Installation and user manual   (type N531)

Mains operated UNICOM 300

UNICOM 300

PWR
STATUS

NETWORK
WDS

SIG1
SIG2

INIT
DATA

GPRS/LTE CAT 1
Modem - Datalogger
Manufacturer: Wigersma & Sikkema
Address: NL-6983 BP 4 DOESBURG
Type: UNICOM 300, N531
Year of manufacture: 2020
Serialnumber: 33000001
IMEI number: 356611071032183

fmax: 2 Hz (LF)
ta: -40 °C - +60 °C, IP65
Um 253 VAC
Un 115/230 VAC, 50-60 Hz
Im 0.1 A max, Pn 0.5 W

CE 0344 ⟨Ex⟩ II (1)G [Ex ia Ga] IIC
KIWA 20ATEX0022

7 WIG01 33000001

Wigersma & Sikkema

Since 1921

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Preface

- This manual provides important information about the use of the UNIGAS 300. Please read this manual carefully.

- Various remarks and warnings in this manual are marked with symbols. Read these carefully and take measures were necessary.

The symbols used have the following meaning:

	REMARK	Suggestions and recommendations to make tasks easier.
	NOTE	A note draws user's attention to potential problems.
	WARNING	If the procedure is not carried out correctly, a dangerous situation may develop, or data or settings may be lost.
	ESD	Electrostatic discharges (ESD) can cause damage to internal electrical components if you do not take precautions. ESD is caused by static electricity and the damage caused is usually permanent.

	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.

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Introduction

Mains operated UNICOM 300 with mains supply is available in three versions:

- The UNICOM 300 version with 2G/4G modem / datalogger
- The UNICOM 300 version with 2G/4G modem / datalogger and backup battery for preservation of the log functions.
- The UNICOM300 version with 2G/4G modem / data logger and rechargeable accu for full functionality.

Mains operated UNICOM 300 is a 2G/4G modem or data logger equipped with a GSM CSD/GPRS/LTE Cat. 1 modem or GPRS/LTE Cat. M1 modem. The modem used can be found on the type label (CAT 1 or CAT M1), see also chapter 4.5, pos. 4. Further specifications of both modems can be found in Appendix 4 of this manual.

The inputs are equipped with Ex barriers so that mains operated UNICOM 300 may be used with equipment that is placed in a zone 0 with a potentially explosive atmosphere.

Two microprocessors provide several functions including pulse registration, readout of an encoder counter, processing and storage of data (data logging), communication of this data via 2G/4G, timer (scheduler) for switching the 2G/4G modem on and off and creating and sending logged data in an FTP message.

Mains operated UNICOM 300 is equipped with inputs for both Encoder and two pulse contacts and a serial connection for communication with UNIGAS 300.

Mains operated UNICOM 300 can communicate in the following ways:
- through GSM data (CSD, only Cat. 1 modem)
- through a TCP connection over GPRS/LTE Cat. (M)1
- by sending FTP files. One FTP server can be set up where the FTP files are to be sent to.
- synchronizing clock (date / time) with an NTP server

UNICOM 300 automatically detects the presence of a backup battery or a back-up accu and will adjust a number of relevant functions itself.

1.   Explosion safety instructions (Ex)

The safety instructions and declaration of conformity are included in a separate document that must be supplied with every mains operated UNICOM 300. See the *DDN5802CVML EU Declaration of Conformity and Safety instructions UNICOM 300 N531* for the Dutch / English document.

UNICOM 300 N531 is approved for use outside the explosion-hazardous area. UNICOM 300 N531 is equipped with intrinsically safe circuits, which may be connected to equipment set up in an explosion-hazardous area, group IIC (places with an explosives atmosphere other than mines), zone 0.

Approval data:

⟨Ex⟩ II (1)G [Ex ia Ga] IIC
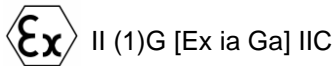
KIWA 20ATEX0022

Ambient temperature range ta: -40°C to +60°C

Manual *DDN5006GHEN* (this manual) should be read and understand completely before installing and put into use UNICOM 300 N531. Does any question arise or clarification is needed with regard to explosion safety with respect to UNICOM 300 N531, please contact Wigersma & Sikkema.

Additional instructions on explosion safety, see figure 1:

1.   Only installation in the position as indicated in the picture at the front page, is permitted.
2.   Connections that may be connected to equipment in the explosion-hazardous area are marked with blue cable glands.
3.   If a mounted cable is to be removed and reinstalled, for any reason whatsoever, check to see whether the cable is installed correctly, whether there are any loose wires and whether the cable gland has been properly tightened. Also check to see whether the Ex protective cover (2), see figure 1, has been put in place.
4.   The mains or external DC voltage should first be removed or switched off for all actions that involve loosening the Ex protective cover (2).
5.   Any actions that require opening of the casing, closing of the casing should always include a check to see that the sealing of the cover rests against the casing properly and over its entire length. Also check to see that both screws are in place and properly tightened.
6.   If the casing is open, ensure that no moisture enters the casing.
7.   Cable glands that are not used should be closed with the factory installed caps. The caps should be placed with the abutting edge within the gland nut head and the gland nut head must be tightened properly.
8.   Optionally, a back-up battery can be installed. Only an original Wigersma & Sikkema back-up battery pack, type NN2758, may be installed. Installing requires loosening of the Ex protective cover (2), see instructions at point 4.
9.   If there are any defects, UNICOM 300 N531 should be repaired by Wigersma & Sikkema. Fuses may only be replaced by Wigersma & Sikkema.

Dealing with mains voltage:

First read the Explosion safety instructions (Ex), see above.

Only qualified service personnel may handle installation, maintenance or service.

Always check first to make sure no mains voltage is present and that it has been seen to that the mains voltage cannot be switched on.

Only reconnect mains when all cables are connected and the Ex cover (2) has been put in place, see figure 1.

Additional instructions on explosion safety for use with external antenna:

1. Replacing the antenna with a type other than the ones recommended is not recommended, see manual *DDN5006GHEN* (this manual) for additional information.

2. Prevent damaging the cable of the external antenna during installation. If the cable is damaged, the antenna should be replaced as a whole with a non-damaged unit.
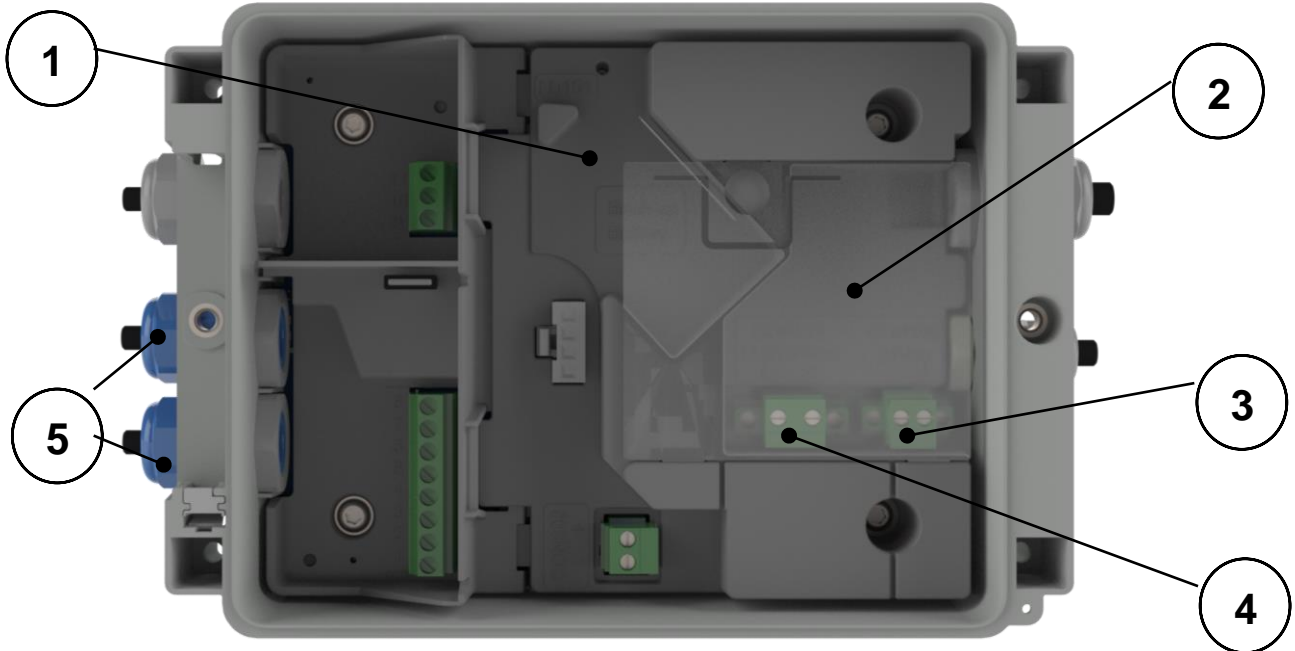
Figure 1

1	Mounting position for optional back-up battery
2	Ex protective cover for the connections of mains supply or external DC supply
3	24 VDC connection (15 VDC to 32 VDC)
4	115 / 230 VAC Mains connection
5	Cable glands to connect to equipment placed in the explosion-hazardous environment, marked blue

Figure 2

6	wiring to terminals 1 – 8
7	wiring to terminal CON202, supply to apparatus placed in the Ex hazardous area

2 Inputs and data structure

Mains operated UNICOM 300 supports basic functions for the registry of counter values of a connected gas meter:

1.   Two pulse inputs.
2.   Encoder (NAMUR).
3.   One serial input for UNIGAS 300.

Mains operated UNICOM 300 has two pulse outputs that can transmit pulse or alarm.

Mains operated UNICOM 300 is able to count two pulses in two counters, read an encoder counter in a third counter and log it in an interval logger.
Mains operated UNICOM 300 can transmit the incoming pulses or encoder counter reading to two pulse outputs.
Mains operated UNICOM 300 can be connected to UNIGAS 300 for serial communication.

Pulse input 2 can also be applied as an alarm input. When an alarm is detected, a status message is registered.
The pulse outputs can be configured as alarm outputs, see also *"settings for pulse outputs"* H11.2, OBIS C.93.2 and C.93.3.

Appendix 1 shows the functions schematically, and Appendix 2 shows the data structure schematically for the mains operated UNICOM 300.

3   Installation

The housing of UNICOM 300 has a protection class IP65 in accordance with EN60529. UNICOM 300 may be placed in the open air.

First read Explosion safety instructions (Ex) of document *DDN5802CVML* EU Declaration of Conformity and Safety instructions UNICOM 300 N531 before proceeding.

Electrostatic discharges (ESD) can cause damage to internal electrical components if you do not take precautions. ESD is caused by static electricity and the damage caused is usually permanent.

3.1 Installation

See *DDN5002MHML* installation manual for installation/assembly options and installation instructions. This manual can be downloaded from www.wigersma-sikkema.com.

It is not necessary to open the UNICOM 300 to mount the mounting brackets to a gas meter or to the wall.

3.2 Dealing with mains voltage

First read the provisions for explosion protection, see *chapter 2 Explosion protection instructions (Ex)* or the *DDN5802CVML* EU Declaration of Conformity and Safety instructions UNICOM 300 N531.

Depending on the function and the configuration of UNICOM 300, the inputs are already configured from factory and it is possible that the corresponding cable (s) is (are) mounted.

The back-up battery is **not** connected! This is done because of battery life.
Connect the back-up battery only after the mains power has been connected.
See chapter 4.6 *Out of service* for actions concerning the back-up battery when taking the UNICOM 300 out of service.

Disconnect the mains voltage before carrying out any maintenance.

Only connect the mains voltage if all cables are connected.
If the connections are changed, check that the mains voltage is not present and that it is ensured that the mains voltage cannot be switched on.
Always place the Ex-protection cap (fig.1, 2 or fig. 6, 7) over the mains connection.

3.3 Handling DC voltage

Mains operated UNICOM 300 can also be powered by 24V (15 - 32VDC). The 24V connection is recognizable by the 24V label, and this label must be removed when connecting the 24V. Make sure that the + and - are connected correctly. Incorrect connections will cause the fuse to blow. The device must then be sent to W&S for repair. See also (4) in figure 6.

3.4 Powering UNIGAS 300 with mains operated UNICOM 300

To connect the external power supply for the UNIGAS 300, + and - must be correctly connected according to cable specification, see appendix 3C.

If an old UNILOG 300 power supply cable is available at the time of installation, it can be used if all conditions described in Chapter 4 and Appendix 3C are met.

3.5 Front mains operated UNICOM 300
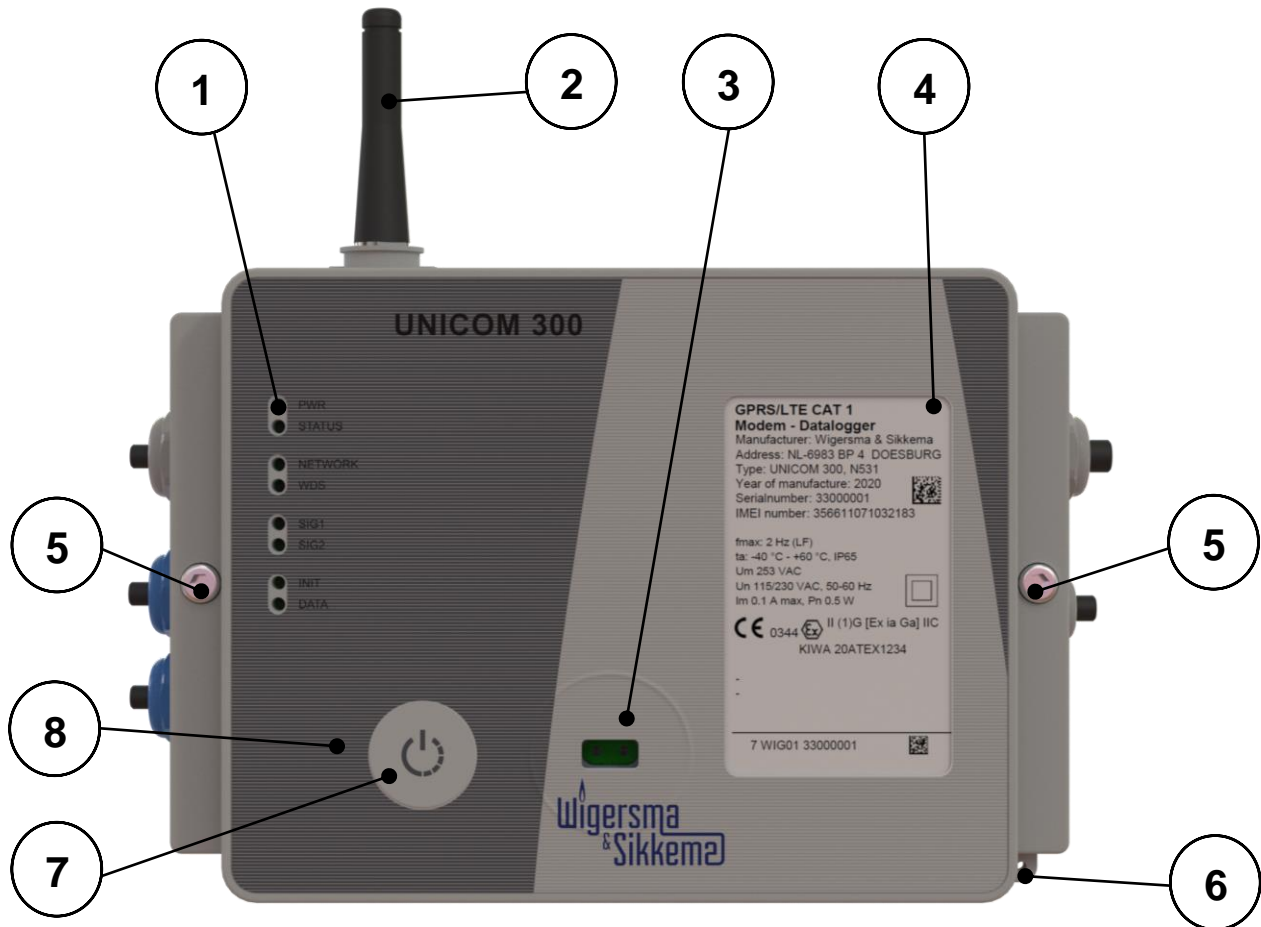
Figure 3

1	Status LEDs (see table 6)	5	Anti-loss screw[2]
2	Antenna	6	Seal
3	SW 2 (see table 3) Communication port[1]	7	SW1 (zie table 3)
4	Typelabel	8	Breather opening[3]

(1) Communication port for reading and configuring UNICOM 300 on location.
This communication port is suitable for an infrared communication head in combination with the software program UNITOOL.

(2) Opening the housing.
Turn the two-cylinder head screws until the screw comes loose (anti-loss screw). Then open the housing on the right side. It is possible that the sealing will stick, making the housing more difficult to open.

⚠️ **Closing** the housing must be done with caution. The hinge of the lid has some tolerance so that the seal in the lid, when closed, can connect to the underside of the housing.
Make sure that when closing the lid it is not pushed up or down. Make sure that the sealing ring in the lid is clean.

(3) Breather opening for pressure equalization between UNICOM 300 and ambient atmosphere.
Behind the breather opening a membrane is placed that prevents ingress of moisture.

⚠️ Take care not to damage the membrane. The membrane must not be covered. See also figure 3, point 3.

3.6 Power supply connections
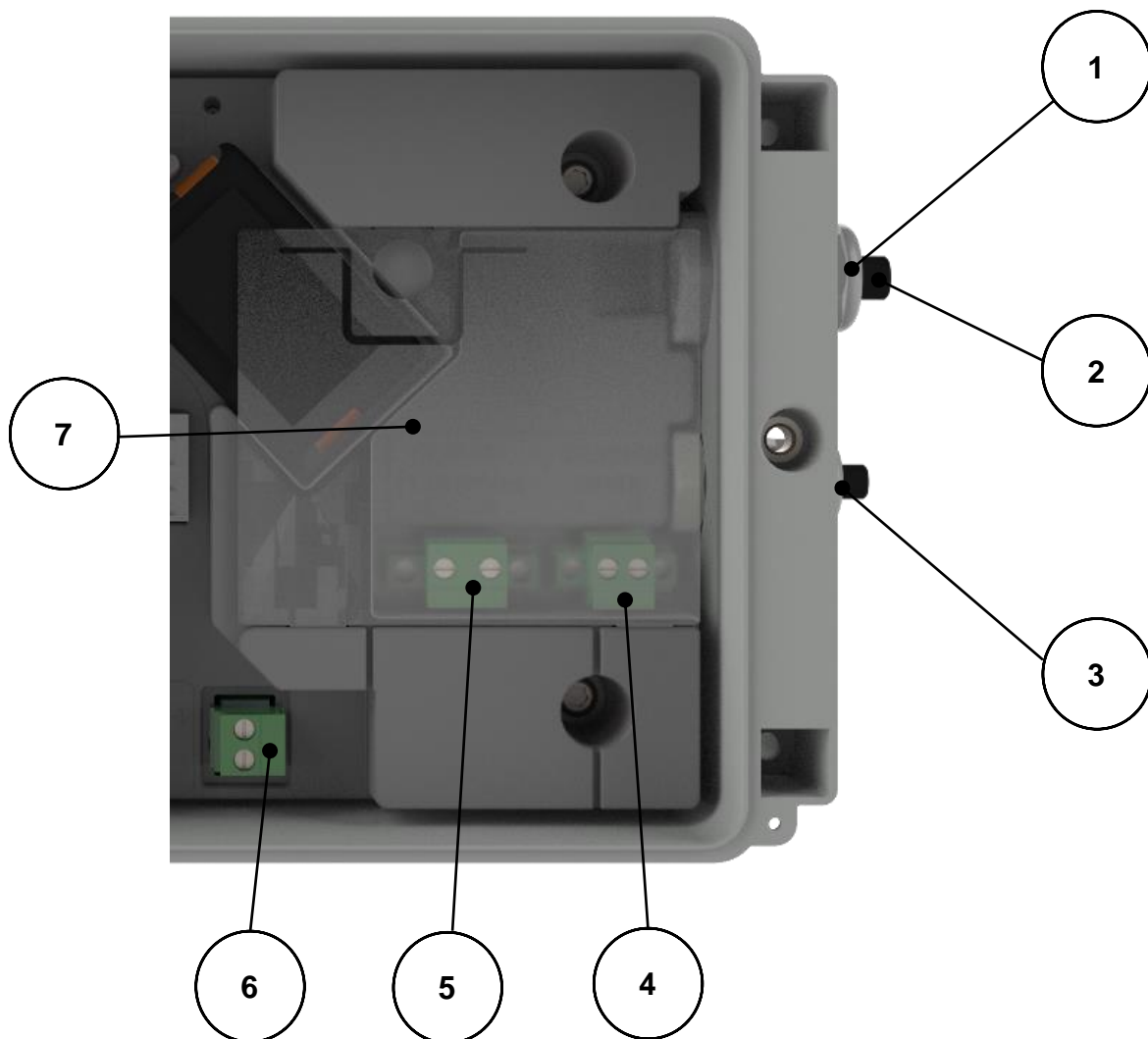
Figure 6

1	Cable gland for mains voltage
2	Sealing cap for cable gland
3	Cable gland for back-up battery
4	24 VDC connection (15 VDC - 32 VDC)
5	230 VAC Mains connection
6	Power supply for UNIGAS 300
7	Ex-protection cover for mains or external DC voltage

⚠️ Cable glands which are not used must be closed with the enclosed sealing caps.

3.7 Connecting to the mains voltage

⚠️ Make sure that the mains connection is not live.

⚠️ First connect UNICOM 300 completely before connecting it to the mains.

Order of connection:

1. Insert a SIM card (if not already done). See also chapter 5 SIM card.
2. Insert the power cable through the appropriate cable gland (Fig. 6, 1).
3. Connect the power cable to the 230 VAC or 24 VDC terminal in the UNICOM 300 (fig. 6, 5).
4. Screw the terminal and the cable gland tight and fit the Ex-protection cap (fig. 6, 7).
5. Connect the power supply for UNIGAS 300 (Fig. 6, 6) (optional).
6. Connect UNICOM 300 to the 230 VAC or 24 VDC mains supply. UNICOM 300 switches on when the power supply is connected.
7. Adjust the configuration with UNITOOL (optional).
8. Connect the back-up battery (optional).
9. Press SW1 and wait for the NETWORK status LED to come on.

⚠️ If the device is pre-programmed, it may have already been registered.

3.8   Connections of the inputs and outputs
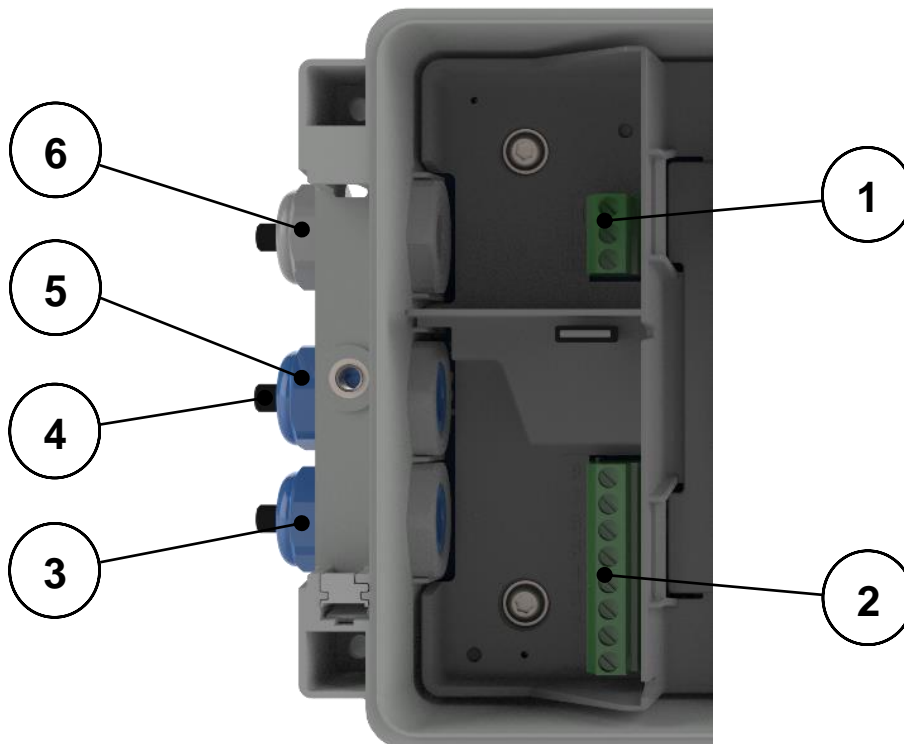
Figure 7

1	Puls outputs, see table 1
2	Input connections, see table 2
3	Cable gland for pulse inputs, power supply and encoder
4	Sealing cap for cable gland
5	Cable gland for serial cable UNIGAS 300
6	Cable gland for pulse outputs

Output	Terminal number	Name	Function
Pulse	11	Pulse out 2*	connection for pulse output 2
	10	GND	Ground for pulse out cable
	9	Pulse out 1*	connection for pulse output 1

Table 1: Connections outputs

* The pulse outputs are suitable for a switching voltage of 3 to 20 V with a switching current of 10 µA to 50 mA.

Input	Terminal number	Name	Function	Wigersma & Sikkema cable color coding
Power supply UNIGAS 300	CON202	+	+ power supply for UNIGAS 300	Yellow
		-	- power supply for UNIGAS 300	Grey
Serial	8	REQ	Serial data to UNIGAS EVCD	White
	7	GND/SHIELD	Ground/shield data cable	Black / Green
	6	DATA	Serial data from UNIGAS EVCD	Brown
Pulse	5	GND/SHIELD	Combined cable ground and shield for pulse cable	Green
	4	PULSE 2	connection for pulse input 2	White
	3	PULSE 1	connection for pulse input 1	Brown
Encoder	2	NAMUR - / GND	Connection for Encoder	-
	1	NAMUR +	Connection for Encoder	-

Table 2: connections inputs

See Appendix 3 for connection diagrams for UNICOM 300 - UNIGAS 300.

⚠️ In order to make a good connection between the threaded ends and the connection terminals (see Figure 7, 1 and 7, 2), it is important to ensure that the connection terminals are first fully unscrewed. Then insert the threaded end and tighten the terminals. Check that the threaded end is properly connected.

⚠️ A different color coding for the serial wire connection may apply for UNIGAS (see Appendix 5).

3.9 Components
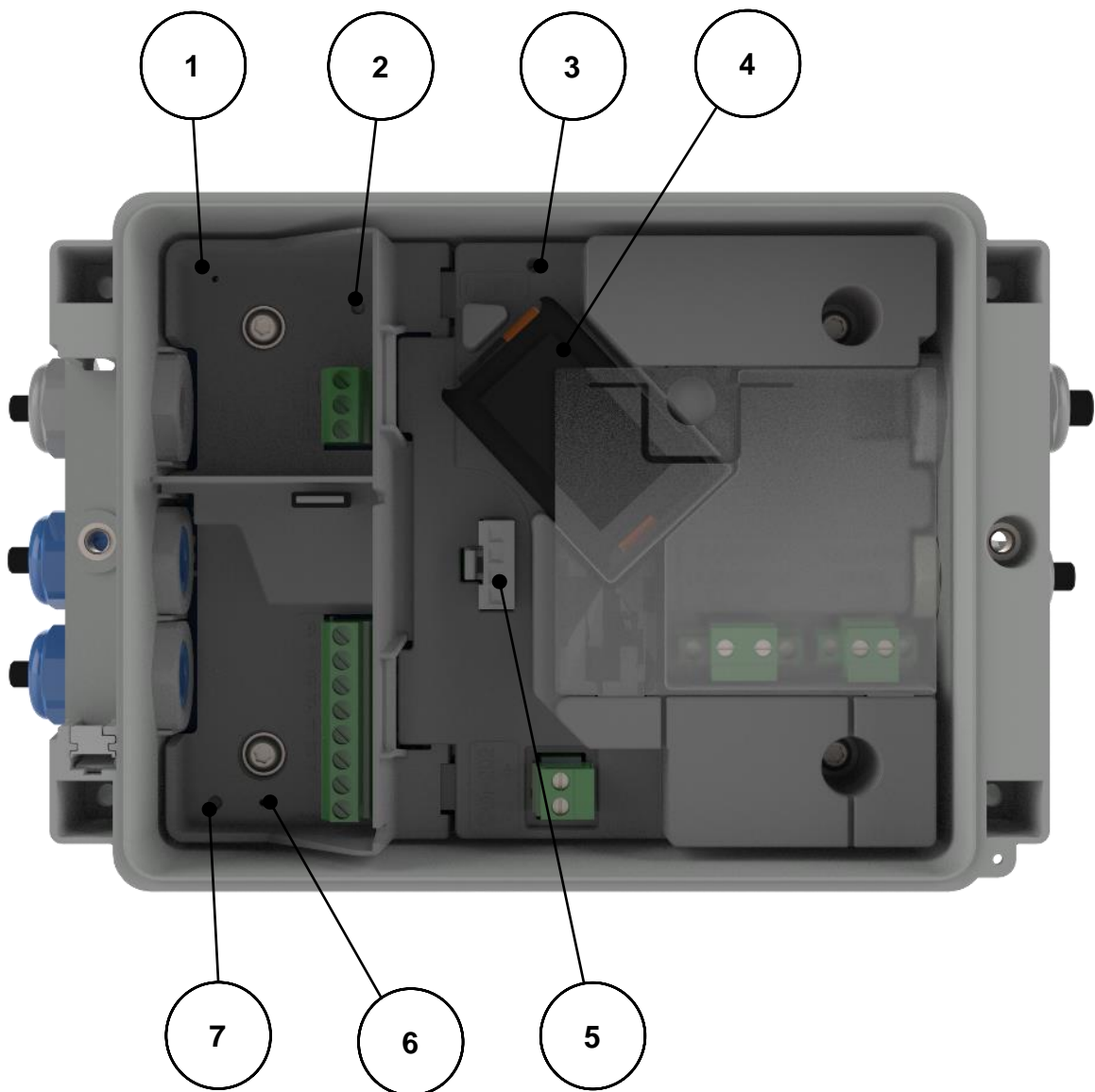
Figure 4

1	Status LED logger
2	Programming switch (SW5)
3	LED power supply
4	Backup battery (optional)
5	UNICOM 300 power connector
6	Status LED encoder
7	Switch manual encoder initialization (SW4)

3.10 Components inside cover
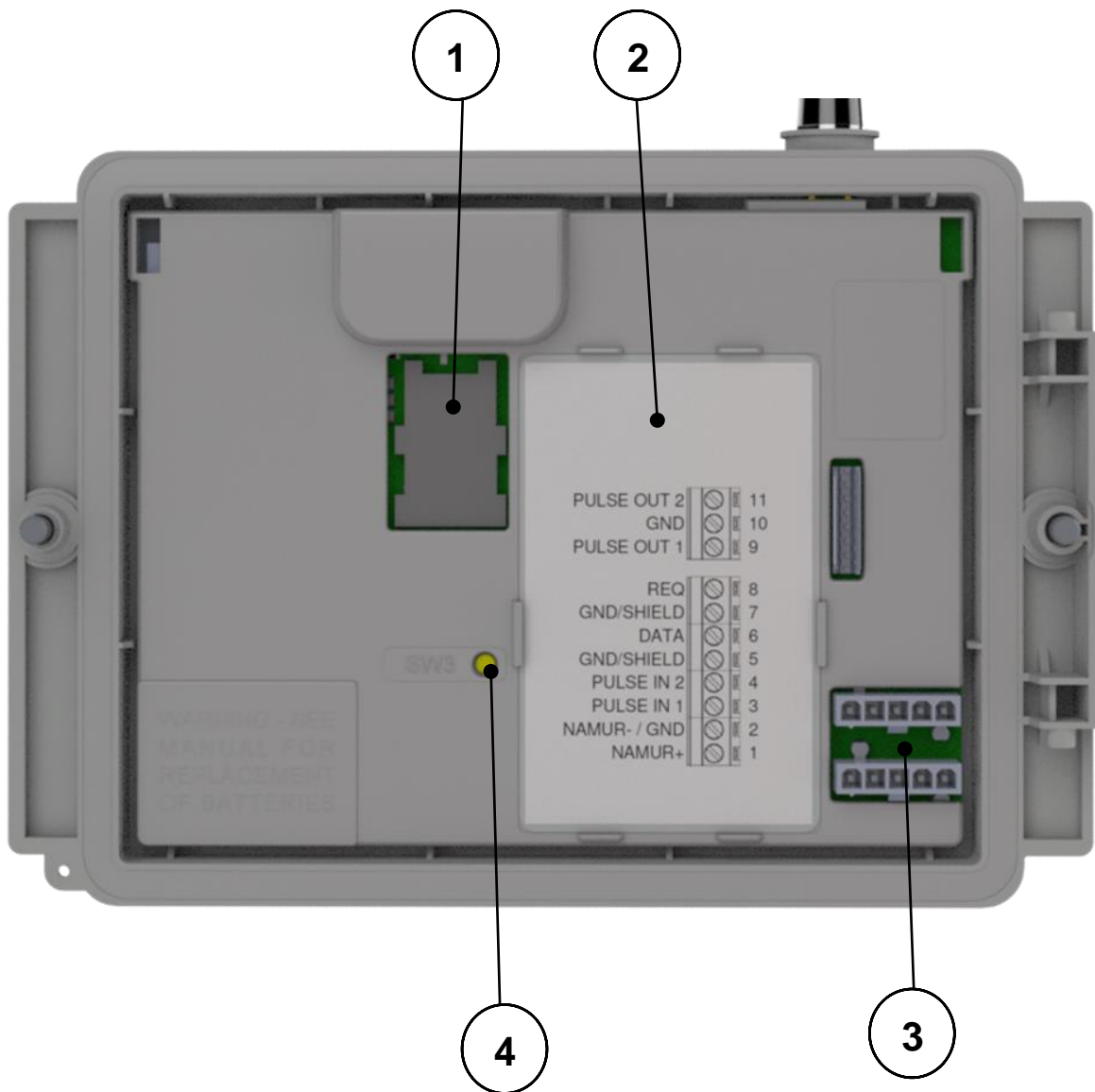
Figure 5

1	Mini-SIM card holder
2	Label for terminal connections and/or SIM-card
3	Connectors for battery packs
4	SW3 (zie table 3)

3.11   Function switches mains operated UNICOM 300

Switch	Switch operation	Function
optical head detection	-	Optical head placed; Status LEDs and optical head detection are activated.
SW1 (MODEM function)	until the NETWORK status LED comes on	Modem is turned on; 30 minutes service window is opened. If modem is on, it is switched off and on again. Status LED's are activated during the service window. To start the device INIT function, switch SW1 must remain pressed until the INIT LED blinks once every 4 seconds. After that, SW1 can be released and the initialization will be carried out further. See also 5.2.
SW1 (MODEM function)	For 1 second	NOTE! Functionality available from firmware version 11.0.21. Optical head and status LEDs are activated for 30 minutes.
SW3 (MODEM function)	For at least 4 seconds	Resetting the battery consumption counter of the backup battery. Reset the power supply type. When changing the power supply configuration, SW3 must be pressed for at least 4 seconds for a new initialization Status LED INIT will be on for 10 seconds.
SW1 & SW3 (MODEM function)	For at least 4 seconds	Stock lock activation After activating stock lock, the status LED will start for 10 seconds. This is independent of state SW1 / SW2.

Table 3: function switches (Modem)

4   Into service

4.1 SIM-card

UNICOM 300 can be pre-equipped with a SIM-card.

Suitable GSM-subscriptions are for example M2M subscriptions for GSM CSD and/or
GPRS / LTE cat. (M)1 data.

When using GPRS / LTE Cat. (M)1, UNICOM 300 requires several settings with which UNICOM 300
can log on to an APN; such as APN name with the corresponding username and password.

4.2 SIM-card placement

Open UNICOM 300 (see figure 3, note 2). The mini-SIM holder is located in the lid of the UNICOM 300 (see figure 5).

Press lightly on the metal-colored closure of the mini-SIM holder and turn anticlockwise, the mini-SIM holder unlocks and falls open. The mini-SIM must be inserted with the gold contacts facing backwards and the angled corner upwards (fig. 8, pos. 1). Close the mini-SIM holder by carrying out the above operations in reverse order.

Insert the SIM card as shown in figure 8, pos. 2.

After placing the mini-SIM, test the correct operation as described in chapter 5.

> ⚠️ If the SIM card is changed, SW1 **must always** be pressed until the NETWORK status LED lights up to perform a re-registration, see also Table 3.
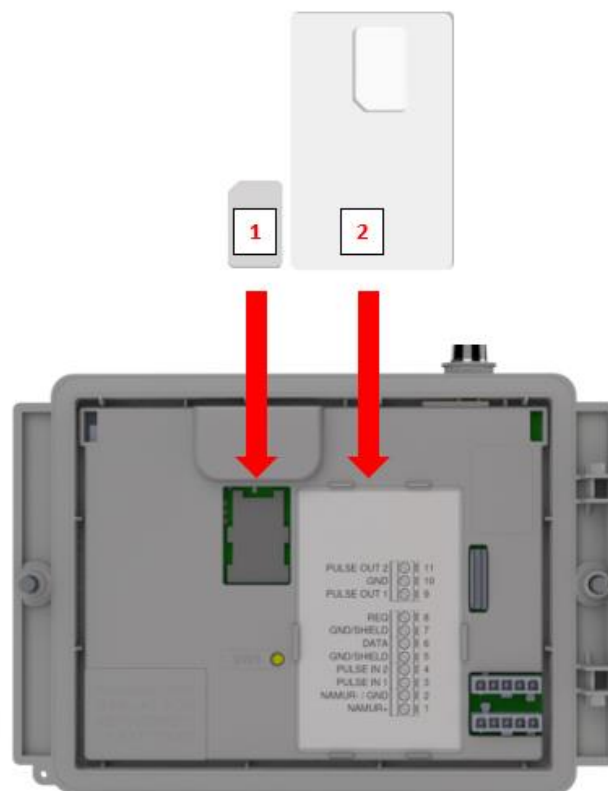
Figure 8

4.3 Activation and registry

When using the UNICOM 300 as data logger, it is necessary to carry out the following action with the central acquisition system:

The modem is activated when it is supplied with power (230 VAC / 24 VDC).
The modem can also be activated by pressing SW1 until the NETWORK status LED lights up (see figure 3). The UNICOM 300 will now log on. Registration can take several minutes. If UNICOM 300 is successfully logged on to the network, the network status LED (Table 4) will flash. If TCP is active, the WDS status LED will be active.

Let the central acquisition system connect to UNICOM 300 and synchronize the clock. This ensures that the internal clock is synchronized with the central acquisition system. Wigersma & Sikkema delivers UNICOM 300 standard with deactivated data logger and modem functions. Clock synchronization will activate the datalogger functions (the scheduler, interval logger, the historical logger and, if activated, the FTP). If UNICOM 300 is configured for encoder readout, an encoder initialization will also take place with the data from the gas meter being read out.

4.4 Device init function

The device init function is used for synchronizing the clock with an NTP server, sending a first FTP message and deactivating the stock lock function after installation of the UNICOM 300.

To activate the device init function, press switch SW1 until status LED INIT flashes once every 4 seconds. Then release SW1.

The device init function can only be activated if NTP, FTP and the APN are programmed.
If they are not programmed, the function cannot be activated, and the status LED INIT will flash 1x per second when pressing switch SW1.

The initialization then starts, and the current date, time and modem information are requested.
The stock lock of UNICOM 300 is also deactivated. The meter (UNIGAS 300 or UNICOM 300) will then handle the further device init. If the UNICOM 300 is set as Encoder, the encoder initialization will also be carried out. When the encoder initialization is complete, the status LED INIT will flash once every 2 seconds.

Next, an FTP message will be sent, and after sending the first FTP message, the status LED INIT will be on continuously for 10 seconds to indicate that the device init has been completed correctly.

If the device init is not to be executed, SW1 must be released within 4 seconds.

4.5 Adaptation of use: data logger <-> transparent modem

Adaptation of use as a data logger to use as a transparent modem:

- Check with UNITOOL whether value C.93.15 is "off" or set the value C.93.15 to "off".
- Activate the stock lock function, see table 3.

Adaptation of use as a transparent modem to data logger:

- Check with UNITOOL whether value C.93.15 is set to "on" or set the value C.93.15 to "on".
- This is done automatically with a clock synchronization by the central acquisition system or when a device init is executed (see chapter 5.4).

4.6 Out of service

If it is necessary to deactivate the UNICOM 300 (take it out of service), it **must** be ensured that the modem is **not active**!
This can be checked by activating SW1 for 1 second (see table 3, from firmware version 11.0.21) or activating the communication port SW2 which causes the status LED to display.
LED "Network" must be **off**, see also Table 4.

To avoid unnecessary draining of the backup battery, it is important to disconnect the backup battery (when present) when the UNICOM is taken out of service.
This also prevents the storage of irrelevant log data.

5   Activation of the modem, TCP and NTP services

5.1 Activation of the modem

The modem can be turned on by pressing switch SW1 until the NETWORK status LED starts flashing, SW1 can then be released.

If switch SW1 is operated again, the modem will log in again, turning the modem off and on again. This is apparent as the NETWORK status LED (see Chapter 5) is off for a short time.

5.2 Activation of TCP services

If the TCP server function is activated in UNICOM 300, the device will log on to GPRS/LTE Cat. (M)1 when the modem is switched on.
Before the TCP server is activated an IP-address will be assigned to UNICOM 300. If logging on to GPRS/LTE Cat. (M)1, or activating the TCP server fails, this will be repeated up to four times. If after four attempts the registration is not successful, UNICOM 300 will be registered on the GSM network, (NETWORK status LED will flash) but not on the GPRS/LTE Cat. (M)1 network. Press SW1 until the NETWORK status LED lights up to initiate a re-registration.

5.3 Activation of NTP

UNICOM 300 is equipped with a function to read out the NTP-time server. When connected to this time server, the date and time are read out. If NTP is activated and UNICOM 300 has been synchronized with the NTP server in the last 24 hours, then UNICOM MODEM's clock is no longer synchronized by monitoring data traffic.

To activate NTP functionality, the NTP time server must be set via C92.65 and C.92.66. In addition, the APN data must also be set.

The requested NTP time is the GMT time. Through time zone setting (C.92.64) and with DST (summer/wintertime) the time is adjusted in UNICOM 300.

When the NTP function is activated, the clock is requested once a day at approximately 00:35.

If reading out the NTP time server does not succeed, another attempt will be made after 12 hours.

5.4 Activation of FTP

To use the FTP functionality, the FTP server data must be set (FTP server, FTP user name, FTP password, FTP port). Also the APN data and the FTP interval have to be set.

If the FTP functionality of the UNICOM 300 is activated, the UNICOM 300 will send the load profile after activating the datalogger. See chapter 8 for activation of the data log functions. If UNICOM 300 is placed as modem at UNIGAS 300 and CI module, UNICOM 300 will forward the FTP message from UNIGAS 300.

UNICOM 300 checks if the FTP message arrived correctly on the server. At first installation or at not correctly sending the FTP message, UNICOM 300 or UNIGAS 300 will, when sending the (next) FTP message, send the data of the failed message. The data is depending on the set load profile (0.8.5) limited as follows:
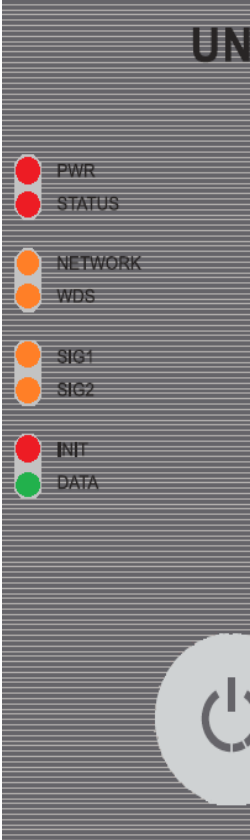
Setting 0.8.5:
  5 minutes = 10 days
10 minutes = 10 days
15 minutes = 31 days
30 minutes = 31 days
60 minutes = 61 days
     1 day = 61 days

6   Function Check

6.1 Checking the system status by means of the status LEDs

There are eight status LEDs on mains operated UNICOM 300 that show different states. The status LEDs are active if an optical head is placed on the communication port (SW2, figure 3), or if SW1 (figure 3) is operated. This way, the status LEDs are only active in the event that a technician is on site.

Status LED	Condition LED (see figure 6)
PWR; Supply	Continuously on; Power supply voltage good Blinking 1 x per 4 seconds; Power supply voltage low Blinking 1 x per second; Backup battery empty
STATUS; UNICOM status	10 seconds on; Stock lock activated Blinking 1 x per 2 seconds; Stock lock not activated Blinking 1 x per 4 seconds; Stock lock activated Blinking 1 x per second; Critical error
Network; Network status	Continuously on; network registry started Blinking 1 x per 4 seconds; registered on network Blinking 1 x per 2 seconds; Connection (CSD; FTP; TCP) Off; Modem off
WDS; 2G/4G status	Continuously on; Registered on 2G / TCP services Blinking 1 x per 4 seconds; Registered on 4G Blinking 1 x per 2 seconds; Registered on 4G / TCP services Off; registered on 2G CSD (only Cat. 1 modem)
SIG1; GSM signal status	Continuously on; Main cell < -92 dBm Blinking 1 x per 4 seconds; Main cell ≥ -92 dBm en < -80 dBm Blinking 1 x per 2 seconds; Main cell ≥ -80 dBm
SIG2;	Not functional
INIT;	10 seconds continuously on; device INIT successfully completed or battery counters reset Blinking 1 x per 4 seconds; device INIT started Blinking 1 x per 2 seconds; Encoder readout completed Blinking 1 x per second; device INIT in ERROR Off: device INIT not activated
DATA;	Blinking at transfer of data by modem

Table 4: status LEDs UNICOM 300

6.2   Checking the system status data logger

On the logger part of UNICOM 300 two status LEDs (see figure 4) are available which show different conditions.

Status LED	Condition LED (see figure 6)
Status	Blinking 5 ms every 10 seconds; Stock lock activated Blinking 5 ms every 5 second; Stock lock not activated
Encoder	10 seconds on; Encoder initialization completed successfully Blinking 1x per 2 seconds; Encoder initialization active Blinking 1x per second; repeated every 10 seconds. Encoder initialization in error.
Power supply PCA	LED on; power supply present LED off; no power supply present

Table 5: status LEDs UNICOM 300 datalogger

7　Configuration

7.1　Gas meters with encoder

Application: data logger

UNICOM 300 is suitable for the use of gas meters with an encoder output from the Itron, GWF, Honeywell (Elster), Dresser, FMG, RMG, GFO or RMA (Aerzen) products, which are equipped with a NAMUR interface. To use this function, parameter C.93.40 must be set on by means of UNITOOL service software. Registration of the encoder counting mode takes place in counter 3.

7.1.1　Initialization encoder

Because UNICOM 300 is provided with a check on the encoder counter value, not every counter value will be accepted (see chapter 8.1.4). To ensure that UNICOM 300 takes over the encoder counter value once, when UNICOM 300 is installed or when changing the gas meter, UNICOM 300 has four ways to initialize the encoder counter:

1. If the data logger functions are activated. The interval logger and the historic logger are deleted. Activation can be performed using:

   - UNITOOL and setting parameter C.93.30; deactivating stock lock

     or

   - Takes place when the clock of UNICOM 300 is synchronized by for example a central data acquisition system or manual time synchronization.

2. When parameter C.93.40 is set to value "encoder" by means of service software UNITOOL

3. Manual initialization by SW4 (see chapter 8.1.2)

4. Device init as described in chapter 5.2.

7.1.2　Manual encoder initialization

It is possible for a user to manually start an encoder initialization on location.
The procedure is as follows:

- Press SW4 until the Encoder status LED blinks 1x per 2 seconds or is continuously on.

- The Encoder status LED will show the status of the initialization (see table 5).

7.1.3　Readout of gas meter data

UNICOM 300 will, if supported by the encoder counter, read the gas meter data. Data from the gas meter are serial number, manufacturer and year of manufacturing.

The data from the gas meter is read out:

- When encoder initialization takes place, see chapter 8.1.1.

- If the encoder counter is read out successfully after a failure notification of encoder readout has been set in the status registry.

7.1.4　Readout of encoder counters

If an encoder counter is connected without initializing it and the position of the encoder counter is lower or much higher than the value in counter 3 (Vm3) of UNICOM 300, UNICOM 300 will not take over the encoder counter mode. In the status register a message is made of an incorrect readout of the encoder counter.

If the encoder counter is reduced, the counter mode will not be adopted by UNICOM 300. A status message is made of this in the status register. If the return is temporary, UNICOM 300 will take over the counting position again as soon as it is larger than the last meter reading.

7.2 Gas meters with a pulse

Application: data logger

Input 1 is always set to pulse, input 2 may be set to pulse or alarm.

> ⚠️ Check and / or program the correct pulse ratios (parameter 1:0.7.2 and 2:0.7.2) by means of the UNITOOL service software.

For UNICOM 300 pulse outputs, a choice can then be made for Vm1-Vm2-Vm3 or Alarm1 via the parameters mentioned in chapter 11.

7.3 Transparent modem (Electronic volume converter type UNIGAS)

Application: modem for EVC types UNIGAS

Connect the serial cable of the UNIGAS to the serial terminals and make sure settings are as described in chapter 5.5 and activate the modem.

7.4 Deactivating the data logger

If necessary, the data logger functions of UNICOM 300 can be deactivated.

Deactivation can be performed using UNITOOL and setting parameter C.93.30 or by activating stock lock with SW1 and SW3 (see table 3).

8   External antennas

Wigersma & Sikkema has external antennas for various applications; a round-beam antenna, a directional antenna and a vandal-proof antenna. The external antennas are supplied with mounting material and instructions for connection to UNICOM 300.
The standard antenna can be loosened from the UNICOM 300. Another antenna can then be connected to the free connection. See also *DDN003MHEN*

> ⚠️ If the external antenna is placed in the Ex zone, the antenna must not have a gain greater than 2 dB.

9   Software

The following software package is available

- Configuration and readout of a single UNICOM 300:

  UNITOOL software: https://www.wigersma-sikkema.com/en/downloads-2/software/

10 Counters and registers

Below are the counters and registers (parameters) that are present in UNICOM 300.
The name is displayed per counter or register, supplemented by the OBIS code, the security level and a short description.

All counters and registers are readable with the software UNITOOL.

Counting and register can be provided with a write protection. The following security levels are present in UNICOM 300:

- Protection by programming switch: writing is only possible if the programming switch SW5 is operated during writing. This form of security can be disabled, see register C.93.24

- Security level 1: password 1 is used to access the mode in which counters and registers can be read and written.

- Security level 2a: with register 2a, writing of registers is possible. Password 2a corresponds to the VDEW password.

If passwords are not programmed, registers can be read and written without the use of passwords or with the use of a random password.

10.1   UNICOM 300 modem

Device data

Name	Unit	OBIS	Security level	Description
Device type	-	C.1.1		Device type and version UNICOM 300
Serial number	-	C.1.0		Serial number of the UNICOM 300
Firmware version	-	7-0:0.2.0		Firmware version
Firmware CRC	-	C.91.3		16-bit CRC-value of the memory
SW modem engine	-	C.90.23		Software version of the modem module
IMEI number	-	C.90.24		IMEI number
SIM-card number	-	C.90.25		The number of the inserted SIM card
Modem type	-	C.90.32		Modem engine type
Track and Trace data	-	C.91.5		Track and Trace data UNICOM 300 PCA
GSM Main cell	-	C.90.7		Strength of the GSM main cell

Other settings

Name	Unit	OBIS	Security level	Description
Device address	-	C.90.1	Password 2a	UNICOM 300 device address
EAN-code	-	C.96.0	Password 2a	Customer specific code for meter location
Stock lock	-	C.93.30	Password 2a	Activate or deactivate Lock in stock. Is set to Unlocked after a time-date synchronization.

Consumption data

Name	Unit	OBIS	Security level	Description
Battery voltage MODEM	mV	C.90.6		Supply voltage
Battery hour counter MODEM	h	C.6.0		Number of hours in operation
Operation	h	C.90.13		Number of hours in operation
nominal battery capacity	Ah	C.90.31		The nominal battery capacity This is determined: - 1x a day at 00:33 - With a power-on
Supply type	-	C.91.15		Supply type; Options are: • BAT • BAT – BAT • EXT • EXT – BAT • EXT – ACCU
Ah-used	Ah	C.90.21		Consumed energy from the UNICOM 300 battery in Ah
Networkh	h	C.90.4		GSM/ GPR / LTE connected to network time registration
Commh	h	C.90.5		GSM/ GPRS/ LTE communication time registration

GPRS / LTE cat. (M)1 settings

Name	Unit	OBIS	Security level	Description
TCP APN Name	-	C.92.40	Password 2a	APN name on which UNICOM 300 must log in for TCP and FTP
TCP APN user	-	C.92.41	Password 2a	Username with which you must log on to the APN for TCP and FTP
TCP APN password	-	C.92.42	Password 2a	Password that must be registered on the APN for TCP and FTP
TCP server port number	-	C.92.48	Password 2a	TCP server port number Do not program port 0. This will result in modem errors
TCP Firewall IP address	-	C.92.67		Firewall IP address
TCP Firewall IP address mask	-	C.92.68		Firewall IP address Mask
TCP server	-	C.92.51	Password 2a	TCP server activated
FTP server 1 user	-	C.92.43	Password 2a	FTP username
FTP server 1 password	-	C.92.44	Password 2a	FTP password
FTP server 1 IP of DSN	-	C.92.46	Password 2a	FTP server IP address or DNS naam
FTP server port number	-	C.92.47	Password 2a	FTP server port number Do not program port 0. This will result in modem errors
FTP workingdir	-	C.92.89		The working directory for the FTP file. The FTP file is stored in this directory
FTP APN name		C.92.90		APN name on which UNICOM 300 must log in for FTP Optional: can be used for another APN for FTP. If these have not been entered, the TCP APN data will be used for FTP
FTP APN user		C.92.91		Username with which you must log on to the APN for FTP Optional: can be used for another APN for FTP. If these have not been entered, the TCP APN data will be used for FTP
FTP APN password		C.92.92		Password which must be registered on the APN for FTP Optional: can be used for another APN for FTP. If these have not been entered, the TCP APN data will be used for FTP
FTP mode	-	C.92.50	Password 2a	FTP mode passive or active
NTP server IP or DNS	-	C.92.65		NTP IP address or DNS name
NTP server port number	-	C.92.66		NTP port number

GPRS / LTE cat. (M)1 settings (continued)

Name	Unit	OBIS	Security level	Description
Modem CHV1 ME password	-	C.92.61	Password 2a	Pin code for modem. If an incorrect PIN is used for a SIM card with PIN protection, an ERRORPIN message will be issued if this object is read out
Assigned IP address	-	C.92.45		Assigned IP address. If unsuccessfully logged on to the APN, no value is displayed (i.e. not the IP address of a previous successful login)
Selection of wireless network	-	C.93.37	Password 2a	Selection of wireless network. GPRS/ LTE cat.1 . Possible: • 2G • 4G • 4G – 2G fallback

Clock and call window

Name	Unit	OBIS	Security level	Description
Time	(z)hhmmss	0.9.1	Password 2a	Actual time
Date	(z)ddmmjj	0.9.2	Password 2a	Actual date
ns	s	C91.1	Password 2a	value where the status bit clock_set> ns is set
Time zone setting GMT offset	-	C.92.64	Password 2a	GMT time zone setting. To correct the clock at NTP.
SSW_modem_on	-	C.93.21	Password 2a	If the value is "on", after the object has been programmed, the modem will remain on regardless of which function the modem wants to turn on or off. If the value is set to "off", the UNICOM MODEM will start the service window. The modem is switched off after 30 minutes
Presentation scheduler DST	-	C.93.8	Password 2a	Switch for use scheduler clock in DST
Start date and time billing scheduler	-	C.90.12	Password 2a	Start date and time of the billing scheduler
Billing scheduler	-	C.90.11	Password 2a	Settings for billing scheduler
Start date and time service scheduler	-	C.90.33	Password 2a	Start date and time of the service scheduler
Service scheduler	-	C.90.34	Password 2a	Settings for service scheduler
Call window shortening Billing scheduler	-	C.93.16	Password 2a	Billing scheduler: •Call window shortening on / off •MonthSync window on / off
Call window shortening Service scheduler	-	C.93.36	Password 2a	Service scheduler: •Call window shortening on / off •MonthSync window on / off
MonthSync_amount Billing scheduler	-	C.90.35	Password 2a	The times (in days) that the billing scheduler must be executed at the time of synchronization
MonthSync_amount Service scheduler	-	C.90.36	Password 2a	Service scheduler: see C.90.35

10.2   UNICOM 300 datalogger

Device data

Name	Unit	OBIS	Security level	Description
Device type	-	C.1.1		Device type and version UNICOM 300
Serial number	-	C.1.0		Serial number of the UNICOM 300
Firmware version MODEM PCB	-	7-0:0.2.0		Firmware version UNICOM MODEM PCB
Firmware version LOGGER PCB		7-0:0.2.1		Firmware version UNICOM LOGGER PCB
Firmware CRC MODEM	-	C.91.3		16-bit CRC-value UNICOM Modem firmware
Firmware CRC LOGGER	-	C.91.4		16-bit CRC-value UNICOM LOGGER firmware
Track and Trace data	-	C.91.5		Track and trace data UNICOM PCA logger

Other settings

Name	Unit	OBIS	Security level	Description
Device address		C.90.1	Password 2a	Device address for IEC 62056-21 communication protocol
EAN-code		C.96.0	Password 2a	Customer specific code for the meter location
End of gas day	h	C.91.2	Password 2a	Moment when UNICOM 300 ends the day and logs in the monthly logger. If the log interval is at 24h, logging takes place in the interval logger and is also used for FTP
Gas meter Serial number	-	7-1:0.2.14	Password 2a	Serial number of the connected gas meter. When an encoder telework is used, the serial number is automatically taken over. In this case, the setting cannot be changed by the user
FLAG coding gas meter manufacturer	-	C.91.10	Password 2a	FLAG coding from the manufacturer of the gas meter (3 letters). When using an encoder telework, the FLAG code is automatically adopted. In this case, the setting cannot be changed by the user
Gas meter year of construction	-	C.91.11	Password 2a	Construction year of the gas meter. When an encoder telework is used, the year of construction is automatically adopted. In this case, the setting cannot be changed by the user
Broadcast mode	-	C.93.15	Password 2a	Response to a 1107 request. In "Off" UNICOM 300 does not respond if there is no device address in the request (transparent modem) With "On", there will be a response if there is no device address in the request (logger)
Setting interval time interval logger		0.8.5	Password 2a	Interval time for the interval logger P.01 Number of days in FTP file: 5 min = 10 days 10 min = 10 days 15 min = 31 days 30 min = 31 days 60 min = 61 days 1 day = 61 days
Stock lock	-	C.93.30	Password 2a	Activate or deactivate stock-lock or datalogger functions. Is set to Unlocked after a time-date synchronization
Security SW 5	-	C.93.24	SW5	Switch for activating protection by SW5. If value is On, then the parameters with protection SW5 are protected by means of switch SW5. If value is Off, then the parameters are either by SW5, or by PWD2

Counter values

Name	Unit	OBIS	Security level	Description
Counter value input 1	m³	1:23.0.0	SW2	Counter value input 1
Counter value input 2	m³	2:23.0.0	SW2	Counter value input 2
Counter value input 3	m³	3:23.0.0	SW2	Counter value input 3 Encoder

Settings for inputs

Name	Unit	OBIS	Security level	Description
INP1DIV	pulse/m³	1:0.7.2	SW2	Pulse ratio input 1
INP2DIV	pulse/m³	2:0.7.2	SW2	Pulse ratio input 2
sswEnc	-	C.93.40	Password 2a	Encoder input activation
sswPin2	-	C.93.41	Password 2a	Setting of input 2

Settings for warnings and alarms

Name	Unit	OBIS	Security level	Description
Alarm INP2 – INP1	m³	C.92.9	Password 2a	Alarm for volume difference between set channels by sswInpDiff '. If = 0, the volume difference function is disabled
sswInpDiff	-	C.93.39	Password 2a	Channels for determining volume difference

Settings for outputs

Name	Unit	OBIS	Security level	Description
OUT1_div	pulse/m³	C.94.1	SW2	Pulse ratio output 1
OUT2_div	pulse/m³	C.94.2	SW2	Pulse ratio output 2
SSW_ pulsout1	-	C.93.2	Password 2a	Switch for pulse output 1 At the moment of the creation of an Alarm1 an impulse of 0.1s is issued. If the status bit is then active, a pulse of 0.1 is issued every 5 minutes
SSW_ pulsout2	-	C.93.3	Password 2a	Switch for pulse output 2 (see also C.93.2)
SSW_Alarm mask 1	-	C.93.42	Password 2a	Bitmask for transmission error at status registers 7.1, 7.2 and 7.3 at alarm output
SSW_Alarm mask 2	-	C.93.43	Password 2a	Bitmask for transmission error at status registers 7.1, 7.2 and 7.3 at alarm output 2

Consumption Data

Name	Unit	OBIS	Security level	Description
UBatt LOGGER	mV	C.90.6		Voltage of the UNICOM 300
Battery hour counter LOGGER	h	C.6.0		Number of hours in operation

Flow

Name	Unit	OBIS	Security level	Description
Q1_nx5	m^3/h	1:43.0.0		Flow input 1, quantity under operating conditions based on moving average of n x 5 minutes
Q2_nx5	m^3/h	2:43.0.0		Flow input 2, quantity under operating conditions based on moving average of n x 5 minutes
Q3_nx5	m^3/h	3:43.0.0		Flow input 3, quantity under operating conditions based on moving average of n x 5 minutes
Flow determination n	-	C.93.1	Password 2a	Time basis for determination of flow Q based on the moving average of n units of 5 minutes

FTP settings

Name	Unit	OBIS	Security level	Description
FTP filename	-	C.91.8	Password 2a	Text for display in the file name. If this object is set to 00000000, the serial number of UNICOM 300 is issued in the file name. This object is also displayed in data read out
FTP interval	-	C.92.49	Password 2a	Interval for sending FTP messages. FTP config: off, 5, 10, 15, 30, 60 and 1440 minutes. At 1440 minutes (24 hours) the sending of FTP takes place on gas day (parameter C.91.2)
FTP Billing Data	-	C.92.56	Password 2a	Interval for sending the billing data in the FTP file. Daily, weekly or monthly intervals
FTP offset randomizer		C.92.69	Password 2a	Setting for maximum random value. A random value is determined that lies within the set interval. If an FTP file cannot be sent, a new random value is calculated; Settings are 5, 10, 15, 30 minutes, 1 hour, 2 hours and 3 hours

VDEW status registry

the VDEW status registry consists of 16 registrations of alarms and is represented as a hexadecimal number of 4 characters:

St: $V_1 V_2 V_3 V_4$

Bitnumber		Value St	Description	Condition / Event
15 / F	V_1	8, 9, A, B, C, D, E, F	-	
14 / E		4, 5, 6, 7, C, D, E, F	logger is erased	Event
13 / D		2, 3, 6, 7, A, B, E, F	-	
12 / C		1, 3, 5, 7, 9, B, D, F	-	
11 / B	V_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	SW5 has been operated during writing of OBIS parameter	Event
7	V_3	8, 9, A, B, C, D, E, F	-	
6		4, 5, 6, 7, C, D, E, F	UNICOM 300 had no power supply	Event
5		2, 3, 6, 7, A, B, E, F	Clock has been set with more than +/- *ns*	Event
4		1, 3, 5, 7, 9, B, D, F	A counter value has been set	Event
3	V_4	8, 9, A, B, C, D, E, F	DST active	Condition
2		4, 5, 6, 7, C, D, E, F	Fatal error; CRC-error	Event
1		2, 3, 6, 7, A, B, E, F	Alarm active: Differential Alarm input 1 and 2, Alarm input 2, error encoder readout	Event
0		1, 3, 5, 7, 9, B, D, F	Fatal error: battery / accu flat, watchdog error	Event

Status registry 1; operational status 1

St : $1_1 1_2 1_3 1_4$

Status		Weergave			Omschrijving
CRC-error LOGGER	1_1	8, 9, A, B, C, D, E, F	E	F	CRC error occurred in program memory of the processor of the top PCB. The memory is checked once per hour
Watchdog LOGGER		4, 5, 6, 7, C, D, E, F	E	E	Watchdog of the program of the processor of the top PCB has been activated
CRC-error MODEM		2, 3, 6, 7, A, B, E, F	E	D	CRC error occurred in program memory of the processor of the bottom PCB. The memory is checked once per hour
Watchdog MODEM		1, 3, 5, 7, 9, B, D, F	E	C	Watchdog of the program of the processor of the bottom PCB has been activated
Reset	1_2	8, 9, A, B, C, D, E, F	E	B	Software has been rebooted
External power		4, 5, 6, 7, C, D, E, F	C	A	External power supply present
Alarm ENCODER		2, 3, 6, 7, A, B, E, F	C	9	Readout values from encoder counter are unusable (BCC error) or a encoder reading is lower than counter reading Vm3. Vm3 will not be modified.
Counters set	1_3	4, 5, 6, 7, C, D, E, F	E	6	A counter reading has been set
Alarm switch program		2, 3, 6, 7, A, B, E, F	C	5	SW5 was operated
Low battery	1_4	1, 3, 5, 7, 9, B, D, F	C	0	Battery voltage too low (< 8.5 V) or Ah_used > Ah_new State is ended when SW 3 is operated

Status registry 2; operational status 2

St : $2_1 2_2 2_3 2_4$

| Weergave		Weergave			Omschrijving
Battery exchanged	2_1	2, 3, 6, 7, A, B, E, F	E	D	Battery exchanged through SW3
Alarm volume difference		1, 3, 5, 7, 9, B, D, F	E	C	Volume difference measured between inputs 1 and 2 equal to or higher than value Vm1Vm2_warning. See chapter 17 for more details
	2_2				No function
	2_3				No function
Clock set	2_4	8, 9, A, B, C, D, E, F	E	3	Clock set
Clock set > 10 sec.		4, 5, 6, 7, C, D, E, F	E	2	Clock has been moved by more than ns (register C.91.1) s, see also chapter 12.1, table "Clock and call window".
Log book cleared		2, 3, 6, 7, A, B, E, F	E	1	Status log book erased
Logger cleared		1, 3, 5, 7, 9, B, D, F	E	0	Interval logger, day logger or month logger erased

C= condition and E= event

Status registry 3; other alarm and warnings

St : $3_1 3_2 3_3 3_4$

| Weergave		Weergave			Omschrijving
Encoder enable	3_1	4, 5, 6, 7, C, D, E, F	C	E	Set if encoder initialization could not be performed. This to indicate that encoder is functionally switched on, but not read out.
Stock lock		2, 3, 6, 7, A, B, E, F	C	D	If stock lock is active, this status bit is set.
Alarm NTP		1, 3, 5, 7, 9, B, D, F	C	C	Set if deviation RTC clock and NTP clock is greater than C.92.95. Removed if deviation is smaller, or by setting the clock manually.
Logboek (O) full	3_2	8, 9, A, B, C, D, E, F	C	B	Status logbook is full; the oldest loggings will be overwritten. Is cancelled as soon as logbook is deleted.
Alarm input 1		1, 3, 5, 7, 9, B, D, F	C	8	Connected alarm contact open

C= condition and E= event

Appendix 1: Schematic display of the functionalities
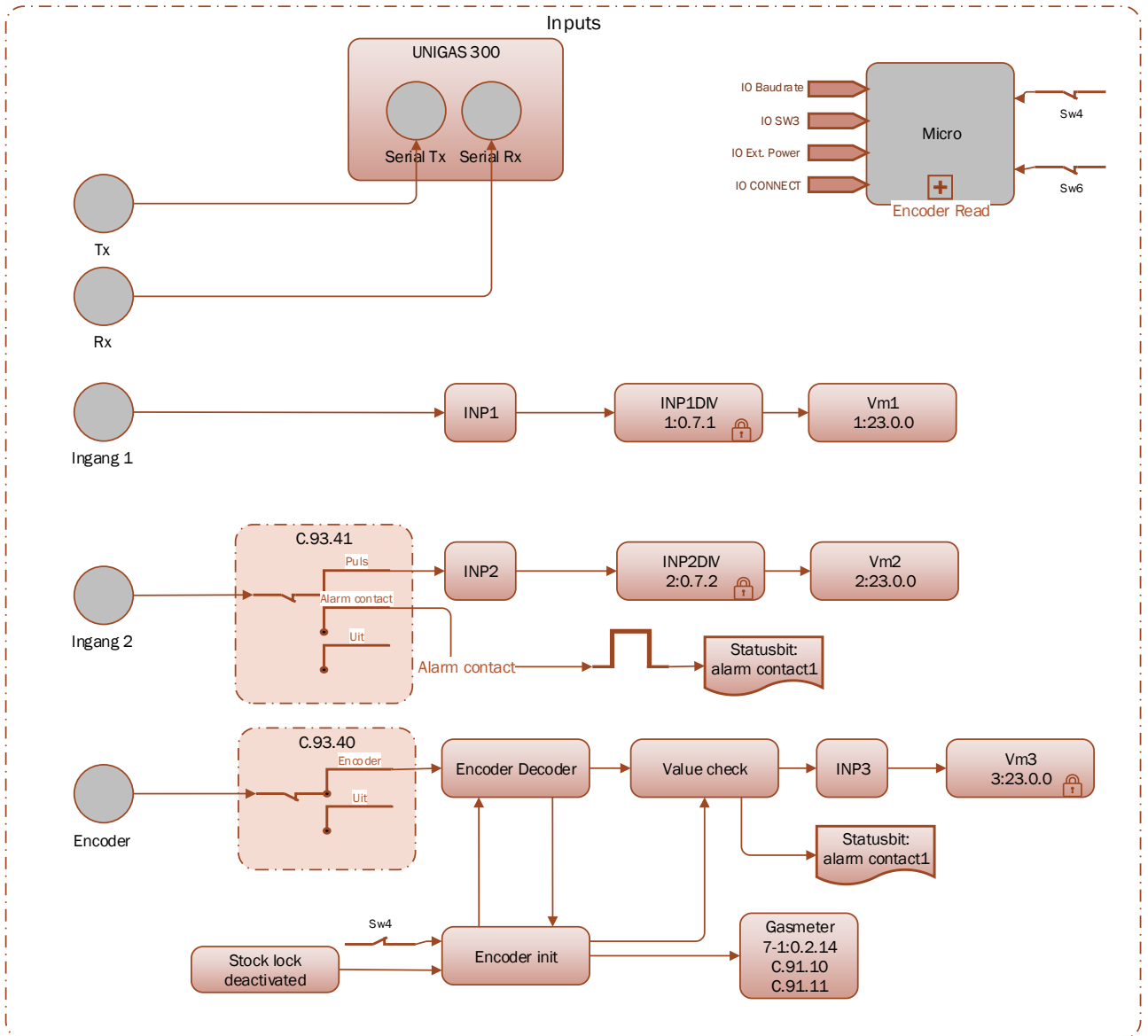
Schematic display of the functionalities of UNICOM 300 datalogger

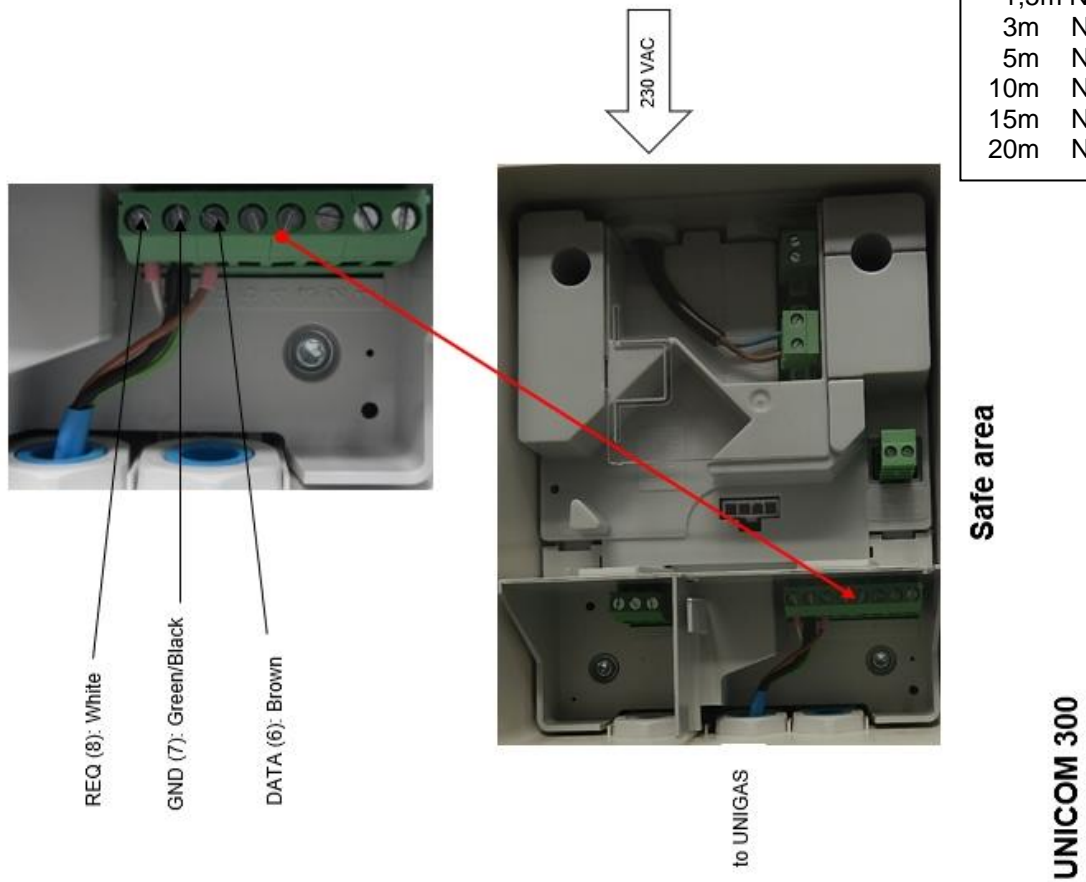# Appendix 2: Schematic display of the data structure
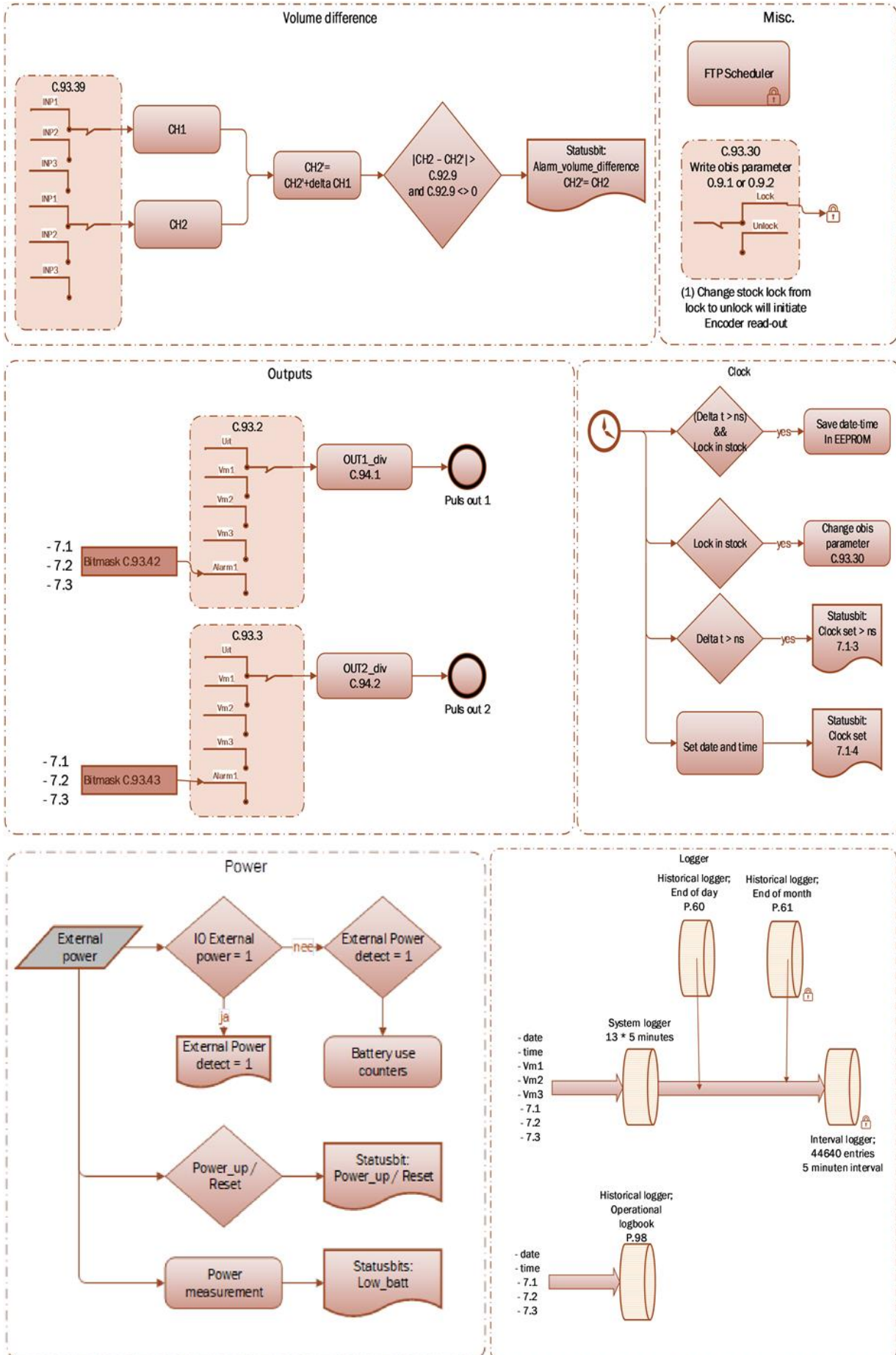
Schematic display of the data structure UNICOM 300 datalogger

Appendix 3: Wiring diagrams UNICOM 300 - UNIGAS 300
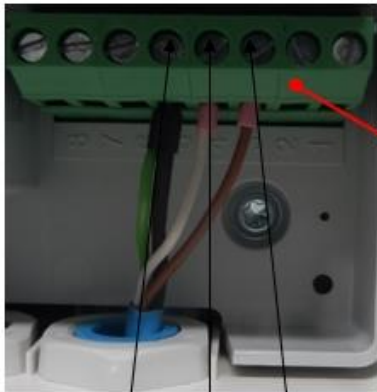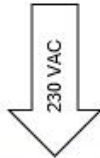
A. Serial connection between UNILOG 300 and UNIGAS 300

For the serial connection to UNIGAS 300 the optical connector cable is used.

Available lengths:	
0,3m	NN2430S
1,5m	NN2488S
3m	NN2442S
5m	NN2439S
10m	NN2437S
15m	NN2478S
20m	NN2486S

230 VAC

REQ (8): White

GND (7): Green/Black

DATA (6): Brown

to UNIGAS

Safe area

UNICOM 300

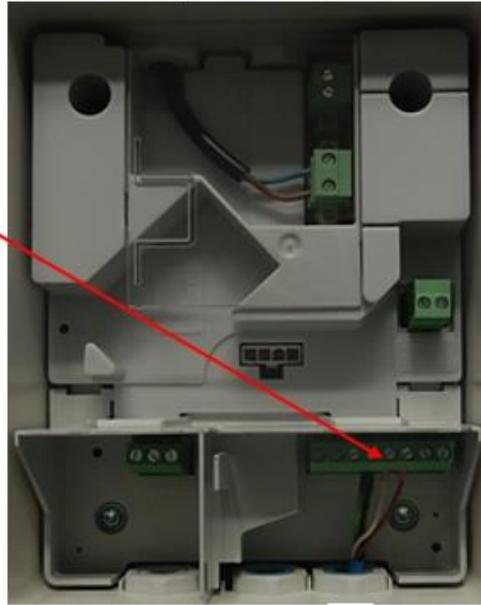UNIGAS 300

Hazardous area

to UNICOM

B.   Pulse connection between UNILOG 300 and UNIGAS 300
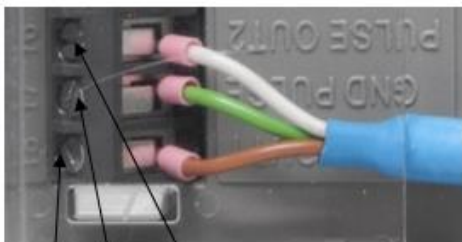
Available length:
5m   NN2647

230 VAC

GND (5): Green/Black

PULSE 2 (4): White

PULSE 1(3): Brown

Safe area

To UNIGAS

UNICOM 300

PULSE OUT 1 (18): Brown

GND PULSE (17): Green

PULSE OUT 2 (16): White

PULSE OUT2

GND PULS

UNIGAS 300

Hazardous area

To UNICOM

C. Pulse and external power supply connection between UNILOG 300 and UNIGAS 300

When replacing a UNILOG with a UNICOM power supply, it is possible to use the cable used with the UNILOG. Strip for the correct cable lengths of the 5 cores information below:

Green / Brown / White : 50 mm
Grey / Yellow   : 105 mm

Due to explosion safery it is strongly advised to use suitable wire ferrules.

Available lengths:	
0,65m	NN2662
1,5m	NN2663
3m	NN2664
5m	NN2665
10m	NN2666
15m	NN2667
20m	NN2668
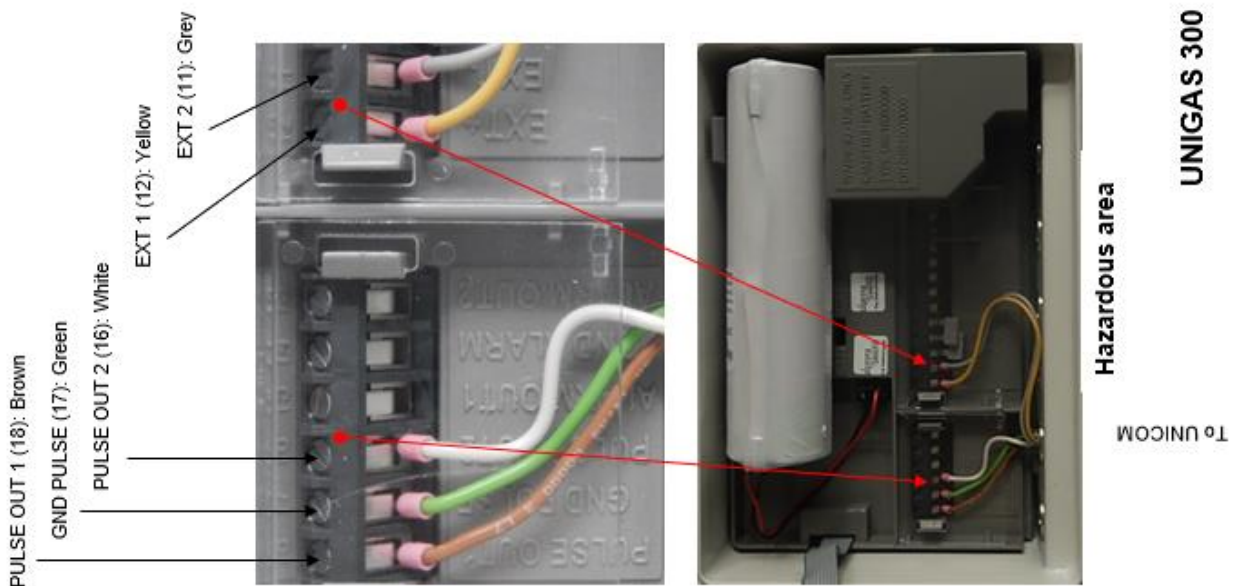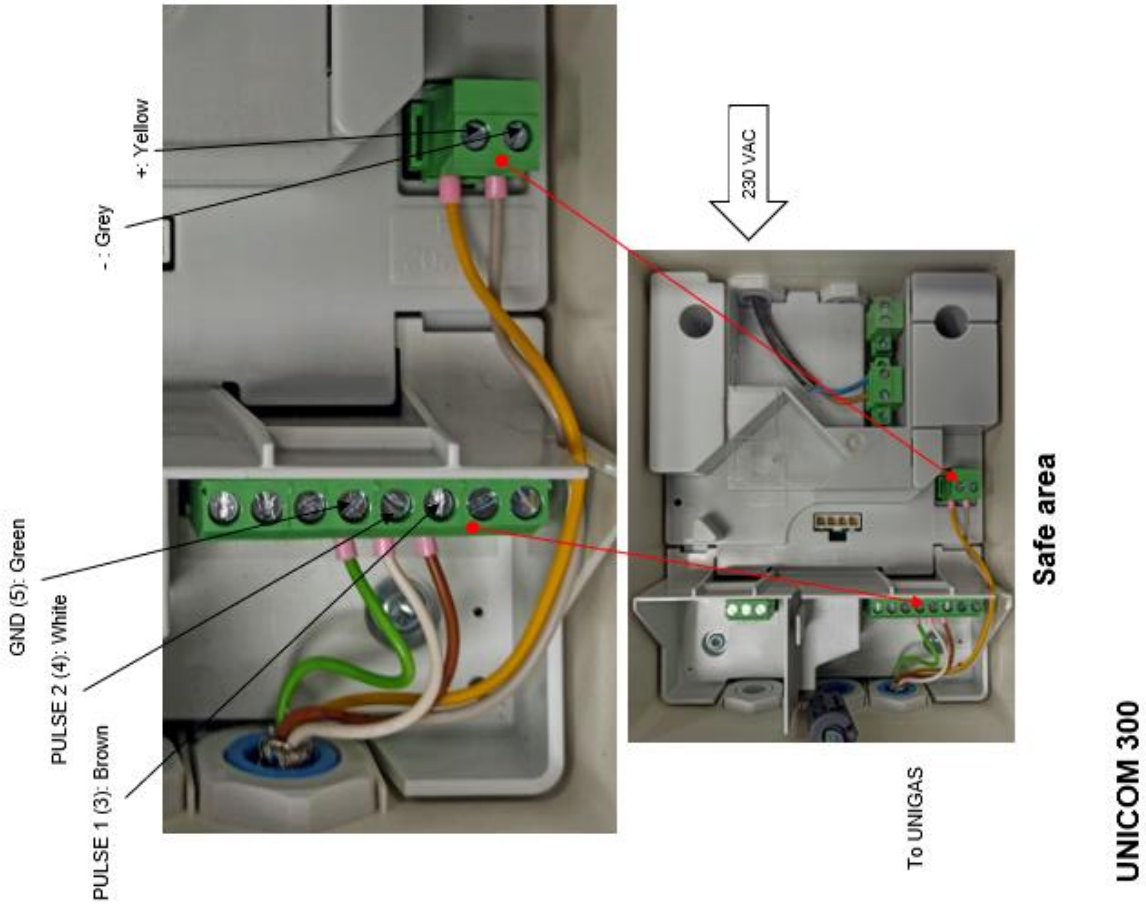
Appendix 4: Technical specification

Subject to changes

UNICOM 300

General

- Explosion safety   ATEX   ⟨Ex⟩   II (1) G [Ex ia Ga] IIC
  ta: -40° C to +60° C

  Suitable for natural gas installations
  Mounting in the safe area.

- Technical lifetime   15 years
- Weight   max 1.5 kg
- Dimensions h x w x d   approx. 140 x 200 x 85 mm
- Material casing   Polyester
- Color   RAL 9002 Grau Weiss
- Protection class   IP 65, suitable for continuous outdoor use
- Operating temperature AC mains   - 25 °C to + 60 °C, 0 – 100% RH condensing
- Operating temperature DC mains   - 40 °C to + 60 °C, 0 – 100% RH condensing
  - 25 °C to + 60 °C for backup battery
- System   low power microprocessor, MSP 430 series, 2 Mb EEprom memory
- Remote software update   Yes

Power supply input

- Two terminals for external power input

  - 9.0 VDC (15 – 32 32 VDC)   Pnom 0.5 W, Pmax 5 W
  - 115 or 230 VAC, 47 – 63 Hz   Pnom 0.5 W, Imax 0.1 A

Power supply output

- Two terminals for external power output

  - 9.0 V means for Modem   9.0 V ± 0.5 V, 3 W
  - 7.5 V with brown out for UNIGAS 300   7.5 V ± 1.5 V, 50 mA continue, 100 mA peak

Power supply status indicator

- 1 status internal indicator   Output power present

Back up battery

- Used for datalogger and time functions
  (no modem functions)
- Service life   Typical, 10 years
- Output   7,2 V, 1.2 Ah
- Minimum operation time   1000 hours
- Expected operation time   > 5000 hours

Communication ports

- Communication port for service   for serial communication with UNIGAS, infrared communication head according IEC 62056-21
- Baud rates   9600 baud full duplex

Status indicator Front

- Status indicator LED's

  Activated at placing optical head
  critical or pushbutton front

  - PWR (power supply status (Good; Low; Flat))
  - STATUS (stock-lock active, not active, error)
  - NETWORK (IP service status: Non; registering; attached)
  - WDS (network 2G/4G status: Non; registering; registered 2G; registered 4G; attached)
  - SIG 1 (Signal strength)
    Main cell   < - 92 dBm (medium)
    Main cell   < - 80 dBm (good)
  - SIG 2 (Not functional)
  - INIT (initialization first put into use)
  - DATA (received and sent data)

Real time clock

- Internal clock   yes, POSIX
- Internal synchronization   NTP
- Daylight saving time support   yes
- Back-up function (logger only)   back-up for few minutes clock running at power down or battery exchange.

Communication protocol

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

Integrated GPRS / LTE cat. 1 modem

- 4G-band   B1, B3, B7, B8, B20
- 2G-band   B3, B8
- Services   CSD, TCP, FTP, NTP
- Authentication   PAP, CHAP
- Operating temperature   - 40 °C to + 60 °C
- SIM card interface   mini SIM

Integrated GPRS / LTE cat. M1 modem

- 4G-band   B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B26, B27, B28, B66, B85
- 2G-band   B2, B3, B5, B8
- Services   TCP, FTP, NTP
- Authentication   PAP, CHAP
- Operating temperature   - 40 °C to + 60 °C
- SIM card interface   mini SIM

for integrated GPRS / LTE modem

- Activation service interval 30 minutes   Front push-button
- Flexible programmable scheduler   External; Started from external meter
- Flexible programmable billing scheduler   Internal
- Flexible programmable service scheduler   Internal

Scheduler for FTP client services

- Initiation FTP transfer   External; Started from Logger or UNIGAS

Service software PC platform

- UNITOOL   Windows 10

Status indicator

- 2 Status indicator LED's

  Diagnosis
  NAMUR Encoder counter initialization

Inputs

- Inputs LF 1 and 2
  pulse

  2 Hz max, reed and electronic switches with

  length min 50 ms
- Cable gland   Ø 4 -8 mm
- Resolution counters input 1, 2   XXXXXXXX.XXX
- Input 1 range pulse input ratio   XXXX.XX pulse/m3
- Input 2 range pulse input ratio   XXXX.XX pulse/m3
- Extended functions   Pulse difference to input 1,2 or 3 with
                                       programmable alarm

Encoder

- Support for Encoder counters   Manufacturer Itron, GWF, Honeywell (Elster),
                                       Dresser, FMG, RMG, GFO or RMA (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
  - Encoder initialization
  - after resolving Encoder read error
    (VDEW status bit 1)
- Resolution counter encoder   XXXXXXXX.XXX

Outputs

- Pulse outputs 1 and 2   Off, Vm1, Vm2, Vm3, Alarm1
- Max. frequency   2 Hz
- Pulse ratio   Equal as input or 1 – 100 m³/p, configurable
- Pulse width   100 ms (dependant on switching voltage and
                                       switching current)
- Switching voltage   Suitable switching voltage of 3 to 20 V with a
                                       switching current of 10 µA to 50 mA.

ATEX approved Um 250V. When mounted in Ex safe area, pulse outputs may be connected to other apparatus without additional Ex safety interfaces.

Loggers

- Interval logger   155 days 5 minutes interval,
- Historical end of month logger   36 months
- Historical end of day logger   100 days
- Operational logbook   360 events

Scheduler for FTP client services

- initiation FTP transfer   Internal

Antenna

- GSM antenna   Standard mounted, +2 dB
  SMA (f) connector for external antenna
- External GSM unidirectional antenna +6 dB   Optional (5 or 10 m cable)
- External GSM directional antenna +9 dB   Optional (5 m cable)

Barcode definitions

- Code 128, Mode B (customer specific)
- Data matrix DIN 43863-5 (fixed)
- Data matrix Wigersma en Sikkema

Specification mounting bracket for mounting UNICOM 300

General

- dimensions   approx. 180 x 50 mm
- material   Stainless steel
- Weight   0,2 kg

Specification universal mounting bracket for mounting UNICOM 300 with UNIGAS 300

General

- dimensions   approx. 40 x 240 mm
- material   Stainless steel
- Weight   0,2 kg

Appendix 5: Serial connections UNIGAS converters

Connector type				
Description		Cable color black with M12 Male connector	Cable color blue with M12 Male connector	Cable color blue with optical connector
UNIGAS EVC type		UNIGAS 61D or UNIGAS 61E	UNIGAS 61D or UNIGAS 61E	UNIGAS 300
Serial connections UNICOM 300	**REQ**	Brown	White	White
	GND	Black	Green/ black	Green/ black
	DATA	Blue	Brown	Brown