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CANOPEN - Driver of CANBUS Protocol for PCI 712 NT Card User's Manual

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1. CANOPEN - Driver of CANBUS Protocol for PCI 712 NT Card

1.1. Driver Use

The CANOPEN driver is used for data exchange between SELECONTROL MAS PLCs of Selectron Lyss AG and **asix** system computers by using the CAN network. The **asix** system computers must be provided with the PCI_712 NT communication processor card and the PCI712 CanLib32 software package of Selectron Lyss AG.

1.2. Declaration of Transmission Channel

The full syntax of declaration of transmission channel working according to the CANOPEN protocol is given below:

logical_name=CANOPEN,*card_no*

where:

card_no - PCI_712 NT card no., by means of which the transmission with the CAN network is executed. In the present version the CANOPEN driver can operate with one PCI_712 NT card.

The CANOPEN driver is loaded as a DLL automatically.

1.3. Addressing the Process Variable

Values of process variables are transferred in telegrams sent by controllers connected to the CAN network. Each telegram consists of at most 8 bytes, which can be identified as:

bits with indexes 1 – 8	(type BY),
16-bit numbers with indexes 1 – 4	(type WD),
32-bit numbers with indexes 1 – 2	(type (DW).

The CANOPEN driver distinguishes the following types of access to process variables:

read-only	(type R_),
write-only	(type W_),
read/write	(type RW_).

Addressing the process variables consists in indication of:

- access type (R_, W_ or RW_);
- variable type (BY, WD, DW);
- telegram no. (for the variables with RW_ access type it is the number of telegram used to read the variable);
- index within the telegram (for the variables with RW_ access type it is the index of telegram used to read the variable);
- for the variables of RW_ access type it is necessary to declare additionally:
    - number of telegram used to write the variable,
    - index of telegram used to write the variable.

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

<access_type><variable_type><tel>.<index>[.<tel>.<index>]

where:

access_type	- type of access to process variables:
R_	- read-only,
W_	- write-only,
RW_	- read/write,
variable_type	- type of process variables:
BY	- variable of byte type,
WB	- variable of 16-bit number type,
DW	- variable of 32-bit number type,
Tel	- telegram no.,
Index	- index within the telegram.

EXAMPLE

X1, byte no 2 of telegram 31,	R_BY31.2,	NONE, 1, 1, NOTHING_BYTE
X2, word no. 3 of telegram 31,	R_WD31.3,	NONE, 1, 1, NOTHING
X3, state of burners,	RW_BY31.1.35.3,	NONE, 1, 1, NOTHING_BYTE
X4, valve setting,	RW_WD32.1.34.1,	NONE, 1, 1, NOTHING

The X3 variable value is transferred to **asix** in byte no. 3 of the telegram 31. The setting of X3 variable consists in sending from **asix** the telegram no. 34, the byte no. 3 of which contains required value of X3 variable.

1.4. Driver Configuration

The driver of the CANOPEN protocol may be configured with use of the [**CANOPEN]** section in the initialization file of an **asix** application. Individual parameters are transferred in separate items of the section. Each section has the following syntax:

item_name=[number [,number]] [YES|NO]

TRANSMISSION_SPEED=network_no,baud_id

Meaning	- the item is used to declare the transmission speed in the CAN network.
Default value	- by default, the transmission speed is assumed to be 1 MB.
Parameter:	
network_no	- CAN network no. (in the present version always the network no. 1),
baud_id	- identifier of transmission speed in the CAN network:
	1 - 1 MB
	2 - 500 kB
	3 - 250 kB
	4 - 125 kB
	5 - 100 kB
	6 - 50 kB
	7 - 20 kB

EXAMPLE

An example of declaration of transmission speed of 20 kB (the CAN network numbered 1):

TRANSMISSION_SPEED=1,7

Frequency of Data Reading from PCI_712 NT Card

☑ ***REFRESH_CYCLE=number***

Meaning	- the item is used to declare a time interval between successive signals allowing the PCI_712 NT card driver to generate information on messages received from the CAN network.
Default value	- by default, the CANOPEN driver send signals every 0.5 sec.
number	- equal to 0.5-second intervals, which must pass between successive signals allowing the PCI_712 NT card driver to generate information on messages received from the CAN network.

EXAMPLE

The declaration of sending a permission signal every 1 sec:

REFRESH_CYCLE=2

Checking Reception of Telegrams from CAN Network CAN

☑ ***NETWORK_CONTROL=number***

Meaning	- the item allows to test reception of telegrams from the CAN network. It defines the maximal time (in seconds) between receptions of successive telegrams with the same number. In case of exceeding this time the process variables bound with such telegram will be provided with an error status. If additionally in the same time any telegram wasn't received from the CAN network a message about a lack of telegrams in network is generated in *'Control Panel'*.
Default value	- by default, the CANOPEN driver doesn't check reception of telegrams.
number	- maximal number of seconds which may pass between successive telegrams with the same number.

EXAMPLE

An example of checking reception of telegrams every 5 seconds:

NETWORK_CONTROL=5

Tracing Telegrams Received from CAN Network

TELEGRAM_TRACE=YES|NO

Meaning - the item controls transferring to the operator panel the messages about telegrams that have been received from the CAN network. A message includes the number of CAN network, the number of telegram, number of bytes and telegram content in hexadecimal form.

Default value - by default, the contents of telegrams are not displayed.

EXAMPLE

The declaration of tracing the received telegrams:

TELEGRAM_TRACE=YES

Tracing Control Telegrams

CONTROL_TRACE=YES|NO

Meaning - the item controls transferring to the operator panel the messages about control telegrams that have been sent from the **asix** system computer to controllers. A message includes the number of CAN network, the number of telegram, number of bytes and telegram contents in hexadecimal form.

Default value - by default, the contents of telegrams are not displayed.

EXAMPLE

The declaration of tracing the control telegrams:

CONTROL_TRACE=YES

LOG_FILE=file_name

Meaning - the item allows to define a file, to which all the messages, describing telegrams received from the CAN network, will be written. If LOG_FILE does not define the full path, a log file will be created in the current directory. The log file should be used only while the **asix** system start-up.

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

EXAMPLE

LOG_FILE=D:\asix\CAN.LOG