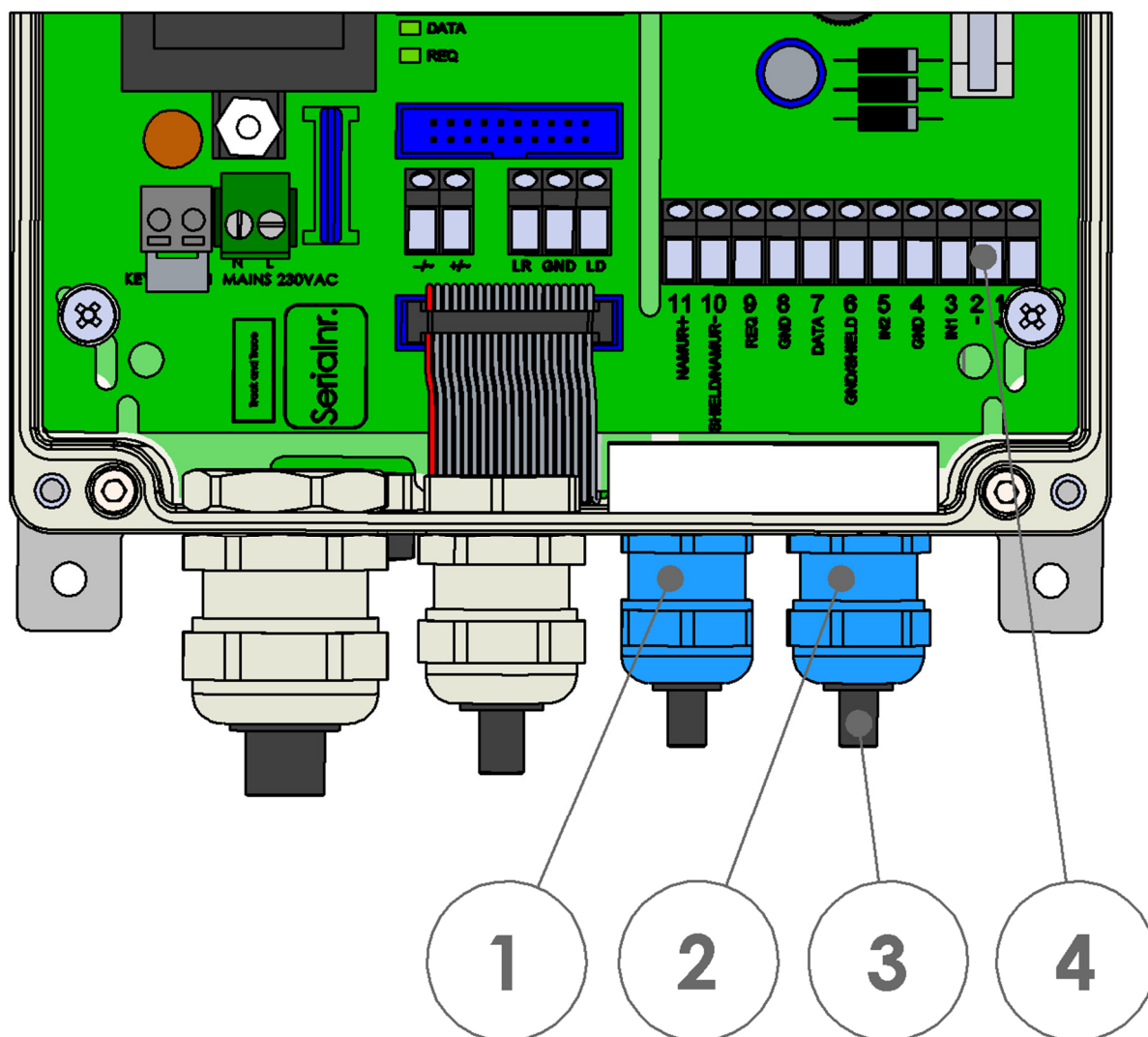


*Figure 5. UNILOG 300 input connections*

1. Cable gland for Encoder cable or serial connection
2. Cable gland for the UNIGAS 300 and/or pulse input and power supply cable
3. Cap to seal an unused cable gland
4. Screw terminals 1 – 11

⚠ **PLEASE NOTE**    Cable glands that are not used should be sealed with the caps included in the delivery

*Table 1. Connections*

| Input | Terminal number | Name | Function | Wigersma & Sikkema cable colour coding |
|---|---|---|---|---|
| **UNIGAS 300 power supply** | 1 | + | + power supply for UNIGAS 300 | Yellow |
| | 2 | - | - power supply for UNIGAS 300 | Grey |
| **Pulse** | 3 | IN1 | Connection for pulse input 1 | Brown |
| | 4 | GND | Common earth for pulse | Green/Black |
| | 5 | IN2 | Connection for pulse input 2 | White |
| | 6 | GND/SHIELD | Common cable shield for pulse | Black |
| **Serial** | 7 | DATA | Serial data from UNIGAS EVCD | Brown |
| | 8 | GND | Earth connection for serial cable | Green or Green/Black |
| | 9 | REQ | Serial data to UNIGAS EVCD | White |
| **Encoder** | 10 | SHIELD/ NAMUR - | Cable shield for serial cable or connection to Encoder counter | Black or cable colour to Encoder counter |
| | 11 | NAMUR + | Connection to Encoder counter | Cable colour to Encoder counter |

See Annex 2 for wiring diagrams for UNILOG 300 and UNIGAS 300.

⚠ **PLEASE NOTE**   A different colour coding for the serial cable connection may apply to UNIGAS 61 D and E. See Annex 3.

# 7   SIM card

Before you continue, first read *Explosion safety instructions (Ex)* (Chapter 2).

A SIM card may already have been installed in UNILOG at the factory. If so, the corresponding telephone number is printed on the label in UNILOG 300. If there is no SIM card, a mini SIM card must be inserted. This should preferably be done in a workshop prior to the installation.

Suitable GSM subscriptions are for example M2M for GSM data and/or GPRS data.

If GPRS is used, additional settings are required in UNILOG 300 so it can register to an APN: the APN name with the corresponding user name and password.

## 7.1   Inserting or replacing a SIM card

Open UNILOG 300, see Chapter 4; *Opening and closing the casing*. The SIM card holder is located above the centre, in the back of the casing.

Lightly press on the metal-coloured closing mechanism of the SIM card holder and twist it counter clockwise, unlocking the SIM card holder so it drops open. The SIM card can be inserted with the gold contacts facing the back and the slanted corner upwards. Close the SIM card holder by reversing the aforesaid actions.

Note the telephone number of the SIM card on the label in UNILOG 300.

After concluding the entire installation, test for proper functioning as described in Chapter 7*, Function check*.
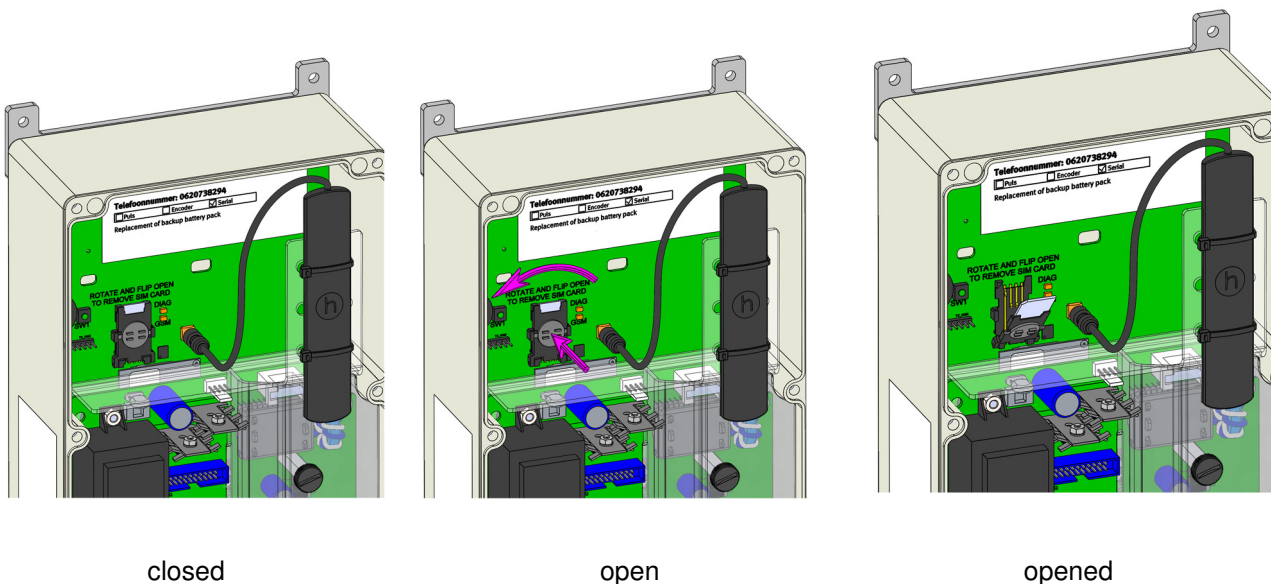


closed            open            opened

*Figure 6. Opening the SIM card holder*

# 8 Function check

## 8.1 System status check

A status LED is used to check the system status (pos. 5, figure 3).

LED colour: green.

1. Once per second for half a minute maximum: start up; this only happens if UNILOG 300 is powered up.

2. Continuously once per second: critical error, contact Wigersma & Sikkema.

3. Once short every 10 seconds: all functions are working correctly, data log functions are deactivated; application as transparent modem.

4. Once short every 5 seconds: all functions are working correctly, data log functions are activated; application as data logger or data logger plus transparent modem.

5. Twice short every 5 seconds: no external power and back-up NiHM battery near empty.

6. Three times short every 5 seconds: no external power and back-up NiHM battery empty, GSM modem switched off to save battery consumption.
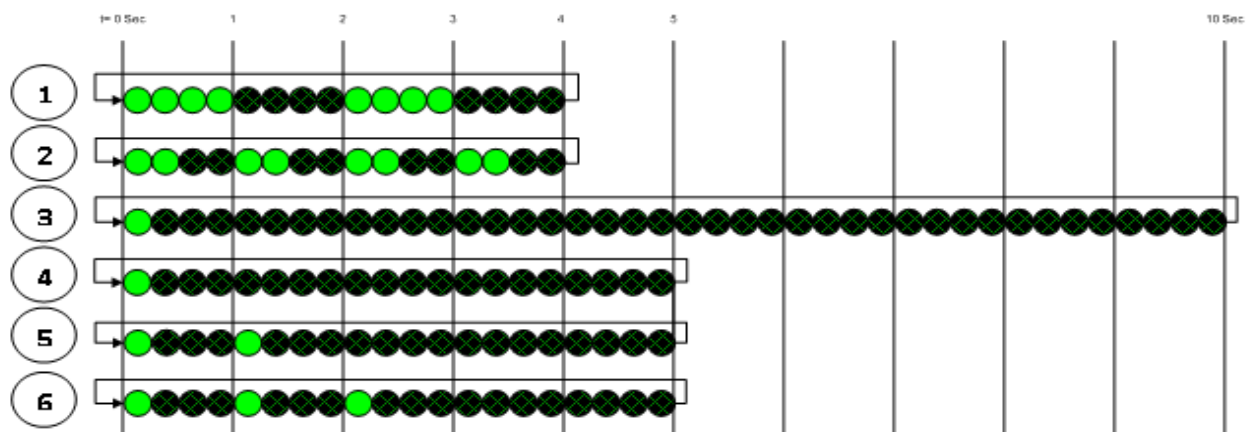


*Figure 7. System status LED functions*

## 8.2 Check after installation

If UNILOG 300 is attached to the GSM network successfully, the GSM status LED (pos 6, figure 3) will begin flashing. Then contact the central system so that the communication can be checked.

When used as data logger, it is necessary to then take the following actions with the central system:

- have the central system call in and set the clock of UNILOG 300. This will ensure that the internal clock is set to the same time as the central system. Wigersma & Sikkema delivers UNILOG 300 in standard version with deactivated data log functions. Clock synchronisation will activate the data logger functions (the scheduler, interval logger, historical logger and, if activated, the internal FTP session). If UNILOG 300 is configured for Encoder counter reading, a reading of the Encoder counter will also take place for encoder counter reading initialization, and the data of the gas meter will be read as well.

- have the central system call in once again and retrieve the billing data. This ensures that the connection *to the* meter is functioning properly. This can be seen from the presence of relevant UNILOG register data in the central system.

When used as transparent modem, the following action will be taken with the central system:
- have the central system call in and retrieve the billing data of the UNIGAS connected to UNILOG 300. This ensures that the connection to UNIGAS is functioning properly. This can be seen from the presence of relevant UNIGAS register data in the central system.

The aforesaid actions can also be taken by means of the UNITOOL software.

## 8.3 GSM connection check

Correct functioning of the GSM connection can be checked by means of the GSM status LED (pos. 6, figure 3), colour yellow. During start-up of UNILOG 300, the GSM status LED is lit up continuously until UNILOG 300 is reported to the GSM network. This may take 10 to 20 seconds, depending on the GSM network. As soon as UNILOG 300 is registered to the network, the GSM status LED will start flashing slowly (once every two seconds). At the moment a connection with UNILOG 300 is established, the GSM status LED will start to flash quickly (once per second). After the connection is closed, the GSM status LED will start flashing slowly again.
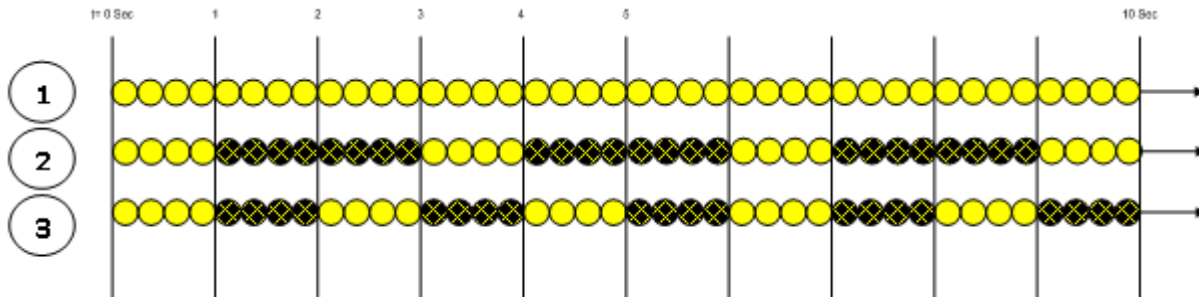


*Figure 8. GSM status LED functions*

## 8.4 GSM network check

If there are any doubts about the quality of the GSM network at the site the UNILOG 300 is installed, it is possible to check the reception quality by means of the Wigersma & Sikkema MODEM NETWORK MONITOR service software.

# 9 External antennas

If the signal strength is insufficient, an external antenna can be installed. Two types of external antennas are available: an omni directional antenna and a directional antenna. The external antennas are delivered with installation material and a manual for connection to UNILOG 300.

See manual **DDN002MHGB** for more information about external antennas. This manual is downloadable from de Wigersma & Sikkema website (www.wigersma-sikkema.com).

# 10 Backup power supply

## 10.1 Version N34 with AA back-up battery for the clock function
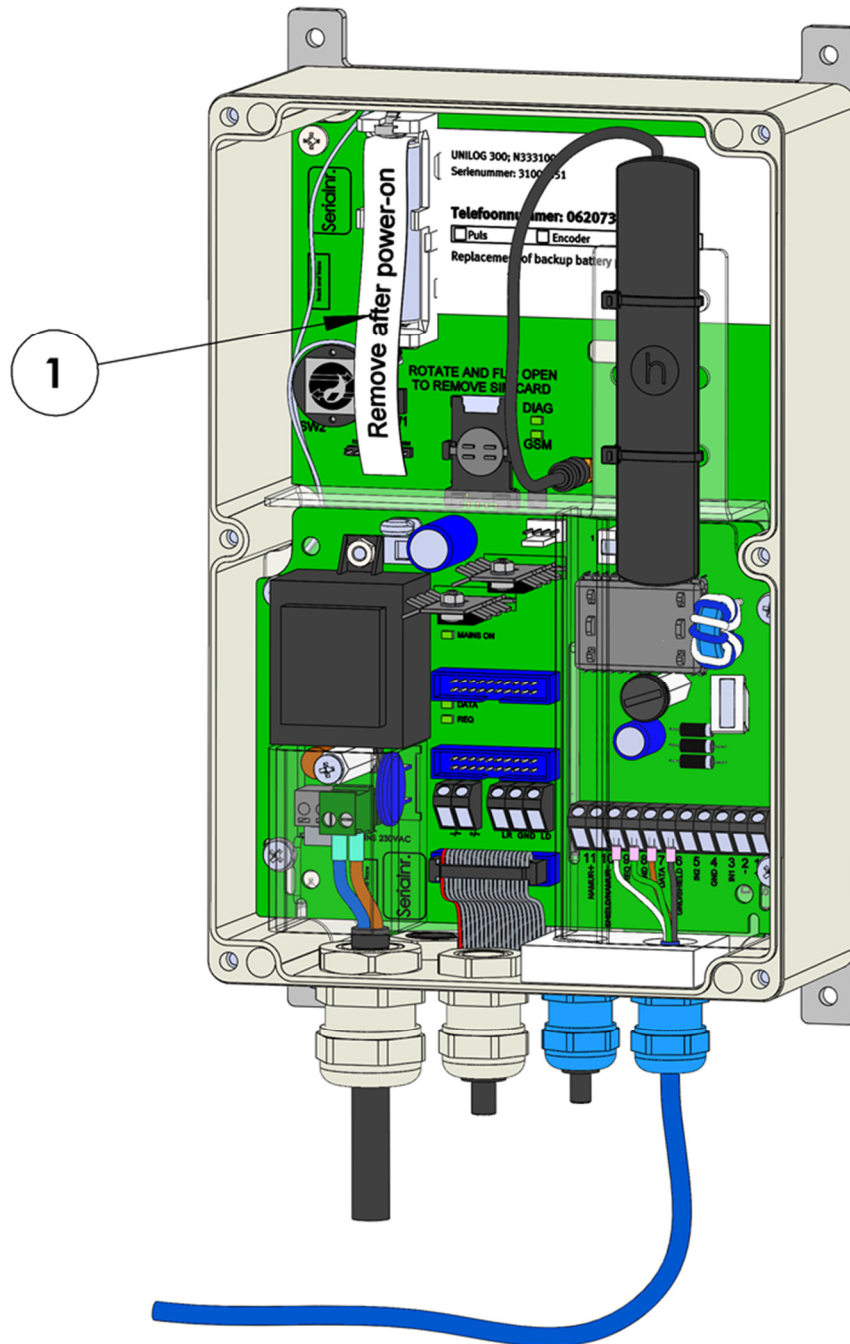


*Figure 9. Version N34*

⚠️ At delivery the back-up battery is disconnected by means of a tag. Remove this tag after the UNILOG 300 is connected to mains, see pos. 1, figure 9.

At failure of mains supply, the back-up battery will keep the clock active for about a year. The logging of pulses and the readout of the encoder will continue when the mains is restored. When it is necessary to keep all the functions alive, please use version N35 (see chapter 9.2).
A new back-up battery can be obtained from Wigersma & Sikkema (article number NN3481).

## 10.2 Version N35 with back-up battery for all functions



*Figure 10. Version N35*

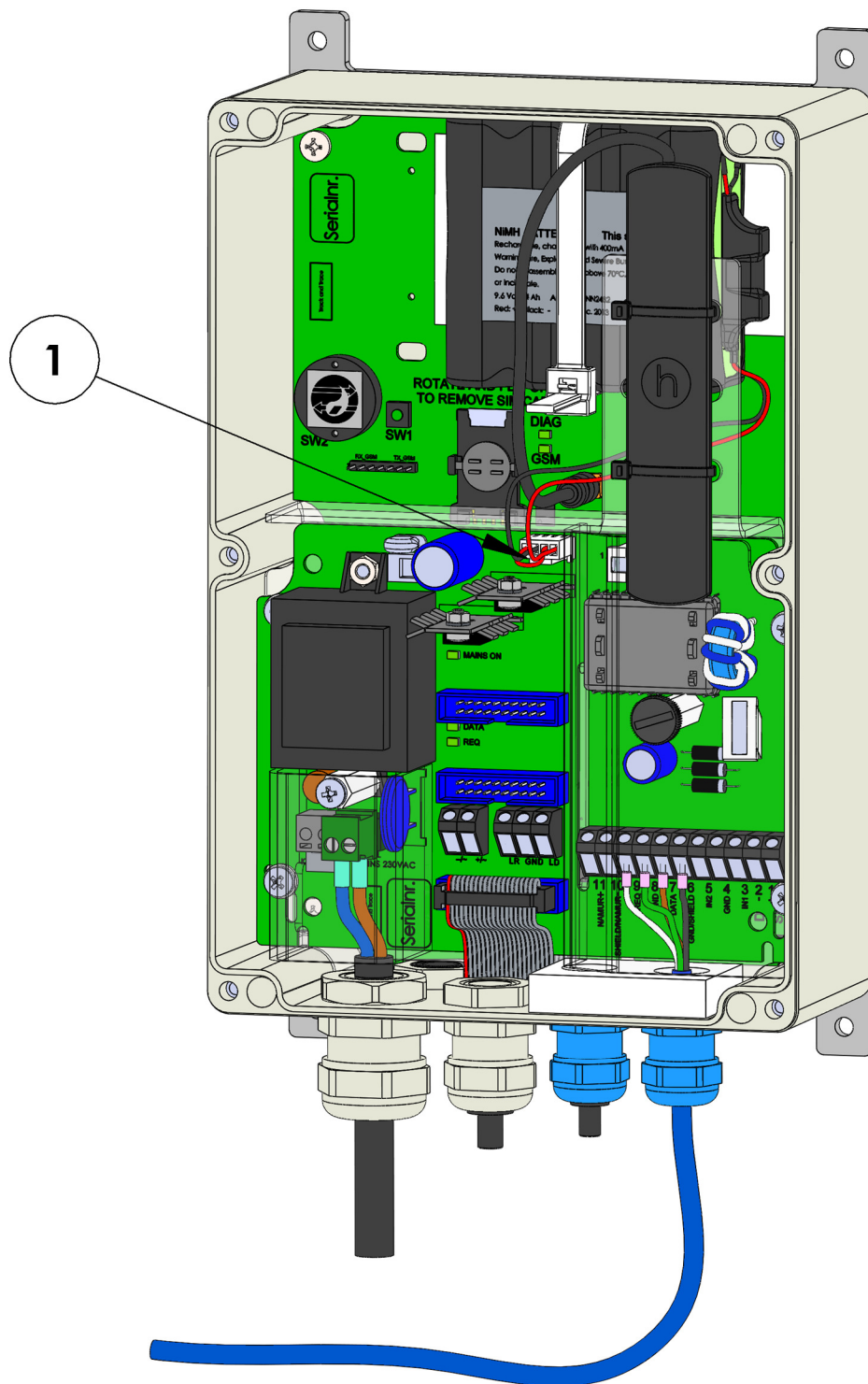At delivery the back-up battery is disconnected. Connect the back-up battery at the above mentioned position after the UNILOG 300 is connected to mains, see pos. 1, figure 10.

# 11 Counters and registers

The counters and registers (parameters) available in UNILOG 300 are listed below. The name of each counter or register is presented, supplemented by the OBIS code, the protection level and a short description.

All counters and registers can be read with the UNITOOL software (depending on UNITOOL user rights granted and the UNILOG 300 version).

Counters and registers may have writing protection installed. The following protection levels are present in UNILOG 300:

- Protection by programming switch: writing is only possible if the programming switch *SW2* (pos. 2, Figure 4*)* is operated during writing. This type of protection can be switched off, see register C.93.24

- Protection level 1: password 1 provides access to the mode in which counters and registers can be read and written.

- Protection level 2a: password 2a enables writing registers. Password 2a is the same as the VDEW password.

If passwords are not programmed, registers can be read and written without the use of passwords or by using an arbitrary password.

**Service registers**

| Name | Unit | OBIS | | Description |
|------|------|------|---|-------------|
| Type of equipment | - | C.1.1 | | Equipment type and version of UNILOG 300. |
| Serial number | - | C.1.0 | | Serial number and version of UNILOG 300 |
| Firmware version | - | 7-0:0.2.0 | | Firmware version |
| SW modem engine | | C.90.23 | | Modem module software version |
| IMEI number | | C.90.24 | | IMEI number |
| SIM card number | | C.90.25 | | The number of the SIM card inserted |
| Track and Trace data | | C.91.5 | | UNILOG PCB Track and Trace data |
| GSM main cell | | C.90.7 | | Strength of the GSM main cell |

**Other settings**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| Device address | | C.90.1 | Password 2a | Device address for IEC 62056-21 communication protocol. |
| EAN code | | C.96.0 | Password 2a | Meter location code |
| End of gas day | h | C.91.2 | Password 2a | Point of time when UNILOG 300 concludes the day and logs into the month logger. If the log interval is set to 24 hrs, logging into the interval logger will take place |
| Gas meter serial number | - | 7-1:0.2.14 | Password 2a | Serial number of the gas meter connected. If an Encoder counter is used, the serial number is set automatically. In that case, the setting cannot be changed by the user. |
| Gas meter manufacturer FLAG coding | - | C.91.10 | Password 2a | Gas meter manufacturer FLAG coding (3 letters) If an encoder counter is used, the FLAG code is set automatically. In that case, the setting cannot be changed by the user. |
| Gas meter year of manufacture | - | C.91.11 | Password 2a | Gas meter year of manufacture. If an Encoder counter is used, the year of manufacture is set automatically. In this case, the setting cannot be changed by the user. |
| Broadcast | - | C.93.15 | Password 2a | Response to a 1107 request. When 'off', UNILOG 300 does not respond at an unaddressed sign on. When 'on', UNILOG 300 does respond at an unaddressed sign on. |
| Interval logger interval time setting | | 0.8.5 | Password 2a | Interval logger interval time |
| Data logger functions | - | C.93.30 | Password 2a | Activating or deactivating the data logger functions |
| SW2 protection | - | C.93.24 | SW2 | Disabling write protection by SW2 and enabling write protection by password 2a. |

**Counter readings**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| Counter reading input 1 | m³ | 1:23.0.0 | *SW2* | Counter reading for input 1 |
| Counter reading input 2 | m³ | 2:23.0.0 | *SW2* | Counter reading for input 2 |

**Settings for inputs**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| INP1DIV | p/m3 | 1:0.7.2 | *SW2* | Division factor pulse input 1 |
| INP2DIV | p/m3 | 2:0.7.2 | *SW2* | Division factor pulse input 2 |
| Function input 1 | | C.93.25 | *SW2* | Functionality input 1 disabled, LF or Encoder |

**Settings for alarms**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| Alarm INP2 – INP1 | m3 | C.92.9 | *Password 2a* | Alarm threshold for volume difference between input 1 and 2. If set to 0, this function is disabled. |

**Consumption data**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| Battery voltage | mV | C.90.6 | | Battery voltage |
| Operation | h | C.90.13 | | Number of operating hours |
| Ah-used | Ah | C.90.21 | | Battery capacity consumed. This register can be used to assess whether the UNILOG batteries must be replaced. When using 1 or 2 battery packs, respectively, in Western Europe, 12 Ah or 24 Ah, respectively, can be taken as the value at which the batteries will have to be replaced. This leaves approximately 10% residual capacity. |
| Networkh | h | C.90.4 | | Amount of hours connected to the GSM network |
| Commh | h | C.90.5 | | Amount of hours GSM communication |

**Flow rate**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| Q1_nx5 | m3/h | 1:43.0.0 | | Input 1 flow rate, quantity under measurement conditions based on a progressive average of n x 5 minutes. |
| Q2_nx5 | m3/h | 2:43.0.0 | | Input 2 flow rate, quantity under operating conditions based on a progressive average of n x 5 minutes. |
| Flow rate specification n | - | C.93.1 | Password 2a | Time base to calculate the flow rate Q based on the progressive average of n units of 5 minutes |

**GPRS settings**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| APN Name | - | C.92.40 | Password 2a | APN used for log-in |
| APN user | - | C.92.41 | Password 2a | User name to log in at APN |
| APN password | - | C.92.42 | Password 2a | Password to log in at APN |
| FTP server user | - | C.92.43 | Password 2a | FTP server user |
| FTP server password | - | C.92.44 | Password 2a | FTP server password |
| FTP server IP or DSN | - | C.92.46 | Password 2a | FTP server IP or DSN |
| FTP server port number | - | C.92.47 | Password 2a | FTP server port number |
| TCP server port number | - | C.92.48 | Password 2a | TCP server port number |
| Modem CHV1 ME password | - | C.92.61 | Password 2a | Pin code for the SIM card |
| FTP file name | - | C.91.8 | Password 2a | Number to be issued in the FTP file name for an internal FTP message |
| IP address | - | C.92.45 | | The IP address assigned by the GPRS network. Only presented if the TCP server is activated |
| FTP interval | - | C.92.49 | Password 2a | Interval for sending FTP messages |
| FTP mode | | C.92.50 | Password 2a | Passive or active FTP mode |
| TCP server | | C.92.51 | Password 2a | Activate TCP server |

**Clock and modem scheduler**

| Name | Unit | OBIS | Protection level | Description |
|---|---|---|---|---|
| Time | hhmmss | 0.9.1 | Password 2a | Current time |
| Date | ddmmyy | 0.9.2 | Password 2a | Current date |
| ns | s | C.91.1 | Password 2a | Maximum deviation of the clock that may be corrected without setting a status bit in the VDEW status register. |
| Protocol clock DST presentation | | C.93.7 | Password 2a | Option switch for use of the communication protocol clock in summer or winter time |
| Call window clock DST presentation | | C.93.8 | Password 2a | Option switch for use of the call window clock in summer or winter time |
| Call window starting date and time | | C.90.12 | Password 2a | Call window starting date and time |
| Call window | | C.90.11 | Password 2a | Settings for call window and recall window |
| Call window shortening | | C.93.16 | Password 2a | If the UNILOG 300 is battery-operated, the modem is switched off after a correct communication session. The recall window will be cancelled. |

### VDEW status register

The VDEW status register consists of 16 registrations of an alarm and is presented as a 4-character hexadecimal number:

$$\text{St:} \quad 1_1 1_2 1_3 1_4$$

| Bit number | | Value St | Description | State / Event |
|---|---|---|---|---|
| 15 / F | $1_1$ | 8, 9, A, B, C, D, E, F | - | |
| 14 / E | | 4, 5, 6, 7, C, D, E, F | logger erased | event |
| 13 / D | | 2, 3, 6, 7, A, B, E, F | - | |
| 12 / C | | 1, 3, 5, 7, 9, B, D, F | - | |
| 11 / B | $1_2$ | 8, 9, A, B, C, D, E, F | - | |
| 10 /A | | 4, 5, 6, 7, C, D, E, F | - | |
| 9 | | 2, 3, 6, 7, A, B, E, F | - | |
| 8 | | 1, 3, 5, 7, 9, B, D, F | SW2 operated while writing obis parameter | Event |
| 7 | $1_3$ | 8, 9, A, B, C, D, E, F | - | |
| 6 | | 4, 5, 6, 7, C, D, E, F | UNILOG 300 was powered up after a power down | Event |
| 5 | | 2, 3, 6, 7, A, B, E, F | time set of clock more than *ns* | Event |
| 4 | | 1, 3, 5, 7, 9, B, D, F | - | |
| 3 | $1_4$ | 8, 9, A, B, C, D, E, F | summer time activated | State |
| 2 | | 4, 5, 6, 7, C, D, E, F | fatal error: CRC error | Event |
| 1 | | 2, 3, 6, 7, A, B, E, F | active alarm: Differential Alarm inputs 1 and 2 or Alarm input 2, error in Encoder reading | Event |
| 0 | | 1, 3, 5, 7, 9, B, D, F | Fatal error: empty battery, watchdog error | Event |

If a status bit is set, it is dealt with as follows:

| | Type | description/ behavior |
|---|---|---|
| State | Interval logger (P.01) | The actual state is stored at the time of logging in the interval logger |
| | Data read out mode | The actual state at the moment of readout is displayed in the status bit of readout |
| Event | Interval logger (P.01) | The state of the event is stored until the next log moment and subsequently logged in the interval logger. The status then gets stored and reset. |
| | Data read out mode | The status of the event is stored until parameter C. 5 is written. Except for status bit 5 (clock), status bit 5 resets after the time set of the clock. |

# 12   Software Support

The following software packages are available:

- Programming and reading UNILOG 300:

    UNITOOL software                   ordering code     G6900000

- Checking the signal quality of the GSM network connection:

    MODEM NETWORK MONITOR software       ordering code     N2400

- Tools for the use of UNILOG 300 software packages on site:

    UNILOG adapter for local reading (7-pin flat connector / USB)
                                                   ordering code     N2406

# Annex 1: Specification

## General

- Mains supply                                    230 VAC, 4VA nominal, 12 VA peak
- Cable gland for line supply                  Ø 10 -14 mm
- Low voltage supply                           12  VAC +/10% 18 VA min. or
                                                    12 – 15 VDC (N33 and N34)
                                                    14 – 15 VDC (N35)
                                                    70 - 120 mA nominal
                                                    + 100 mA during GSM communication
                                                    + 200 mA during charging of NiHM back up
                                                    battery

- ATEX approval                                ⟨Ex⟩_II_(1)_ G [Ex ia Ga] IIC
                                                    ZELM 14 ATEX 0523 X
                                                    Mounting in safe area only
                                                    Um = 253 VAC

- Mounting bracket                             Stainless Steel
- Protection class                              IP 65
- Operating temperature                       - 25 °C to + 55 °C
- Weight                                         2.3 kg
- Dimensions w x h x d                         160 x 240 x 105 mm
- Material casing                               Polycarbonate
- Colour                                         Grey, RAL7035
- GSM antenna                                  integrated
- External GSM unidirectional antenna +6 Db   optional (5 m cable)
- External GSM directional antenna +9 Db      optional (5 m cable)
- Cables for serial and pulse connection      EMC shielded,
- Available lengths                            3, 5, 10 or 15 meter,
                                                    other length's on request

## N34 Li AA back up battery

- Back up functions                            data logger and clock
- Back up life time                            >1 year
- Type                                          Saft LS14500, NN3481

## N35 NiHM back up battery

- Back up functions                            all functions
- Back up life time                            72 h (depending of use)
- Charge time                                   24 h max.
- Protection                                    under voltage lock out @ 8V
- Type                                          NN2487, 9.6V 4 Ah high
                                                    temperature battery pack

## Pulse inputs

- Input 1 and 2        Reed or transistor contact, 7.5 V,
  0.6 mA active

- Cable gland        Ø 4 -8 mm
- Resolution counters input 1 and 2        XXXXXXXX.XXX
- Input 1 range pulse input ratio        XXXX.XX pulse/m$^3$
- Input 2 range pulse input ratio        XXXX.XX pulse/m$^3$
- Extended functions input 2        Pulse difference to input 1 with programmable
  alarm

## Serial input

- DATA and REQ (Tx and Rx)        7.5 V, Req 2 mA at mark,
  Data 1 mA at mark

- Max baud rate        9600 baud full duplex
- Cable gland        Ø 4 -8 mm

## NAMUR input

- NAMUR input        U nominal 7.5 V, Ri = 1k
- Cable gland        Ø 4 -8 mm

## External power to meter – UNIGAS 300

- External power        7.5 V 100 mA peak – 50 mA continuous
- Cable gland        shared with gland for pulse input

## ATEX specification of inputs and external power

- Terminal 1 (+) and 2 (-)
  - Uo        = 8,7 V
  - Io        = 586 mA
  - Po        = 1,3 W
  - Co        = 5,8 uF
  - Lo        = 0,1 mH
- Terminal 3 (IN1) and 4, 5 (IN2) and 6, 9 (REQ) en 8
  - Uo        = 8,7 V
  - Io        = 3 mA
  - Po        = 7 mW
  - Co        = 5,8 uF
  - Lo        = 100 mH
- Terminal 7 (DATA) and 8
  - Uo        = 8,7 V
  - Io        = 18 mA
  - Po        = 38 mW
  - Co        = 5,8 uF
  - Lo        = 90 mH
- Terminal 11 (NAMUR+) and 10
  - Uo        = 8,7 V
  - Io        = 9 mA
  - Po        = 20 mW
  - Co        = 5,8 uF
  - Lo        = 100 mH

## GSM/GPRS modem and data logger

| | | |
|---|---|---|
| • | System | Dual UART low power microprocessor<br>64 kbyte Eeprom memory<br>Flash program memory |
| • | Remote software update | Yes |
| • | Internal reset | Once a day |
| • | Watchdog | Implemented |

## Battery power management

| | | |
|---|---|---|
| • | Monitors | Backup battery voltage and used battery capacity |
| • | Low battery handling | Automatic shutdown of modem to prevent flat battery |

## Status indicator

- • Status indicator led's

  Yellow:
  - GSM network status

  Green:
  - Battery status
  - Encoder test status
  - Data logger enabled indication
  - Error indication
  - Power-up indication

  Red
  - Mains live

  Green
  - Serial communication (DATA and REQ)

## Pulse inputs and counters

| | | |
|---|---|---|
| • | Resolution counters input 1 and 2 | XXXXXXXX.XXX |
| • | Input 1 range pulse input ratio | XXXX.XX pulse/$m^3$ |
| • | Input 2 range pulse input ratio | XXXX.XX pulse/$m^3$ |
| • | Extended functions input 2 | Pulse difference to input 1 with programmable alarm |

## Encoder

- Support for Encoder counters      Manufacturer Itron, GWF, Elster, Dresser, FMG GFO or Aerzen

| Counter formats | Multiplier | | | | | | |
|---|---|---|---|---|---|---|---|
| | $10^{+3}$ | $10^{+2}$ | $10^{+1}$ | $10^{+0}$ | $10^{-1}$ | $10^{-2}$ | $10^{-3}$ |
| 9 | - | - | - | - | X | X | X |
| 8 | - | - | - | X | X | X | X |
| 7 | - | - | X | X | X | X | - |
| 6 | - | X | X | X | X | - | - |

- Reading of Encoder counter      Every 5 minutes and at serial communication
  - data read out mode and reading counter values
- Reading of Encoder "b" telegram      Read out initiated after:
  - activation of logger functions
  - setting parameter C.93.25 to Encoder
  - Encoder test by switches SW2 and SW1
  - after resolving Encoder read error (VDEW status bit 1)

## Real time clock

- Internal POSIX clock
- Daylight saving      Yes / no (programmable)

## Logger

- Logger capacity      1960 logs, 2 channels
- Recording interval      5, 10, 15, 30, 60 minutes or once a day programmable

## Historical data

- Historical data      Counter 1 and 2, Counter 1 and 2 peak flow
- Historical moment      End of month
- Historical logger      13 x end of month

## Peak flow

- Flow calculation interval input 1 and input 2      5, 10, 15, 30 or 60 minutes selectable
- Peak flow detection input 1 and input 2      Maximum of flow

## Internal serial port for local read out and programming of functions

- Connection      Internal
- Signals      RS232 Rx, Tx (REQ, DATA)
- Baud-rates      9600, full duplex

## Communication protocol

- IEC 1107 mode C, VDEW 2.0 protocol for acquisition systems

## Integrated GSM/GPRS-modem

- Type                                Sierra Wireless AirPrime™
- Model                            Q2686RD
- FCC                               N7NQ2686
- GSM-band                     Quad band E-GSM/GPRS 900/1800 and 850/1900 MHz
- GPRS                          Class 10
- GPRS services               TCP and FTP
- GPRS authentication        PAP, CHAP
- GSM-unit operating temperature    - 25 °C to + 55 °C
- SIM card interface            mini SIM and embedded SIM JEDEC SON-8
- Antenna                     Quad band 0 dB, integrated
External antenna optional

## TCP services

- Connect attempts             4

## Scheduler for FTP client services

- initiation FTP transfer        Internal scheduler or external
- scheduler internal FTP programmable     Off, every 5, 10, 15, or 60, 1440 minutes (1440 minutes, FTP is sent on end of gas day 'C.91.2')

## Service software PC platform

- UNITOOL                    Windows 7, 8, 10
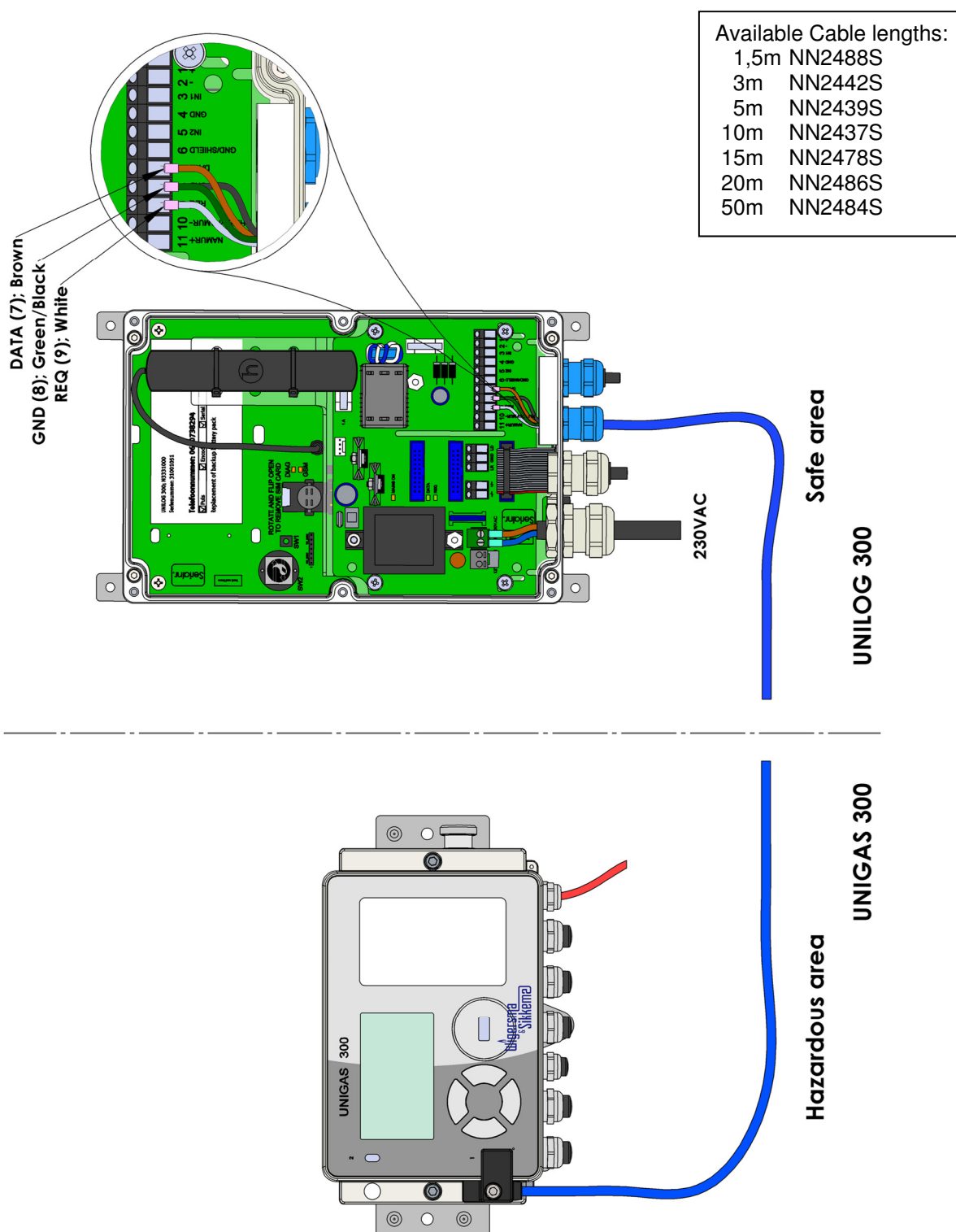- MODEM NETWORK MONITOR    Windows 7, 8, 10

## Pulse-out module

- Pulse outputs                4, optical solid state output, independent galvanic isolated
- Max. parameters            125 V AC and 100 mA$_{eff}$
- On resistance                < 30 $\Omega$
- Max. output frequency       100 Hz DC 50 %
- Operating temperature        - 25 °C to + 55 °C
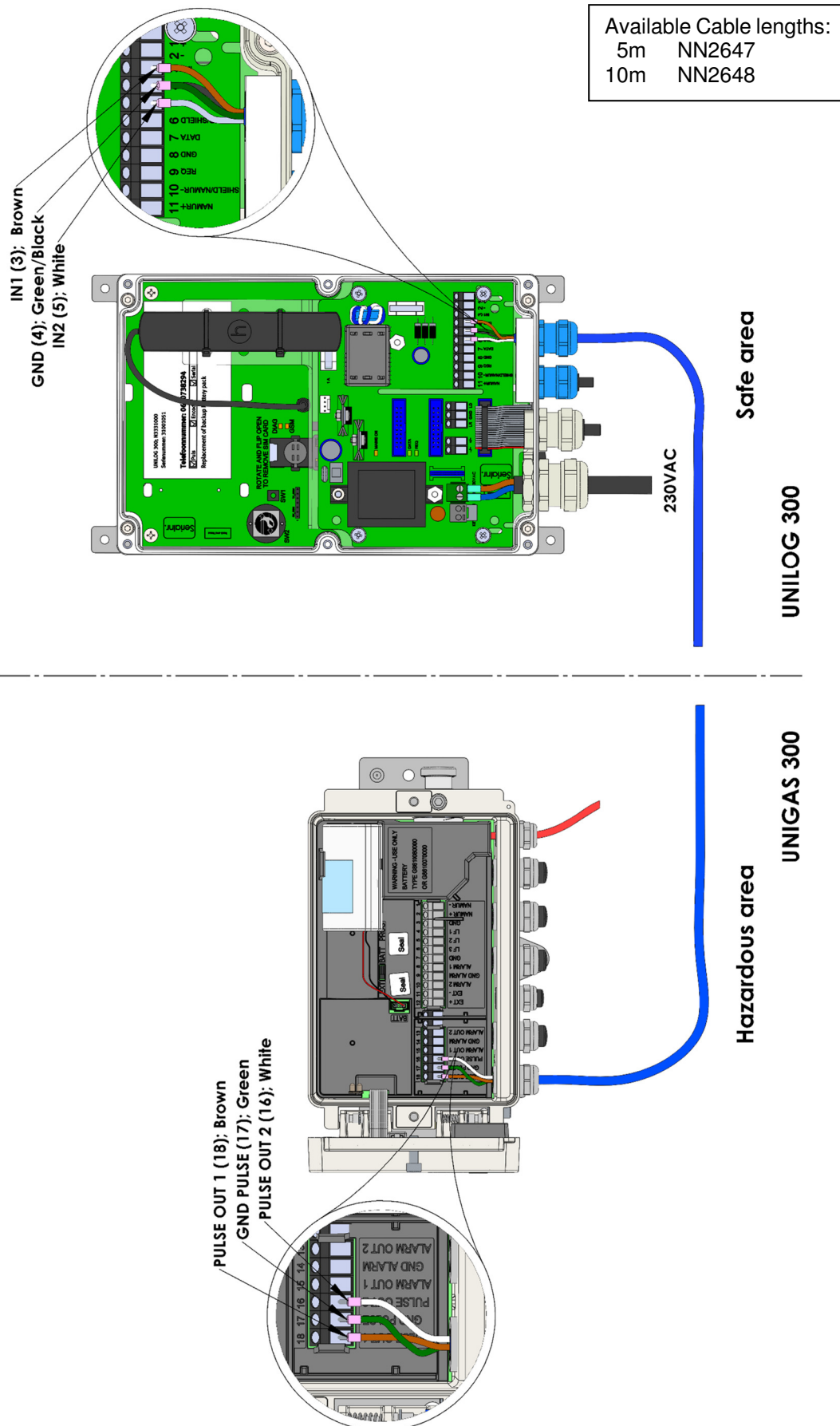- Pulse signal indicators       2 x 4 status led's

# Annex 2: Wiring diagrams UNILOG 300 – UNIGAS 300
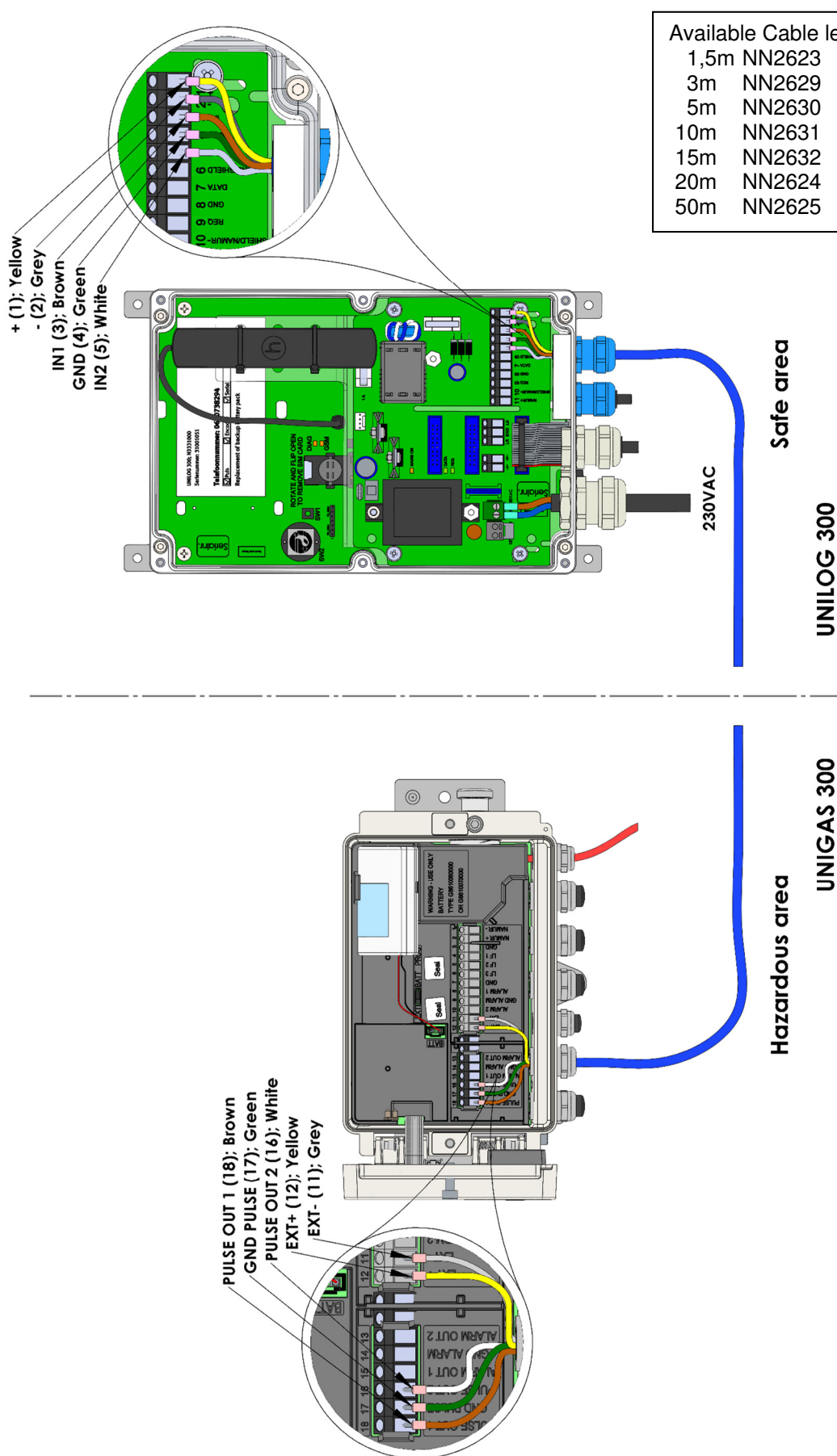
## Serial connection to UNIGAS 300

Serial connection to UNIGAS 300 is established with the optical connector cable.

Available Cable lengths:
1,5m  NN2488S
3m    NN2442S
5m    NN2439S
10m   NN2437S
15m   NN2478S
20m   NN2486S
50m   NN2484S

DATA (7): Brown
GND (8): Green/Black
REQ (9): White

230VAC

Safe area

UNILOG 300

UNIGAS 300

Hazardous area

UNIGAS 300

## Pulse connection UNILOG 300 to UNIGAS 300

| Available Cable lengths: | |
|---|---|
| 5m | NN2647 |
| 10m | NN2648 |

IN1 (3): Brown
GND (4): Green/Black
IN2 (5): White

Safe area

230VAC

UNILOG 300

UNIGAS 300

Hazardous area

PULSE OUT 1 (18): Brown
GND PULSE (17): Green
PULSE OUT 2 (16): White

## Pulse and external power connection UNILOG 300 to UNIGAS 300

Available Cable lengths:
| | |
|---|---|
| 1,5m | NN2623 |
| 3m | NN2629 |
| 5m | NN2630 |
| 10m | NN2631 |
| 15m | NN2632 |
| 20m | NN2624 |
| 50m | NN2625 |

+ (1): Yellow
- (2): Grey
IN1 (3): Brown
GND (4): Green
IN2 (5): White

Safe area

UNILOG 300

230VAC

Hazardous area

UNIGAS 300

PULSE OUT 1 (18): Brown
GND PULSE (17): Green
PULSE OUT 2 (16): White
EXT+ (12): Yellow
EXT- (11): Grey

# Annex 3: Serial connection to all UNIGAS models

| Connector type |  |  |  |
|---|---|---|---|
| **Description** | Cable colour black provided with a fixed M12 Male connector | Cable colour blue with an M12 Male connector | Cable colour blue with an optic connector |
| **UNIGAS EVHI model** | UNIGAS 61D or UNIGAS 61E | UNIGAS 61D or UNIGAS 61E | UNIGAS 300 |
| **Serial connections** — **REQ** | Brown | White | White |
| **EARTHING** | Black | Green / black | Green / black |
| **DATA** | Blue | Brown | Brown |