T-box Zone

Modbus RTU communication with SYSTEM Flowair via T-box ZONE

1. Modbus Documentation

1.1. Protocol parameters

1	Standard	RS485
2	Baudrate	9600, 19200, 38400, 57600, 76800, 115200, 230400
3	Data bits	8
4	Parity	Even; None; Odd
5	Stop bits	1; 2
6	Version	Modbus RTU
7	Addressing convention	Register address starting from 0
8	Data type	Unsigned Int16 (if not stated otherwise)

1.2. MODBUS functions

Read Holding Register	0x03
Read Input Register	0x04
Write Single Register	0x06
Write Multiple Registers	0x10

1.3. T-box ZONE settings:

Flowair System can be controlled via Building Management System (refereed to as BMS) **using T-Box Zone as a gate to access all available Flowair devices.** T-box settings are unblocked. All the settings can be changed via MODBUS RTU.

Direct access to single DRV or group of DRV's settings depends on Zone configuration, see example bellow:

Zone 1 (set in T-box): DRV ELIS dip switch addresses 1; DRV ELIS dip switch addresses 2 set in the same Zone.

- In this case group from two DRV ELIS is created. Controlling (Holding Register) of two units at the same time (Input Register available for each DRV ELiS)

For direct access to control each DRV ELIS please set it in separate zones.

1.4. How to Control DRV's in MODBUS :

1. Map of connecting DRV's with information about addresses and Zones in chapter 1.5. (Input Register 0x10)
2. There is two options Control DRV's (Holding Register):

   a) using dynamic info two parameters should be set:
      I. Zone ID on 0x2300
      II. Device ID on 0x2301 (device ID is unique value for Each type of DRV)
      Than:
      III. Register 0x2302 will be 0x00 from DRV Holding Registers (example: DRV ELIS; 0x00 Work Mode)
      IV. Register 0x2303 will be 0x01 from DRV Holding Registers (example: DRV ELIS; 0x01 CurtainFanSpeedRef)
      V. Etc.

   b) using static space .
      I. Register 0x2320 will be 0x00 from DRV Holding Registers (example: DRV ELIS; 0x00 Work Mode)
      II. Register 0x2321 will be 0x01 from DRV Holding Registers (example: DRV ELIS; 0x01 CurtainFanSpeedRef)
      III. Next Group/DRV address is starting from 0x2340. Length 32 for each Holding registers space.

3. To Read information from each DRV. (Input Register):
   I. Register 0x0140 from DRV Input Register (example: DRV ELIS; 0x01 Software Type)
   II. Register 0x0143 from DRV Input Register (example: DRV ELIS; 0x04 Temperature measured by T3 sensor)
   III. Next DRV address is starting from 0x160. Length 32 for each Input registers space

1.5. Masked Registers

Masked registers were introduced to pack indepedend information to one 16-bit register. To extract information user has to apply correct mask by using **and** logic operator (∧) and **shift** operator (⇒).

1.5.1. Masked Register Example

Fuse state for EC/3V/Roof fans, information can be read from 4 bits.

Parameter name	Description	Shift	Mask	Value
FAN_ROOF	Fan roof fuse state	0	15	fuse_condition
FAN_EC	Fan EC fuse state	4	240	fuse_condition
FAN_3V	Fan 3V fuse state	8	3840	fuse_condition

Note

Table shows indepedend information that can be extraced from this register. Value column points to expected return values and their interpretation.

fuse_condition

Parameter name	Description	Value
NOT_SET	Not set.	0
FUSE_OK	Fan fuse is OK	1
FUSE_BLOWN	Fan fuse is BLOWN.	2

Note

Table shows how to interpret information after applying mask and shift.

1.5.2. How to extract values

assumption

Device returned value **4384** from masked register example.

task

Extract **FAN_EC** fuse condition.

Math representation

$$\text{Value} \wedge \text{mask} \Rightarrow \text{shift} = \text{result}$$

$$4384 \wedge 240 \Rightarrow 4 = 2$$

Python implementation

```python
def extract_masked_value(value, mask, shift):
    return (value & mask) >> shift
```

C implementation

```c
uint16_t extract_masked_value(uint16_t value, uint16_t mask, uint16_t shift) {
    return ((value & mask) >> shift);
};
```

Lastly interpret recived value according to **fuse_condition** table.

FUSE_BLOWN	Fan fuse is BLOWN.	**2**

Tip

Depending on how the information is split through the register it might be easier to read in a hexadecimal format. From our example **4384** can be represented as hex **0x1120** (0 - NOT_SET, 1 - FUSE_OK etc.). Presenting value in hex format helps when information is written on nibbles, binary format is more suitable for information written on bits.

1.5.3. Alarms

There are few types of ALARMs all register of them are mark by ALARM word.

e.g.

Parameter name	Description	
0x7FFF	PT1000 sensor not connected	**ALARM**
0x02	Water Exchanger Antifreeze enabled (user parameters overwritten)	**ALARM**
0x02	Fan fuse is BLOWN.	**ALARM**

1.6. T-Box Zone parameters (Controler)

1.6.1. Holding Register

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>SetScreenLock</td><td>Turn on screen lock.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OFF_0</td><td>Disabled.</td><td>0</td></tr>
<tr><td>ON_1</td><td>Enabled.</td><td>1</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>EnableDisableController</td><td>Enables or disables controller and all connected devices.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OFF_0</td><td>Disabled.</td><td>0</td></tr>
<tr><td>ON_1</td><td>Enabled.</td><td>1</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>UnlockScreen</td><td>Unlocks screen. Viable while screen lock is turned on.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OFF_0</td><td>Disabled.</td><td>0</td></tr>
<tr><td>ON_1</td><td>Enabled.</td><td>1</td></tr>
</table></td></tr>
<tr><td>0x03</td><td>Null_7</td><td>Register not used.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>Unit16_range</td><td>Register not used.</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x04</td><td>SetYear</td><td>Datetime setting. Set year.r.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>YEAR</td><td>Set year.</td><td>2021</td><td>2035</td></tr>
</table></td></tr>
<tr><td>0x05</td><td>SetMonth</td><td>Datetime setting. Set month.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>MONTH</td><td>Set month.</td><td>0</td><td>11</td></tr>
</table></td></tr>
<tr><td>0x06</td><td>SetDay</td><td>Datetime setting. Set day.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_1_31</td><td>Range 1-31</td><td>1</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x07</td><td>SetHours</td><td>Datetime setting. Set hour.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>HOUR</td><td>Set day</td><td>0</td><td>23</td></tr>
</table></td></tr>
<tr><td>0x08</td><td>SetMinutes</td><td>Datetime setting. Set Minute.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>SEXAGESIMAL</td><td>Set minutes or seconds.</td><td>0</td><td>59</td></tr>
</table></td></tr>
<tr><td>0x09</td><td>SetSeconds</td><td>Datetime setting. Set second.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>SEXAGESIMAL</td><td>Set minutes or seconds.</td><td>0</td><td>59</td></tr>
</table></td></tr>
<tr><td>0x0A</td><td>SetExternalSignalEnable</td><td>External signal Handling</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OFF_0</td><td>Disabled.</td><td>0</td></tr>
<tr><td>ON_1</td><td>Enabled.</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>0x0B</td><td>SetExternalSignalMode</td><td>External signal mode/functionality
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OFF_0</td><td>Disabled.</td><td>0</td></tr>
<tr><td>ON_1</td><td>Enabled.</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>0x0C</td><td>SetExternalSignalContact</td><td>External signal contact configuration
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>NO_0</td><td>Normally open.</td><td>0</td></tr>
<tr><td>NC_1</td><td>Normally close.</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>0x0D</td><td>SetExternalSignalLevel</td><td>External signal level
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>GLOBAL_0</td><td>Global all drvs.</td><td>0</td></tr>
<tr><td>ZONES_1</td><td>Zones select.</td><td>1</td></tr>
</table>
</td></tr>
</table>

1.6.2. Input Register

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>hardware_type</td><td>Information about hardware type and it's version.

<table>
<tr><th>Parameter name</th><th>Description</th><th>Shift</th><th>Mask</th><th>Value</th></tr>
<tr><td>PCB_VERSION</td><td><LSB>PCB version</td><td>0</td><td>255</td><td>pcb_v</td></tr>
<tr><td>PCB_name</td><td><MSB>PCB name</td><td>0</td><td>65280</td><td>pcb_n</td></tr>
</table>

pcb_v
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>PCB-VERSION_CONT</td><td><LSB>PCB Version</td><td></td></tr>
</table>

pcb_n
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>NOT_SET</td><td>Not set.</td><td>0</td></tr>
<tr><td>DRV_OXEN</td><td>OXEN Driver</td><td>256</td></tr>
<tr><td>DRV_ELIS</td><td>ELIS Driver</td><td>512</td></tr>
<tr><td>DRV_KM</td><td>KM Driver</td><td>768</td></tr>
<tr><td>DRV_M</td><td>M Driver</td><td>1024</td></tr>
<tr><td>DRV_V</td><td>V Driver</td><td>1280</td></tr>
<tr><td>PSENS_HARDWARE</td><td>Sensor device</td><td>1536</td></tr>
<tr><td>CUBE</td><td>Rooftop driver</td><td>1792</td></tr>
<tr><td>DRV_ELIS_EC</td><td>DRV ELIS EC</td><td>2048</td></tr>
<tr><td>LUNA</td><td>LUNA</td><td>2306</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>Information about hardware type and it's verson.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OXEN</td><td>OXEN</td><td>257</td></tr>
<tr><td>CURTAIN</td><td>CURTAIN</td><td>513</td></tr>
<tr><td>KM</td><td>KM</td><td>769</td></tr>
<tr><td>HEATER_EC</td><td>HEATER_EC</td><td>1025</td></tr>
<tr><td>DESTRATIFICATOR_AC</td><td>DESTRATIFICATOR</td><td>1281</td></tr>
<tr><td>DESTRATIFICATOR_EC</td><td>DESTRATIFICATOR_EC</td><td>1283</td></tr>
<tr><td>CURTAIN_HEATER</td><td>CURTAIN_HEATER</td><td>1537</td></tr>
<tr><td>HEATER_AC</td><td>HEATER_AC</td><td>1793</td></tr>
<tr><td>HEATER_AC_EL</td><td>HEATER_AC_EL</td><td>1794</td></tr>
<tr><td>KM_RAW</td><td>KM_RAW</td><td>2305</td></tr>
<tr><td>ROBUR_PN</td><td>ROBUR_PN</td><td>2561</td></tr>
<tr><td>COOL</td><td>COOL</td><td>2817</td></tr>
<tr><td>ROBUR_KM</td><td>ROBUR_KM</td><td>4097</td></tr>
<tr><td>ROBUR_KM_NEXT</td><td>ROBUR_KM_NEXT</td><td>4098</td></tr>
<tr><td>ROBUR</td><td>ROBUR</td><td>4353</td></tr>
<tr><td>ROBUR_NEXT</td><td>ROBUR_NEXT</td><td>4354</td></tr>
<tr><td>DRV_V_RAW</td><td>DRV_V_RAW</td><td>4865</td></tr>
<tr><td>PSENS_ABS</td><td>PSENS ABSOLUTE</td><td>5121</td></tr>
<tr><td>PSENS_DIFF</td><td>PSENS DIFFERENTIAL</td><td>5122</td></tr>
<tr><td>PSENS_DIF_60</td><td>PSENS DIFFERENTIAL 60mBar</td><td>5123</td></tr>
<tr><td>CUBE</td><td>CUBE</td><td>5377</td></tr>
<tr><td>LUNA</td><td>LUNA</td><td>5890</td></tr>
<tr><td>ELIS AX</td><td>ELIS AX</td><td>6146</td></tr>
</table></td></tr>
<tr><td>0X02</td><td>connection_count</td><td>Connection count. Increased each time register is read. First query always returns value 0x01. If register value equals 0zFFFF before the query, next one will be equal to 0x00. Monitoring this register enables system diagnostics (e.g. if the program was not deployed second time after voltage shortage).
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>CONNECTION_COUNT</td><td>Connection Count</td><td>0</td><td>65535</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x03</td><td>soft_ver</td><td>Software version.
Check out ourguide on how to extract information from masked register
<table>
<tr><th>Parameter name</th><th>Description</th><th>Shift</th><th>Mask</th><th>Value</th></tr>
<tr><td>TAG</td><td>TAG</td><td>0</td><td>15</td><td>major_minor</td></tr>
<tr><td>MINOR</td><td>MINOR</td><td>4</td><td>240</td><td>major_minor</td></tr>
<tr><td>MAJOR</td><td>MAJOR</td><td>8</td><td>3840</td><td>major_minor</td></tr>
</table>
major_minor
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>MAJOR_MINOR</td><td>MAJOR MINOR</td><td></td></tr>
</table></td></tr>
<tr><td>0x04</td><td>main_sensor_reading</td><td>Temperature measured by main sensor.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th><th>Value</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>TEMPERATURE</td><td>Temperature.</td><td>-1500</td><td>2000</td><td></td><td>5</td><td>0.1</td></tr>
<tr><td>SHORT_CIRCUIT</td><td>Short circuit.</td><td></td><td></td><td>28672</td><td></td><td></td></tr>
<tr><td>PT1000_NC</td><td>Sensor not connected.</td><td></td><td></td><td>32767</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>0x05</td><td>secondary sensor reading</td><td>Temperature measured by secondary sensor.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th><th>Value</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>TEMPERATURE</td><td>Temperature.</td><td>-1500</td><td>2000</td><td></td><td>5</td><td>0.1</td></tr>
<tr><td>SHORT_CIRCUIT</td><td>Short circuit.</td><td></td><td></td><td>28672</td><td></td><td></td></tr>
<tr><td>PT1000_NC</td><td>Sensor not connected.</td><td></td><td></td><td>32767</td><td></td><td></td></tr>
</table></td></tr>
<tr><td>0x06</td><td>NULL_6</td><td>Register not used.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>Unit16_range</td><td>Register not used.</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x07</td><td>NULL_7</td><td>Register not used.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>Unit16_range</td><td>Register not used.</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x08</td><td>Device Count</td><td>Discovered devices count.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_0_31</td><td>Count in range 0-31.</td><td>0</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x09</td><td>Zone Count</td><td>Zone count.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_0_31</td><td>Count in range 0-31.</td><td>0</td><td>31</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0A</td><td>GroupCount</td><td>Group count.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_0_31</td><td>Count in range 0-31.</td><td>0</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x0B</td><td>DeviceStatus_1_16</td><td>Discovered devices status.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Shift</th><th>Mask</th><th>Value</th></tr>
<tr><td>DRV_01</td><td>Device 01 status</td><td>0</td><td>1</td><td>device_status</td></tr>
<tr><td>DRV_02</td><td>Device 01 status</td><td>1</td><td>2</td><td>device_ststus</td></tr>
<tr><td>DRV_03</td><td>Device 03 status</td><td>2</td><td>4</td><td>device_ststus</td></tr>
<tr><td>DRV_04</td><td>Device 04 status</td><td>3</td><td>8</td><td>device_status</td></tr>
<tr><td>DRV_05</td><td>Device 05 status</td><td>4</td><td>16</td><td>device_status</td></tr>
<tr><td>DRV_06</td><td>Device 06 status</td><td>5</td><td>32</td><td>device_status</td></tr>
<tr><td>DRV_07</td><td>Device 07 status</td><td>6</td><td>64</td><td>device_status</td></tr>
<tr><td>DRV_08</td><td>Device 08 status</td><td>7</td><td>128</td><td>device_status</td></tr>
<tr><td>DRV_09</td><td>Device 09 status</td><td>8</td><td>256</td><td>device_status</td></tr>
<tr><td>DRV_10</td><td>Device 10 status</td><td>9</td><td>512</td><td>device_status</td></tr>
<tr><td>DRV_11</td><td>Device 11 status</td><td>10</td><td>1024</td><td>device_status</td></tr>
<tr><td>DRV_12</td><td>Device 12 status</td><td>11</td><td>2048</td><td>device_status</td></tr>
<tr><td>DRV_13</td><td>Device 13 status</td><td>12</td><td>4096</td><td>device_status</td></tr>
<tr><td>DRV_14</td><td>Device 14 status</td><td>13</td><td>8192</td><td>device_status</td></tr>
<tr><td>DRV_15</td><td>Device 15 status</td><td>14</td><td>16384</td><td>device_status</td></tr>
<tr><td>DRV_16</td><td>Device 16 status</td><td>15</td><td>32768</td><td>device_status</td></tr>
</table>
device_status
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>ERROR_0</td><td>Error</td><td>0</td></tr>
<tr><td>OK_1</td><td>Ok</td><td>1</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0C</td><td>DeviceStatus _17_32</td><td>Discovered devices status.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Shift</th><th>Mask</th><th>Value</th></tr>
<tr><td>DRV_17</td><td>Device 17 status</td><td>0</td><td>1</td><td>device_status</td></tr>
<tr><td>DRV_18</td><td>Device 18 status</td><td>1</td><td>2</td><td>device_status</td></tr>
<tr><td>DRV_19</td><td>Device 19 status</td><td>2</td><td>4</td><td>device_status</td></tr>
<tr><td>DRV_20</td><td>Device 20 status</td><td>3</td><td>8</td><td>device_status</td></tr>
<tr><td>DRV_21</td><td>Device 21 status</td><td>4</td><td>16</td><td>device_status</td></tr>
<tr><td>DRV_22</td><td>Device 22 status</td><td>5</td><td>32</td><td>device_status</td></tr>
<tr><td>DRV_23</td><td>Device 23 status</td><td>6</td><td>64</td><td>device_status</td></tr>
<tr><td>DRV_24</td><td>Device 24 status</td><td>7</td><td>128</td><td>device_status</td></tr>
<tr><td>DRV_25</td><td>Device 25 status</td><td>8</td><td>256</td><td>device_status</td></tr>
<tr><td>DRV_26</td><td>Device 26 status</td><td>9</td><td>512</td><td>device_status</td></tr>
<tr><td>DRV_27</td><td>Device 27 status</td><td>10</td><td>1024</td><td>device_status</td></tr>
<tr><td>DRV_28</td><td>Device 28 status</td><td>11</td><td>2048</td><td>device_status</td></tr>
<tr><td>DRV_29</td><td>Device 29 status</td><td>12</td><td>4096</td><td>device_status</td></tr>
<tr><td>DRV_30</td><td>Device 30 status</td><td>13</td><td>8192</td><td>device_status</td></tr>
<tr><td>DRV_31</td><td>Device 31 status</td><td>14</td><td>16384</td><td>device_ststus</td></tr>
<tr><td>TBOX</td><td>TBOX status</td><td>15</td><td>32768</td><td>device_status</td></tr>
</table>
device_status
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>ERROR_0</td><td>Error</td><td>0</td></tr>
<tr><td>OK_1</td><td>Ok</td><td>1</td></tr>
</table></td></tr>
<tr><td>0x0D</td><td>ControlerStatus_1_16</td><td>Discovered controler status – 32 bit value.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>INFO_MAP_Range</td><td>Shift.</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x0E</td><td>ControlerStatus_17_31</td><td>Discovered controler status - 23 bit value.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>INFO_MAP_RANGE</td><td>Shift.</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x0F</td><td>InfoStartpoint</td><td>Dynamic device info startpoint.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>STARTPOINT</td><td>Startpoint.</td><td>12345</td></tr>
</table></td></tr>
</table>

1.7. Dynamic Info

1.7.1. Holding Register - Dynamic Info (T box Zone settings)

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x900</td><td>SetZoneID</td><td>Set Zone ID that indicates what zone is being changed.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_1_31</td><td>Set Zone ID</td><td>1</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x901</td><td>EnableDisableZone</td><td>Enables or disables all zone devices.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OFF_0</td><td>Disabled</td><td>0</td></tr>
<tr><td>ON_1</td><td>Enabled</td><td>1</td></tr>
</table></td></tr>
<tr><td>0x902</td><td>ZoneTRef</td><td>Target temperature.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>TEMP_REF</td><td>Target temperature</td><td>50</td><td>450</td><td>5</td><td>0.1</td></tr>
</table></td></tr>
<tr><td>0x903</td><td>ZoneAntifreeze</td><td>Enable zone antifreeze.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>ON_1</td><td>Enabled</td><td>1</td></tr>
<tr><td>OFF_2</td><td>Disabled</td><td>2</td></tr>
</table></td></tr>
<tr><td>0x904</td><td>ZoneTLeadSensorSelect</td><td>Target temperature to enable zone antifreeze.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>AF_WH_TEMP_REF</td><td>Target temperature</td><td>50</td><td>150</td><td>5</td><td>0.1</td></tr>
</table></td></tr>
<tr><td>0x905</td><td>ZoneTLeandSensorSelect</td><td>Lead sensor selection.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>TLST_LEAD</td><td>Temperature value transmitted via Modbus</td><td>1</td></tr>
<tr><td>TLST_T4</td><td>Temperature measured by T4 sensor (room temperature)</td><td>3</td></tr>
<tr><td>TLST_CONTROLLER</td><td>Temperature measured by internal controller sensor</td><td>4</td></tr>
</table></td></tr>
<tr><td>0x906</td><td>ZoneSensorOffset</td><td>Zone sensor Offset.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>LEAD_SENSOR_TEMP_OFFSET</td><td>Temperature sensor offset.</td><td>-100</td><td>100</td><td>5</td><td>0.1</td></tr>
</table></td></tr>
<tr><td>0x907</td><td>T4SensorOffset</td><td>T4 average sensor offset.
<table>
<tr><th>Parameter name</th><th>Desccription</th><th>Min</th><th>Max</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>LEAD_SENSOR__TEMP_OFFSET</td><td>Temperature sensor offset</td><td>-100</td><td>100</td><td>5</td><td>0.1</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x908</td><td>ZoneExternalSignalEnable</td><td>Zone signal handling.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OFF_0</td><td>Disabled</td><td>0</td></tr>
<tr><td>ON_1</td><td>Enabled</td><td>1</td></tr>
</table></td></tr>
<tr><td>0x909</td><td>ZoneExternalSignalDrvUid</td><td>External signal drv UID
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_1_31</td><td>Range 1-31</td><td>1</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x90A</td><td>TLeadVal</td><td>Lead temperature sensor value.
<table>
<tr><th>Parameter name</th><th>Desccription</th><th>Min</th><th>Max</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>LEAD_SENSOR_TEMP</td><td>Lead temperature sensor value.</td><td>-600</td><td>600</td><td>5</td><td>0.1</td></tr>
</table></td></tr>
</table>

1.7.2. Input Register (T box Zone settings)

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x900</td><td>ZoneID1</td><td>Zone ID1
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_1_31</td><td>Range 1-31</td><td>1</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x901</td><td>AverageZoneTemp</td><td>Average temperature measured by local temperature sensors in the zone.
<table>
<tr><th>Parameter name</th><th>Desccription</th><th>Min</th><th>Max</th><th>Step</th><th>Multiplier</th></tr>
<tr><td>TEMPERATURE</td><td>Temperature.</td><td>-1500</td><td>2000</td><td>5</td><td>0.1</td></tr>
<tr><td>SHORT_CIRCUIT</td><td>Short circuit</td><td></td><td></td><td>28672</td><td></td></tr>
<tr><td>PT1000_NC</td><td>Sensor not connected.</td><td></td><td></td><td>32767</td><td></td></tr>
</table></td></tr>
<tr><td>0x902</td><td>ZoneDeviceCount</td><td>Zone devices count.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_0_31</td><td>Count in range 0-31</td><td>0</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x910</td><td>ZoneID2</td><td>ZoneID2
Form 0x910 to 0x912</td></tr>
<tr><td>0x920</td><td>ZoneID3</td><td>ZoneID2
Form 0x920 to 0x922</td></tr>
</table>

1.7.3. Input Register (DRV's mapping)

1.7.3.1. Cluster

This section is a `cluster` – content is repeated to reduce clutter. Each `controller` can handle up 31 `devices` so this section is repeated: 31
lenght: 8

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x10</td><td>DeviceID</td><td>Modbus ID (address set on dipswitch)
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_1_31</td><td>Range 1-31</td><td>1</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x11</td><td>DeviceStatus01</td><td>Device Status 01.
Any value other than 0 indicates an ALARM</td></tr>
<tr><td>0x12</td><td>DeviceStatus02</td><td>Device Status 02
Any value other than 0 indicates an ALARM</td></tr>
<tr><td>0x13</td><td>ZoneID</td><td>Zone ID (Zone number)
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_1_31</td><td>Range 1-31</td><td>1</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x14</td><td>DeviceGroupID</td><td>Device group ID
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>INFO_MAP_RANGE</td><td>Shift</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x15</td><td>DeviceReadingsStartPoint</td><td>Device readings start point (starting point for INPUT REGISTERS for specific unit)
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>INFO_MAP_RANGE</td><td>Shift</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x16</td><td>ZoneReadingsStartPoint</td><td>Device zone readings start point.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>INFO_MAP_RANGE</td><td>Shift</td><td>0</td><td>65535</td></tr>
</table></td></tr>
<tr><td>0x17</td><td>NULL_6</td><td>Register not used.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>Unit16_range</td><td>Register not used.</td><td>0</td><td>65535</td></tr>
</table></td></tr>
</table>

1.7.4. Holding Register - Dynamic Info T box Zone (DRV's Holding Registers)

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x2300</td><td>SetZoneID</td><td>Set Zone ID that indicates in what zone device settings shall be changed.
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>RANGE_1_31</td><td>Range 1-13</td><td>1</td><td>31</td></tr>
</table></td></tr>
<tr><td>0x2301</td><td>SetDeviceGroupID</td><td>Set device group ID that idicates what device group shall be changed in selected zone.
(e.g. heaters 1793 in first zone).
<table>
<tr><th>Parameter name</th><th>Description</th><th>Min</th><th>Max</th></tr>
<tr><td>INFO_MAP_RANGE</td><td>Shift</td><td>0</td><td>65535</td></tr>
</table>
<table>
<tr><th>Parameter name</th><th>Description</th><th>Value</th></tr>
<tr><td>OXEN</td><td>OXEN</td><td>257</td></tr>
<tr><td>CURTAIN</td><td>CURTAIN</td><td>513</td></tr>
<tr><td>KM</td><td>KM</td><td>769</td></tr>
<tr><td>HEATER_EC</td><td>HEATER_EC</td><td>1025</td></tr>
<tr><td>DESTRATIFICATOR_AC</td><td>DESTRATIFICATOR</td><td>1281</td></tr>
<tr><td>DESTRATIFICATOR_EC</td><td>DESTRATIFICATOR_EC</td><td>1283</td></tr>
<tr><td>CURTAIN_HEATER</td><td>CURTAIN_HEATER</td><td>1537</td></tr>
<tr><td>HEATER_AC</td><td>HEATER_AC</td><td>1793</td></tr>
<tr><td>HEATER_AC_EL</td><td>HEATER_AC_EL</td><td>1794</td></tr>
<tr><td>KM_RAW</td><td>KM_RAW</td><td>2305</td></tr>
<tr><td>ROBUR_PN</td><td>ROBUR_PN</td><td>2561</td></tr>
<tr><td>COOL</td><td>COOL</td><td>2817</td></tr>
<tr><td>ROBUR_KM</td><td>ROBUR_KM</td><td>4097</td></tr>
<tr><td>ROBUR_KM_NEXT</td><td>ROBUR_KM_NEXT</td><td>4098</td></tr>
<tr><td>ROBUR</td><td>ROBUR</td><td>4353</td></tr>
<tr><td>ROBUR_NEXT</td><td>ROBUR_NEXT</td><td>4354</td></tr>
<tr><td>DRV_V_RAW</td><td>DRV_V_RAW</td><td>4865</td></tr>
<tr><td>PSENS_ABS</td><td>PSENS ABSOLUTE</td><td>5121</td></tr>
<tr><td>PSENS_DIFF</td><td>PSENS DIFFERENTIAL</td><td>5122</td></tr>
<tr><td>PSENS_DIF_60</td><td>PSENS DIFFERENTIAL 60mBar</td><td>5123</td></tr>
<tr><td>CUBE</td><td>CUBE</td><td>5377</td></tr>
<tr><td>LUNA</td><td>LUNA</td><td>5890</td></tr>
<tr><td>ELIS AX</td><td>ELIS AX</td><td>6146</td></tr>
</table></td></tr>
<tr><td>0x2302 - 0x2319</td><td>DRVregisters</td><td>DRV registers map is starting from 0x00</td></tr>
</table>

1.8. T box Zone Static Info

1.8.1. Holding/Input Register - Static Info (DRV's space for Holding/Input Registers)

<table>
<tr><th>Name</th><th>Description</th></tr>
<tr><td>FirstDRV</td><td>First DRV (lowest detected address)
<table>
<tr><th>Address space</th><th>First address</th><th>Last address</th><th>lenght</th><th>repeat</th></tr>
<tr><td>Input registers</td><td>0x0140</td><td>0x017F</td><td>32</td><td>31</td></tr>
<tr><td>Holding registers</td><td>0x2320</td><td>0x233F</td><td>32</td><td>31</td></tr>
</table></td></tr>
<tr><td>SecondDRV</td><td>Second DRV (second lowest detected address)
<table>
<tr><th>Address space</th><th>First address</th><th>Last address</th><th>lenght</th></tr>
<tr><td>Input registers</td><td>0x0180</td><td>0x01BF</td><td>32</td></tr>
<tr><td>Holding registers</td><td>0x2340</td><td>0x235F</td><td>32</td></tr>
</table></td></tr>
<tr><td>...DRV</td><td>... DRV (next detected address)</td></tr>
<tr><td>ThirtiethDRV</td><td>Thirtieth DRV
<table>
<tr><th>Address space</th><th>First address</th><th>Last address</th><th>lenght</th></tr>
<tr><td>Input registers</td><td>0x0840</td><td>0x087F</td><td>32</td></tr>
<tr><td>Holding registers</td><td>0x26C0</td><td>0x26DF</td><td>32</td></tr>
</table></td></tr>
</table>

2. Devices

2.1. Software Type

Parameter name	Description	Value
OXEN	OXEN	257
CURTAIN	CURTAIN	513
KM	KM	769
HEATER_EC	HEATER_EC	1025
DESTRATIFICATOR_AC	DESTRATIFICATOR	1281
DESTRATIFICATOR_EC	DESTRATIFICATOR_EC	1283
CURTAIN_HEATER	CURTAIN_HEATER	1537
HEATER_AC	HEATER_AC	1793
HEATER_AC_EL	HEATER_AC_EL	1794
KM_RAW	KM_RAW	2305
ROBUR_PN	ROBUR_PN	2561
COOL	COOL	2817
ROBUR_KM	ROBUR_KM	4097
ROBUR_KM_NEXT	ROBUR_KM_NEXT	4098
ROBUR	ROBUR	4353
ROBUR_NEXT	ROBUR_NEXT	4354
DRV_V_RAW	DRV_V_RAW	4865
PSENS_ABS	PSENS ABSOLUTE	5121
PSENS_DIFF	PSENS DIFFERENTIAL	5122
PSENS_DIF_60	PSENS DIFFERENTIAL 60mBar	5123
CUBE	CUBE	5377
LUNA	LUNA	5890
ELIS AX	ELIS AX	6146

2.2. DRV-ELIS & DRV-SLIM (Air Curtain)

2.2.1. INPUT REGISTER DRV ELIS/SLIM

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>CURTAIN</td><td>CURTAIN</td><td>513</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use.</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use.</td></tr>
<tr><td>0x04</td><td>T3</td><td>Temperature measured by T3 sensor (air after water heat exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-350</td><td>-35,0</td><td>Minimal value</td><td></td></tr>
<tr><td>350</td><td>35,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T4</td><td>Temperature measured by T4 sensor (air before water heat exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-350</td><td>-35,0</td><td>Minimal value</td><td></td></tr>
<tr><td>350</td><td>35,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>CurtainFanSpeed</td><td>Curtain fan speed (S1, S2, S3).
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>ValveState</td><td>Valve state
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>VALVE_IDLE</td><td>Valve in stand by mode (for 3-way valves)</td></tr>
<tr><td>0x01</td><td>VALVE_OPEN</td><td>Opening valve</td></tr>
<tr><td>0x02</td><td>VALVE_CLOSE</td><td>Closing valve</td></tr>
</table>
</td></tr>
<tr><td>0x08</td><td>HeaterFanSpeed</td><td>Heater fan speed (S1, S2, S3).
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>VALVE_IDLE</td><td>Valve in stand by mode (for 3-way valves)</td></tr>
<tr><td>0x01</td><td>VALVE_OPEN</td><td>Opening valve</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>0x02</td><td>VALVE_CLOSE</td><td>Closing valve</td></tr>
</table>
</td></tr>
<tr><td>0x09</td><td>ContactDoor</td><td>Contact door state.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>DOOR_OPEN</td><td>Door open</td></tr>
<tr><td>0x02</td><td>DOOR_CLOSE</td><td>Door close</td></tr>
</table>
</td></tr>
<tr><td>0x0A</td><td>HeaterDetect</td><td>Heater detection procedure (ELIS-DUO).
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>HEATER_DT_NS</td><td>Detection procedure not commenced</td></tr>
<tr><td>0x01</td><td>HEATER_DT_FAIL</td><td>Heater not detected</td></tr>
<tr><td>0x02</td><td>HEATER_DT_PASS</td><td>Heater detected</td></tr>
</table>
</td></tr>
<tr><td>0x08</td><td>AntifreezeeState</td><td>Information about antifreeze (8 bits for respected mode).
<table>
<tr><th>Value 15..8 bit</th><th>Value 7..0 bit</th><th>Antifreeze</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-</td><td>0x01</td><td>Warehouse</td><td>Normal work mode.</td><td></td></tr>
<tr><td>-</td><td>0x02</td><td>Warehouse</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
<tr><td>0x01</td><td>-</td><td>Water Exchanger</td><td>Normal work mode.</td><td></td></tr>
<tr><td>0x02</td><td>-</td><td>Water Exchanger</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x0C</td><td>FuseState</td><td>Fuse state for 3V fans, information can be read from 4 bits (11..8 bit).
<table>
<tr><th>Value 11..8 bit</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Read only</td><td></td></tr>
<tr><td>0x01</td><td>Fuse state - working</td><td></td></tr>
<tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr>
</table>
Example:
Fuse state 3V fan: working (0x1)
Register value: 0x100
Fuse state 3V fan: blown (0x2)
Register value: 0x200</td></tr>
<tr><td>0x0D</td><td>CurtainElectricpower</td><td>Electric heater power.
<table>
<tr><th>Value</th><th>Name</th><th>L2 output</th><th>L1 output</th></tr>
<tr><td>0x00</td><td>ELECTRIC_POWER_0</td><td>OFF</td><td>OFF</td></tr>
<tr><td>0x01</td><td>ELECTRIC_POWER_1</td><td>OFF</td><td>ON</td></tr>
</table>
L1, L2 outputs are located on VALVE connector.</td></tr>
</table>

2.2.2. HOLDING REGISTER DRV ELIS/SLIM

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0</td><td>WM_TS</td><td>From local TS regulator</td></tr>
<tr><td>1</td><td>WM_OFF</td><td>Device off</td></tr>
<tr><td>2</td><td>WM_HEAT</td><td>Heat mode</td></tr>
<tr><td>3</td><td>WM_VENT</td><td>Ventilation mode</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>CurtainFanSpeedRef</td><td>Forcing fan speed (S1, S2, S3).
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>NULL_2</td><td>Register not used.</td></tr>
<tr><td>0x03</td><td>NULL_3</td><td>Register not used.</td></tr>
<tr><td>0x04</td><td>CurtainProgram</td><td>Device group ID Curtain program setting.
<table>
<tr><th>Value</th><th>Setting</th><th>Description</th></tr>
<tr><td>0</td><td>CURT_PRG_NS</td><td>No forcing</td></tr>
<tr><td>1</td><td>CURT_PRG_K1</td><td>Forcing SW3 to value K1 (Temp. Drop or Door Switch Turns On Unit)</td></tr>
<tr><td>2</td><td>CURT_PRG_K2</td><td>Forcing SW3 to value K2 (Door Switch Turns On unit, Than temp. Drop Turns On Heating)</td></tr>
</table></td></tr>
<tr><td>0x05</td><td>CurtainFanIdleRef</td><td>Stand-by fan operation.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table>
Step:1
Multiplier: 1,0</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x06</td><td>FanIdleDelay</td><td>Time delay of stand-by fan operation.
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0..65534</td><td>Delay in seconds</td></tr><tr><td>65535</td><td>Infinite</td></tr></table>Step:1
Multiplier: 1,0</td></tr>
<tr><td>0x07</td><td>ValveIdleDelay</td><td>Time delay of valve in stand-by fan operation.
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0..65534</td><td>Delay in seconds</td></tr><tr><td>65535</td><td>Infinite</td></tr></table>Condition: ValveIdleDelay<FanIdleDelay
Step:1
Multiplier: 1,0</td></tr>
<tr><td>0x08</td><td>AntifreezeWaterExchanger State</td><td>Information about water exchanger antifreeze.
<table><tr><th>Value</th><th>Name</th><th>Description</th></tr><tr><td>0x00</td><td>NOT_SET</td><td>Not set</td></tr><tr><td>0x01</td><td>ON_1</td><td>enabled</td></tr><tr><td>0x02</td><td>OFF_2</td><td>disabled</td></tr></table></td></tr>
<tr><td>0x09</td><td>AntifreezeWaterExchanger TempRef</td><td>Target temperature to enable antifreeze.
<table><tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr><tr><td>50</td><td>5,0°C</td><td>Minimal value</td></tr><tr><td>150</td><td>15,0°C</td><td>Maximal value</td></tr></table>Step:5
Multiplier: 0,1</td></tr>
</table>

2.3. DRV D (LEO D - destratifier)

2.3.1. INPUT REGISTER DRV D

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>CURTAIN</td><td>CURTAIN</td><td>1281</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use</td></tr>
<tr><td>0x04</td><td>T3</td><td>Temperature measured by T3 sensor (temperature measured near the celling).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-350</td><td>-35,0</td><td>Minimal value</td><td></td></tr>
<tr><td>350</td><td>35,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T4</td><td>Temperature measured by T4 sensor (temperature measured in the room).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-350</td><td>35,0</td><td>Minimal value</td><td></td></tr>
<tr><td>350</td><td>35,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>FanEff</td><td>Curtain fan speed (S1, S2, S3).
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>DestStatus</td><td>Desertification condition.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0x01</td><td>Condition (destTemp > Td - Tm) and (Tz > Tm) not met</td></tr>
<tr><td>0x02</td><td>Condition (destTemp > Td - Tm) and (Tz > Tm) met</td></tr>
</table>
Tz - target room temperature (Tref)
Td - temperature measured near the celling (T3 sensor),
Tm - temperature measured in the room (TLeadVal or T4 sensor - depends on TleadSensorSelect settings).</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x08</td><td>FuseState</td><td>Fuse state for 3V fans, information can be read from 4 bits (11..8 bit).
<table>
<tr><th>Value 11..8 bit</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Read only</td><td></td></tr>
<tr><td>0x01</td><td>Fuse state - working</td><td></td></tr>
<tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr>
</table>
Example:
Fuse state 3V fan: working (0x1)
Register value: 0x100
Fuse state 3V fan: blown (0x2)
Register value: 0x200</td></tr>
</table>

2.3.2. HOLDING REGISTER DRV D

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode
<table>
<tr><th>Value</th><th>Work state</th><th>Name</th><th>Description</th></tr>
<tr><td>1</td><td>WM_OFF</td><td>HEATER_DT_NS</td><td>Desertification off</td></tr>
<tr><td>2</td><td>WM_AUTO_DEPEND</td><td></td><td>Work mode AUTO</td></tr>
<tr><td>3</td><td>WM_AUTO_INDEPEND</td><td>HEATER_DT_FAIL</td><td>Work mode AUTO</td></tr>
<tr><td>4</td><td>WM_MANUAL</td><td>HEATER_DT_PASS</td><td>Work mode MANUAL</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>FanEffRef</td><td>Fan efficiency setting.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>DestTempRef</td><td>Target value for lunching desertification mode.
<table>
<tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr>
<tr><td>0</td><td>0,0</td><td>Minimal value</td></tr>
<tr><td>50</td><td>5,0</td><td>Default value</td></tr>
<tr><td>100</td><td>10,0</td><td>Maximal value</td></tr>
</table>
Condition:
DestTempRef > Td – Tm
Td – temperature value measured near desertificator (T3 sensor).
Tm – temperature value measured in the room (TLeadVal or T4 - depends on the TleadSensorSelect register value).</td></tr>
<tr><td>0x03</td><td>WorkModeTempR ef</td><td>Target value for desertification in MANUAL mode.
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>50</td><td>5,0</td><td>Minimal value</td></tr>
<tr><td>450</td><td>45,0</td><td>Maximal value</td></tr>
</table></td></tr>
</table>

2.4. DRV M (LEO EC – Fan Heater)

2.4.1. INPUT REGISTER DRV M

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>HEATER_EC</td><td>HEATER_EC</td><td>1025</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use</td></tr>
<tr><td>0x04</td><td>T3</td><td>Temperature measured by T3 sensor (air after water heat exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T4</td><td>Temperature measured by T4 sensor (temperature measured in the room).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>FanEff</td><td>EC Fan - Revolutions per minute (rpm).
<table>
<tr><th>Value [rpm]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>3000</td><td>Maximal value</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>AntifreezeeState</td><td>Information about antifreeze (8 bits for respected mode).
<table>
<tr><th>Value 15..8 bit</th><th>Value 7..0 bit</th><th>Antifreeze</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-</td><td>0x01</td><td>Warehouse</td><td>Normal work mode.</td><td></td></tr>
<tr><td>-</td><td>0x02</td><td>Warehouse</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
<tr><td>0x01</td><td>-</td><td>Water Exchanger</td><td>Normal work mode.</td><td></td></tr>
<tr><td>0x02</td><td>-</td><td>Water Exchanger</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x08</td><td>DestStatus</td><td>Destratification status:
(destDtemp > Td - Tm) and (Tz >Tm)
Tz - room setting temp. (value from Tref register)
Td - temp. measured at destratificator (temp. value from T3 sensor)
Tm - temp. measured into room (value from TLeadVal or T4 - depending on settings in TleadSensorSelect register)
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0x01</td><td>Condition (destDtemp > Td - Tm) and (Tz >Tm) not fullfilled</td></tr><tr><td>0x02</td><td>Condition (destDtemp > Td - Tm) and (Tz >Tm) fullfilled</td></tr></table></td></tr>
<tr><td>0x09</td><td>FanEcConnect</td><td>EC Fan and DRV M connection status.
<table><tr><th>Value</th><th>Description</th><th>Alarm</th></tr><tr><td>0x01</td><td>Fan not connected</td><td>ALARM</td></tr><tr><td>0x02</td><td>Fan connected</td><td></td></tr></table></td></tr>
<tr><td>0x0A</td><td>FuseState</td><td>Fuse state for EC/3V/Roof fans, information can be read from 4 bits.
<table><tr><th>Bit</th><th>Description</th></tr><tr><td>3..0</td><td>Roof fan</td></tr><tr><td>4..7</td><td>EC fan</td></tr><tr><td>8...11</td><td>3V fan</td></tr></table>
<table><tr><th>Value</th><th>Description</th><th>Alarm</th></tr><tr><td>0x00</td><td>Read only</td><td></td></tr><tr><td>0x01</td><td>Fuse state - working</td><td></td></tr><tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr></table>Example:
Fuse state 3V fan: working (0x1)
Register value: 0x100
Fuse state 3V fan: blown (0x2)
Register value: 0x200</td></tr>
<tr><td>0x0B</td><td>ValveState</td><td>Valve state.
<table><tr><th>Value</th><th>Name</th><th>Description</th></tr><tr><td>0x00</td><td>VALVE_IDLE</td><td>Valve in stand by mode (for 3-way valves)</td></tr><tr><td>0x01</td><td>VALVE_OPEN</td><td>Opening valve</td></tr><tr><td>0x02</td><td>VALVE_CLOSE</td><td>Closing valve</td></tr></table></td></tr>
</table>

2.4.2. HOLDING REGISTER DRV M

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode.
<table>
<tr><th>Value</th><th>Work state</th><th>Description</th></tr>
<tr><td>0</td><td>WM_DEF</td><td>Default value after power reset</td></tr>
<tr><td>1</td><td>WM_OFF</td><td>Device off</td></tr>
<tr><td>2</td><td>WM_HT_AUTO</td><td>Automatic heating</td></tr>
<tr><td>3</td><td>WM_HT_MANUAL</td><td>Manual heating</td></tr>
<tr><td>4</td><td>WM_COOL_AUTO</td><td>Automatic cooling</td></tr>
<tr><td>5</td><td>WM_COOL_MANUAL</td><td>Manual cooling</td></tr>
<tr><td>6</td><td>WM_VENT</td><td>Ventilation</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>FanEffRef</td><td>Fan efficiency setting.
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>Reserved</td><td>Reserved</td></tr>
<tr><td>0x03</td><td>DestTempRef</td><td>Target value for lunching desertification mode.
<table>
<tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr>
<tr><td>0</td><td>0,0</td><td>Minimal value</td></tr>
<tr><td>50</td><td>5,0</td><td>Default value</td></tr>
<tr><td>100</td><td>10,0</td><td>Maximal value</td></tr>
</table>
Condition:
DestTempRef > Td – Tm
Td – temperature value measured near desertificator (T3 sensor).
Tm – temperature value measured in the room (TLeadVal or T4 - depends on the TleadSensorSelect register value).</td></tr>
<tr><td>0x04</td><td>NULL_4</td><td>Register not used.</td></tr>
<tr><td>0x05</td><td>ModeAutoFanEffRefMin</td><td>Minimal fan efficiency in AUTO mode.
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table></td></tr>
<tr><td>0x06</td><td>ModeAutoFanEffRefMax</td><td>Maximal fan efficiency in AUTO mode.
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x07</td><td>ModeManualFannEffRef</td><td>Fan efficiency after attaining target temperature in MANUAL mode.
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table></td></tr>
</table>

2.5. DRV COOL (LEO COOL – Fan Heater)

2.5.1. INPUT REGISTER DRV COOL

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>COOL</td><td>COOL</td><td>2817</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use</td></tr>
<tr><td>0x04</td><td>T3</td><td>Temperature measured by T3 sensor (temperature measured near the celling).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T4</td><td>Temperature measured by T4 sensor (room temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>FanEff</td><td>AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>AntifreezeeState</td><td>Warehouse antifreeze state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Normal work mode.</td><td></td></tr>
<tr><td>0x02</td><td>Antifreeze enabled (user parameters overwritten).</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x08</td><td>NULL_8</td><td>Register not used.</td></tr>
<tr><td>0x09</td><td>FilterPressureState</td><td>Filter pressure state.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0x00</td><td>Filter – bad condition, or not connected</td></tr>
<tr><td>0x02</td><td>Filter – good condition, connected</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0A</td><td>FuseState</td><td>Fuse state for EC/3V/Roof fans, information can be read from 4 bits.
<table>
<tr><th>Bit</th><th>Description</th></tr>
<tr><td>3..0</td><td>Roof fan</td></tr>
<tr><td>4..7</td><td>EC fan</td></tr>
<tr><td>8...11</td><td>3V fan</td></tr>
</table>
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Read only</td><td></td></tr>
<tr><td>0x01</td><td>Fuse state - working</td><td></td></tr>
<tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr>
</table>
Example:
Fuse state 3V fan: working (0x1)
Register value: 0x100
Fuse state 3V fan: blown (0x2)
Register value: 0x200</td></tr>
<tr><td>0x0B</td><td>ValveState</td><td>Valve state.
<table>
<tr><th>0x00</th><th>VALVE_IDLE</th><th>Valve in stand by mode (for 3-way valves)</th></tr>
<tr><td>0x00</td><td>VALVE_IDLE</td><td>Valve in stand by mode (for 3-way valves)</td></tr>
<tr><td>0x01</td><td>VALVE_OPEN</td><td>Opening valve</td></tr>
<tr><td>0x02</td><td>VALVE_CLOSE</td><td>Closing valve</td></tr>
</table></td></tr>
</table>

2.5.2. HOLDING REGISTER DRV COOL

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode.
<table>
<tr><th>Value</th><th>Work state</th><th>Description</th></tr>
<tr><td>0</td><td>WM_DEF</td><td>Default value after power reset</td></tr>
<tr><td>1</td><td>WM_OFF</td><td>Device off</td></tr>
<tr><td>2</td><td>WM_HT_AUTO</td><td>Automatic heating</td></tr>
<tr><td>3</td><td>WM_HT_MANUAL</td><td>Manual heating</td></tr>
<tr><td>4</td><td>WM_COOL_AUTO</td><td>Automatic cooling</td></tr>
<tr><td>5</td><td>WM_COOL_MANUAL</td><td>Manual cooling</td></tr>
<tr><td>6</td><td>WM_VENT</td><td>Ventilation</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>FanEffRef</td><td>Fan efficiency setting.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>NULL_2</td><td>Register not used.</td></tr>
<tr><td>0x03</td><td>NULL_3</td><td>Register not used.</td></tr>
<tr><td>0x04</td><td>NULL_4</td><td>Register not used.</td></tr>
<tr><td>0x05</td><td>ModeAuto_FanEffRef Min</td><td>Minimal fan efficiency and fan efficiency after attaining target temperature in AUTO mode.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x06</td><td>ModeManual_FanEffR ef</td><td>Fan efficiency after attaining target temperature in MANUAL mode.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
</table>

2.6. DRV EL (LEO EL – Electric Fan Heater)

2.6.1. INPUT REGISTER DRV EL

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>HEATER_AC_EL</td><td>HEATER_AC_EL</td><td>1794</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use</td></tr>
<tr><td>0x04</td><td>T3</td><td>Temperature measured by T3 sensor (temperature measured near the celling).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T4</td><td>Temperature measured by T4 sensor (room temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>FanEff</td><td>Fan efficiency.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>AntifreezeeState</td><td>Information about antifreeze.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Normal work mode.</td><td></td></tr>
<tr><td>0x02</td><td>Antifreeze enabled (user parameters overwritten).</td><td>ALARM</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x08</td><td>DestStatus</td><td>Destratification status:
(destDtemp > Td - Tm) and (Tz >Tm)
Tz - room setting temp. (value from Tref register)
Td - temp. measured at destratificator (temp. value from T3 sensor)
Tm - temp. measured into room (value from TLeadVal or T4 - depending on settings in TleadSensorSelect register
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0x01</td><td>Condition (destDtemp > Td - Tm) and (Tz >Tm) not fullfilled</td></tr>
<tr><td>0x02</td><td>Condition (destDtemp > Td - Tm) and (Tz >Tm) fullfilled</td></tr>
</table></td></tr>
<tr><td>0x09</td><td>ThermalContactState</td><td>hermal contact state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Overheat alarm</td><td>ALARM</td></tr>
<tr><td>0x02</td><td>Normal work</td><td></td></tr>
</table>
IF 0x09 = 0x01 user parameters are overwritten:
HR 0x07 FanEffRef = 100
HR 0x0F ElectricHeaterPTCPower = 0
Overwrite discontinues when temperature inside the heater drops below safe limits.</td></tr>
<tr><td>0x0A</td><td>FuseState</td><td>Fuse state for EC/3V/Roof fans, information can be read from 4 bits.
<table>
<tr><th>Bit</th><th>Description</th></tr>
<tr><td>3..0</td><td>Roof fan</td></tr>
<tr><td>4..7</td><td>EC fan</td></tr>
<tr><td>8...11</td><td>3V fan</td></tr>
</table>
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Read only</td><td></td></tr>
<tr><td>0x01</td><td>Fuse state - working</td><td></td></tr>
<tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr>
</table>
Example:
Fuse state 3V fan: working (0x1)
Register value: 0x100
Fuse state 3V fan: blown (0x2)
Register value: 0x200</td></tr>
</table>

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x0B</td><td>PTCHeaterPowerState</td><td>Electric heater power for LEO EL L in manual heating work mode.
(SW3.5 = K1)
<table>
<tr><th>Value</th><th>L2 State</th><th>L1 State</th><th>Description</th></tr>
<tr><td>0x01</td><td>OFF</td><td>OFF</td><td>Off</td></tr>
<tr><td>0x02</td><td>OFF</td><td>ON</td><td>1 heat setting</td></tr>
<tr><td>0x03</td><td>ON</td><td>OFF</td><td>2 heat setting</td></tr>
<tr><td>0x04</td><td>ON</td><td>ON</td><td>3 heat setting</td></tr>
</table>
Electric heater power for LEO EL S in manual heating work mode.
(SW3.5 = K2)
<table>
<tr><th>Value</th><th>L2 State</th><th>L1 State</th><th>Description</th></tr>
<tr><td>0x01</td><td>OFF</td><td>OFF</td><td>Off</td></tr>
<tr><td>0x02</td><td>OFF</td><td>ON</td><td>1 heat setting</td></tr>
<tr><td>0x03</td><td>ON</td><td>ON</td><td>2 heat setting</td></tr>
<tr><td>0x04</td><td>ON</td><td>ON</td><td>2 heat setting</td></tr>
</table></td></tr>
<tr><td>0x0C</td><td>ElectricHeaterTyper</td><td>
<table>
<tr><th>Value</th><th>L2 State</th><th>Description</th></tr>
<tr><td>0x01</td><td>EH_TYPE_EL10</td><td>LEO EL S heater</td></tr>
<tr><td>0x02</td><td>EH_TYPE_EL23</td><td>LEO EL L heater</td></tr>
</table></td></tr>
</table>

2.6.2. HOLDING REGISTER DRV EL

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0x00</td><td>WM_TS</td><td>(Local controll by only TS regulator)</td></tr>
<tr><td>0x01</td><td>WM_OFF</td><td>Device off</td></tr>
<tr><td>0x02</td><td>WM_AUTO</td><td>Automatic mode</td></tr>
<tr><td>0x03</td><td>WM_HEAT</td><td>Manual heating</td></tr>
<tr><td>0x04</td><td>WM_VENT</td><td>Ventilation</td></tr>
<tr><td>0x05</td><td>WM_RAW</td><td>Raw.
Not used.</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>FanSpeedRef</td><td>Fan efficiency setting.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>DestTempRef</td><td>Target value for lunching desertification mode.
<table>
<tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr>
<tr><td>0</td><td>0,0</td><td>Minimal value</td></tr>
<tr><td>50</td><td>5,0</td><td>Default value</td></tr>
<tr><td>100</td><td>10,0</td><td>Maximal value</td></tr>
</table>
Condition:
DestTempRef > Td – Tm
Td – temperature value measured near desertificator (T3 sensor).
Tm – temperature value measured in the room (TLeadVal or T4 - depends on the TleadSensorSelect register value).</td></tr>
<tr><td>0x04</td><td>NULL_4</td><td>Register not used.</td></tr>
<tr><td>0x05</td><td>ElectricHeaterPTCPowerL</td><td>Electric heater power for LEO EL L in manual heating work mode. (SW3.5 = K1)
<table>
<tr><th>Value</th><th>L2 State</th><th>L1 State</th><th>Description</th></tr>
<tr><td>0x01</td><td>OFF</td><td>OFF</td><td>Off</td></tr>
<tr><td>0x02</td><td>OFF</td><td>ON</td><td>1 heat setting</td></tr>
<tr><td>0x03</td><td>ON</td><td>OFF</td><td>2 heat setting</td></tr>
<tr><td>0x04</td><td>ON</td><td>ON</td><td>3 heat setting</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x06</td><td>ElectricHeaterPTCPowerS</td><td>Electric heater power for LEO EL S in manual heating work mode. (SW3.5 = K2)
<table>
<tr><th>Value</th><th>L2 State</th><th>L1 State</th><th>Description</th></tr>
<tr><td>0x01</td><td>OFF</td><td>OFF</td><td>Off</td></tr>
<tr><td>0x02</td><td>OFF</td><td>ON</td><td>1 heat setting</td></tr>
<tr><td>0x03</td><td>ON</td><td>ON</td><td>2 heat setting</td></tr>
<tr><td>0x04</td><td>ON</td><td>ON</td><td>2 heat setting</td></tr>
</table></td></tr>
<tr><td>0x07</td><td>ModeAuto_FanEffRefMin</td><td>Minimal fan efficiency and fan efficiency after attaining target temperature in AUTO mode.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x08</td><td>ModeManual_FanEffRef</td><td>Fan efficiency after attaining target temperature in MANUAL mode.
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
</table>

2.7. DRV R (ROBUR NEXT R – Gas Heater)

2.7.1. INPUT REGISTER DRV R

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>ROBUR_R_NEXT</td><td>ROBUR_R_NEXT</td><td>4354</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use</td></tr>
<tr><td>0x04</td><td>NULL_04</td><td>Register not used.</td></tr>
<tr><td>0x05</td><td>T3</td><td>Temperature measured by T3 sensor (temperature measured near the celling).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>T4</td><td>Temperature measured by T4 sensor (room temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>NULL_7</td><td>Register not used.</td></tr>
<tr><td>0x08</td><td>ExternalGasDetectTH1</td><td>External gas detector signal - first threshold.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Gas concentration below threshold</td><td></td></tr>
<tr><td>0x01</td><td>Gas concentration exceeds threshold</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x09</td><td>ExternalGasDetectTH2</td><td>External gas detector signal - second threshold.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Gas concentration below threshold</td><td></td></tr>
<tr><td>0x01</td><td>Gas concentration exceeds threshold</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x0A</td><td>ExternalGasDetectVal</td><td>Gas concentration value - 0-10V DC input (gas detector scaling information required)</td></tr>
<tr><td>0x0B</td><td>NULL_11</td><td>Register not used.</td></tr>
<tr><td>0x0C</td><td>NULL_12</td><td>Register not used.</td></tr>
<tr><td>0x0D</td><td>NULL_13</td><td>Register not used.</td></tr>
<tr><td>0x0E</td><td>NULL_14</td><td>Register not used.</td></tr>
</table>

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x0F</td><td>AntifreezeStateWarehouse</td><td>Information about warehouse antifreeze state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Normal work mode</td><td></td></tr>
<tr><td>0x02</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x10</td><td>FuseState</td><td>Fan fuse state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Read only</td><td></td></tr>
<tr><td>0x01</td><td>Fuse state - working</td><td></td></tr>
<tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x11</td><td>GasAlarmState</td><td>Robur alarm (gas/flame). Read from clamp no.6 (connection terminal inside Robur heater).
<table>
<tr><th>Value</th><th>Name</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>ON</td><td>Alarm detected</td><td>ALARM</td></tr>
<tr><td>0x02</td><td>OFF</td><td>No alarm</td><td></td></tr>
</table></td></tr>
<tr><td>0x12</td><td>STBAlarmState</td><td>Air extraction temperature alarm (STB).
<table>
<tr><th>Value</th><th>Name</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>NC</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
<tr><td>0x01</td><td>ON</td><td>STB alarm detected (T3 >= T_STB_REF))</td><td>ALARM</td></tr>
<tr><td>0x02</td><td>OFF</td><td>STB alarm not detected (T3 <= (T_STB_REF - 1 [K]))</td><td></td></tr>
</table></td></tr>
<tr><td>0x13</td><td>FilterWorkTime</td><td>Filter work time.
FilterWorkTime = 5 * FilterWorkTime (min)
<table>
<tr><th>Value</th><th>Work time (min)</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimal value</td></tr>
<tr><td>65535</td><td>5*65535</td><td>Maximal Value</td></tr>
</table></td></tr>
</table>

2.7.2. HOLDING REGISTER DRV R

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode.
<table>
<tr><th>Value</th><th>Work state</th><th>Description</th></tr>
<tr><td>0x00</td><td>NS</td><td>Read only</td></tr>
<tr><td>0x01</td><td>OFF</td><td>Device off</td></tr>
<tr><td>0x02</td><td>HEAT_AUTO</td><td>Automatic heating mode</td></tr>
<tr><td>0x03</td><td>HEAT_MANUAL</td><td>Manual heating mode</td></tr>
<tr><td>0x04</td><td>VENT</td><td>Ventilation mode</td></tr>
</table></td></tr>
<tr><td>0x08</td><td>STBTemperatureAlarm On</td><td>Target temperature to invoke STB alarm state (Inpur Register 0x12). If > T3 alarm occurs.
Default value ensures error occurrence before real STB Robur alarm (which needs manual reset from heater control box).
<table>
<tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr>
<tr><td>810</td><td>81,0</td><td>Minimal value</td></tr>
<tr><td>900</td><td>90,0</td><td>Default value</td></tr>
<tr><td>1200</td><td>120,0</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x09</td><td>STBTemperatureAlarm Off</td><td>Target temperature to reset STB alarm state (Inpur Register 0x12). If > T3 alarm occurs.
<table>
<tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr>
<tr><td>610</td><td>61,0</td><td>Minimal value</td></tr>
<tr><td>800</td><td>80,0</td><td>Maximal value</td></tr>
</table>
Additional condition:
STB_T_OFF < STB_T_REF</td></tr>
<tr><td>0x0A</td><td>ContinuosModeFan SpeedRef</td><td>Fan speed after attaining target temperature.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>100</td><td>Fan on</td></tr>
<tr><td>0</td><td>Fan off</td></tr>
</table></td></tr>
<tr><td>0x0B</td><td>GasBurnerLevelRef</td><td>Gas heater power in manual heating work mode.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0x00</td><td>Read only</td></tr>
<tr><td>0x01</td><td>Gas burner first step</td></tr>
<tr><td>0x02</td><td>Gas burner second step</td></tr>
</table></td></tr>
</table>

2.8. DRV R KM (ROBUR NEXT R KM – Gas Heater with mixing Chamber)

2.8.1. INPUT REGISTER DRV R KM

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>ROBUR_KM_NEXT</td><td>ROBUR_KM_NEXT</td><td>4098</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use</td></tr>
<tr><td>0x04</td><td>T1</td><td>Temperature measured by T1 sensor (fresh air temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T3</td><td>Temperature measured by T3 sensor (air extraction temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>T4</td><td>Temperature measured by T4 sensor (room temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>NULL_7</td><td>Register not used.</td></tr>
<tr><td>0x08</td><td>ExternalGasDetectTH1</td><td>External gas detector signal - first threshold.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Gas concentration below threshold</td><td></td></tr>
<tr><td>0x01</td><td>Gas concentration exceeds threshold</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x09</td><td>ExternalGasDetectTH2</td><td>External gas detector signal - second threshold.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Gas concentration below threshold</td><td></td></tr>
<tr><td>0x01</td><td>Gas concentration exceeds threshold</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x0A</td><td>ExternalGasDetectVal</td><td>Gas concentration value - 0-10V DC input (gas detector scaling information required)</td></tr>
</table>

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x0B</td><td>NULL_11</td><td>Thermocontact signal from fan roof.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Temperature below safe limit</td><td></td></tr>
<tr><td>0x02</td><td>Temperature above safe limit</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x0C</td><td>NULL_12</td><td>Roof fan efficiency.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0D</td><td>DamperLevel</td><td>Damper position.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Temperature below safe limit</td><td></td></tr>
<tr><td>0x02</td><td>Temperature above safe limit</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x0E</td><td>DamperForceState</td><td>Forcing state for damper in mode DamperForceMode == DAMPER_FMD_ON
<table>
<tr><th>Value</th><th>Condition</th></tr>
<tr><td>0x01</td><td>T4 >= DamperForceTempRef</td></tr>
<tr><td>0x02</td><td>T4 < DamperForceTempRef</td></tr>
</table></td></tr>
<tr><td>0x0F</td><td>AntifreezeStateWarehouse</td><td>Information about warehouse antifreeze state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Normal work mode</td><td></td></tr>
<tr><td>0x02</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x10</td><td>FuseState</td><td>Fan fuse state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Read only</td><td></td></tr>
<tr><td>0x01</td><td>Fuse state - working</td><td></td></tr>
<tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x11</td><td>GasAlarmState</td><td>Robur alarm (gas/flame). Read from clamp no.6 (connection terminal inside Robur heater).
<table>
<tr><th>Value</th><th>Name</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>ON</td><td>Alarm detected</td><td>ALARM</td></tr>
<tr><td>0x02</td><td>OFF</td><td>No alarm</td><td></td></tr>
</table></td></tr>
<tr><td>0x12</td><td>STBAlarmState</td><td>Air extraction temperature alarm (STB).
<table>
<tr><th>Value</th><th>Name</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>NC</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
<tr><td>0x01</td><td>ON</td><td>STB alarm detected (T3 >= T_STB_REF))</td><td>ALARM</td></tr>
<tr><td>0x02</td><td>OFF</td><td>STB alarm not detected (T3 <= (T_STB_REF - 1 [K]))</td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x13</td><td>FilterWorkTime</td><td>Filter work time.

FilterWorkTime = 5 * FilterWorkTime (min)

<table>
<tr><th>Value</th><th>Work time (min)</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimal value</td></tr>
<tr><td>65535</td><td>5*65535</td><td>Maximal Value</td></tr>
</table>
</td></tr>
</table>

2.8.2. HOLDING REGISTER DRV R KM

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode.
<table>
<tr><th>Value</th><th>Work state</th><th>Description</th></tr>
<tr><td>0x00</td><td>NS</td><td>Read only</td></tr>
<tr><td>0x01</td><td>OFF</td><td>Device off</td></tr>
<tr><td>0x02</td><td>HEAT_AUTO</td><td>Automatic heating mode</td></tr>
<tr><td>0x03</td><td>HEAT_MANUAL</td><td>Manual heating mode</td></tr>
<tr><td>0x04</td><td>VENT</td><td>Ventilation mode</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>DamperForceMode</td><td>Damper forcing mode.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>DAMPER_FMD_NS</td><td>Read only</td></tr>
<tr><td>0x01</td><td>DAMPER_FMD_OFF</td><td>Forcing mode off</td></tr>
<tr><td>0x02</td><td>DAMPER_FMD_ ON</td><td>Depends on air draw temperature:
if (T1 < DamperForceTempRef)
{
DamperLevelRef = DamperForceRef;
}</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>DamperForceTempRef</td><td>Target temperature value to open damper in forcing mode.
(work mode DamperForceMode == DAMPER_FMD_ ON).
<table>
<tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr>
<tr><td>-100</td><td>-10,0</td><td>Minimal value</td></tr>
<tr><td>150</td><td>15,0</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x03</td><td>DamperForceLevelRef</td><td>Target temperature value to open damper.
(work mode DamperMode == DAMPER_FMD_ ON)
Condition: Temp < DamperForceTempRef
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x04</td><td>DamperLevelRef</td><td>Damper position.
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x05</td><td>DamperContLevelRef</td><td>Damper position when:
WorkMode == WM_WINTER_CONT.<table><tr><th>Value[%]</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>30</td><td>Default value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x06</td><td>FanRoofForceEffRef</td><td>Forcing fan roof ventilator speed (efficiency will be increased by FanRoofForceEffRef).<table><tr><th>Value[%]</th><th>Description</th></tr><tr><td>-100</td><td>Minimal value</td></tr><tr><td>0</td><td>Default value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x07</td><td>FanRoofMode</td><td>Fan roof work mode.<table><tr><th>Value</th><th>Name</th><th>Description</th></tr><tr><td>0x00</td><td>FR_MD_ NS</td><td>Ready only</td></tr><tr><td>0x01</td><td>FR_MD_01</td><td>Depends on damper position (DamperLevelRef) and fan efficiency settings (FanEffRef)</td></tr><tr><td>0x02</td><td>FR_MD_02</td><td>Depends on damper position (DamperLevelRef)</td></tr></table></td></tr>
<tr><td>008</td><td>STBTemperatureAlarm On</td><td>Target temperature to invoke STB alarm state (Inpur Register 0x12). If > T3 alarm occurs.
Default value ensures error occurrence before real STB Robur alarm (which needs manual reset from heater control box).<table><tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr><tr><td>810</td><td>81,0</td><td>Minimal value</td></tr><tr><td>900</td><td>90,0</td><td>Default value</td></tr><tr><td>1200</td><td>120,0</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x09</td><td>STBTemperatureAlarm Off</td><td>Target temperature to reset STB alarm state (Inpur Register 0x12). If > T3 alarm occurs.<table><tr><th>Value</th><th>Temperature [K]</th><th>Description</th></tr><tr><td>610</td><td>61,0</td><td>Minimal value</td></tr><tr><td>800</td><td>80,0</td><td>Maximal value</td></tr></table>Additional condition:
STB_T_OFF < STB_T_REF</td></tr>
<tr><td>0x0A</td><td>ContinuosModeFan SpeedRef</td><td>Fan speed after attaining target temperature.<table><tr><th>Value</th><th>Description</th></tr><tr><td>100</td><td>Fan on</td></tr><tr><td>0</td><td>Fan off</td></tr></table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Parameter</th><th>Description</th></tr>
<tr><td>0x0B</td><td>Gas Burner Level Ref</td><td>Gas heater power in manual heating work mode.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0x00</td><td>Read only</td></tr><tr><td>0x01</td><td>Gas burner first step</td></tr><tr><td>0x02</td><td>Gas burner second step</td></tr></table></td></tr>
<tr><td>0x0C</td><td>ExternalInputTH1Damper LevelRef</td><td>Damper position for EXT TH1<table><tr><th>Value[%]</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>100</td><td>Default value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table>Step: 5</td></tr>
<tr><td>0x0D</td><td>FilterMaxWorkTime</td><td>Time after which the filter alarm will activate..<table><tr><th>Value[h]</th><th>Description</th></tr><tr><td>100</td><td>Minimal value</td></tr><tr><td>4000</td><td>Default value</td></tr><tr><td>4000</td><td>Maximal value</td></tr></table>Step:100</td></tr>
<tr><td>0x0E</td><td>ExternalInputTH2Damper LevelRef</td><td>Damper position for EXT TH2.<table><tr><th>Value[%]</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>100</td><td>Default value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table>Step: 5</td></tr>
</table>

2.9. DRV KM (LEO KM – Fan Heater with Mixing Chamber)

2.9.1. INPUT REGISTER DRV KM

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>KM</td><td>KM</td><td>769</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use</td></tr>
<tr><td>0x04</td><td>T1</td><td>Temperature measured by T1 sensor (fresh air temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T3</td><td>Temperature measured by T3 sensor (air after water heat exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>T4</td><td>Temperature measured by T4 sensor (air before water heat exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>T5</td><td>Temperature measured by T5 sensor (water exchanger temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x08</td><td>ExternalGasDetectTH1</td><td>External gas detector signal - first threshold.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Gas concentration below threshold</td><td></td></tr>
<tr><td>0x01</td><td>Gas concentration exceeds threshold</td><td>ALARM</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x09</td><td>ExternalGasDetectTH2</td><td>External gas detector signal - second threshold.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Gas concentration below threshold</td><td></td></tr>
<tr><td>0x01</td><td>Gas concentration exceeds threshold</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x0A</td><td>ExternalGasDetect_val</td><td>Gas concentration value - 0-10V DC input (gas detector scaling information required).
<table>
<tr><th>Value</th><th>Voltage</th><th>Description</th></tr>
<tr><td>0</td><td>0,0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>10,0</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0B</td><td>FanRoof_TK</td><td>TK signal from fan roof.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Temperature below safe limit.</td><td></td></tr>
<tr><td>0x02</td><td>Temperature above safe limit.</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x0C</td><td>FanEff</td><td>Fan efficiency.
EC Fan - speed variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table>
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x0D</td><td>FanUvoEff</td><td>Roof fan efficiency.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0E</td><td>DamperLevel</td><td>Damper position.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0F</td><td>DamperForceState</td><td>Forcing state for damper in mode DamperForceMode == DAMPER_FMD_ON
<table>
<tr><th>Value</th><th>Condition</th></tr>
<tr><td>0x01</td><td>Temp >= DamperForceTempRef</td></tr>
<tr><td>0x02</td><td>Temp < DamperForceTempRef</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x10</td><td>AntiFreezeState</td><td>Information about antifreeze (8 bits for respected mode).
<table>
<tr><th>Value 15..8 bit</th><th>Value 7..0 bit</th><th>Antifreeze</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-</td><td>0x01</td><td>Warehouse</td><td>Normal work mode.</td><td></td></tr>
<tr><td>-</td><td>0x02</td><td>Warehouse</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
<tr><td>0x01</td><td>-</td><td>Water Exchanger</td><td>Normal work mode.</td><td></td></tr>
<tr><td>0x02</td><td>-</td><td>Water Exchanger</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x11</td><td>FilterWorkTime</td><td>Filter work time.
FilterWorkTime = 5 * FilterWorkTime (min)
<table>
<tr><th>Value</th><th>Work time (min)</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimal value</td></tr>
<tr><td>65535</td><td>5*65535</td><td>Maximal Value</td></tr>
</table></td></tr>
<tr><td>0x12</td><td>FilterPreasureSwitchState</td><td>Filter pressure state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Not connected</td><td></td></tr>
<tr><td>0x01</td><td>Connected - good condition</td><td></td></tr>
<tr><td>0x02</td><td>Connected - bad condition</td><td>WARNING</td></tr>
</table></td></tr>
<tr><td>0x13</td><td>FanEcConnect</td><td>Information about EC Fan connection.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x01</td><td>Not connected</td><td>ALARM</td></tr>
<tr><td>0x02</td><td>Connected</td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x14</td><td>FuseState</td><td>Fuse state for EC/3V/Roof fans, information can be read from 4 bits.
<table>
<tr><th>Bits</th><th>Description</th></tr>
<tr><td>3..0</td><td>Roof fan</td></tr>
<tr><td>4..7</td><td>EC fan</td></tr>
<tr><td>8...11</td><td>3V fan</td></tr>
</table>
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>Read only</td><td></td></tr>
<tr><td>0x01</td><td>Fuse state - working</td><td></td></tr>
<tr><td>0x02</td><td>Fuse state - blown</td><td>ALARM</td></tr>
</table>
Example:
Fuse state 3V fan: working (0x1)
Register value: 0x100
Fuse state 3V fan: blown (0x2)
Register value: 0x200</td></tr>
<tr><td>0x15</td><td>ValveState</td><td>Valve state.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>VALVE_IDLE</td><td>Valve in stand by mode (for 3-way valves)</td></tr>
<tr><td>0x01</td><td>VALVE_OPEN</td><td>Opening valve</td></tr>
<tr><td>0x02</td><td>VALVE_CLOSE</td><td>Closing valve</td></tr>
</table></td></tr>
</table>

2.9.2. HOLDING REGISTER DRV KM

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode
<table>
<tr><th>Value</th><th>Work mode</th><th>Description</th></tr>
<tr><td>0</td><td>WM_NS</td><td>Read only</td></tr>
<tr><td>1</td><td>WM_OFF</td><td>Device off</td></tr>
<tr><td>2</td><td>WM_HT</td><td>Heat mode</td></tr>
<tr><td>3</td><td>WM_COOL</td><td>Cool mode</td></tr>
<tr><td>4</td><td>WM_VENT</td><td>Ventilation mode</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>DamperForceMode</td><td>Damper forcing mode
<table>
<tr><th>Value</th><th>Work mode</th><th>Description</th></tr>
<tr><td>0</td><td>DAMPER_FMD_NS</td><td>Read only</td></tr>
<tr><td>1</td><td>DAMPER_FMD_OFF</td><td>Forcing mode off</td></tr>
<tr><td>2</td><td>DAMPER_FMD_ ON</td><td>Depends on air draw temperature:
if (T1 < DamperForceTempRef)
{
DamperLevelRef = DamperForceRef;
}</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>DamperForceTempRef</td><td>Target temperature value to open damper in forcing mode.
(work mode DamperForceMode == DAMPER_FMD_ ON).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>-100</td><td>-10,0</td><td>Minimal value</td></tr>
<tr><td>150</td><td>15,0</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x03</td><td>DamperForceLevelRef</td><td>Target temperature value to open damper. (work mode DamperMode == DAMPER_FMD_ ON)
Condition: Temp < DamperForceTempRef
<table>
<tr><th>Value</th><th>Damper airflow regulation [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x04</td><td>DamperLevelRef</td><td>Damper settings:
<table>
<tr><th>Value</th><th>Damper airflow regulation [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x05</td><td>FanEffRef</td><td>Fan settings:
EC Fan - speed variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table>
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
<tr><td>0x06</td><td>FanRoofForceEffRef</td><td>Forcing fan roof efficiency (FanRoofForceEffRef will be added to FanEffRef).
<table>
<tr><th>Value</th><th>Fan efficiency</th><th>Description</th></tr>
<tr><td>-100</td><td>-100</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x07</td><td>FanRoofMode</td><td>Fan roof work mode.
<table>
<tr><th>Value</th><th>Work mode</th><th>Description</th></tr>
<tr><td>0</td><td>FR_MD_NS</td><td>Read only.</td></tr>
<tr><td>1</td><td>FR_MD_01</td><td>Fan roof efficiency depended on DamperLevelRef and FanEffRef.</td></tr>
<tr><td>2</td><td>FR_MD_02</td><td>Fan roof efficiency depended on DamperLevelRef.</td></tr>
</table></td></tr>
<tr><td>0x08</td><td>ThermostatModeState</td><td>Thermostatic mode.
<table>
<tr><th>Value</th><th>Work mode</th><th>Description</th></tr>
<tr><td>1</td><td>THERMO_MD_ON</td><td>Thermostatic mode on</td></tr>
<tr><td>2</td><td>THERMO_MD_OFF</td><td>Thermostatic mode off</td></tr>
</table></td></tr>
<tr><td>0x09</td><td>ThermostatModeFanEffRef</td><td>Fan settings for thermostatic mode.
EC Fan - speed variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table>
AC Fan - 3 steps.
<table>
<tr><th>Value</th><th>Gear</th><th>Description</th></tr>
<tr><td>0</td><td>FAN_SPEED0</td><td>Fan off</td></tr>
<tr><td>1..33</td><td>FAN_SPEED1</td><td>First step</td></tr>
<tr><td>34..66</td><td>FAN_SPEED2</td><td>Second step</td></tr>
<tr><td>67..100</td><td>FAN_SPEED3</td><td>Third step</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0A</td><td>TLeasSensorSelectSupply</td><td>Leading sensor select
<table>
<tr><th>Value</th><th>Work mode</th><th>Description</th></tr>
<tr><td>0</td><td>TLST_ZONE</td><td>Zone sensor</td></tr>
<tr><td>2</td><td>TLST_T3</td><td>Read only</td></tr>
</table></td></tr>
<tr><td>0x0B</td><td>T3LeadSensorOffset</td><td>Temperature sensor offset
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>-100</td><td>-10,0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>10,0</td><td>Maximal value</td></tr>
</table>
Step; 5
Multiplier: 0,1</td></tr>
<tr><td>0x0C</td><td>FilterMaxWorkTime</td><td>Time after which the filter alarm will activate
<table>
<tr><th>Value[h]</th><th>Description</th></tr>
<tr><td>100</td><td>Minimal value</td></tr>
<tr><td>4000</td><td>Default value</td></tr>
<tr><td>4000</td><td>Maximal value</td></tr>
</table>
Step:100</td></tr>
<tr><td>0x0D</td><td>ExternalInputTH1FanRef</td><td>Fan efficiency for for EXT TH1
<table>
<tr><th>Value[%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Default value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0E</td><td>ExternalInputTH2FanRef</td><td>Fan efficiency for EXT TH2
<table>
<tr><th>Value[%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Default value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0F</td><td>ExternalInputTH1Damper LevelRef</td><td>Damper position for EXT TH1
<table>
<tr><th>Value[%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Default value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table>
Step: 5</td></tr>
<tr><td>0x10</td><td>External Input TH2 Damper LevelRef</td><td>Damper position for EXT TH2
<table>
<tr><th>Value[%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>100</td><td>Default value</td></tr>
<tr><td>100</td><td>Maximal value</td></tr>
</table>
Step: 5</td></tr>
</table>

2.10. DRV OXEN (OXEN – Heat Recovery Unit)

2.10.1. INPUT REGISTER DRV OXEN

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>Staus1</td><td>Status register no 1.
<table>
<tr><th>BIT</th><th>Name</th><th>Description</th></tr>
<tr><td>0...3</td><td>WorkMode</td><td>Oxen work mode.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>NONE</td><td>Type not identified</td></tr>
<tr><td>0x01</td><td>COLD</td><td>Cold OXEN</td></tr>
<tr><td>0x02</td><td>ELECTRIC</td><td>Electric OXEN</td></tr>
<tr><td>0x03</td><td>HOT</td><td>Water OXEN</td></tr>
</table></td></tr>
<tr><td>4...5</td><td>OxenType</td><td>Oxen Type.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>OFF</td><td>Normal work mode</td><td></td></tr>
<tr><td>0x01</td><td>ON</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>6...7</td><td>AfWaterEx</td><td>Water exchanger antifreeze information.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0x00</td><td>OFF</td><td>Normal work mode</td><td></td></tr>
<tr><td>0x01</td><td>ON</td><td>Antifreeze enabled (user parameters overwritten)</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>8...9</td><td>AfHeatCrossEx</td><td>Heat cross exchanger antifreeze information.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>IDLE</td><td>Initial value after supplying voltage</td></tr>
<tr><td>0x01</td><td>INIT</td><td>Oxen initialization</td></tr>
<tr><td>0x02</td><td>READY</td><td>Oxen ready</td></tr>
</table></td></tr>
<tr><td>10..15</td><td>-</td><td>Not used</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>Status2</td><td>Not used.</td></tr>
<tr><td>0x02</td><td>T1</td><td>Temperature measured by T1 sensor (fresh air temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td></td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x03</td><td>T2</td><td>Temperature measured by T2 sensor (air near fan extraction).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x04</td><td>T3</td><td>Temperature measured by T3 sensor (air after water heat exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x05</td><td>T4</td><td>Temperature measured by T4 sensor (room air / air return sensor).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x06</td><td>T5</td><td>Temperature measured by T5 sensor (water exchanger temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-500</td><td>-50,0</td><td>Minimal value</td><td></td></tr>
<tr><td>1000</td><td>100,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x07</td><td>Outputs</td><td>Outputs status.
<table>
<tr><th>BIT</th><th>Name</th><th>Description</th></tr>
<tr><td>0</td><td>Damper</td><td>Damper status.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0x00</td><td>Closed</td></tr>
<tr><td>0x01</td><td>Opened</td></tr>
</table></td></tr>
<tr><td>1</td><td>Bypass</td><td>Bypass status.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0x00</td><td>Closed</td></tr>
<tr><td>0x01</td><td>Opened</td></tr>
</table></td></tr>
<tr><td>2...3</td><td>Valve</td><td>Valve status.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>IDLE</td><td>IDLE state (3-way valve)</td></tr>
<tr><td>0x01</td><td>OPEN</td><td>Opening valve</td></tr>
<tr><td>0x02</td><td>CLOSE</td><td>Closing valve</td></tr>
</table></td></tr>
<tr><td>4...15</td><td>-</td><td>Not used</td></tr>
</table></td></tr>
<tr><td>0x08</td><td>Inputs</td><td>Inputs status.
<table>
<tr><th>BIT</th><th>Name</th><th>Description</th></tr>
<tr><td>0</td><td>NP_IN1</td><td>Non-potential input state IN1</td></tr>
<tr><td>1</td><td>NP_IN2</td><td>Non-potential input state IN2</td></tr>
<tr><td>2</td><td>NP_IN3</td><td>Non-potential input state IN3</td></tr>
<tr><td>3</td><td>SW1_P5</td><td>SW1 switch state, position 5</td></tr>
<tr><td>4</td><td>SW1_P4</td><td>SW1 switch state, position 4</td></tr>
<tr><td>5</td><td>SW1_P3</td><td>SW1 switch state, position 3</td></tr>
<tr><td>6</td><td>SW1_P2</td><td>SW1 switch state, position 2</td></tr>
<tr><td>7</td><td>SW1_P1</td><td>SW1 switch state, position 1</td></tr>
</table>
Non-potential inputs state:
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0</td><td>CLOSE</td><td>Short circuit</td></tr>
<tr><td>1</td><td>OPEN</td><td>Open</td></tr>
</table>
Switch states:
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0</td><td>OFF</td><td>Switch in OFF position</td></tr>
<tr><td>1</td><td>ON</td><td>Switch in ON position</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x09</td><td>FilterWorkTime</td><td>Filter work time.

<table><tr><th>Value</th><th>[min]</th><th>Description</th></tr><tr><td>0</td><td>5 * 0</td><td>Minimal value</td></tr><tr><td>65534</td><td>5 * 65534</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0A</td><td>FansEff_1</td><td>Fan efficiency in group I (supply fans).

EC Fan - speed variable in range 0 - 100%

<table><tr><th>Value</th><th>Fan speed</th><th>Description</th></tr><tr><td>0</td><td>0%</td><td>Minimal value</td></tr><tr><td>100</td><td>100%</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0B</td><td>FansEff_2</td><td>Fan efficiency setting in group II (exhaust fans).

EC Fan - speed variable in range 0 - 100%

<table><tr><th>Value</th><th>Fan speed</th><th>Description</th></tr><tr><td>0</td><td>0%</td><td>Minimal value</td></tr><tr><td>100</td><td>100%</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0C</td><td>OxenElectric_PtcPower</td><td>Not used.</td></tr>
<tr><td>0x0D</td><td>OxenElectric_PtcTk</td><td>Not used</td></tr>
</table>

2.10.2. HOLDING REGISTER DRV OXEN

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>FansEffRef_1</td><td>Fan efficiency setting in group I.
EC Fan - speed variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table>
Note: FansEffRef_1 = FansEffRef_2</td></tr>
<tr><td>0x01</td><td>FansEffRef_2</td><td>Fan efficiency setting in group II.
EC Fan - speed variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>OxenState</td><td>Work status.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0</td><td>OXEN_ST_OFF</td><td>Disabled</td></tr>
<tr><td>1</td><td>OXEN_ST_ECO</td><td>Enabled</td></tr>
</table></td></tr>
<tr><td>0x03</td><td>OxenMode</td><td>Work mode (bypass).
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0</td><td>OXEN_MD_AUTO</td><td>Automatic adjustment (automatic adjustment)</td></tr>
<tr><td>1</td><td>OXEN_MD_WINTER</td><td>Winter adjustment (bypass off)</td></tr>
<tr><td>2</td><td>OXEN_MD_SUMMER</td><td>Summer adjustment (bypass on)</td></tr>
</table></td></tr>
<tr><td>0x04</td><td>FilterMaxWorkTime</td><td>Time after which the filter alarm will activate
<table>
<tr><th>Value[h]</th><th>Description</th></tr>
<tr><td>100</td><td>Minimal value</td></tr>
<tr><td>4000</td><td>Default value</td></tr>
<tr><td>4000</td><td>Maximal value</td></tr>
</table>
Step:100</td></tr>
<tr><td>0x05</td><td>TleadSensorSelectSupply</td><td>Leading sensor offset.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0</td><td>TLST_ZONE</td><td>Zone sensor</td></tr>
<tr><td>2</td><td>TLST_T3</td><td>Read only</td></tr>
</table></td></tr>
<tr><td>0x06</td><td>T3LeadSensorOff</td><td>Temperature sensor offset
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>-100</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table>
Step:5
Multiplier: 0,1</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x07</td><td>ExternalInputTH1FanRef1</td><td>An efficiency setting in group I (supply fans) For EXT TH1
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table>
Default value: 100</td></tr>
<tr><td>0x08</td><td>ExternalInputTH2FanRef1</td><td>An efficiency setting in group I (supply fans) For EXT TH2
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table>
Default value: 100</td></tr>
<tr><td>0x09</td><td>ExternalInputTH1FanRef2</td><td>An efficiency setting in group II (exhaust fans) For EXT TH1
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0A</td><td>ExternalInputTH2FanRef2</td><td>An efficiency setting in group II (exhaust fans) For EXT TH2
<table>
<tr><th>Value</th><th>Fan speed</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x09</td><td>RegParam_T</td><td>Doubling time for adjustment (regulator) (OXEN HOT).
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Minimal value</td></tr>
<tr><td>1000</td><td>Maximal value</td></tr>
</table></td></tr>
</table>

2.11. DRV CUBE (CUBE – Rooftop Unit)

2.11.1. INPUT REGISTER DRV CUBE

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x09</td><td>ambient_temp_value</td><td>Outside temperature.<table><tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr><tr><td>-640</td><td>-64,0</td><td>Minimal value</td></tr><tr><td>640</td><td>64,0</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0A</td><td>supply_temp_value</td><td>Supply air temperature.<table><tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr><tr><td>-640</td><td>-64,0</td><td>Minimal value</td></tr><tr><td>640</td><td>64,0</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0B</td><td>return_temp_value</td><td>Exhaust air temperature.<table><tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr><tr><td>-640</td><td>-64,0</td><td>Minimal value</td></tr><tr><td>640</td><td>64,0</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0C</td><td>water_temp_value</td><td>Water exchanger temperature.<table><tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr><tr><td>-640</td><td>-64,0</td><td>Minimal value</td></tr><tr><td>1500</td><td>150,0</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0D</td><td>TempRoom_ADD</td><td>Room Sensor.<table><tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr><tr><td>-640</td><td>-64,0</td><td>Minimal value</td></tr><tr><td>1500</td><td>150,0</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0E</td><td>recirculation_damper_level</td><td>Recirculation damper level.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x0F</td><td>swirl_diffuser_position</td><td>Swirl diffuser position.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x10</td><td>NULL</td><td>Not used.</td></tr>
<tr><td>0x10</td><td>rotary_level</td><td>Rotor level.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x11</td><td>fan_supply_flow</td><td>Fan supply flow.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>10000</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x12</td><td>gas_heating_value</td><td>Gas heating value.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Minimal value</td></tr><tr><td>100</td><td>Maximal value</td></tr></table></td></tr>
<tr><td>0x13</td><td>CO2_status</td><td>Status CO2
Description is split between <MSB> <LSB>.
<MSB> ignored
<LSB> CO2 status<table><tr><th>Value</th><th>Name</th><th>Description</th><th>Alarm</th></tr><tr><td>0x00</td><td>CO2_STAT_OK</td><td>CO2 status OK</td><td></td></tr><tr><td>0x01</td><td>CO2_STAT_L1</td><td>CO2 level 1</td><td>ALARM</td></tr><tr><td>0x02</td><td>CO2_STAT_L2</td><td>CO2 level 2</td><td>ALARM</td></tr></table></td></tr>
<tr><td>0x14</td><td>Rooftop_work_mode</td><td>Rooftop work mode
Description is split between <MSB> <LSB>.
<MSB> ignored
<LSB> Work mode<table><tr><th>Value</th><th>Work status</th><th>Description</th></tr><tr><td>1</td><td>RT_WM_VENT</td><td>Ventilation</td></tr><tr><td>2</td><td>RT_WM_HTG</td><td>Heating</td></tr><tr><td>3</td><td>RT_WM_HTGREC</td><td>Heating with recovery</td></tr><tr><td>4</td><td>RT_WM_CLG</td><td>Cooling</td></tr><tr><td>5</td><td>RT_WM_CLGREC</td><td>Cooling with recovery</td></tr></table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x15</td><td>Rooftop_current_work
_mode</td><td>Rooftop current work mode
Description is split between <MSB> <LSB>.
<MSB> ignored
<LSB> Current work mode
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>1</td><td>WM_STOP</td><td>Stop</td></tr>
<tr><td>2</td><td>WM_FREEZ</td><td>Freez</td></tr>
<tr><td>3</td><td>WM_OFF</td><td>Off</td></tr>
<tr><td>4</td><td>WM_STARTUP</td><td>StrtUp</td></tr>
<tr><td>5</td><td>WM_ECO</td><td>Eco</td></tr>
<tr><td>6</td><td>WM_CMFRT</td><td>Cmfrt</td></tr>
<tr><td>7</td><td>WM_CO2</td><td>CO2</td></tr>
<tr><td>8</td><td>WM_THMST</td><td>Thmst</td></tr>
<tr><td>9</td><td>WM_NGHTCLG</td><td>NghtClg</td></tr>
<tr><td>10</td><td>WM_OVRRUN</td><td>OvrRun</td></tr>
<tr><td>11</td><td>WM_DEFROST</td><td>DeFrost</td></tr>
</table></td></tr>
<tr><td>0x16</td><td>Alarm</td><td>Alarm
Description is split between <MSB> <LSB>.
<MSB> ignored
<LSB> Alarms
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0</td><td>AL_OK</td><td>OK</td></tr>
<tr><td>1</td><td>AL_MAINTENANCE</td><td>Maintenance</td></tr>
<tr><td>2</td><td>AL_WARNING</td><td>Warning</td></tr>
<tr><td>3</td><td>AL_FAULT</td><td>Fault</td></tr>
<tr><td>4</td><td>AL_DANGER</td><td>Danger</td></tr>
</table></td></tr>
<tr><td>0x17</td><td>room_temp_sensor_status</td><td>Room temp sensor status.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>OK</td></tr>
<tr><td>1</td><td>no sensor</td></tr>
<tr><td>X5</td><td>Short circuit</td></tr>
</table></td></tr>
<tr><td>0x18</td><td>NULL</td><td>Not used.</td></tr>
<tr><td>0x19</td><td>NULL</td><td>Not used.</td></tr>
<tr><td>0x1A</td><td>ControlSource</td><td>
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>1</td><td>LOCAL</td><td>Rooftop HMI</td></tr>
<tr><td>2</td><td>SCHEDULE</td><td>Calendar from Rooftop</td></tr>
<tr><td>3</td><td>TBOX</td><td>T-box as controller</td></tr>
<tr><td>4</td><td>BMS</td><td>External Modbus</td></tr>
</table></td></tr>
</table>

2.11.2. HOLDING REGISTER DRV CUBE

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode</td><td>Work mode settings
Description is split between <MSB> <LSB>.
<MSB> ignored
<LSB> Work mode
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>1</td><td>WM_OFF</td><td>Device off</td></tr>
<tr><td>2</td><td>WM_ON</td><td>Device on</td></tr>
<tr><td>3</td><td>WM_THERM</td><td>Device Therm</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>fan_eff</td><td>Fan efficiency setting - variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan efficiency</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x02</td><td>fan_eff_CO2_I</td><td>Fan efficiency settings for CO2 sensor stage 1 - variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan efficiency</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x03</td><td>fan_eff_CO2_II</td><td>Fan efficiency settings for CO2 sensor stage 2 - variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Fan efficiency</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x04</td><td>recirculation_mode</td><td>Recirculation mode settings
Description is split between <MSB> <LSB>.
<MSB> ignored
<LSB> Recirculation mode
<table>
<tr><th>Value</th><th>Recirculation Mode</th><th>Description</th></tr>
<tr><td>0</td><td>RM_AUTO</td><td>Auto mode</td></tr>
<tr><td>1</td><td>RM_MANUAL</td><td>Manual mode</td></tr>
</table></td></tr>
<tr><td>0x05</td><td>recirculation_value</td><td>Recirculation value - variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Recirculation value</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x06</td><td>recirculation_value_CO2_I</td><td>Recirculation value for CO2 sensor stage 1 - variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Recirculation value</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x07</td><td>recirculation_value_CO2_II</td><td>Recirculation value for CO2 sensor stage 2 - variable in range 0 - 100%
<table>
<tr><th>Value</th><th>Recirculation value</th><th>Description</th></tr>
<tr><td>0</td><td>0%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x08</td><td>work_mode_NW</td><td>Work mode NW (swirl diffuser)
Description is split between <MSB> <LSB>.
<MSB> ignored
<LSB> Work mode NW
<table>
<tr><th>Value</th><th>Work Mode</th><th>Description</th></tr>
<tr><td>0</td><td>WM_NW_AUTO</td><td>Auto mode</td></tr>
<tr><td>1</td><td>WM_NW_MANUAL</td><td>Manual mode</td></tr>
</table></td></tr>
<tr><td>0x09</td><td>swirl_diffuser_level</td><td>Swirl diffuser level.
<table>
<tr><th>Value</th><th>Swirl diff. level</th><th>Description</th></tr>
<tr><td>30</td><td>30%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0A</td><td>Clg_swirl_diffuser_level</td><td>Swirl diffuser level in cooling mode.
<table>
<tr><th>Value</th><th>Swirl diff. level</th><th>Description</th></tr>
<tr><td>30</td><td>30%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
<tr><td>0x0B</td><td>Htg_swirl_diffuser_level</td><td>Swirl diffuser level in heating mode.
<table>
<tr><th>Value</th><th>Swirl diff. level</th><th>Description</th></tr>
<tr><td>30</td><td>30%</td><td>Minimal value</td></tr>
<tr><td>100</td><td>100%</td><td>Maximal value</td></tr>
</table></td></tr>
</table>

2.12. DRV AX (ELIS AX – Air Curtain)

2.12.1. INPUT REGISTER DRV AX

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>DRV_ELIS_EC</td><td>DRV ELIS EC</td><td>6146</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Connection count</td><td>Register for internal use.</td></tr>
<tr><td>0x03</td><td>Soft_ver</td><td>Register for internal use.</td></tr>
<tr><td>0x04</td><td>T1</td><td>Temperature value from the sensor connected to the PT1 input - outdoor air temperature measurement.
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-1500</td><td>-150,0</td><td>Minimal value</td><td></td></tr>
<tr><td>2000</td><td>200,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x05</td><td>T3</td><td>Temperature value from sensor connected to PT3 input - supply air temperature measurement.
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-1500</td><td>-150,0</td><td>Minimal value</td><td></td></tr>
<tr><td>2000</td><td>200,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>T4</td><td>Temperature measured by T4 sensor (room temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-1500</td><td>-150,0</td><td>Minimal value</td><td></td></tr>
<tr><td>2000</td><td>200,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>T5</td><td>Temperature value from the sensor connected to the input. PT5 - measurement of the temperature of water on the post-return pipe of the water exchanger.
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-1500</td><td>-150,0</td><td>Minimal value</td><td></td></tr>
<tr><td>2000</td><td>200,0</td><td>Maximal value</td><td></td></tr>
<tr><td>0x7000</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>0x7FFF</td><td>-</td><td>PT1000 sensor not connected</td><td>ALARM</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x08</td><td>CurtainState1</td><td>The register contains information on what state the controller is in. Each bit of the register represents whether a particular function of the controller has been activated. The concept of function is understood here in a broad sense, i.e. it can represent the operating mode of the curtain (in Holding Regirters register: Elis_Work_Mode) or the currently running program (in Holding Regirters register: Program).
<table>
<tr><th>BIT</th><th>Name</th><th>Description for BIT == 1</th></tr>
<tr><td>0</td><td>WM_OFF</td><td>The controller is in OFF state</td></tr>
<tr><td>1</td><td>WM_VENT</td><td>The controller is in VENT state</td></tr>
<tr><td>2</td><td>WM_HEAT</td><td>The controller is in HEAT state</td></tr>
<tr><td>3</td><td>WM_SMART</td><td>The controller is in SMART state</td></tr>
<tr><td>4</td><td>PROGRAM_K1</td><td>K1 program is being implemented</td></tr>
<tr><td>5</td><td>PROGRAM_K2</td><td>K2 program is being implemented</td></tr>
<tr><td>6</td><td>PROGRAM_K3</td><td>K3 program is being implemented</td></tr>
<tr><td>7</td><td>ADD_HEAT</td><td>Condition of the reheating function has been met</td></tr>
<tr><td>8</td><td>STANDBY</td><td>Condition of the standby function has been met</td></tr>
<tr><td>9</td><td>PREHEAT</td><td>Condition of the preheating function has been fulfilled</td></tr>
<tr><td>10</td><td>AF_WAREHOUSE</td><td>Condition of antifreeze protection of the hall has occurred</td></tr>
<tr><td>11</td><td>AF_WATER_EXCHANGER</td><td>Condition of protection of the water exchanger has occurred</td></tr>
<tr><td>12</td><td>DOOR_OPEN_FREQ</td><td>Condition of the door frequency detection function has occurred</td></tr>
<tr><td>13</td><td>Curtain_State_02</td><td>Curtain_State_02 register value > 0</td></tr>
<tr><td>14</td><td>Curtain_State_03</td><td>Curtain_State_03 register value > 0</td></tr>
<tr><td>15</td><td>NOT_USE</td><td>Not used (value 0x0)</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x09</td><td>CurtainState2</td><td>Controller status register extensions.
<table>
<tr><th>BIT</th><th>Name</th><th>Description for BIT == 1</th><th>Alarm</th></tr>
<tr><td>0</td><td>WM_OFF</td><td>The controller is in OFF state</td><td>ALARM</td></tr>
<tr><td>1</td><td>WM_VENT</td><td>The controller is in VENT state</td><td>ALARM</td></tr>
<tr><td>2</td><td>WM_HEAT</td><td>The controller is in HEAT state</td><td>ALARM</td></tr>
<tr><td>3</td><td>WM_SMART</td><td>The controller is in SMART state</td><td>ALARM</td></tr>
<tr><td>4</td><td>PROGRAM_K1</td><td>K1 program is being implemented</td><td>ALARM</td></tr>
<tr><td>5</td><td>PROGRAM_K2</td><td>K2 program is being implemented</td><td>ALARM</td></tr>
<tr><td>6</td><td>PROGRAM_K3</td><td>K3 program is being implemented</td><td>ALARM</td></tr>
<tr><td>7</td><td>ADD_HEAT</td><td>Condition of the reheating function has been met</td><td>ALARM</td></tr>
<tr><td>8</td><td>STANDBY</td><td>Condition of the standby function has been met</td><td>ALARM</td></tr>
<tr><td>9</td><td>PREHEAT</td><td>Condition of the preheating function has been fulfilled</td><td>ALARM</td></tr>
<tr><td>10</td><td>AF_WAREHOUSE</td><td>Condition of antifreeze protection of the hall has occurred</td><td>ALARM</td></tr>
<tr><td>11</td><td>AF_WATER_EXCHANGER</td><td>Condition of protection of the water exchanger has occurred</td><td></td></tr>
<tr><td>12</td><td>DOOR_OPEN_FREQ</td><td>Condition of the door frequency detection function has occurred</td><td></td></tr>
<tr><td>13</td><td>Curtain_State_02</td><td>Curtain_State_02 register value > 0</td><td></td></tr>
<tr><td>14</td><td>Curtain_State_03</td><td>Curtain_State_03 register value > 0</td><td></td></tr>
<tr><td>15</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0A</td><td>CurtainState3</td><td>Controller status register extensions.
<table>
<tr><th>BIT</th><th>Name</th><th>Description for BIT == 1</th><th>Alarm</th></tr>
<tr><td>0</td><td>FUSE_FAN1</td><td>Blown fuse for FAN1</td><td>ALARM</td></tr>
<tr><td>1</td><td>FUSE_FAN2</td><td>Blown fuse for FAN2</td><td>ALARM</td></tr>
<tr><td>2</td><td>FUSE_RELAY</td><td>Blown fuse for RELAY</td><td>ALARM</td></tr>
<tr><td>3</td><td>OUT1_WORK</td><td>Information on the state of WORK (output open)</td><td></td></tr>
<tr><td>4</td><td>OUT2_EMERGENCY</td><td>State information of EMERGENCY (output open)</td><td>ALARM</td></tr>
<tr><td>5</td><td>PREHEAT_T5_REF_FORCE</td><td>Information about forcing by register [0x0C] EWM_HEAT_T5_Max</td><td></td></tr>
<tr><td>6</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>7</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>8</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>9</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>10</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>11</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>12</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>13</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>14</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
<tr><td>15</td><td>NOT_USE</td><td>Not used (value 0x0)</td><td></td></tr>
</table></td></tr>
<tr><td>0x0B…
…0x11</td><td>Fan1Speed…Fan7Speed</td><td>Actual value of the supply air fan speed.
Fan speed value read from input FAN_EC_1 ... FAN_EC_7
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum value</td></tr>
<tr><td>5000</td><td>Maximum value</td></tr>
</table></td></tr>
<tr><td>0x12</td><td>FilterWorkTime</td><td>Filter operating time.
<table>
<tr><th>Value</th><th>Filter operating time [min]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>65535</td><td>5*65535</td><td>Maximum value</td></tr>
</table>
FilterWorkTime = 5 * FilterWorkTime [min]</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x13</td><td>ValveRealysState</td><td>Current status of the valve connected to VALVE_RELAYS.
<table>
<tr><th>Value</th><th>Name</th><th>L1</th><th>L2</th><th>Description</th></tr>
<tr><td>0x00</td><td>IDLE</td><td>0</td><td>0</td><td>Valve at rest (condition for three-point valve)</td></tr>
<tr><td>0x01</td><td>OPEN</td><td>0</td><td>1</td><td>Opening the valve</td></tr>
<tr><td>0x02</td><td>CLOSE</td><td>1</td><td>0</td><td>Closing the valve</td></tr>
<tr><td>-</td><td>-</td><td>1</td><td>1</td><td>Unauthorized condition</td></tr>
</table>
L1, L2 contacts:
0 - opened
1 - closed</td></tr>
<tr><td>0x14</td><td>Valve0-10State</td><td>The current status of the valve connected to 0-10 V.
Value read from input 0-10V
<table>
<tr><th>Value [%]</th><th>[V]</th><th>Description</th></tr>
<tr><td>0</td><td>0,0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>10,0</td><td>Maximum value</td></tr>
</table></td></tr>
</table>

2.12.2. HOLDING REGISTER DRV AX

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>WorkMode,</td><td>Work mode.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0x01</td><td>OFF</td><td>Device off</td></tr>
<tr><td>0x02</td><td>HEAT</td><td>Operation mode: heating</td></tr>
<tr><td>0x03</td><td>VENT</td><td>Operation mode: ventilation</td></tr>
<tr><td>0x04</td><td>SMART</td><td>Operation mode: smart</td></tr>
</table></td></tr>
<tr><td>0x01</td><td>FanWorkMode</td><td>Fan mode:
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>MANUAL</td><td>Fan work in manual mode</td></tr>
<tr><td>0x02</td><td>AUTO</td><td>Fan work in auto mode.</td></tr>
</table>
Default value: MANUAL (0x01)</td></tr>
<tr><td>0x02</td><td>Program</td><td>The program according to which the curtain works:
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>K1</td><td>K1 program has been selected. (Temp. Drop or Door Switch Turns On Unit)</td></tr>
<tr><td>0x02</td><td>K2</td><td>K2 program has been selected. (Door Switch Turns On unit, Than temp. Drop Turns On Heating)</td></tr>
<tr><td>0x03</td><td>K3</td><td>K3 program has been selected. (Temp. Drop Turns On Unit, No reaction for Door Switch)</td></tr>
</table>
Default value: K1 (0x01)</td></tr>
<tr><td>0x03</td><td>FWM_ManualHeatVentRef</td><td>Fan efficiency:
(Fan_ Work_ Mode == MANUAL) && (Elis_ Work_ Mode == (HEAT or VENT))
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 50 [%]</td></tr>
<tr><td>0x04</td><td>FWM_StandbyRef</td><td>Standard fan performance set point (STANDBY) .
Parameter active if:
(Fan_ Work_ Mode == MANUAL) || (Fan_ Work_ Mode == AUTO)
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 20 [%]</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x05</td><td>FWM_AutoHeatVentMin</td><td>The maximum value of the fan capacity in the automatic operating state.
Parameter active if:
(Fan_Work_Mode == AUTO) && (Elis_Work_Mode == (HEAT || VENT))
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 0 [%]
Condition: FWM_Auto_Heat_Vent_Min < FWM_Auto_Heat_Vent_Max</td></tr>
<tr><td>0x06</td><td>FWM_AutoHeatVentMax</td><td>The maximum value of the fan capacity in the automatic operating state.
Parameter active if:
(Fan_Work_Mode == AUTO) && (Elis_Work_Mode == (HEAT || VENT))
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 100 [%]
Condition: FWM_Auto_Heat_Vent_Max > FWM_Auto_Heat_Vent_Min</td></tr>
<tr><td>0x07</td><td>EWM_HeatT3Ref</td><td>Temperature setpoint for supply air for heating (HEAT).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>250</td><td>25</td><td>Minimum value</td></tr>
<tr><td>450</td><td>45</td><td>Maximum value</td></tr>
</table>
Default value: 32,0 [C] (320)</td></tr>
<tr><td>0x08</td><td>EWM_HeatT5Max</td><td>Return water temperature limitation value for heating (HEAT).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>200</td><td>20</td><td>Minimum value</td></tr>
<tr><td>500</td><td>50</td><td>Maximum value</td></tr>
</table>
Default value: 32,0 [C] (320)</td></tr>
<tr><td>0x09</td><td>EWM_HeatT5LimitMode</td><td>Enable / disable return water temperature limitation for heating (HEAT).
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>ON</td><td>Enable</td></tr>
<tr><td>0x02</td><td>OFF</td><td>Disable</td></tr>
</table>
Default value: OFF (0x02)</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0A</td><td>PrheatT5Ref</td><td>Return water temperature limitation value for heating (HEAT).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>200</td><td>20</td><td>Minimum value</td></tr>
<tr><td>600</td><td>60</td><td>Maximum value</td></tr>
</table>
Default value: 30,0 [C] (300)
(*) Value Preheat_T5_Ref depends on the value of the parameter WM_HEAT_T5_Max.
If:
EMW_HEAT_T5_Limit_Mode_On_Off == ON,
and:
Preheat_T5_Ref > EWM_HEAT_T5_Max,
than the return water temperature control algorithm will take the value from the register [0x0C] EWM_HEAT_T5_Max. In addition, in the register [0x0A] Curtain_State_03 it is possible to read the information on the PREHEAT_T5_REF_FORCE field about the forcing of Preheat_T5_Ref through the [0x0C] EWM_HEAT_T5_Max register.</td></tr>
<tr><td>0x0B</td><td>StanbyFanIdleDelay</td><td>Delay time of standby fan operation (STANDBY)
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum delay in [s] (standby deactivation)</td></tr>
<tr><td>65534</td><td>Maximum delay in [s]</td></tr>
<tr><td>0xFFFF</td><td>Continuous operation</td></tr>
</table>
Defaulkt value: 300 s
For:
Standby_Fan_Idle_Delay > 0,
The condition must be met:
Standby_Fan_Idle_Delay >= Standby_Valve_Idle_Delay.
If:
Standby_Fan_Idle_Delay < Standby_Valve_Idle_Delay
then to register:
[0x14] Standby_Valve_Idle_Delay
will be written the value of:
[0x13] Standby_Fan_Idle_Delay.</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0C</td><td>StanbyValveIdleDelay</td><td>Delay time of valve operation in standby (STANDBY)
<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Minimum delay in [s] (standby deactivation)</td></tr><tr><td>65534</td><td>Maximum delay in [s]</td></tr><tr><td>0xFFFF</td><td>Continuous operation</td></tr></table>Default value: 300 s
For:
Standby_Valve_Idle_Delay > 0,
The condition must be met:
Standby_Valve_Idle_Delay <=Standby_Fan_Idle_Delay.
If:
Standby_Valve_Idle_Delay > Standby_Fan_Idle_Delay
then to register:
[0x13] Standby_Fan_Idle_Delay
will be written the value of:
[0x14] Standby_Valve_Idle_Delay.</td></tr>
<tr><td>0x0D</td><td>AntifreezeWareHouseOn</td><td>Enable / disable return water temperature limitation for heating (HEAT).
<table><tr><th>Value</th><th>Name</th><th>Description</th></tr><tr><td>0x01</td><td>ON</td><td>Enable</td></tr><tr><td>0x02</td><td>OFF</td><td>Disable</td></tr></table>Default value: OFF (0x02)</td></tr>
<tr><td>0x0E</td><td>AntifreezeWareTempOn</td><td>Antifreeze warehouse threshold.
<table><tr><th>Value</th><th>Name</th><th>Description</th></tr><tr><td>50</td><td>5,0</td><td>Minimum value</td></tr><tr><td>150</td><td>15,0</td><td>Maximum value</td></tr></table>Default value: 7,0 [C]</td></tr>
<tr><td>0x0F</td><td>AntifreezeWaterExchangeOn</td><td>Water exchanger antifreeze activation.
<table><tr><th>Value</th><th>Name</th><th>Description</th></tr><tr><td>0x01</td><td>ON</td><td>Enable</td></tr><tr><td>0x02</td><td>OFF</td><td>Disable</td></tr></table>Default value: ON (0x01)</td></tr>
<tr><td>0x10</td><td>AntifreezeWaterExchangeT3</td><td>Threshold value of supply air temperature for the condition of activation of anti-freeze protection of water exchanger.
<table><tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr><tr><td>50</td><td>5,0</td><td>Minimum value</td></tr><tr><td>100</td><td>10,0</td><td>Maximum value</td></tr></table>Default value: 7,0 [C] (70)</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x11</td><td>AntifreezeWaterExchangeT5</td><td>The threshold value of the return water temperature for the condition of tripping the anti-freeze protection of the water exchanger.
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>50</td><td>5,0</td><td>Minimum value</td></tr>
<tr><td>200</td><td>20,0</td><td>Maximum value</td></tr>
</table>
Default value: 7,0 [C] (70)</td></tr>
<tr><td>0x12</td><td>PreheatOnOff</td><td>Enable / disable preheating (PREHAET)
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>ON</td><td>Enable</td></tr>
<tr><td>0x02</td><td>OFF</td><td>Disable</td></tr>
</table>
Default value: OFF (0x02)</td></tr>
<tr><td>0x13</td><td>FilterMaxWorkTime</td><td>Erasing the filter operating time counter
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>NS</td><td>Enable</td></tr>
<tr><td>0x01</td><td>RESET</td><td>Disable</td></tr>
</table>
Default value: OFF (0x02)</td></tr>
<tr><td>0x14</td><td>DoorOpenFreqAlpha Threshold</td><td>Detection threshold value of door opening frequency in the mode. Parameter active if:
Elis_Work_Mode == SMART
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x00</td><td>NS</td><td>Enable</td></tr>
<tr><td>0x01</td><td>RESET</td><td>Disable</td></tr>
</table>
Default value: 0,60 (60)</td></tr>
<tr><td>0x15</td><td>DoorOpenFreqTimePeriod</td><td>Setpoint of the detection period of the door opening frequency. Parameter active if :
Elis_Work_Mode == SMART
<table>
<tr><th>Value [s]</th><th>Description</th></tr>
<tr><td>2*60</td><td>Minimum value</td></tr>
<tr><td>15*60</td><td>Maximum value</td></tr>
</table>
Default value: 5*60 [s]</td></tr>
<tr><td>0x16</td><td>FWMAutoAddHeatMin</td><td>Minimum value of fan capacity in reheating (ADD HEAT).
Parameter active if:
Fan_Work_Mode == AUTO
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 5%
Condition: FWM_Auto_Add_Heat_Min < FWM_Auto_Add_Heat_Max</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x17</td><td>FWMAutoAddHeatMax</td><td>Maximumvalue of fan capacity in reheating (ADD HEAT).
Parameter active if:
Fan_Work_Mode == AUTO
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 5%
Condition: FWM_Auto_Add_Heat_Min > FWM_Auto_Add_Heat_Max</td></tr>
<tr><td>0x18</td><td>EWMSmartT124h</td><td>Temperature setpoint for determining transition condition between modes VENT - > HEAT.
Parameter active if:
Elis_Work_Mode == SMART
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>150</td><td>15,0</td><td>Minimum value</td></tr>
<tr><td>240</td><td>24,0*</td><td>Maximum value</td></tr>
</table>
Default value: 17,0 (170)
(*) EWM_Smart_T1_24h_ref <= EWM_Smart_T1_3h_ref – 1 [K]</td></tr>
<tr><td>0x19</td><td>EWMSmartT13h</td><td>Temperature setpoint for determining transition condition between modes HEAT- > VENT.
Parameter active if:
Elis_Work_Mode == SMART
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>160</td><td>16,0*</td><td>Minimum value</td></tr>
<tr><td>250</td><td>25,0</td><td>Maximum value</td></tr>
</table>
Default value: 21,0 (210)
(*) EWM_Smart_T1_3h_ref >= EWM_Smart_T1_24h_ref + 1 [K]</td></tr>
<tr><td>0x1A</td><td>HeatT3_PI_KP</td><td>KP gain value of the PI controller for the supply air temperature control system (T3).
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 3</td></tr>
<tr><td>0x1B</td><td>HeatT3_PI_TI</td><td>The value of the doubling time TI of the PI controller for the supply air temperature control system (T3).
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum value</td></tr>
<tr><td>600</td><td>Maximum value</td></tr>
</table>
Default value: 3*60 = 180 [s]</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x1C</td><td>HeatT5_PI_KP</td><td>KP gain value of the PI controller for the return water temperature control system (T5).
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum value</td></tr>
<tr><td>100</td><td>Maximum value</td></tr>
</table>
Default value: 3</td></tr>
<tr><td>0x1D</td><td>HeatT5_PI_TI</td><td>The value of the TI time of the PI controller for the return water temperature control system (T5).
<table>
<tr><th>Value [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Minimum value</td></tr>
<tr><td>600</td><td>Maximum value</td></tr>
</table>
Default value: 3*60 = 180 [s]</td></tr>
</table>

2.13. DRV LUNA(LUNA – Fan Heater)

2.13.1. INPUT REGISTER DRV LUNA

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>Software_type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>LUNA</td><td>LUNA Hard</td><td>2306</td></tr>
</table>
</td></tr>
<tr><td>0x02</td><td>Software_Type</td><td>
<table>
<tr><th>Parameter</th><th>Description</th><th>Value</th></tr>
<tr><td>LUNA</td><td>LUNA Soft</td><td>5890</td></tr>
</table>
</td></tr>
<tr><td>0x03</td><td>Connection count</td><td>Register for internal use.</td></tr>
<tr><td>0x04</td><td>Soft_ver</td><td>Register for internal use.</td></tr>
<tr><td>0x05</td><td>RoomTempeartureValue</td><td>Temperature measured by T4 sensor (room temperature).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td></tr>
</table>
</td></tr>
<tr><td>0x06</td><td>LeadTempeartureValue</td><td>Temperature measured by Leading sensor (MODBUS, ROOM, SUPLY, INTAKE).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td></tr>
</table>
</td></tr>
<tr><td>0x07</td><td>IntakeTempeartureValue</td><td>Temperature measured by Ti3 sensor (inlet air).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td></tr>
</table>
</td></tr>
<tr><td>0x08</td><td>SuplyTempeartureValue</td><td>Temperature measured by T1 sensor (outlet air).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td></tr>
</table>
</td></tr>
<tr><td>0x09</td><td>HeaterTempeartureValue</td><td>Temperature measured by T2 sensor (water exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td></tr>
</table>
</td></tr>
<tr><td>0x0A</td><td>FanEffciencyValue</td><td>Fan Efficeincy.
<table>
<tr><th>Value</th><th>Efficeincy [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>1000</td><td>100</td><td>Maximum value</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0B</td><td>DrainPumpAlarm</td><td>Drain pump alarm state.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0</td><td>Alarm off</td><td></td></tr>
<tr><td>1</td><td>Alarm active</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x0C</td><td>FilterWorkTime</td><td>Filter work time.
<table>
<tr><th>Value</th><th>Filter work time [min]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>32767</td><td>5*32767</td><td>Maximum value</td></tr>
</table>
Example: If the value of the IR register [0x0C]=12, the operating time is 5x12=60 min</td></tr>
<tr><td>0x0D</td><td>ValveHTValue</td><td>Current state of the heating valve.
<table>
<tr><th>Value</th><th>Opening status [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Valve close</td></tr>
<tr><td>1000</td><td>100</td><td>Valve open to maximum</td></tr>
</table></td></tr>
<tr><td>0x0E</td><td>ValveCLValue</td><td>Current state of the cooling valve:
<table>
<tr><th>Value</th><th>Opening status [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Valve close</td></tr>
<tr><td>1000</td><td>100</td><td>Valve open to maximum</td></tr>
</table></td></tr>
<tr><td>0x0F</td><td>Smart1State</td><td>Information whether the mode is active.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>OFF</td></tr>
<tr><td>1</td><td>Active</td></tr>
</table></td></tr>
<tr><td>0x10</td><td>Smart2State</td><td>Information whether the mode is active.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>OFF</td></tr>
<tr><td>1</td><td>Active</td></tr>
</table></td></tr>
<tr><td>0x11</td><td>Smart3State</td><td>Information whether the mode is active.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>OFF</td></tr>
<tr><td>1</td><td>Active</td></tr>
</table></td></tr>
<tr><td>0x12</td><td>TechnologicalHeatAlarm</td><td>Lack of the heat from the source.
<table>
<tr><th>Value</th><th>Description</th><th>Alarm</th></tr>
<tr><td>0</td><td>Alarm off</td><td></td></tr>
<tr><td>1</td><td>Alarm active</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x13</td><td>Smart2LowTempAlarm</td><td>Low supply temperature – II state.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Alarm off</td></tr>
<tr><td>1</td><td>Alarm active</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x14</td><td>SuplyTempeartureValue</td><td>Temperature measured by T1 sensor (outlet air).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td><td></td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td><td></td></tr>
<tr><td>1100</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>-250</td><td>-</td><td>NTC sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x15</td><td>HeaterTempeartureValue</td><td>Temperature measured by T2 sensor (water exchanger).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td><td></td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td><td></td></tr>
<tr><td>1100</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>-250</td><td>-</td><td>NTC sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x16</td><td>IntakeTempeartureValue</td><td>Temperature measured by T3 sensor (inlet air).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td><td></td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td><td></td></tr>
<tr><td>1100</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>-250</td><td>-</td><td>NTC sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x17</td><td>RoomTempeartureValue</td><td>Temperature measured by T4 sensor (room air).
<table>
<tr><th>Value</th><th>Temperature [C]</th><th>Description</th><th>Alarm</th></tr>
<tr><td>-150</td><td>-15,0</td><td>Minimal value</td><td></td></tr>
<tr><td>950</td><td>95,0</td><td>Maximal value</td><td></td></tr>
<tr><td>1100</td><td>-</td><td>Short circuit</td><td></td></tr>
<tr><td>-250</td><td>-</td><td>NTC sensor not connected</td><td>ALARM</td></tr>
</table></td></tr>
<tr><td>0x18</td><td>InputDIState</td><td>State of Di-connector.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>OFF</td></tr>
<tr><td>1</td><td>Active</td></tr>
</table></td></tr>
<tr><td>0x19</td><td>FanWorkTime</td><td>Fan work time.
<table>
<tr><th>Value</th><th>Filter work time [h]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>32767</td><td>32767</td><td>Maximum value</td></tr>
</table></td></tr>
<tr><td>0x1A</td><td>PreheatState</td><td>Preheat state.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>OFF</td></tr>
<tr><td>1</td><td>Maximum value of temperature</td></tr>
</table></td></tr>
</table>

2.13.2. HOLDING REGISTER DRV LUNA

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>OnOff</td><td>Work mode.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0x00</td><td>OFF</td><td>Device Off</td></tr>
<tr><td>0x01</td><td>ON</td><td>Device On</td></tr>
</table>
Default: OFF (0x00)</td></tr>
<tr><td>0x02</td><td>ManualWorkMode</td><td>Fan mode.
<table>
<tr><th>Value</th><th>Name</th><th>Description</th></tr>
<tr><td>0x01</td><td>MANUAL</td><td>Fan work in manual mode</td></tr>
<tr><td>0x02</td><td>AUTO</td><td>Fan work in auto mode.</td></tr>
</table>
Default: MANUAL (0x01)</td></tr>
<tr><td>0x03</td><td>DestratificatioinMode</td><td>Enable/disable Destratification mode.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0x00</td><td>OFF</td><td>disable</td></tr>
<tr><td>0x01</td><td>ON</td><td>enable</td></tr>
</table>
Default: OFF (0x00)
Function active if Low Ceiling Mode HR[0x04]==OFF</td></tr>
<tr><td>0x04</td><td>LowCeilingMode</td><td>Enable/disable Low Ceiling mode:
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0x00</td><td>OFF</td><td>disable</td></tr>
<tr><td>0x01</td><td>ON</td><td>enable</td></tr>
</table>
Default: OFF (0x00)</td></tr>
<tr><td>0x05</td><td>NozzleLvl</td><td>Nozzle Settings (Parameter adjustable in 5 steps).
<table>
<tr><th>Val [%]</th><th>Description</th></tr>
<tr><td>0</td><td>Nozzle closed (air flow directed vertically down)</td></tr>
<tr><td>25</td><td>Nozzle 25% open</td></tr>
<tr><td>50</td><td>Nozzle 50% open</td></tr>
<tr><td>75</td><td>Nozzle 75% open</td></tr>
<tr><td>100</td><td>Nozzle 100% open (air flow directed sideways “horizontally”)</td></tr>
</table>
Defaut: 0%
Function active if Manual Work Mode HR [0x02]==ON</td></tr>
<tr><td>0x06</td><td>SmartMode</td><td>Enable/disable Smart Mode.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0x00</td><td>OFF</td><td>disable</td></tr>
<tr><td>0x01</td><td>ON</td><td>enable</td></tr>
</table>
Default: 0x00
Function active if Input DI Configuration [0x16]==1 or 2</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x07</td><td>PreheatMode</td><td>Enable/disable preheat.
<table>
<tr><th>Value</th><th>Work status</th><th>Description</th></tr>
<tr><td>0x00</td><td>OFF</td><td>disable</td></tr>
<tr><td>0x01</td><td>ON</td><td>enable</td></tr>
</table>
Default: 0x00
Function active if Exchanger Type Configuration HR [0x18]==0 or 2</td></tr>
<tr><td>0x08</td><td>FanManualLvl</td><td>Manual Fan Efficiency:
<table>
<tr><th>Value</th><th>Efficience [%]</th><th>Description</th></tr>
<tr><td>200</td><td>20</td><td>Min. fan speed allowed in manual mode</td></tr>
<tr><td>1000</td><td>100</td><td>Max. fan speed allowed in manual mode</td></tr>
</table>
Default: 20% (200)
Function active if Register [0x02] ==1</td></tr>
<tr><td>0x09</td><td>DestratificationTempRef</td><td>Temperature difference value defining the activation of the function.
<table>
<tr><th>Value</th><th>Temperature [°C]</th><th>Description</th></tr>
<tr><td>20</td><td>2,0</td><td>Minimum value</td></tr>
<tr><td>60</td><td>6,0</td><td>Maximum value</td></tr>
</table>
Default: 5,0°C (50)
IntakeTempeartureValue IR [0x07] - RoomTempeartureValue IR [0x05] >
DestartificationTempRef HR [0x09]</td></tr>
<tr><td>0x0A</td><td>PreheatTempRef</td><td>The exchanger temperature value [IR0x09] after which the fan is turn on (applies to Heating Mode).
<table>
<tr><th>Value</th><th>Temperature [°C]</th><th>Description</th></tr>
<tr><td>280</td><td>28,0</td><td>Minimum value</td></tr>
<tr><td>370</td><td>37,0</td><td>Maximum value</td></tr>
</table>
Default: 28,0°C (280)</td></tr>
<tr><td>0x0B</td><td>SmartMode1TimeRef</td><td>The time value after which the SMART MODE I condition will be activated.
<table>
<tr><th>Value</th><th>Time [s]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>7200</td><td>7200</td><td>Maximum value</td></tr>
</table>
Default 1800 s (1800)</td></tr>
<tr><td>0x0C</td><td>SmartMode2TimeRef</td><td>The time value after which the SMART MODE II condition will be activated.
<table>
<tr><th>Value</th><th>Time [s]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>14400</td><td>14400</td><td>Maximum value</td></tr>
</table>
Default 3600 s (3600)</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x0D</td><td>SmartMode3TimeRef</td><td>The time value after which the SMART MODE II condition will be activated.
<table>
<tr><th>Value</th><th>Time [s]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>28800</td><td>28800</td><td>Maximum value</td></tr>
</table>
Default 7200 s (7200)</td></tr>
<tr><td>0x0E</td><td>SmartMode2HysteresisHeat</td><td>Temperature hysteresis for heating.
<table>
<tr><th>Value</th><th>Temperature [°C]</th><th>Description</th></tr>
<tr><td>10</td><td>1,0</td><td>Minimum value</td></tr>
<tr><td>50</td><td>5,0</td><td>Maximum value</td></tr>
</table>
Default: 2°C (20)</td></tr>
<tr><td>0x0F</td><td>SmartMode2HysteresisCool</td><td>Temperature hysteresis for cooling.
<table>
<tr><th>Value</th><th>Temperature [°C]</th><th>Description</th></tr>
<tr><td>10</td><td>1,0</td><td>Minimum value</td></tr>
<tr><td>50</td><td>5,0</td><td>Maximum value</td></tr>
</table>
Default: 2°C (20)</td></tr>
<tr><td>0x10</td><td>SmartMode3TempMin</td><td>Minimum temperature for SMART MODE III.
<table>
<tr><th>Value</th><th>Temperature [°C]</th><th>Description</th></tr>
<tr><td>160</td><td>16,0</td><td>Minimum value</td></tr>
<tr><td>210</td><td>21,0</td><td>Maximum value</td></tr>
</table>
Default:18°C (180)</td></tr>
<tr><td>0x11</td><td>InputDiForce</td><td>Parameter overwritten by MODBUS when the parameter InputDIConfiguration HR [0x16] is activated for minimum 1 Device. Value read from IR [0x1E]
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>disable</td></tr>
<tr><td>1</td><td>enable</td></tr>
</table>
Default:0
Activation: InputDIForce HR [0x11]==1
The condition must be met: InputDIConfiguration HR [0x16]= 1 or 2 and: IR [0x0E]==1</td></tr>
<tr><td>0x12</td><td>DestratificationFanRef</td><td>Fan efficiency in Destratification mode.
<table>
<tr><th>Value</th><th>Fan Speed [%]</th><th>Description</th></tr>
<tr><td>400</td><td>40</td><td>Minimum value</td></tr>
<tr><td>1000</td><td>100</td><td>Maximum value</td></tr>
</table>
Default: 60% (600)</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x13</td><td>LowCeilingFanRef</td><td>Fan efficiency in Low ceiling mode.
<table>
<tr><th>Value</th><th>Fan Speed [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>1000</td><td>100</td><td>Maximum value</td></tr>
</table>
Default: 60% (600)
The minimum value is limited by changing the value in the HR register [0x14].
The maximum value is limited by changing the value in the HR register [0x15].</td></tr>
<tr><td>0x14</td><td>LowCeilingLowLimit</td><td>The low limit for fan efficiency in Low Ceiling mode.
<table>
<tr><th>Value</th><th>Fan Speed [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>1000</td><td>100</td><td>Maximum value</td></tr>
</table>
Default: 0% (0)</td></tr>
<tr><td>0x15</td><td>LowCeilingHighLimit</td><td>The high limit or fan efficiency in Low Ceiling mode.
<table>
<tr><th>Value</th><th>Fan Speed [%]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>1000</td><td>100</td><td>Maximum value</td></tr>
</table>
Default: 60% (600)</td></tr>
<tr><td>0x16</td><td>InputDIConfiguration</td><td>Activation and selection of contact polarization.
<table>
<tr><th>Value</th><th>Type</th><th>Description</th></tr>
<tr><td>0</td><td>OFF</td><td>Contact inactive</td></tr>
<tr><td>1</td><td>NC</td><td>Contact Normally Closed</td></tr>
<tr><td>2</td><td>NO</td><td>Contact Normally Open</td></tr>
</table></td></tr>
<tr><td>0x17</td><td>ActuatorsTime Configuration</td><td>The parameter value responsible for the correct operation of the 3P actuator.
The parameter value should be consistent with the opening time value provided by the actuator manufacturer.
<table>
<tr><th>Value</th><th>Time [s]</th><th>Description</th></tr>
<tr><td>0</td><td>0</td><td>Minimum value</td></tr>
<tr><td>2000</td><td>2000</td><td>Maximum value</td></tr>
</table>
Default: 150s (150)</td></tr>
<tr><td>0x18</td><td>ExchangerType Configuration</td><td>Type of exchanger.
<table>
<tr><th>Value</th><th>Description</th></tr>
<tr><td>0</td><td>Heat exchanger for Heating</td></tr>
<tr><td>1</td><td>Heat echanger for Cooling</td></tr>
<tr><td>2</td><td>Heat exchanger for Heating/cooling</td></tr>
</table>
Default: 2</td></tr>
</table>

<table>
<tr><th>Address</th><th>Name</th><th>Description</th></tr>
<tr><td>0x19</td><td>ValveTypeConfiguration</td><td>Type of valve actuator.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>3-point actuator</td></tr><tr><td>1</td><td>ON/OFF actuator</td></tr></table>Default: 0</td></tr>
<tr><td>0x1A</td><td>DrainPumpAlarm Configuration</td><td>Selecting the polarity of the condensate pump alarm contact.<table><tr><th>Value</th><th>Description</th></tr><tr><td>0</td><td>Alarm contact deactivated</td></tr><tr><td>1</td><td>NC polarity</td></tr><tr><td>2</td><td>NO polarity</td></tr></table>Default: 0</td></tr>
<tr><td>0x1B</td><td>FilterMaxWorkTime</td><td>Setting the maximum filter operating time.<table><tr><th>Value</th><th>Time [h]</th><th>Description</th></tr><tr><td>0</td><td>0</td><td>Minimum value</td></tr><tr><td>4000</td><td>4000</td><td>Maximum value</td></tr></table>Default: 4000h (4000)</td></tr>
<tr><td>0x1C</td><td>GroupTLeadSensorSelect</td><td>Selection of the lead sensor<table><tr><th>Val</th><th>Description</th></tr><tr><td>1</td><td>Leading temperature value sent via MODBUS</td></tr><tr><td>2</td><td>Value from the Ti1 SUPPLY sensor</td></tr><tr><td>3</td><td>Value from the Ti4 ROOM sensor</td></tr><tr><td>4</td><td>Value from the Ti3 INTAKE sensor</td></tr></table></td></tr>
</table>