

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. Prievídza.

The communication supports and was tested for these devices:

ELTRONIC, FC200 ST, FC200 WM, FC200 GS, MAXTRONIC, 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

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
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).

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 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 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 manometer	kPa	77	INT	
Higher value on 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

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Changes and modifications

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Document revisions

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



Related pages:

[Communication protocols](#)