



***K3N - Driver of OMRON's K3N Meters  
Family Protocol  
User's Manual***

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# 1. K3N - Driver of OMRON's K3N Meters Family Protocol

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## 1.1. Driver Use

The K3N driver is used for data exchange between the OMRON's K3N meters family and **asix** system computers. The communication is executed according to the CompoWay/F protocol from OMRON via standard serial ports of an **asix** computer.

## 1.2. Declaration of Transmission Channel

The full syntax of declaration of transmission channel which uses the K3N protocol is given below:

```
logical_channel_name=K3N, id, port [, baud, character, parity, stop ]
```

where:

<i>K3N</i>	- driver name;
<i>id</i>	- controller number in the K3N network;
<i>port</i>	- port name: COM1, COM2 etc.;
optional parameters:	
<i>baud</i>	- transmission speed;
<i>character</i>	- number of bits in a character;
<i>parity</i>	- parity check type;
<i>stop</i>	- number of stop bits.

If the optional parameters are not given, then the factory settings of meter are assumed as default values, i.e.:

- transmission speed: 9600 baud,
- bits in a character: 7,
- parity check: EVEN,
- number of stop bits: 2.

### EXAMPLE

The declaration of the logic channel named CHAN1, which operates according to the K3N protocol and exchanges data with the meter numbered 1 through the COM2 port with default transmission parameters:

```
CHAN1 = K3N, 1, COM2
```

The K3N driver is loaded as a DLL automatically.

## 1.3. Addressing the Process Variables

The syntax of symbolic address which is used for variables belonging to the K3N driver channel is as follows:

<type>[.<category>.<index>]

where:

<i>type</i>	- variable type;
<i>category</i>	- category within the type (for some types);
<i>index</i>	- index within the category (for some types).

Symbols of variable types (in parentheses the type of raw variable value is given):

<b>VW</b>	- values of variables transferred in the form of 16-bit unsigned numbers (WORD). It concerns to <i>Status data</i> variable (category C0, index 3);
<b>VL</b>	- values of variables transferred in the form of 32-bit signed numbers (LONG). It concerns the variables of the category C0 except the variable <i>Status data</i> ;
<b>PW</b>	- values of parameters transferred in the form of 16-bit unsigned numbers (WORD). It concerns to all the variables of the category 8000 and 8824;
<b>PL</b>	- values of parameters transferred in the form of 32-bit signed numbers (LONG). It concerns to all the variables of the category C00C and 8824;
<b>STAT</b>	- status of work mode (WORD);
<b>INFO</b>	- supplemental information transferred with the status of work mode (WORD);
<b>RST</b>	- execution of the command <i>reset of minimal and maximal values</i> (WORD);
<b>FCLR</b>	- execution of the command <i>clear forced-zero setting</i> (WORD);
<b>MODE</b>	- setting the operating mode of the meter ( <i>Run</i> or <i>Setting Mode</i> ) (WORD);
<b>CTRL</b>	- setting the programming mode of the meter ( <i>Remote programming</i> or <i>Local programming</i> ) (WORD).

*Category* and *index* must be given for types **VW**, **VL**, **PW**, **PL**. The list of legal symbols (numbers) of category and index ranges within individual category contains the documentation "*Communication Output-type Intelligent Signal Processor – OPERATION MANUAL*" Cat. No. N96-E1-1 (pkt 1-5 'Memory/Parameters Area Details').

Values of **VW**, **VL**, **PW** or **PL** type variables may be read and modified. A correct reading of the **VW**, **VL**, **PW**, **PL** type variables is possible only when the meter is set in the *Run mode*.

Values of **INFO**, **STAT** type variables may be only read.

The **RST**, **FCLR**, **MODE**, **CTRL** type variables are used only to execute commands controlling the operating mode of the meter and it is not possible to read them.

Sending the control by using a **MODE** type variable causes:

- switching the meter to the *Run mode* if the control value of the variable is set on 0,
- switching the meter to *Setting mode* if the control value of the variable is different from 0.

Sending the control by using a **CTRL** type variable causes:

- switching the meter to the *Local programming* mode if the control value of the variable is set on 0,
- switching the meter to the *Remote programming* mode if the control value is different from 0.

## EXAMPLES OF VARIABLE DECLARATIONS

```
# Present value: variable no. 0 from the category C0
JJ_0, VL.C0.0, CHAN1, 1, 1, NOTHING_LONG
```

```
# Maximum value: variable no. 1 from the category C0
```

```

JJ_1, VL.C0.1, CHAN1, 1, 1, NOTHING_LONG

# status value (Status data): variable no 3 from the category C0
JJ_2, VW.C0.3, CHAN1, 1, 1, NOTHING

# current operating mode of the meter (Run, Setting mode)
JJ_10, STAT, CHAN1, 1, 1, NOTHING

# supplement information transferred with the meter status
# (HOLD status, RESET status, Local/Remote programming)
JJ_11, INFO, CHAN1, 1, 1, NOTHING

# execution of the command: reset of minimal and maximal values of the meter
JJ_12, RST, CHAN1, 1, 1, NOTHING

# execution of the command: Clear forced-zero setting
JJ_13, FCLR, CHAN1, 1, 1, NOTHING

# execution of the command: Switch mode
JJ_14, MODE, CHAN1, 1, 1, NOTHING

# execution of the command: Remote/Local programming
JJ_14, CTRL, CHAN1, 1, 1, NOTHING

# parameter input range of the K3NX meter
JJ_20, PW.8000.0, CHAN1, 1, 1, NOTHING

# parameter scaling display value 2 of the K3NX meter
JJ_21, PL.C00C.1, CHAN1, 1, 1, NOTHING_LONG

# parameter power supply frequency of the K3NX meter
JJ_22, PW.8824.0, CHAN1, 1, 1, NOTHING

# parameter input mode of the K3NC meter
JJ_30, PW.8000.0, CHAN1, 1, 1, NOTHING

# parameter power failure memory of the K3NC meter
JJ_31, PW.8824.1, CHAN1, 1, 1, NOTHING

# parameter compensation value of the K3NC meter
JJ_32, PW.C82A.0, CHAN1, 1, 1, NOTHING_LONG

```

## 1.4. Driver Configuration

The K3N protocol driver may be configured by means of the **[K3N]** section placed in the application INI file. Individual parameters are transferred in separate items of the section. Each item has the following syntax:

*item\_name*=[number [,number]] [YES] [NO]



**LOG\_FILE**=file\_name

Meaning

- the item allows to define a file where all diagnostic messages of the K3N driver and information about the contents of telegrams

received by the driver will be written. If the item does not define its full path, then the log file is created in the current directory. The log file should be used only while the **asix** start-up.

Default value - by default, any log file is not created.



***LOG\_FILE\_SIZE=number***

Meaning - the item allows to define the log file size in MB.

Default value - by default, it is assumed that the log file has a size of 1 MB.



***LOG\_OF\_TELEGRAMS=YES/NO***

Meaning - the item allows to write to a log file (declared by using the item LOG\_FILE) the contents of telegrams sent within the communication with the meter. Writing the contents of telegrams to the log file should be used only while the **asix** start-up.

Default value - by default, the telegrams are not written.



***RECV\_TIMEOUT=id,number***

Meaning - the item allows to determine a maximal waiting time for arriving the first character of the answer from a given meter. After overflow of this time it is assumed that the considered meter is turned off and the transmission session ends with an error.

Default value - by default, it is assumed that the maximal waiting time for the first character of the answer is equal to 1000 milliseconds.

Parameter:

*id* - meter no. in the K3N network,  
*number* - time in milliseconds (from 100 up to 5000).



***CHAR\_TIMEOUT=id,number***

Meaning - the item allows to determine a maximal time between successive characters of the answer from a given meter. After having exceeded this time it is assumed that the considered meter does not work correctly and the transmission session ends with an error.

Default value - by default, it is assumed that the maximal time between successive characters of the answer is equal 50 milliseconds.

Parameter:

*id* - number of the meter in the network,  
*number* - time in milliseconds (from 10 up to 300).



***NUMBER\_OF\_REPETITIONS=number***

Meaning - the item allows to determine a number of repetitions in case of occurring the transmission error.

Default value - by default, the item receives a value of 0 (no repetition).

<b>1.</b>	<b>K3N - DRIVER OF OMRON'S K3N METERS FAMILY PROTOCOL</b>	<b>3</b>
1.1.	DRIVER USE	3
1.2.	DECLARATION OF TRANSMISSION CHANNEL	3
1.3.	ADDRESSING THE PROCESS VARIABLES	3
1.4.	DRIVER CONFIGURATION	5