

# Flextronic Connectivity Guide

**ENG** Installation and operating instruction

- Flamconnect Gateway
- Analog outputs
- Digital (Discrete) outputs
- Building Management System (BMS) Interface



## Safety icons



Caution



High voltage



Hot surface



Corrosive



Magnetic field



Sharp object



Crushing of hands



Hand injury in Press



Low temperature



Toxic material



Hot steam



Hot content



General prohibition sign



Do not touch



No open flame



No tool



No pushing



Do not stare at light source



General mandatory action sign



Connect an earth terminal to the ground



Disconnect mains plug from outlet



Refer to instruction manual



Wash your hands



Wear head protection



Wear ear protection



Wear eye protection



Wear foot protection



Wear protective gloves



Wear a mask



Wear respiratory protection



Look carefully



230V required



2 person carrying



Heavy



Fragile



Do not throw in regular bin



Phillips screwdriver



Flat head screwdriver



Wrench



Drill



Qualified installer required

# Table of contents

|           |                                                  |           |
|-----------|--------------------------------------------------|-----------|
| <b>1.</b> | <b>Correct use .....</b>                         | <b>6</b>  |
| <b>2.</b> | <b>Product description.....</b>                  | <b>7</b>  |
| 2.1.      | Wiring details.....                              | 7         |
| 2.2.      | Flamconnect Gateway.....                         | 8         |
| 2.3.      | BMS Connectivity Modbus & Bacnet.....            | 10        |
| 2.4.      | Interconnected Flamco Automats .....             | 10        |
| 2.5.      | Digital (Discrete) output signals .....          | 12        |
| <b>3.</b> | <b>Wireless Configuration and settings .....</b> | <b>14</b> |
| 3.1.      | Communication Interface settings.....            | 14        |
| 3.2.      | Digital (Discrete) output programming.....       | 14        |
| <b>4.</b> | <b>Modbus mapping table .....</b>                | <b>16</b> |
| 4.1.      | Flamcomat .....                                  | 16        |
| 4.2.      | FlexFiller.....                                  | 18        |
| 4.3.      | Vacumat Eco G4.....                              | 23        |
| <b>5.</b> | <b>Bacnet mapping table.....</b>                 | <b>29</b> |
| 5.1.      | Flamcomat .....                                  | 29        |
| 5.2.      | Flexfiller.....                                  | 32        |
| 5.3.      | Vacumat Eco G4 .....                             | 36        |



This document is intended as a supplement to the product Installation and Operating instructions.

This instruction specifically supports the Flamcomat G4, Flexfiller and Vacumat Eco G4, in terms of safety, use and operation.

For installation instructions and further documentation in various languages, visit [www.flamco.aalberts-hfc.com/manuals](http://www.flamco.aalberts-hfc.com/manuals). Further product information can be requested from the relevant Flamco branch office.

Legend:



Home



Settings



General



Service info

# 1. Correct use

The Flextronic control unit must be used in accordance with this manual. The declaration of conformity in the original documentation still applies.

## 2. Product description

The Flextronic is a universal control unit for Flamco automats. It has a wide range of communication options that can be activated in the Flextronic accessories/advanced menu:

Unindicated ports are intended for specific Automat accessories or other operational purposes. They are not to be used for customer interface or communications.

### 2.1. Wiring details



1. Ethernet port for BMS integration, communicating in either the Modbus or Bacnet protocol.
2. USB port for saving the operational log or performing a Firmware update.
3. Canbus ports (paired for daisy chain) for the interconnection of multiple Flamco automats.
4. RS-485 ports (paired for daisy chain) for the Flamco Remote Gateway connection (Flamconnect) or alternatively for the BMS integration via Modbus or Bacnet.
5. Wireless interface (2.400...2.485 GHz) for pairing with a smartphone or a tablet.
6. Analog voltage output signals for remote indication of vessel level and system pressure (0-10V).
7. Digital (Discrete) output signals (250VAC, 5A max., potential free). Custom errors and warnings can be configured to the three ports in the Flextronic Alarms menu.

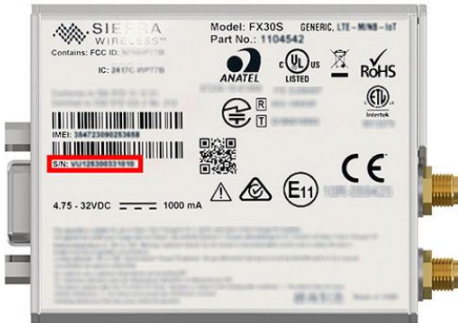
The installation, data processing and commissioning must be performed by trained, qualified and competent personnel. The appropriate national standards, regulations and rules must be followed. For installation instructions and further documentation in various languages, visit [www.flamco.aalberts-hfc.com/manuals](http://www.flamco.aalberts-hfc.com/manuals)

Additional cables are not included or supplied by Flamco.  
 Flamco recommends the use of twisted single pair shielded cable.  
 The termination resistor has a value of 120 Ohm.  
 The maximum permissible length of cables is 500 m.

## 2.2. Flamconnect Gateway

### Requirements for proper operation:

- There must be good GSM coverage where the gateway is located. If this is not the case, item 90009 can be ordered. This is an antenna with cable, the cable can be connected to the gateway, the antenna can be placed at a location with a good GSM network.
- Check whether the antenna is properly connected to the gateway.
- Communication from the Vacumat Eco G4 via RS485 port must be set to "gateway".
- The serial number required during registration can be found on the back of the gateway.



### Security

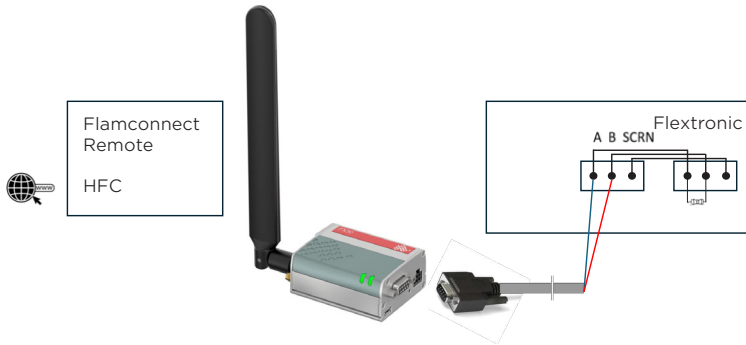
What safety measures are there?

We take your data very seriously, so we have a host of security measures in place to ensure your data stays safe. Below is a small subset of these measures to give an idea of their scope:

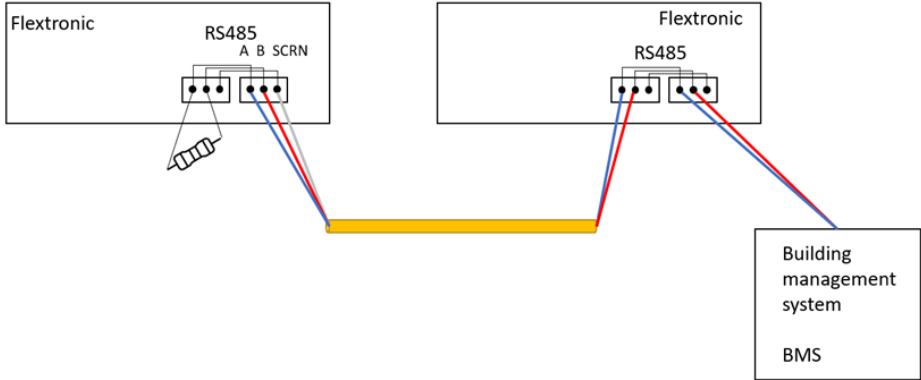
- The portal team has a daily focus on security, with peer reviews, static code checking, automated testing, etc.
- Security is designed into the multi-level portal. Developers, for example, must explicitly code for situations where they need data that would normally not be accessible to the logged in user, because otherwise that data is simply «invisible.»
- All access is password protected. All users are authorized using roles and permissions using standard Microsoft certified solutions.
- IoT connections are encrypted with TLS and access keys or certificates (depending on customer requirements).

- Our portal has measures to actively protect against CORS, XSS, Content-type sniffing, Framing, etc.
- Actions on sensitive data (e.g. device data / user accounts) are logged in an audit trail.
- Deployments are fully automated to avoid configuration errors that could lead to security breaches.
- Internal and external security is actively screened through pen tests and security audits.
- In addition to our built-in security measures, we can also configure additional measures, for example Cloudflare to protect against DDOS attacks or Azure API Management to throttle API clients that make too many requests.
- Last but not least, we use Microsoft Azure and all it has to offer in terms of security, data encrypted at rest, keyvaults, no practical physical access and of course their team of world class security experts!

By using Flamconnect Remote you agree to the Contract and Terms of Use”.



## 2.3. BMS Connectivity Modbus & Bacnet



Communication as both Modbus and Bacnet is not possible on the RS-485 BUS at the same time. If both protocols are required, one of the protocols must run over the Ethernet connection (IP).

When using the Flamconnect Remote Gateway, the RS485 port is dedicated to this feature. If Modbus or Bacnet is also required then this may only be achieved using the Ethernet port (IP).

## 2.4. Interconnected Flamco Automats

Please note that automats first need to be commissioned as a standalone automat, before the Co-Operation mode can be initiated. Make sure the automats intended for the Co- Operation mode are connected hydraulically to the same system.

All automats must be wired and connected via the same network. According to the Connectivity Guide the total cable length should not exceed 500m. Flamco does not provide a cable (Flamco recommends twisted single pair shielded cable).

In the Flextronic controller, the CAN-bus interface is used for the Co-Operation network. The termination resistor (120Ω) is provided by default on each Flextronic. The resistor should be installed only at the ends of the line as illustrated in the image below.

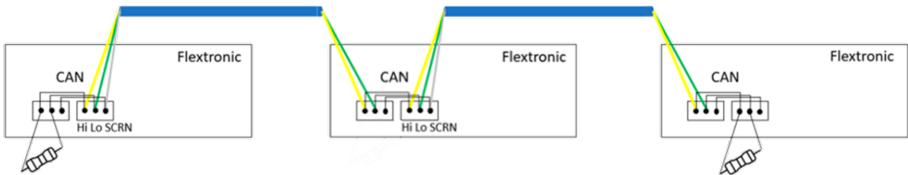
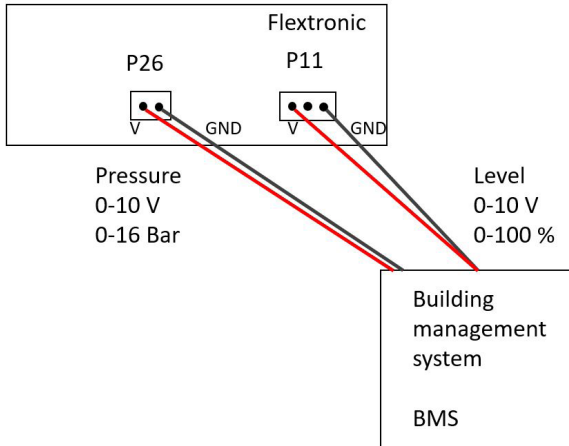


Figure: Connection example of CAN-bus interface

## 2.5 Analog output signals (customer)

To acquire the voltage analog signal of the system pressure and the vessel level.

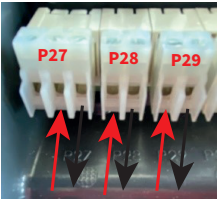


## 2.5. Digital (Discrete) output signals

**GUI settings:**  
Invert polarity: off

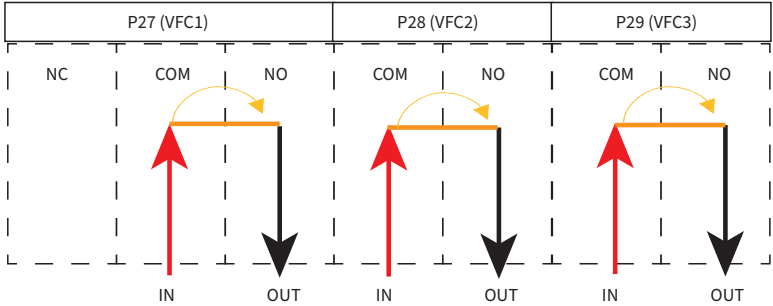
**Specifications of VFC:**  
5A @ 240VAC (non-inductive)

↑ Incoming signal from BMS  
↓ Returning signal to BMS  
— relay



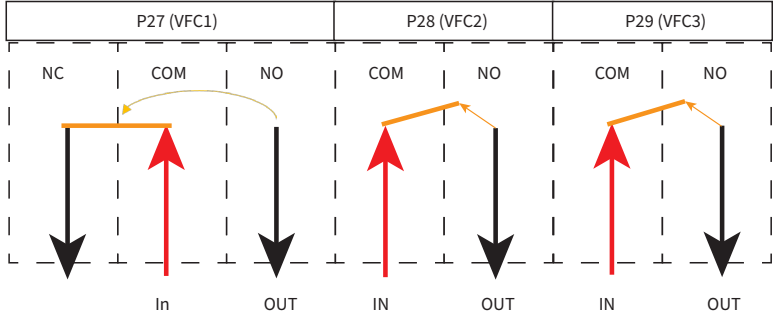
### No Fault

(NO) Relay closed at (NO) OUT when controller powered up and running without error



### Faulty

(NO) Relay openend at (NO) OUT when controller is powered down, running with error or cable broken



To acquire the status of the automat. The custom fault can be assigned to every output. Output P29 is a boiler interlock signal of the  $>110\text{ }^{\circ}\text{C}$  mode, it is not available for alarming in this mode.

## 3. Wireless Configuration and settings

Configuration is possible using the Flamconnect App.

To pair: enter the Passcode. It can be found on the QR-code label on the automat or displayed on the screen.

|                                                                                  |             |                                                       |                                                                                   |
|----------------------------------------------------------------------------------|-------------|-------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | System Info | To observe the automat and the controller information |  |
|----------------------------------------------------------------------------------|-------------|-------------------------------------------------------|-----------------------------------------------------------------------------------|

The configuration of the customer interfaces and the communication protocols is accessible in the controller menu.

|                                                                                  |             |                                              |                                                                                   |
|----------------------------------------------------------------------------------|-------------|----------------------------------------------|-----------------------------------------------------------------------------------|
|  | Accessoires | To activate the advanced automat accessories |  |
|----------------------------------------------------------------------------------|-------------|----------------------------------------------|-----------------------------------------------------------------------------------|

### 3.1. Communication Interface settings

#### Ethernet:

|            |                 |
|------------|-----------------|
| IP address | 192.168.100.150 |
| IP mask    | 255.255.255.0   |
| IP gateway | 192.168.100.1   |

#### RS-485:

Flextronic is slave.

|           |            |
|-----------|------------|
| Device ID | selectable |
| Baud rate | 19200      |
| Parity    | 8-n-1      |

It is possible to assign only one protocol at a time to the same interface. When the Remote Service Gateway is connected, the Modbus and Bacnet are not available over RS-485. Please use Ethernet port for BMS integration instead.



**Note:** Modbus has a U16 Limit therefore some U32 values are stored on 2 register addresses, these need to be combined to receive the actual U32 value (see Modbus tables in chapter 4).

### 3.2. Digital (Discrete) output programming

It is possible to assign custom fault(s) (errors and warnings) to the potential free digital (discrete) outputs. If more than one fault is assigned to the same output, the output becomes active if any of the assigned faults is active for that output.

Configuring of the faults is available in the Flextronic menu:

|                                                                                   |               |                                                                                |                                                                                   |
|-----------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|  | <p>Alarms</p> | <p>To assign the alarm message(s) to the relevant potential free output(s)</p> |  |
|-----------------------------------------------------------------------------------|---------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|

## 4. Modbus mapping table

### 4.1. Flamcomat

| Register | Access | Name                           | Type   | Unit | Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|--------|--------------------------------|--------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x0001   | R      | Current working pressure       | UINT16 | cbar | 0..16000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 0x0002   | R      | Current vessel level           | UINT16 | %    | 0..100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0x0003   | R      | Outputs state (1-on)           | UINT16 |      | Bit0: Motor 1 active<br>Bit1: Motor 2 active<br>Bit2: Valve 1 active<br>Bit3: Valve 2 active<br>Bit4: Valve 3 active<br>Bit8: Degassing On (Enabled)<br>Bit9: Degassing mode (0-normal, 1-turbo)<br>Bit 0: Single pump/ compressor maximum run time error<br>Bit 1: Redundant pumps/ compressor maximum run time error<br>Bit 2: Load dependant pumps/ compressor maximum run time error<br>Bit 3: Single pump/ compressor current error<br>Bit 4: Pump A current error (double pump/ compressor configuration)<br>Bit 5: Pump B current error (doublepump/ compressor configuration)<br>Bit 6: Pumps A and B current error (double pump/ compressor configuration)<br>Bit 7: Pump C/ compressor current error<br>Bit 8: Self-learning valve correction error<br>Bit 9: Self-learning pump correction error<br>Bit 10: Pressure sensor current exceeded<br>Bit 11: Pressure sensor no current<br>Bit 12: Load cell current exceeded<br>Bit 13: Load cell no current<br>Bit 14: Pump A/ compressor power consumption too high<br>Bit 15: Pump B/ compressor power consumption too high |
| 0x0004   | R      | Error table 1 (1-error active) | UINT16 |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

| Register | Access | Name                              | Type   | Unit  | Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|--------|-----------------------------------|--------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x0005   | R      | Error table 2<br>(1-error active) | UINT16 |       | <p>Bit 0: Pump C power consumption too high<br/>           Bit 1: Maximum Runtime P35 M1 exeeded<br/>           Bit 2: Maximum Runtime P36 M2 exeeded<br/>           Bit 3: Maximum supplation threaded water amount exeeded<br/>           Bit 4: Pump running, no decrease of water level in vessel*<br/>           Bit 5: Valve open, no increase of water level in vessel*<br/>           Bit 6: Maximum runtime P33 V1 exeeded<br/>           Bit 7: Maximum runtime P34 V2 exeeded<br/>           Bit 8: To run quick fill*<br/>           Bit 9: To run system fill*<br/>           Bit 10: System run in auto mode<br/>           Bit 11: Quick system filling active, V to stop*<br/>           Bit 12: System filling active, V to stop*<br/>           Bit 13: Manual mode active, press V to start automat<br/>           Bit 14: Diaphragm rupture<br/>           Bit 15: Spare</p> <p>Bit 0: Water level increase in vessel without Flamcomat activity*<br/>           Bit 1: Water level decrease in vessel without Flamcomat activity*<br/>           Bit 2: Maintenance 1 is due<br/>           Bit 3: Initial fill failed<br/>           Bit 4: Maximum refill time exeeded<br/>           Bit 5: Maximum drain time exeeded*<br/>           Bit 6: No refill flow<br/>           Bit 7: Amount refill water too much<br/>           Bit 8: Spare<br/>           Bit 9: Spare<br/>           Bit 10: Spare<br/>           Bit 11: Initial fill active<br/>           Bit 12: Manual initial fill active<br/>           Bit 13: System fill timer expired<br/>           Bit 14: Quick fill timer expired*<br/>           Bit 15: Maintenance 2 is due</p> <p>Bit 0: Maintenance 3 is due<br/>           Bit 1: Maintenance 4 is due<br/>           Bit 2: Spare<br/>           Bit 3: Spare<br/>           Bit 4: Spare<br/>           Bit 5: Spare<br/>           Bit 6: Spare<br/>           Bit 7: Spare<br/>           Bit 8: Spare<br/>           Bit 9: Spare<br/>           Bit 10: Spare<br/>           Bit 11: Spare<br/>           Bit 12: Spare<br/>           Bit 13: Spare<br/>           Bit 14: Spare<br/>           Bit 15: Spare</p> |
| 0x0006   | R      | Error table 3<br>(1-error active) | UINT16 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0x0007   | R      | Error table 4<br>(1-error active) | UINT16 |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 0x0008   | R      | Operational hours total           | UINT16 | hours |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Register | Access | Name                            | Type   | Unit   | Range                                                                                                                                                                                                                                                                                                                               |
|----------|--------|---------------------------------|--------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x0009   | R      | Availability ( 0 - No, 1 - Yes) | UINT16 |        | Bit 0: P35 M1 pressure increase<br>Bit 1: P36 M2 Pressure increase<br>Bit 2: P33 V1 (pressure decrease/ compressor valve)<br>Bit 3: P34 V2 (pressure decrease/ compressor valve)<br>Bit 4: P31 V3 (filling pump/ valve)<br>Bit 8: Minimum pressure limiter<br>Bit 9: Diaphragm rupture sensor<br>Bit 10: Maximum temperature sensor |
| 0x000A   | R      | Pressure setpoint               | UINT16 | cbar   | 0..16000                                                                                                                                                                                                                                                                                                                            |
| 0x000B   | R      | Minimum water level (absolute)  | UINT16 | %      |                                                                                                                                                                                                                                                                                                                                     |
| 0x000C   | R      | Level refeeding On (absolute)   | UINT16 | %      |                                                                                                                                                                                                                                                                                                                                     |
| 0x000D   | R      | Level refeeding Off (absolute)  | UINT16 | %      |                                                                                                                                                                                                                                                                                                                                     |
| 0x000E   | R      | Minimum level alarm limit       | UINT16 | %      |                                                                                                                                                                                                                                                                                                                                     |
| 0x000F   | R      | Maximum level alarm limit       | UINT16 | %      |                                                                                                                                                                                                                                                                                                                                     |
| 0x0010   | R      | Nominal volume of vessel        | UINT16 | l      |                                                                                                                                                                                                                                                                                                                                     |
| 0x0011   | R      | Operational mode                | UINT16 |        | 0 - single mode,<br>1 - redundant mode<br>2 - load-dependent                                                                                                                                                                                                                                                                        |
| 0x0012   | R      | Total refill liters             | UINT16 | l      |                                                                                                                                                                                                                                                                                                                                     |
| 0x0013   | R      | Total refill minutes            | UINT16 | minute |                                                                                                                                                                                                                                                                                                                                     |

\* Not applicable for the Flamcomat MK-U G4

## 4.2. FlexFiller

| Register | Access | Name                          | Type | Unit   | Formatting |
|----------|--------|-------------------------------|------|--------|------------|
| 0x0000   | R      | SystemPressure                | U16  | mbar   | Decimal    |
| 0x0001   | R      | SupplyPressure                | U16  | mbar   | Decimal    |
| 0x0002   | R      | TankLevel                     | U16  | %      | Decimal    |
| 0x0003   | R      | VacuumPressure                | U16  | mbar   | Decimal    |
| 0x000A   | R      | PressureSetpoint              | U16  | mbar   | Decimal    |
| 0x000B   | R      | SafetyValveSetting            | U16  | mbar   | Decimal    |
| 0x000C   | R      | Calculated_LowPressureAlarm   | U16  | mbar   | Decimal    |
| 0x000D   | R      | Calculated_High PressureAlarm | U16  | mbar   | Decimal    |
| 0x000E   | R      | VesselVolume                  | U16  | l      | Decimal    |
|          |        |                               |      |        |            |
| 0x0030   | R      | DigitalInput                  | U16  | Binary | NA         |

|        |   |                           |     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------|---|---------------------------|-----|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x0031 | R | DigitalOutput             | U16 | Binary | Bit 0: P36 (Pump 2 / NC)<br>Bit 1: P35 (Pump 1/Direct drain valve)<br>Bit 2: P34 (NC)<br>Bit 3: P33 (NC)<br>Bit 4: P32 (NC)<br>Bit 5: P31(Refill / Inlet valve)<br>Bit 6: P29 (VFC 1)<br>Bit 7: P28 (VFC 2)<br>Bit 8: P27 (VFC 3)                                                                                                                                                                                                                            |
| 0x0032 | R | AccessoryPresenceMask     | U16 | Binary | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 0x0033 | R | AccessoryPresenceMask     | U16 | Binary | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 0x0034 | R | DaysToTheNextMaintenance1 | U16 | count  | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 0x0035 | R | DaysToTheNextMaintenance2 | U16 | count  | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 0x0036 | R | DaysToTheNextMaintenance3 | U16 | count  | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 0x0037 | R | DaysToTheNextMaintenance4 | U16 | count  | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|        |   |                           |     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 0x0040 | R | Errors_3                  | U16 | Binary | NA (For Future Use)                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0x0041 | R | Errors_2                  | U16 | Binary | NA (For Future Use)                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0x0042 | R | Errors_1                  | U16 | Binary | NA (For Future Use)                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0x0043 | R | Errors_0                  | U16 | Binary | Bit 0: ALR_SYSTEM_PRESSURE_LOW<br>Bit 1: ALR_SYSTEM_PRESSURE_BELOW_MINIMUM<br>Bit 2: ALR_SYSTEM_PRESSURE_SENSOR_OOB_LOW<br>Bit 3: ALR_SYSTEM_PRESSURE_SENSOR_OOB_HIGH<br>Bit 4: ALR_SYSTEM_PRESSURE_HIGH<br>Bit 5: ALR_SYSTEM_FILL_TIMER_EXPIRED<br>Bit 6: ALR_SAFETY_VALVE_ACTIVE<br>Bit 7: ALR_VESSEL_PRECHARGE_LOST<br>Bit 8: ALR_PUMP_1_OVER_CURRENT<br>Bit 9: ALR_PUMP_2_OVER_CURRENT<br>Bit 10: ALR_PUMP_1_NO_CURRENT<br>Bit 11: ALR_PUMP_2_NO_CURRENT |
| 0x0044 | R | Warnings_0                | U16 | Binary | NA (For Future Use)                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0x0045 | R | Warnings_1                | U16 | Binary | Bit 0: WRN_SYPHON_FLUSH_DETECTED                                                                                                                                                                                                                                                                                                                                                                                                                             |

|        |   |            |     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------|---|------------|-----|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0x0046 | R | Warnings_2 | U16 | Binary | Bit 0: WRN_SYSTEM_FILL_ACTIVE<br>Bit 1: WRN_SYSTEM_FILL_ON_HOLD<br>Bit 2: WRN_ANTI_LEGIONELLA_RUNNING<br>Bit 3: WRN_DEVICE_REBOOT<br>Bit 4: WRN_TANK_LEVEL_SENSOR_OOB_LOW<br>Bit 5: WRN_TANK_LEVEL_SENSOR_OOB_HIGH<br>Bit 6: WRN_PUMP_DRY_RUN<br>Bit 8: WRN_MANUAL_SYSTEM_FILL                                                                                                                                                                                                           |
| 0x0046 | R | Warnings_2 | U16 | Binary | Bit 9: WRN_PUMP_1_RUNTIME<br>Bit 10: WRN_PUMP_2_RUNTIME<br>Bit 11: WRN_ANTI_LEGIONELLA_RECOVERY<br>Bit 12: WRN_VACUUM_PRESSURE_SENSOR_OOB_LOW<br>Bit 13: WRN_VACUUM_PRESSURE_SENSOR_OOB_HIGH<br>Bit 14: WRN_FILTER_FULL<br>Bit 15: WRN_VACUUM_ERROR                                                                                                                                                                                                                                      |
| 0x0047 | R | Warnings_3 | U16 | Binary | Bit 0: WRN_SYSTEM_PRESSURE_HIGH<br>Bit 1: WRN_MAX_AMOUNT_TOPUP_WATER<br>Bit 2: WRN_SYSTEM_PRESSURE_LOW<br>Bit 3: WRN_NUMBER_OF_TOPUPS<br>Bit 4: WRN_SUPPLY_PRESSURE_TOO_LOW<br>Bit 5: WRN_SUPPLY_PRESSURE_TOO_HIGH<br>Bit 6: WRN_SUPPLY_PRESSURE_SENSOR_OOB_LOW<br>Bit 7: WRN_SUPPLY_PRESSURE_SENSOR_OOB_HIGH<br>Bit 8: WRN_SYSTEM_FILL_SELF_LEARNING<br>Bit 9: WRN_MANUAL_MODE<br>Bit 10: WRN_MAXIMUM_TOPUP_TIME_EXCEEDED<br>Bit 11: WRN_NO_TOPUP_FLOW<br>Bit 12: WRN_MAINTENANCE_1_DUE |

|        |   |                     |     |        |                                                                                                             |
|--------|---|---------------------|-----|--------|-------------------------------------------------------------------------------------------------------------|
| 0x0047 | R | Warnings_3          | U16 | Binary | Bit 13: WRN_<br>MAINTENANCE_2_DUE<br>Bit 14: WRN_<br>MAINTENANCE_3_DUE<br>Bit 15: WRN_<br>MAINTENANCE_4_DUE |
| 0x0050 | R | OverallRuntime_H    | U16 | h      | Decimal (Combine<br>0x0050&0x0051 to read<br>the full U32 value)                                            |
| 0x0051 | R | OverallRuntime_L    | U16 | h      | Decimal (Combine<br>0x0050&0x0051 to read<br>the full U32 value)                                            |
| 0x0052 | R | TotalFilledVolume_H | U16 | ml     | Decimal (Combine<br>0x0052&0x0053 to read<br>the full U32 value)                                            |
| 0x0053 | R | TotalFilledVolume_L | U16 | ml     | Decimal (Combine<br>0x0052&0x0053 to read<br>the full U32 value)                                            |
| 0x0054 | R | TotalFillTime_H     | U16 | s      | Decimal (Combine<br>0x0054&0x0055 to read<br>the full U32 value)                                            |
| 0x0055 | R | TotalFillTime_L     | U16 | s      | Decimal (Combine<br>0x0054&0x0055 to read<br>the full U32 value)                                            |
| 0x0056 | R | ActivationsMv1_H    | U16 | count  | Decimal (Combine<br>0x0056&0x0057 to read<br>the full U32 value)                                            |
| 0x0057 | R | ActivationsMv1_L    | U16 | count  | Decimal (Combine<br>0x0056&0x0057 to read<br>the full U32 value)                                            |
| 0x0058 | R | ActivationsMv2_H    | U16 | count  | Decimal (Combine<br>0x0058&0x0059 to read<br>the full U32 value)                                            |
| 0x0059 | R | ActivationsMv2_L    | U16 | count  | Decimal (Combine<br>0x0058&0x0059 to read<br>the full U32 value)                                            |
| 0x005A | R | RuntimeMv1_H        | U16 | s      | Decimal (Combine<br>0x005A&0x005B to read<br>the full U32 value)                                            |
| 0x005B | R | RuntimeMv1_L        | U16 | s      | Decimal (Combine<br>0x005A&0x005B to read<br>the full U32 value)                                            |
| 0x005C | R | RuntimeMv2_H        | U16 | s      | Decimal (Combine<br>0x005C&0x005D to read<br>the full U32 value)                                            |
| 0x005D | R | RuntimeMv2_L        | U16 | s      | Decimal (Combine<br>0x005C&0x005D to read<br>the full U32 value)                                            |
| 0x005E | R | ActivationsPump1_H  | U16 | count  | Decimal (Combine<br>0x005E&0x005F to read<br>the full U32 value)                                            |
| 0x005F | R | ActivationsPump1_L  | U16 | count  | Decimal (Combine<br>0x005E&0x005F to read<br>the full U32 value)                                            |
| 0x0060 | R | ActivationsPump2_H  | U16 | count  | Decimal (Combine<br>0x0060&0x0061 to read<br>the full U32 value)                                            |
| 0x0061 | R | ActivationsPump2_L  | U16 | count  | Decimal (Combine<br>0x0060&0x0061 to read<br>the full U32 value)                                            |

|        |   |                          |     |       |                                                            |
|--------|---|--------------------------|-----|-------|------------------------------------------------------------|
| 0x0062 | R | ActivationsValve1_H      | U16 | count | Decimal (Combine 0x0062&0x0063 to read the full U32 value) |
| 0x0063 | R | ActivationsValve1_L      | U16 | count | Decimal (Combine 0x0062&0x0063 to read the full U32 value) |
| 0x0064 | R | RuntimePump1_H           | U16 | s     | Decimal (Combine 0x0064&0x0065 to read the full U32 value) |
| 0x0065 | R | RuntimePump1_L           | U16 | s     | Decimal (Combine 0x0064&0x0065 to read the full U32 value) |
| 0x0066 | R | RuntimePump2_H           | U16 | s     | Decimal (Combine 0x0066&0x0067 to read the full U32 value) |
| 0x0067 | R | RuntimePump2_L           | U16 | s     | Decimal (Combine 0x0066&0x0067 to read the full U32 value) |
| 0x0068 | R | RuntimeValve1_H          | U16 | s     | Decimal (Combine 0x0068&0x0069 to read the full U32 value) |
| 0x0069 | R | RuntimeValve1_L          | U16 | s     | Decimal (Combine 0x0068&0x0069 to read the full U32 value) |
| 0x006A | R | NrOfNormalTopUps_H       | U16 | count | Decimal (Combine 0x006A&0x006B to read the full U32 value) |
| 0x006B | R | NrOfNormalTopUps_L       | U16 | count | Decimal (Combine 0x006A&0x006B to read the full U32 value) |
| 0x006C | R | NrOfEmergencyStops_H     | U16 | count | Decimal (Combine 0x006C&0x006D to read the full U32 value) |
| 0x006D | R | NrOfEmergencyStops_L     | U16 | count | Decimal (Combine 0x006C&0x006D to read the full U32 value) |
| 0x006E | R | SafetyValveActivations_H | U16 | count | Decimal (Combine 0x006E&0x006F to read the full U32 value) |
| 0x006F | R | SafetyValveActivations_L | U16 | count | Decimal (Combine 0x006E&0x006F to read the full U32 value) |
| 0x0070 | R | ActivationsVfc1_H        | U16 | count | Decimal (Combine 0x0070&0x0071 to read the full U32 value) |
| 0x0071 | R | ActivationsVfc1_L        | U16 | count | Decimal (Combine 0x0070&0x0071 to read the full U32 value) |
| 0x0072 | R | ActivationsVfc2_H        | U16 | count | Decimal (Combine 0x0072&0x0073 to read the full U32 value) |
| 0x0073 | R | ActivationsVfc2_L        | U16 | count | Decimal (Combine 0x0072&0x0073 to read the full U32 value) |
| 0x0074 | R | ActivationsVfc3_H        | U16 | count | Decimal (Combine 0x0074&0x0075 to read the full U32 value) |
| 0x0075 | R | ActivationsVfc3_L        | U16 | count | Decimal (Combine 0x0074&0x0075 to read the full U32 value) |

### 4.3. Vacumat Eco G4

| Function code       | Address | Access | Name                    | Type | Unit   | Formatting |                                          |
|---------------------|---------|--------|-------------------------|------|--------|------------|------------------------------------------|
| Input register 0x04 | 0x0000  | R      | System Pressure         | S16  | mbar   | Decimal    |                                          |
| Input register 0x04 | 0x0001  | R      | Vacuum Pressure         | S16  | mbar   | Decimal    |                                          |
| Input register 0x04 | 0x0002  | R      | Temperature             | S16  | cdeg C | Decimal    |                                          |
| Input register 0x04 | 0x000A  | R      | Pressure Setpoint       | U16  | mbar   | Decimal    |                                          |
| Input register 0x04 | 0x000B  | R      | SafetyValve Setting     | U16  | mbar   | Decimal    |                                          |
| Input register 0x04 | 0x000C  | R      | LowPressure AlarmLimit  | U16  | mbar   | Decimal    |                                          |
| Input register 0x04 | 0x000D  | R      | HighPressure AlarmLimit | U16  | mbar   | Decimal    |                                          |
| Input register 0x04 | 0x0030  | R      | DigitalInput            | U16  | Binary | Bit 0      | P18 level switch                         |
|                     |         |        |                         |      |        | Bit 1      | P19 Water meter input                    |
|                     |         |        |                         |      |        | Bit 2      | P20 NA                                   |
|                     |         |        |                         |      |        | Bit 3      | P21 External Top-up in                   |
|                     |         |        |                         |      |        | Bit 4      | P22 Gassensor                            |
|                     |         |        |                         |      |        | Bit 5      | P23 NA                                   |
|                     |         |        |                         |      |        | Bit 6      | P24 Pump Fault Contact                   |
|                     |         |        |                         |      |        | Bit 7      | P25 Standby input                        |
| Input register 0x04 | 0x0031  | R      | DigitalOutput           | U16  | Binary | Bit 8-15   | NA                                       |
|                     |         |        |                         |      |        | Bit 0      | P36 (Pump 2 ENA only)                    |
|                     |         |        |                         |      |        | Bit 1      | P35 (Pump 1)                             |
|                     |         |        |                         |      |        | Bit 2      | P34 (NA)                                 |
|                     |         |        |                         |      |        | Bit 3      | P33 (Vacumat: 3 way valve / ENA: Valve1) |
|                     |         |        |                         |      |        | Bit 4      | P32 (NA)                                 |
|                     |         |        |                         |      |        | Bit 5      | P31 (Vacumat: NA / ENA: System fill)     |
|                     |         |        |                         |      |        | Bit 6      | P29 (VFC 1)                              |
|                     |         |        |                         |      |        | Bit 7      | P28 (VFC 2)                              |
|                     |         |        |                         |      |        | Bit 8      | P27 (VFC 3)                              |
|                     |         |        |                         |      |        | Bit 9-15   | NA                                       |

|                        |        |   |                               |     |        |                     |
|------------------------|--------|---|-------------------------------|-----|--------|---------------------|
| Input register<br>0x04 | 0x0032 | R | AccessoryPresence<br>Mask     | U16 | Binary | NA                  |
| Input register<br>0x04 | 0x0033 | R | AccessoryPresence<br>Mask     | U16 | Binary | NA                  |
| Input register<br>0x04 | 0x0034 | R | DaysToTheNext<br>Maintenance1 | U16 | count  | Decimal             |
| Input register<br>0x04 | 0x0035 | R | DaysToTheNext<br>Maintenance2 | U16 | count  | NA (For Future Use) |
| Input register<br>0x04 | 0x0036 | R | DaysToTheNext<br>Maintenance3 | U16 | count  | NA (For Future Use) |
| Input register<br>0x04 | 0x0037 | R | DaysToTheNext<br>Maintenance4 | U16 | count  | NA (For Future Use) |
| Input register<br>0x04 | 0x0040 | R | Errors_3                      | U16 | Binary | NA (For Future Use) |
| Input register<br>0x04 | 0x0041 | R | Errors_2                      | U16 | Binary | NA (For Future Use) |
| Input register<br>0x04 | 0x0042 | R | Errors_1                      | U16 | Binary | NA (For Future Use) |

|                        |        |   |            |     |        |                     |                                                 |
|------------------------|--------|---|------------|-----|--------|---------------------|-------------------------------------------------|
| Input register<br>0x04 | 0x0043 | R | Errors_0   | U16 | Binary | Bit 0               | ALR_SYSTEM_<br>PRESSURE_LOW                     |
|                        |        |   |            |     |        | Bit 1               | ALR_SYSTEM_<br>PRESSURE_<br>BELOW_MINIMUM       |
|                        |        |   |            |     |        | Bit 2               | ALR_SYSTEM_<br>PRESSURE_<br>SENSOR_OOB_<br>LOW  |
|                        |        |   |            |     |        | Bit 3               | ALR_SYSTEM_<br>PRESSURE_<br>SENSOR_OOB_<br>HIGH |
|                        |        |   |            |     |        | Bit 4               | ALR_SYSTEM_<br>PRESSURE_HIGH                    |
|                        |        |   |            |     |        | Bit 5               | ALR_VACUUM_<br>PRESSURE_<br>SENSOR_OOB_<br>LOW  |
|                        |        |   |            |     |        | Bit 6               | ALR_VACUUM_<br>PRESSURE_<br>SENSOR_OOB_<br>HIGH |
|                        |        |   |            |     |        | Bit 7               | ALR_<br>TEMPERATURE_<br>SENSOR_<br>OOB_LOW      |
|                        |        |   |            |     |        | Bit 8               | ALR_<br>TEMPERATURE_<br>SENSOR_OOB_<br>HIGH     |
|                        |        |   |            |     |        | Bit 9               | ALR_PUMP_<br>OVER_CURRENT                       |
|                        |        |   |            |     |        | Bit 10              | ALR_PUMP_NO_<br>CURRENT                         |
|                        |        |   |            |     |        | Bit 11              | ALR_VACUUM_<br>ERROR                            |
|                        |        |   |            |     |        | Bit 12              | ALR_LOW_<br>WATER_LEVEL                         |
|                        |        |   |            |     |        | Bit 13              | ALR_<br>TEMPERATURE_<br>RANGE_<br>UNDERSHOT     |
|                        |        |   |            |     |        | Bit 14              | ALR_<br>TEMPERATURE_<br>RANGE_<br>OVERSHOT      |
|                        |        |   |            |     |        | Bit 15              | ALR_VACUUM_<br>TEST_FAILED                      |
| Input register<br>0x04 | 0x0044 | R | Warnings_3 | U16 | Binary | NA (For Future Use) |                                                 |
| Input register<br>0x04 | 0x0045 | R | Warnings_2 | U16 | Binary | NA (For Future Use) |                                                 |

|                        |        |   |            |     |        |          |                                          |
|------------------------|--------|---|------------|-----|--------|----------|------------------------------------------|
| Input register<br>0x04 | 0x0046 | R | Warnings_1 | U16 | Binary | Bit 0    | WRN_VACUUM_<br>PRESSURE_TOO_<br>LOW      |
|                        |        |   |            |     |        | Bit 1    | WRN_VACUUM_<br>PRESSURE_TOO_<br>HIGH     |
|                        |        |   |            |     |        | Bit 2    | WRN_<br>CONSTANTLY_<br>GAS_DETECTED      |
|                        |        |   |            |     |        | Bit 3    | WRN_VACUUM_<br>TEST_IN_<br>PROGRESS      |
|                        |        |   |            |     |        | Bit 4-15 | NA                                       |
| Input register<br>0x04 | 0x0047 | R | Warnings_0 | U16 | Binary | Bit 0    | WRN_SYSTEM_<br>PRESSURE_LOW              |
|                        |        |   |            |     |        | Bit 1    | WRN_SYSTEM_<br>PRESSURE_HIGH             |
|                        |        |   |            |     |        | Bit 2    | WRN_NO_<br>REFILL_FLOW                   |
|                        |        |   |            |     |        | Bit 3    | WRN_TIME_<br>BETWEEN_<br>REFILLS         |
|                        |        |   |            |     |        | Bit 4    | WRN_NUMBER_<br>OF_REFILLS                |
|                        |        |   |            |     |        | Bit 5    | WRN_FILLING_<br>WITHOUT_<br>REQUEST      |
|                        |        |   |            |     |        | Bit 6    | WRN_MAX_<br>AMOUNT_<br>REFILL_WATER      |
|                        |        |   |            |     |        | Bit 7    | WRN_REFILL_<br>RUNTIME_<br>EXCEEDED      |
|                        |        |   |            |     |        | Bit 8    | WRN_<br>MAINTENANCE_<br>_1_DUE           |
|                        |        |   |            |     |        | Bit 9    | WRN_TP_<br>_MOTOR                        |
|                        |        |   |            |     |        | Bit 10   | WRN_MANUAL_<br>_MODE                     |
|                        |        |   |            |     |        | Bit 11   | WRN_DEVICE_<br>REBOOT                    |
|                        |        |   |            |     |        | Bit 12   | NA                                       |
|                        |        |   |            |     |        | Bit 13   | WRN_FILTER_<br>FULL                      |
|                        |        |   |            |     |        | Bit 14   | WRN_<br>EXTERNAL_<br>STANDBY_<br>REQUEST |
|                        |        |   |            |     |        | Bit 15   | WRN_INTERNAL_<br>STANDBY                 |

|                        |        |   |                                    |     |       |         |
|------------------------|--------|---|------------------------------------|-----|-------|---------|
| Input register<br>0x04 | 0x0050 | R | OverallRuntime_H                   | U16 | H     | Decimal |
| Input register<br>0x04 | 0x0051 | R | OverallRuntime_L                   | U16 | H     | Decimal |
| Input register<br>0x04 | 0x0052 | R | TotalFilledVolume_H                | U16 | L     | Decimal |
| Input register<br>0x04 | 0x0053 | R | TotalFilledVolume_L                | U16 | L     | Decimal |
| Input register<br>0x04 | 0x0054 | R | TotalFillTime_H                    | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0055 | R | TotalFillTime_L                    | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0056 | R | Total number<br>degassing cycles_H | U16 | count | Decimal |
| Input register<br>0x04 | 0x0057 | R | TotalNumber<br>DegassingCycles_L   | U16 | count | Decimal |
| Input register<br>0x04 | 0x0058 | R | nr of topups_H                     | U16 | count | Decimal |
| Input register<br>0x04 | 0x0059 | R | nr of topups_L                     | U16 | count | Decimal |
| Input register<br>0x04 | 0x005A | R | ActivationsPump_H                  | U16 | count | Decimal |
| Input register<br>0x04 | 0x005B | R | ActivationsPump_L                  | U16 | count | Decimal |
| Input register<br>0x04 | 0x005C | R | ActivationsValve1_H                | U16 | count | Decimal |
| Input register<br>0x04 | 0x005D | R | ActivationsValve1_L                | U16 | count | Decimal |
| Input register<br>0x04 | 0x005E | R | ActivationsValve2_H                | U16 | count | Decimal |
| Input register<br>0x04 | 0x005F | R | ActivationsValve2_L                | U16 | count | Decimal |
| Input register<br>0x04 | 0x0060 | R | RuntimePump_H                      | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0061 | R | RuntimePump_L                      | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0062 | R | RuntimeValve1_H                    | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0063 | R | RuntimeValve1_L                    | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0064 | R | RuntimeValve2_H                    | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0065 | R | RuntimeValve2_L                    | U16 | S     | Decimal |
| Input register<br>0x04 | 0x0066 | R | SumOfGasEvacuation<br>Times_H      | U16 | count | Decimal |
| Input register<br>0x04 | 0x0067 | R | SumOfGasEvacuation<br>Times_L      | U16 | count | Decimal |

|                        |        |   |                              |     |       |                     |
|------------------------|--------|---|------------------------------|-----|-------|---------------------|
| Input register<br>0x04 | 0x0068 | R | NA (For Future Use)          |     | -     | NA (For Future Use) |
| Input register<br>0x04 | 0x0069 | R | NA (For Future Use)          |     | -     | NA (For Future Use) |
| Input register<br>0x04 | 0x006A | R | LevelSwitchActivations<br>_H | U16 | count | Decimal             |
| Input register<br>0x04 | 0x006B | R | LevelSwitchActivations<br>_L | U16 | count | Decimal             |
| Input register<br>0x04 | 0x006C | R | GasSensorActivations<br>_H   | U16 | count | Decimal             |
| Input register<br>0x04 | 0x006D | R | GasSensorActivations<br>_L   | U16 | count | Decimal             |
| Input register<br>0x04 | 0x006E | R | ActivationsVfc1<br>_H        | U16 | count | Decimal             |
| Input register<br>0x04 | 0x006F | R | ActivationsVfc1<br>_L        | U16 | count | Decimal             |
| Input register<br>0x04 | 0x0070 | R | ActivationsVfc2<br>_H        | U16 | count | Decimal             |
| Input register<br>0x04 | 0x0071 | R | ActivationsVfc2<br>_L        | U16 | count | Decimal             |
| Input register<br>0x04 | 0x0072 | R | ActivationsVfc3<br>_H        | U16 | count | Decimal             |
| Input register<br>0x04 | 0x0073 | R | ActivationsVfc3_L            | U16 | count | Decimal             |

## 5. Bacnet mapping table

### 5.1. Flamcomat

| Object ID               | Access | Object Name                    | Type   | Unit | Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------|--------|--------------------------------|--------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OBJECT_ ANALOG_ VALUE:0 | R      | Current working pressure       | UINT16 | cbar | 0..16000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| OBJECT_ ANALOG_ VALUE:1 | R      | Current vessel level           | UINT16 | %    | 0..100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| OBJECT_ ANALOG_ VALUE:2 | R      | Outputs state (1-on)           | UINT16 |      | Bit 0: P35 M1 active (pump/ compressor)<br>Bit 1: P36 M2 active (pump/ compressor)<br>Bit 2: P33 V1 active (valve 1)<br>Bit 3: P34 V2 active (valve 2)<br>Bit 4: P31 V3 active (valve 3)<br>Bit 8: Degassing On (Enabled)*<br>Bit 9: Degassing mode (0-normal, 1-turbo)*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| OBJECT_ ANALOG_ VALUE:3 | R      | Error table 1 (1-error active) | UINT16 |      | Bit 0: Single pump/ compressor maximum run time error<br>Bit 1: Redundant pumps/ compressor maximum run time error<br>Bit 2: Load dependent pumps/ compressor maximum run time error<br>Bit 3: Single pump/compressor current error<br>Bit 4: Pump A current error (double pump/ compressor configuration)<br>Bit 5: Pump B current error (double pump/ compressor configuration)<br>Bit 6: Pumps A and B/ compressor current error (double pump c configuration)<br>Bit 7: Pump C/ compressor current error<br>Bit 8: Self-learning valve correction error<br>Bit 9: Self-learning pump/ compressor correction error<br>Bit 10: Pressure sensor current exceeded<br>Bit 11: Pressure sensor no current<br>Bit 12: Load cell current exceeded<br>Bit 13: Load cell no current<br>Bit 14: Pump A/ compressor power consumption too high<br>Bit 15: Pump B/ compressor power consumption too high |

| Object ID               | Access | Object Name                    | Type   | Unit | Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------|--------|--------------------------------|--------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OBJECT_ ANALOG_ VALUE:4 | R      | Error table 2 (1-error active) | UINT16 |      | Bit 0: Pump C/ compressor power consumption too high<br>Bit 1: Maximum runtime P35 M1 exeeded<br>Bit 2: Maximum runtime P36 M2 exeeded<br>Bit 3: Maximum supplation threaded water amount exeeded<br>Bit 4: Pump/ compressor running, no decrease of water level in vessel<br>Bit 5: Valve open, no increase of water level in vessel<br>Bit 6: Maximum runtime P33 V1 exeeded<br>Bit 7: Maximum runtime P34 V2 exeeded<br>Bit 8: To run quick fill*<br>Bit 9: To run system fill*<br>Bit 10: System run in auto mode<br>Bit 11: Quick system filling active, V to stop*<br>Bit 12: System filling active, V to stop*<br>Bit 13: Manual mode active, press V to start automat<br>Bit 14: Diaphragm rupture<br>Bit 15: Spare |
| OBJECT_ ANALOG_ VALUE:5 | R      | Error table 3 (1-error active) | UINT16 |      | Bit 0: Water level increase in vessel without Flamcomat activity*<br>Bit 1: Water level decrease in vessel without Flamcomat activity*<br>Bit 2: Maintenance 1 is due<br>Bit 3: Initial fill failed<br>Bit 4: Maximum refill time exeeded<br>Bit 5: Maximum drain time exeeded*<br>Bit 6: No refill flow<br>Bit 7: Amount refill water too much<br>Bit 8: Spare<br>Bit 9: Spare<br>Bit 10: Spare<br>Bit 11: Initial fill active<br>Bit 12: Manual initial fill active<br>Bit 13: System fill timer expired*<br>Bit 14: Quick fill timer expired*<br>Bit 15: Maintenance 2 is due                                                                                                                                            |

| Object ID                | Access | Object Name                     | Type   | Unit  | Range                                                                                                                                                                                                                                                                                                                               |
|--------------------------|--------|---------------------------------|--------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OBJECT_ ANALOG_ VALUE:6  | R      | Error table 4 (1-error active)  | UINT16 |       | Bit 0: Maintenance 3 is due<br>Bit 1: Maintenance 4 is due<br>Bit 2: Spare<br>Bit 3: Spare<br>Bit 4: Spare<br>Bit 5: Spare<br>Bit 6: Spare<br>Bit 7: Spare<br>Bit 8: Spare<br>Bit 9: Spare<br>Bit 10: Spare<br>Bit 11: Spare<br>Bit 12: Spare<br>Bit 13: Spare<br>Bit 14: Spare<br>Bit 15: Spare                                    |
| OBJECT_ ANALOG_ VALUE:7  | R      | Operational hours total         | UINT16 | hours |                                                                                                                                                                                                                                                                                                                                     |
| OBJECT_ ANALOG_ VALUE:8  | R      | Availability ( 0 - No, 1 - Yes) | UINT16 |       | Bit 0: P35 M1 pressure increase<br>Bit 1: P36 M2 Pressure increase<br>Bit 2: P33 V1 (pressure decrease/ compressor valve)<br>Bit 3: P34 V2 (pressure decrease/ compressor valve)<br>Bit 4: P31 V3 (filling pump/ valve)<br>Bit 8: Minimum pressure limiter<br>Bit 9: Diaphragm rupture sensor<br>Bit 10: Maximum temperature sensor |
| OBJECT_ ANALOG_ VALUE:9  | R      | Pressure setpoint               | UINT16 | cbar  | 0..16000                                                                                                                                                                                                                                                                                                                            |
| OBJECT_ ANALOG_ VALUE:10 | R      | Minimum water level (absolute)  | UINT16 | %     |                                                                                                                                                                                                                                                                                                                                     |
| OBJECT_ ANALOG_ VALUE:11 | R      | Level refeeding On (absolute)   | UINT16 | %     |                                                                                                                                                                                                                                                                                                                                     |
| OBJECT_ ANALOG_ VALUE:12 | R      | Level refeeding Off (absolute)  | UINT16 | %     |                                                                                                                                                                                                                                                                                                                                     |
| OBJECT_ ANALOG_ VALUE:13 | R      | Minimum level alarm limit       | UINT16 | %     |                                                                                                                                                                                                                                                                                                                                     |
| OBJECT_ ANALOG_ VALUE:14 | R      | Maximum level alarm limit       | UINT16 | %     |                                                                                                                                                                                                                                                                                                                                     |
| OBJECT_ ANALOG_ VALUE:15 | R      | Nominal volume of vessel        | UINT16 | l     |                                                                                                                                                                                                                                                                                                                                     |
| OBJECT_ ANALOG_ VALUE:16 | R      | Operational mode                | UINT16 |       | 0 - single mode,<br>1 - redundant mode<br>2 - load-dependent                                                                                                                                                                                                                                                                        |
| OBJECT_ ANALOG_ VALUE:17 | R      | Total refill liters             | UINT16 | l     |                                                                                                                                                                                                                                                                                                                                     |

| Object ID                | Access | Object Name          | Type   | Unit   | Range |
|--------------------------|--------|----------------------|--------|--------|-------|
| OBJECT_ ANALOG_ VALUE:18 | R      | Total refill minutes | UINT16 | minute |       |

\* Not applicable for the Flamcomat MK-U G4

## 5.2. Flexfiller

| Object ID               | Access | Oject name | Type | Unit   | Formatting                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------|--------|------------|------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OBJECT_ ANALOG_ VALUE:0 | R      | "alarms"   | U64  | Binary | Bit 0: ALR_SYSTEM_PRESSURE_ LOW<br>Bit 1: ALR_SYSTEM_PRESSURE_ BELOW_MINIMUM<br>Bit 2: ALR_SYSTEM_PRESSURE_ BELOW_MINIMUM<br>Bit 3: ALR_SYSTEM_PRESSURE_ SENSOR_OOB_HIGH<br>Bit 4: ALR_SYSTEM_PRESSURE_ HIGH<br>Bit 5: ALR_SYSTEM_FILL_TIMER_ EXPIRED<br>Bit 6: ALR_SAFETY_VALVE_ ACTIVE<br>Bit 7: ALR_VESSEL_PRECHARGE_ LOST<br>Bit 8: ALR_PUMP_1_OVER_ CURRENT<br>Bit 9: ALR_PUMP_2_OVER_ CURRENT<br>Bit 10: ALR_PUMP_1_NO_CURRENT<br>Bit 11: ALR_PUMP_2_NO_CURRENT |
| OBJECT_ ANALOG_ VALUE:1 | R      | "warnings" | U64  | Binary | Bit 0: WRN_SYSTEM_PRESSURE_ HIGH<br>Bit 1: WRN_MAX_AMOUNT_ TOPUP_WATER<br>Bit 2: WRN_SYSTEM_PRESSURE_ LOW<br>Bit 3: WRN_NUMBER_OF_TOPUPS<br>Bit 4: WRN_SUPPLY_PRESSURE_ TOO_LOW<br>Bit 5: WRN_SUPPLY_PRESSURE_ TOO_HIGH<br>Bit 6: WRN_SUPPLY_PRESSURE_ SENSOR_OOB_LOW<br>Bit 7: WRN_SUPPLY_PRESSURE_ SENSOR_OOB_HIGH<br>Bit 8: WRN_SYSTEM_FILL_SELF_ LEARNING<br>Bit 9: WRN_MANUAL_MODE<br>Bit 10: WRN_MAXIMUM_TOPUP_ TIME_EXCEEDED<br>Bit 11: WRN_NO_TOPUP_FLOW      |

|                                |   |                             |     |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------|---|-----------------------------|-----|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OBJECT_<br>ANALOG_<br>VALUE:1  | R | "warnings"                  | U64 | Binary | Bit 12: WRN_MAINTENANCE_1_DUE<br>Bit 13: WRN_MAINTENANCE_2_DUE<br>Bit 14: WRN_MAINTENANCE_3_DUE<br>Bit 15: WRN_MAINTENANCE_4_DUE<br>Bit 16: WRN_SYSTEM_FILL_ACTIVE<br>Bit 17: WRN_SYSTEM_FILL_ON_HOLD<br>Bit 18: WRN_ANTI_LEGIONELLA_RUNNING<br>Bit 19: WRN_DEVICE_REBOOT<br>Bit 20: WRN_TANK_LEVEL_SENSOR_OOB_LOW<br>Bit 21: WRN_TANK_LEVEL_SENSOR_OOB_HIGH<br>Bit 22: WRN_PUMP_DRY_RUN<br>Bit 23: WRN_TANK_OVERFLOW<br>Bit 24: WRN_MANUAL_SYSTEM_FILL<br>Bit 25: WRN_PUMP_1_RUNTIME<br>Bit 26: WRN_PUMP_2_RUNTIME<br>Bit 27: WRN_ANTI_LEGIONELLA_RECOVERY<br>Bit 28: WRN_VACUUM_PRESSURE_SENSOR_OOB_LOW<br>Bit 29: WRN_VACUUM_PRESSURE_SENSOR_OOB_HIGH<br>Bit 30: WRN_FILTER_FULL<br>Bit 31: WRN_VACUUM_ERROR<br>Bit 32: WRN_SYPHON_FLUSH_DETECTED |
| OBJECT_<br>ANALOG_<br>VALUE:2  | R | "current system pressure"   | U16 | mbar   | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:3  | R | "current supply pressure"   | U16 | mbar   | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:4  | R | "current tank level"        | U16 | %      | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:5  | R | "current vacuum pressure"   | U16 | mbar   | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:6  | R | "pressure setpoint"         | U16 | mbar   | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:7  | R | "safety valve setting"      | U16 | mbar   | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:8  | R | "low pressure alarm limit"  | U16 | mbar   | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:9  | R | "high pressure alarm limit" | U16 | mbar   | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:10 | R | "vessel volume"             | U16 | l      | Decimal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| OBJECT_<br>ANALOG_<br>VALUE:11 | R | "digital input"             | U16 | Binary | NA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                |   |                              |     |        |                                                                                                                                                                                                                                         |
|--------------------------------|---|------------------------------|-----|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OBJECT_<br>ANALOG_<br>VALUE:12 | R | "digital output"             | U16 | Binary | Bit 0: P36 (Pump 2 / NC)<br>Bit 1: P35 (Pump 1/MV1 topup valve )<br>Bit 2: P34 (NC)<br>Bit 3: P33 (NC)<br>Bit 4: P32 (NC)<br>Bit 5: P31 (Inlet valve/MV2 Drain Valve)<br>Bit 6: P29 (VFC 1)<br>Bit 7: P28 (VFC 2)<br>Bit 8: P27 (VFC 3) |
| OBJECT_<br>ANALOG_<br>VALUE:13 | R | "accessories"                | U32 | Binary | NA                                                                                                                                                                                                                                      |
| OBJECT_<br>ANALOG_<br>VALUE:14 | R | "days to next maintenance 1" | U16 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:15 | R | "days to next maintenance 2" | U16 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:16 | R | "days to next maintenance 3" | U16 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:17 | R | "days to next maintenance 4" | U16 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:18 | R | "overall runtime"            | U32 | h      | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:19 | R | "total filled volume"        | U32 | ml     | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:20 | R | "total fill time"            | U32 | s      | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:21 | R | "activations MV1"            | U32 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:22 | R | "activations MV2"            | U32 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:23 | R | "runtime MV1"                | U32 | s      | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:24 | R | "runtime MV2"                | U32 | s      | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:25 | R | "activations Pump1"          | U32 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:26 | R | "activations Pump2"          | U32 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:27 | R | "activations Valve1"         | U32 | count  | Decimal                                                                                                                                                                                                                                 |
| OBJECT_<br>ANALOG_<br>VALUE:28 | R | "runtime Pump1"              | U32 | s      | Decimal                                                                                                                                                                                                                                 |

|                                |   |                          |     |       |         |
|--------------------------------|---|--------------------------|-----|-------|---------|
| OBJECT_<br>ANALOG_<br>VALUE:29 | R | "runtime Pump2"          | U32 | s     | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:30 | R | "runtime Valve1"         | U32 | s     | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:31 | R | "nrOfNormalTopUps"       | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:32 | R | "nrOfEmergencyStops"     | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:33 | R | "safetyValveActivations" | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:34 | R | "activationsVfc1"        | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:35 | R | "activationsVfc2"        | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:36 | R | "activationsVfc3"        | U32 | count | Decimal |

### 5.3. Vacumat Eco G4

| Object ID               | Access | Name     | Type | Unit   | Formatting |                                      |
|-------------------------|--------|----------|------|--------|------------|--------------------------------------|
| OBJECT_ ANALOG_ VALUE:0 | R      | "alarms" | U64  | Binary | Bit 0      | ALR_SYSTEM_PRESSURE_ LOW             |
|                         |        |          |      |        | Bit 1      | ALR_SYSTEM_PRESSURE_ BELOW_MINIMUM   |
|                         |        |          |      |        | Bit 2      | ALR_SYSTEM_PRESSURE_ SENSOR_OOB_LOW  |
|                         |        |          |      |        | Bit 3      | ALR_SYSTEM_PRESSURE_ SENSOR_OOB_HIGH |
|                         |        |          |      |        | Bit 4      | ALR_SYSTEM_PRESSURE_ HIGH            |
|                         |        |          |      |        | Bit 5      | ALR_VACUUM_PRESSURE_ SENSOR_OOB_LOW  |
|                         |        |          |      |        | Bit 6      | ALR_VACUUM_PRESSURE_ SENSOR_OOB_HIGH |
|                         |        |          |      |        | Bit 7      | ALR_TEMPERATURE_ SENSOR_OOB_LOW      |
|                         |        |          |      |        | Bit 8      | ALR_TEMPERATURE_ SENSOR_OOB_HIGH     |
|                         |        |          |      |        | Bit 9      | ALR_PUMP_OVER_ CURRENT               |
| OBJECT_ ANALOG_ VALUE:0 | R      | "alarms" | U64  | Binary | Bit 10     | ALR_PUMP_NO_ CURRENT                 |
|                         |        |          |      |        | Bit 11     | ALR_VACUUM_ERROR                     |
|                         |        |          |      |        | Bit 12     | ALR_LOW_WATER_ LEVEL                 |
|                         |        |          |      |        | Bit 13     | ALR_TEMPERATURE_ RANGE_UNDERSHOT     |
|                         |        |          |      |        | Bit 14     | ALR_TEMPERATURE_ RANGE_OVERSHOT      |
|                         |        |          |      |        | Bit 15     | ALR_VACUUM_TEST_ FAILED              |
|                         |        |          |      |        | Bit 16-63  | NA                                   |

|                         |   |                               |     |        |           |                               |
|-------------------------|---|-------------------------------|-----|--------|-----------|-------------------------------|
| OBJECT_ ANALOG_ VALUE:1 | R | "warnings"                    | U64 | Binary | Bit 0     | WRN_SYSTEM_PRESSURE_ LOW      |
|                         |   |                               |     |        | Bit 1     | WRN_SYSTEM_PRESSURE_ HIGH     |
|                         |   |                               |     |        | Bit 2     | WRN_NO_REFILL_FLOW            |
|                         |   |                               |     |        | Bit 3     | WRN_TIME_BETWEEN_ REFILLS     |
|                         |   |                               |     |        | Bit 4     | WRN_NUMBER_OF_REFILLS         |
|                         |   |                               |     |        | Bit 5     | WRN_FILLING_WITHOUT_ REQUEST  |
|                         |   |                               |     |        | Bit 6     | WRN_MAX_AMOUNT_ REFILL_WATER  |
|                         |   |                               |     |        | Bit 7     | WRN_REFILL_RUNTIME_ EXCEEDED  |
|                         |   |                               |     |        | Bit 8     | WRN_MAINTENANCE_1_DUE         |
|                         |   |                               |     |        | Bit 9     | WRN_TP_MOTOR                  |
|                         |   |                               |     |        | Bit 10    | WRN_MANUAL_MODE               |
|                         |   |                               |     |        | Bit 11    | WRN_DEVICE_REBOOT             |
|                         |   |                               |     |        | Bit 12    | WRN_PUMP_RUNTIME              |
|                         |   |                               |     |        | Bit 13    | WRN_FILTER_FULL               |
|                         |   |                               |     |        | Bit 14    | WRN_TOO_DEEP_VACUUM           |
|                         |   |                               |     |        | Bit 15    | WRN_EXTERNAL_ STANDBY_REQUEST |
|                         |   |                               |     |        | Bit 16    | WRN_INTERNAL_STANDBY          |
|                         |   |                               |     |        | Bit 17    | WRN_VACUUM_PRESSURE_ TOO_LOW  |
|                         |   |                               |     |        | Bit 18    | WRN_VACUUM_PRESSURE_ TOO_HIGH |
|                         |   |                               |     |        | Bit 19    | WRN_CONSTANTLY_GAS_ DETECTED  |
|                         |   |                               |     |        | Bit 20-63 | NA                            |
| OBJECT_ ANALOG_ VALUE:2 | R | "current system pressure"     | S16 | mbar   | Decimal   |                               |
| OBJECT_ ANALOG_ VALUE:3 | R | "current vacuum pressure"     | S16 | mbar   | Decimal   |                               |
| OBJECT_ ANALOG_ VALUE:4 | R | "Current teperature pressure" | S16 | cDeg C | Decimal   |                               |
| OBJECT_ ANALOG_ VALUE:5 | R | "pressure setpoint"           | U16 | mbar   | Decimal   |                               |
| OBJECT_ ANALOG_ VALUE:6 | R | "safety valve setting"        | U16 | mbar   | Decimal   |                               |

|                                |   |                                   |     |        |                         |                   |
|--------------------------------|---|-----------------------------------|-----|--------|-------------------------|-------------------|
| OBJECT_<br>ANALOG_<br>VALUE:7  | R | "low pressure alarm<br>limit"     | U16 | mbar   | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:8  | R | "high pressure alarm<br>limit"    | U16 | mbar   | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:9  | R | "digital input"                   | U16 | Binary | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:10 | R | "digital output"                  | U16 | Binary | Bit 0                   | P36 (NA)          |
|                                |   |                                   |     |        | Bit 1                   | P35 (Pump 1)      |
|                                |   |                                   |     |        | Bit 2                   | P34 (NA)          |
|                                |   |                                   |     |        | Bit 3                   | P33 (3 way valve) |
|                                |   |                                   |     |        | Bit 4                   | P32 (NA)          |
|                                |   |                                   |     |        | Bit 5                   | P31 (System fill) |
|                                |   |                                   |     |        | Bit 6                   | P29 (VFC 1)       |
|                                |   |                                   |     |        | Bit 7                   | P28 (VFC 2)       |
|                                |   |                                   |     |        | Bit 8                   | P27 (VFC 3)       |
|                                |   |                                   |     |        | Bit 9-15                | NA                |
| OBJECT_<br>ANALOG_<br>VALUE:11 | R | "accessories"                     | U32 | Binary | NA                      |                   |
| OBJECT_<br>ANALOG_<br>VALUE:12 | R | "days to next<br>maintenance 1"   | U16 | count  | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:13 | R | "days to next<br>maintenance 2"   | U16 | count  | Decimal (NA future use) |                   |
| OBJECT_<br>ANALOG_<br>VALUE:14 | R | "days to next<br>maintenance 3"   | U16 | count  | Decimal (NA future use) |                   |
| OBJECT_<br>ANALOG_<br>VALUE:15 | R | "days to next<br>maintenance 4"   | U16 | count  | Decimal (NA future use) |                   |
| OBJECT_<br>ANALOG_<br>VALUE:16 | R | "overall runtime"                 | U32 | H      | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:17 | R | "total filled volume"             | U32 | L      | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:18 | R | "total fill time"                 | U32 | S      | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:19 | R | "total nr of degassing<br>cycles" | U32 | count  | Decimal                 |                   |
| OBJECT_<br>ANALOG_<br>VALUE:20 | R | "nr of topups"                    | U32 | count  | Decimal                 |                   |

|                                |   |                                  |     |       |         |
|--------------------------------|---|----------------------------------|-----|-------|---------|
| OBJECT_<br>ANALOG_<br>VALUE:21 | R | "activations pump"               | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:22 | R | "activations valve1"             | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:23 | R | "activations valve2"             | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:24 | R | "runtime pump"                   | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:25 | R | "runtime valve1"                 | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:26 | R | "runtime valve2"                 | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:27 | R | "sum of gas evacuation<br>times" | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:28 | R | "level switch activations"       | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:29 | R | "gas sensor activations"         | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:30 | R | "activations vfc1"               | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:31 | R | "activations vfc2"               | U32 | count | Decimal |
| OBJECT_<br>ANALOG_<br>VALUE:32 | R | "activations vfc3"               | U32 | count | Decimal |

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