

OneSoft

OneSoft devices communication protocol

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Supported device types and versions

This protocol supports data acquisition (in the case of SOFTCONTROL and OMOS devices, also data writing) from both the heat meters and control systems produced by OneSoft s.r.o. Prievidza.

The communication supports and was tested for these devices:

ELTRONIC, FC200 ST, FC200 WM, FC200 GS, MAXTRONIC 05, MAXTRONIC 15D, STEAMTRONIC B, STEAMTRONIC D, SOFTCONTROL, OMOS

Communication line configuration

- Communication line category: [Serial, SerialOverUDP Device Redundant](#).
- Serial line parameters:
 - Baud rate (it depends on the device settings),
 - Parity (usually none parity),
 - Handshaking depending on the type of converter RS232/RS485. Set Transmit and Receive delay to approx. 60 ms for the converters that are controlled by RTS signal.

Protocol line parameters

| Parameter | Meaning | Unit | Default value |
|---------------------------|--|--------|---------------|
| Scan Mode (read-only) | Configuration of passive mode (Scan only) in which no requests are sent, only responses processed. | - | NO |
| Wait Timeout in Scan Mode | The delay between reading data in Scan Mode. | ss.mss | 0.5 |

Communication station configuration

- Communication protocol: **OneSoft Devices**
- Station address requires to set these parameters:
 - Device ID (from 0 up to 65535).
 - Data block size (see Table 2).
 - End of range for calculation the checksum „Checksum after:“ (see Table1).

Table 1

| Device type | Data block size | Checksum after |
|---------------|-----------------|----------------|
| ELTRONIC | 93 | 91 |
| FC200 ST | 93 | 91 |
| FC200 WM | 92 | 90 |
| MAXTRONIC | 93 | 91 |
| STEAMTRONIC B | 93 | 90 |
| STEAMTRONIC D | 93 | 91 |
| OMOS | 0 | 0 |
| MAXTRONIC 05 | 0 | 0 |
| MAXTRONIC 15D | 0 | 0 |

In the configuration dialog window of the station, you can choose a device that presets the values from Table 1.

For **SOFTCONTROL** devices, the setting of data block size is different than block size for calculating the checksum depending on firmware in the particular application. We recommend you to ask for technical documentation from a producer. At the end of the data block you can find the following information:

```
*****  
sprava[314] = 0x22 ;  
sprava[315] = 0xcc ; // end of transmission  
  
}  
*****  
/* number of transmitted bytes = 315 */  
*****
```

From this information, it results that the value for "Data block size" and "Checksum after" is 316 (the number of transmitted bytes is in fact 315+1).

OMOS devices do not need this parameter. You can set zero values. When configuring **OMOS** stations, remember that the device consists of several separate modules. Each module is configured as a separate station. See the parameter of station protocol "[OMOS ICS module](#)".

OMOS devices can be time-synchronized - the parameter "[Synchronization period](#)" on the tab "Time parameter" in station configuration should be enabled.

Station protocol parameters

[Communication station - configuration dialog box - Protocol parameters](#) tab.

These parameters influence some optional parameters of the protocol. You can set the following station parameters:

Table 2

| Parameter | Meaning | Unit | Default value |
|----------------------|--|--------|---------------|
| Wait Before Request | Delay that is used before each request. | ms | 100 |
| Wait First Timeout | First delay before reading the response after sending the request. | ms | 500 |
| Wait Timeout | Timeout between readings of response until it is completed. | ms | 400 |
| Retry Timeout | Delay before resending the request when no answer is received. | ms | 1000 |
| Max Wait Retry | The number of repeated readings of response until it is completed. | - | 8 |
| Retry Count | The maximum number of repeated requests. | - | 3 |
| Request Repetition | The number of repeated requests sent before reading the answer. | - | 1 |
| OMOS Device | Communication with OMOS. | YES/NO | NO |
| OMOS ICS Module | ICS address of module of OMOS (module SYSTEM=0, other modules UK/TUV as per configuration). | - | 0 |
| Maxtronic 05 | Communication with MAXTRONIC 05. | YES/NO | NO |
| Maxtronic 15D | Communication with MAXTRONIC 15D. | YES/NO | NO |
| SoftControl Device | Communication with SOFTCONTROL. | YES/NO | NO |
| Begin of Write Block | The beginning index of the data block for writing to SOFTCONTROL/OMOS (see note). | - | 156 |
| End of Write Block | The ending index of the data block for writing to SOFTCONTROL/OMOS (see note). | - | 283 |

Note related to the parameters "Begin of write block" and "End of write block":

These parameters are useful for SOFTCONTROL and OMOS in case of value writing.

SOFTCONTROL: The documentation shows the information in the data block of response as follows:

```
***** beginning of parameters change *****  
//VZT-A TUV1 -----  
pmc=tzmi[5] *10; sprava[156] // 50-z 1.TEPLOTNA HLADINA  
pmc=tzmi[6] *10; sprava[158] // 51-z 2.TEPLOTNA HLADINA
```

...

It marks the beginning of the data block with writing possibility. In this case, the value is 156. The whole data block is usually marked with a different color in the documentation.

OMOS: The setting of "Begin of write block" is 50 for all module types. The value of "End of write block" is 111.

I/O tag configuration

I/O tags: **Di, Ai, Ci, TiA, Ao, Co**

In the configuration of the I/O tag address you must define the following parameters:

- A position of the start of value in a data block („Position:“). If regards I/O tags of Di type, you can also define a bit number (0 to 7 for single-byte values, 0 to 15 for double-byte and 0 to 31 for four-byte). The address is written as Position.Bit, e.g. "24.0" means that the position = 24, the bit number = 0.
- Value type:
 - „BYTE“ – 1-byte unsigned,
 - „INT“ – 2-byte integer signed,
 - „LONG“ – 4-bytes integer signed,
 - „WORD“ – 2-byte word unsigned,
 - „ULONG“ – 4-byte word unsigned,
 - „FLOAT“ – 4-byte float,
 - „DOUBLE“ – 8-byte float (only for Maxtronic 05/15D).

The values, their meaning, the address parameter, technical units, multiply coefficient, are stated in Table 3. For SOFTCONTROL devices, the address parameter "Position" can be found in technical documentation. The address is the number in square brackets behind the word "sprava", e.g.:

```
pmc=ttuv2           *10; sprava[ 24 ] //    8 - VLHKOST A
```

In this example, the address "Position" is 24.

You can configure one I/O tag of TiA type (an actual time of a meter with minute accuracy) for each station. A time in the data block is always on the same position, therefore you need not configure the parameter "Position:" (it is not applicable for SOFTCONTROL).

Table 3

| ELTRONIC | | | | |
|--|-------------|----------|------------|----------------------|
| Value | Tech. units | Position | Value type | Multiply coefficient |
| Analog value 1 | | 9 | INT | 10 |
| Analog value 2 | | 11 | INT | 10 |
| Analog value 3 | | 13 | INT | 10 |
| Analog value 4 | | 15 | INT | 10 |
| El. power M1 | kW (MW) | 17 | INT | 100 |
| El. power M2 | kW (MW) | 19 | INT | 100 |
| El. work M1 | kWh (MWh) | 25 | LONG | 10 |
| El. work M2 | kWh (MWh) | 29 | LONG | 10 |
| Running time M1 | min | 33 | LONG | |
| Running time M2 | min | 37 | LONG | |
| Date of reset M1 | | 41 | LONG | |
| Date of reset M2 | | 45 | LONG | |
| Phys. size of analog value A1 | | 49 | INT | |
| Phys. size of analog value A2 | | 51 | INT | |
| Phys. size of analog value A3 | | 53 | INT | |
| Phys. size of analog value A4 | | 55 | INT | |
| The current time of interval M1 | min | 57 | INT | |
| The current time of interval M2 | min | 63 | INT | |
| The dimension of quantity M1 (MWh,kWh,MW,kW) | | 61 | INT | |
| The dimension of quantity M2 (MWh,kWh,MW,kW) | | 63 | INT | |
| Set 1/4 hour max. M1 | | 69 | INT | 10 |
| Set 1/4 hour max. M2 | | 71 | INT | 10 |
| Actual 1/4 hour work M1 | | 73 | INT | 10 |

| Actual 1/4 hour work M2 | | 75 | INT | 10 |
|--|-------------|----------|------------|----------------------|
| FC200 ST | | | | |
| Value | Tech. units | Position | Value type | Multiply coefficient |
| Steam temperature | °C | 9 | INT | 10 |
| Condensing temperature | °C | 11 | INT | 10 |
| Steam pressure abs. | kPa | 13 | INT | |
| Mass flow rate - steam | t,kg / hour | 17 | INT | |
| Mass flow rate - condensate | t,kg / hour | 19 | INT | |
| Heat rate - steam | MW, kW | 21 | INT | |
| Heat rate - condensate | MW, kW | 23 | INT | |
| Heat steam | MWh, kWh | 25 | LONG | 100 |
| Heat condensate | MWh, kWh | 29 | LONG | 100 |
| Running time - circuit 1 | min | 33 | LONG | |
| Running time - circuit 2 | min | 37 | LONG | |
| Date of reset - circuit 1 | | 41 | LONG | |
| Date of reset - circuit 2 | | 45 | LONG | |
| Steam quantity | t, kg | 49 | LONG | 100 |
| Condensate quantity | m3, lit. | 53 | LONG | 100 |
| Heat under limit of saturation - steam | kWh, MWh | 69 | LONG | 100 |
| Differential pressure - steam | kPa | 73 | INT | 100 |
| Differential pressure - condensate | kPa | 75 | INT | 100 |
| Lower limit of manometer - steam | kPa | 77 | INT | |
| Lower limit of manometer - condensate | kPa | 79 | INT | |
| Superheating - steam | °C | 83 | INT | 10 |
| FC200 WM | | | | |
| Value | Tech. unit | Position | Value type | Multiply coefficient |
| Temperature Output | °C | 9 | INT | 10 |
| Temperature Reverse | °C | 11 | INT | 10 |
| Method of flow measurement O - 3 | | 13 | INT | |
| Flow | m3,l / hour | 17 | INT | 10 |
| Heat rate | MW, kW | 21 | INT | 100 |
| Quantity of heat | MWh, kWh | 25 | LONG | 100 |
| Running time | min | 33 | LONG | |
| Water quantity | m3, l | 49 | LONG | 100 |
| Size 0 - m3/t, 1 - l/kg | | 61 | INT | |
| Delta P | kPa | 73 | INT | 100 |
| Water enthalpy - output | kJ / kg | 83 | INT | |
| Water enthalpy - reverse | kJ / kg | 85 | INT | |
| MAXTRONIC | | | | |
| Value | Tech. unit | Position | Value type | Multiply coefficient |
| Temperature - output M.1 | °C | 9 | INT | 10 |
| Temperature - reverse M.1 | °C | 11 | INT | 10 |
| Temperature - output M.2 | °C | 13 | INT | 10 |
| Temperature - reverse M.2 | °C | 15 | INT | 10 |
| Flow M.1 | m3 / hour | 17 | INT | 10 |

| | | | | |
|--------------------------|-----------|----|------|-----|
| Flow M.2 | m3 / hour | 19 | INT | 10 |
| Temperature power M.1 | MW | 21 | INT | 100 |
| Temperature power M.2 | MW | 23 | INT | 100 |
| Quantity of heat M.1 | MWh | 25 | LONG | 100 |
| Quantity of heat M.2 | MWh | 29 | LONG | 100 |
| Running time M1 | min | 33 | LONG | |
| Running time M2 | min | 37 | LONG | |
| Max. 1/4 hour power M1 | MW | 49 | INT | 100 |
| K factor M1 | imp / m3 | 51 | INT | |
| Actual 1/4 hour power M1 | MW | 53 | INT | 100 |
| K factor M2 | imp / m3 | 55 | INT | |
| Water quantity M1 | m3 | 73 | LONG | 100 |
| Water quantity M2 | m3 | 77 | LONG | 100 |

STEAMTRONIC B

| Value | Tech. unit | Position | Value type | Multiply coefficient |
|-------------------------------|------------|----------|------------|----------------------|
| Steam temperature | °C | 9 | INT | 10 |
| Temperature condensate | °C | 11 | INT | 10 |
| Steam pressure | kPa | 13 | INT | |
| Steam flow | t / hour | 17 | INT | 100 |
| Flow - condensate | m3 / hour | 19 | INT | 100 |
| Heat rate - steam | MW | 21 | INT | 100 |
| Heat rate - condensate | MW | 23 | INT | 100 |
| Total heat - steam | MWh | 25 | LONG | 100 |
| Quantity of heat - condensate | MWh | 29 | LONG | 100 |
| Running time of the device | min | 33 | LONG | |
| Total heat T<satur | MWh | 37 | LONG | 100 |
| Amount of steam | ton | 49 | LONG | 100 |
| Quantity of condensate | m3 | 53 | LONG | 100 |
| Interval heat | MWh | 69 | LONG | 100 |
| Lower limit of manometer | kPa | 77 | INT | |
| Higher limit of manometer | kPa | 79 | INT | |

STEAMTRONIC D

| Value | Tech. unit | Position | Value type | Multiply coefficient |
|---|-------------|----------|------------|----------------------|
| Steam temperature M.1 | °C | 9 | INT | 10 |
| Temperature of condensate M.2 | °C | 11 | INT | 10 |
| Steam pressure M.2 | kPa | 13 | INT | |
| Flow M.1 | kg,t / hour | 17 | INT | 100 |
| Flow M.2 | l,m3 / hour | 19 | INT | 100 |
| Temperature - output M.1 | kW, MW | 21 | INT | 100 |
| Temperature - output M.2 | kW, MW | 23 | INT | 100 |
| Quantity of heat M.1 | kWh, MWh | 25 | LONG | 100 |
| Quantity of heat M.2 | kWh, MWh | 29 | LONG | 100 |
| Running time M1 | min | 33 | LONG | |
| Quantity of heat under the limit of density | kWh, MWh | 37 | LONG | 100 |
| Amount of steam M1 | kg, t | 49 | LONG | 100 |
| Quantity of condensate | l, m3 | 53 | LONG | 100 |

| | | | | |
|--|-----|----|------|----|
| Time when T < Tdens. | min | 57 | LONG | |
| Measuring steam 0 - t/MW, 1 - kg/kW | | 61 | INT | |
| Measuring condensate 0 -m3/MW, 1 -l/kW | | 63 | INT | |
| Lower value on the manometer | kPa | 77 | INT | |
| Higher value on the manometer | kPa | 79 | INT | |
| Superheat of steam | °C | 83 | INT | 10 |

Note: I/O tags whose values are multiplied by the coefficient in a meter must be converted to the technical units (I/O tag configuration, tab "Conversion") by a linear conversion according to Table 4:

Table 4

| Multiply coefficient | Linear conversion – coeff. A | Linear conversion – coeff. B |
|----------------------|------------------------------|------------------------------|
| 10 | 0.1 | 0 |
| 100 | 0.01 | 0 |

Warning: I/O tags of Ci type that are modified by linear conversion will lose the accuracy on decimal positions (value will be approximated to integer numbers). We recommend you to use Ai type.

Literature

Changes and modifications

- Ver. 1.0 – September 8, 2000 – Creation of document.
- Ver. 1.1 - January 23, 2002 - Support of SOFTCONTROL device, modification of the document.
- Ver. 1.2 - November 26, 2009 - Support of OMOS device, modification of the document.
- Ver. 1.3 - December 5, 2011 - Support of Maxtronic 05.
- Ver. 1.4 - October 24, 2022 - Support of Maxtronic 15D.



Related pages:

[Communication protocols](#)