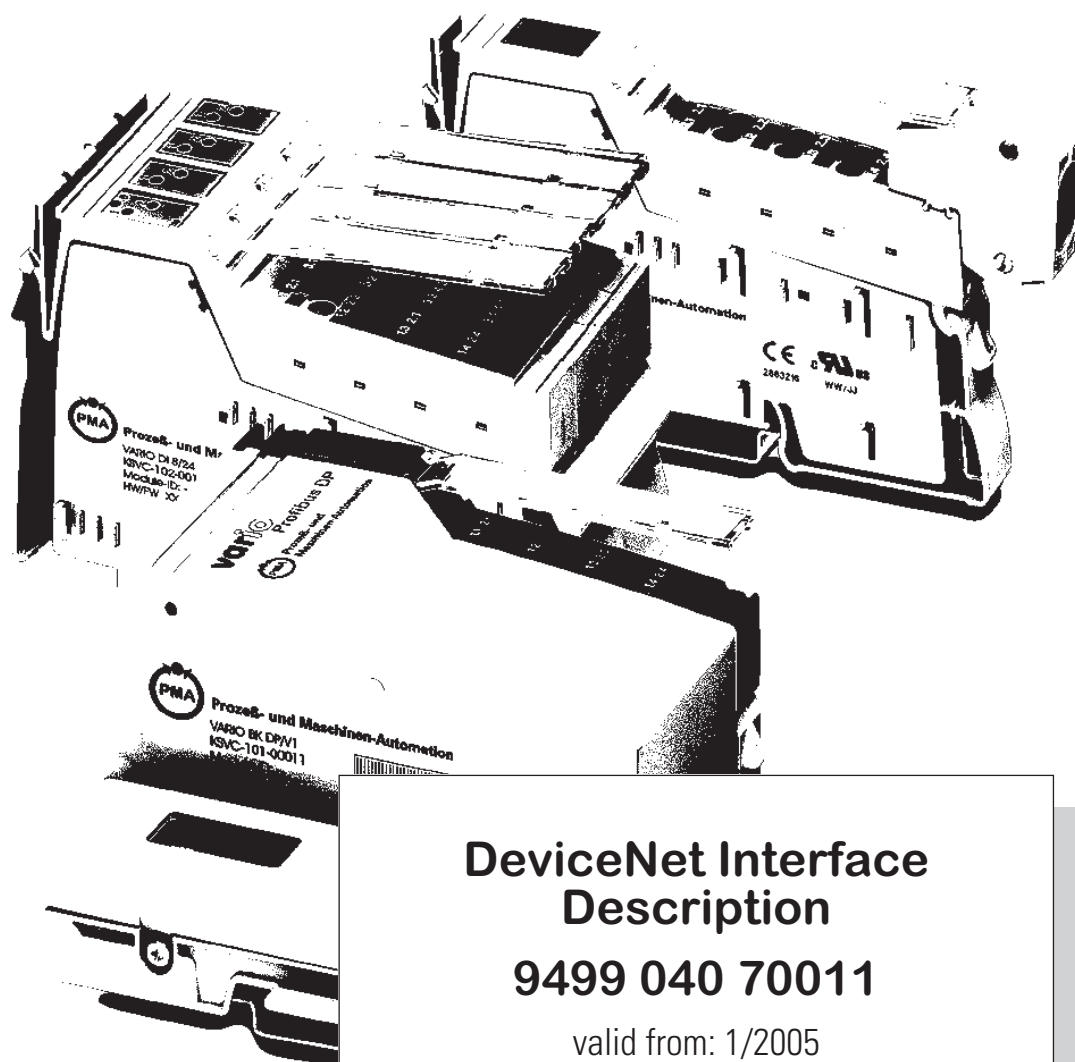




# Modular Controller System KS vario



## DeviceNet Interface Description

9499 040 70011

valid from: 1/2005

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# 1. General

Modular controller system KS vario permits connection of various fieldbus interfaces. For this purpose, the relevant bus coupler is used as a head station for a controller system.

Via one of these bus couplers, the DeviceNet protocol is supported by means of a front-panel interface (9-pole Sub-D connector). Hereby, transmission of all process, parameter and configuration data is possible.

This communication interface permits communication with supervisory systems, visualization tools, etc.

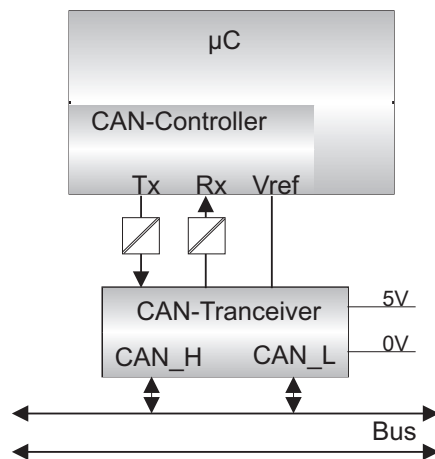
Another standard interface is provided on the KS vario controller modules. This full RS232 interface is used for connection of the 'BlueControl' tool, which runs on a PC.

## **CAN Physical Layer**

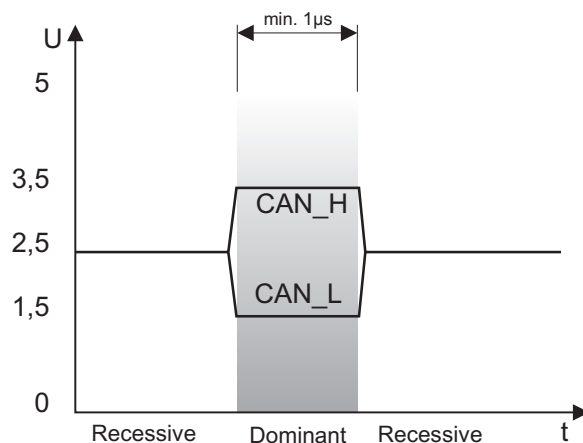
There are various standards related to the CAN Physical Layer. The most important standard for general applications is the "CAN High-Speed Standard ISO 11898-2". The recommendations given below are based primarily on this standard and are valid independent of the used CAN protocol (CANopen / DeviceNet).

## **ISO 11898-2 nodes**

A node compliant with ISO 11898-2 comprises a microcontroller with CAN controller (which may or may not be integrated), which is connected with a CAN transceiver via Rx and Tx line. The transceiver is connected to the differential CAN-H and CAN-L lines at the CAN bus. With KS vario, this (transceiver) connection is galvanically isolated.



With CAN bus, the nominal CAN bus levels are described as "Recessive" (nominal voltage 2,5V for CAN-H and CAN-L) and "Dominant" (nominal 3,5V for CAN-H and 1,5V for CAN-L).



**Baudrates,  
bus lengths**

The maximum useful bus length in a CAN network is determined by a variety of effects, in particular, the following physical effects:

- The delay time of the connected bus nodes (with/without opto-couplers) and the delay time of the bus cable (propagation delays)
- various scanning times within a CAN bit cell due to the oscillator tolerances of bus nodes,
- signal amplitude attenuation due to the resistance of the bus cable and the input resistances of bus nodes

When using ISO 11898-2-compliant transceivers, the bus lengths mentioned below can be realized with standard bus cables.

**Selectable  
Baudrates**

Baudrate	Bus length	Nominal bit time
500 kBd	100m	2 $\mu$ s
250 KBd	200m	4 $\mu$ s
125 KBd	500 m	8 $\mu$ s

For further information on bus lengths, see also standards CiA [IDS-102] (CANopen) or ODVA "DeviceNet Specifications Volume I, Release 2.0", in particular, Appendix A and B.

**Cable para-  
meters**

ISO 11898-2 defines some DC or AC parameters for the cables which can be used in CAN bus networks (typically, pairwise twisted cables with defined electrical properties are used). The important AC parameters are 120 Ohm cable impedance and a nominal "propagation delay" of 5 ns/m ! Recommendations for the bus cables and terminating resistors are given in the following table:

Bus length	Bus cable (Z: 120 Ohm, tp: 5ns/m)		Terminating resistor	Max. bit rate
	Spec. resistance	Cable cross section		
0 ... 40 m	70 mOhm/m	0,25mm <sup>2</sup> , 0,34mm <sup>2</sup> AWG 23, AWG 22	124 Ohm, 1%	1 MBd @ 40m
40 m ... 300 m	<60 mOhm/m	0,34mm <sup>2</sup> , 0,6mm <sup>2</sup> AWG 22, AWG 20	127 Ohm, 1% *)	> 500 kBd @ 40m
300 m ... 600 m	<40 mOhm/m	0,5mm <sup>2</sup> , 0,6mm <sup>2</sup> AWG 20	127 Ohm, 1% *)	> 100 kBd @ 40m
600 m ... 1 km	<26 mOhm/m	0,75mm <sup>2</sup> , 0,8mm <sup>2</sup> AWG 18	127 Ohm, 1% *)	> 50 kBd @ 40m

\*) With very long cables, a higher value for the terminating resistor (150 .. 300 Ohm) is useful for reducing the attenuation.

Further recommendations for CAN networks (especially large ones):

- Galvanic isolation is necessary with very long cables (e.g. 400m bus cable)
- A separate ground line is purposeful.
- The voltage drop (potential difference) across the transceiver ground potentials should be low (smaller than 2 V). Supply voltage from power supply in the middle of the cable.
- The total input resistance of bus nodes should be > 500 Ohm.
- Any tap lines should be as short as possible to prevent/reduce reflections, e.g.<6m @ 500kBd (DeviceNet), and <1 m with higher Baudrates !

For further information, refer to ODVA (DeviceNet), CiA (CANopen), various chip manufacturers and Internet.

## 2. Hints for operation

### 2.1. Connecting the interface, signification of indicator LEDs on the bus coupler

An EDS (Electronic Data Sheet) file is required for KS vario operation. Download is possible from: <http://www.pma-online.de/> (see Software -> EDS files for KS vario).

**Pin allocation Sub-D** Connection is via a 9-pole Sub-D connector.

Pin	Signal
1	unused
2	CAN-L
3	CAN ground
4	unused
5	unused
6	CAN ground
7	CAN-H
8	unused

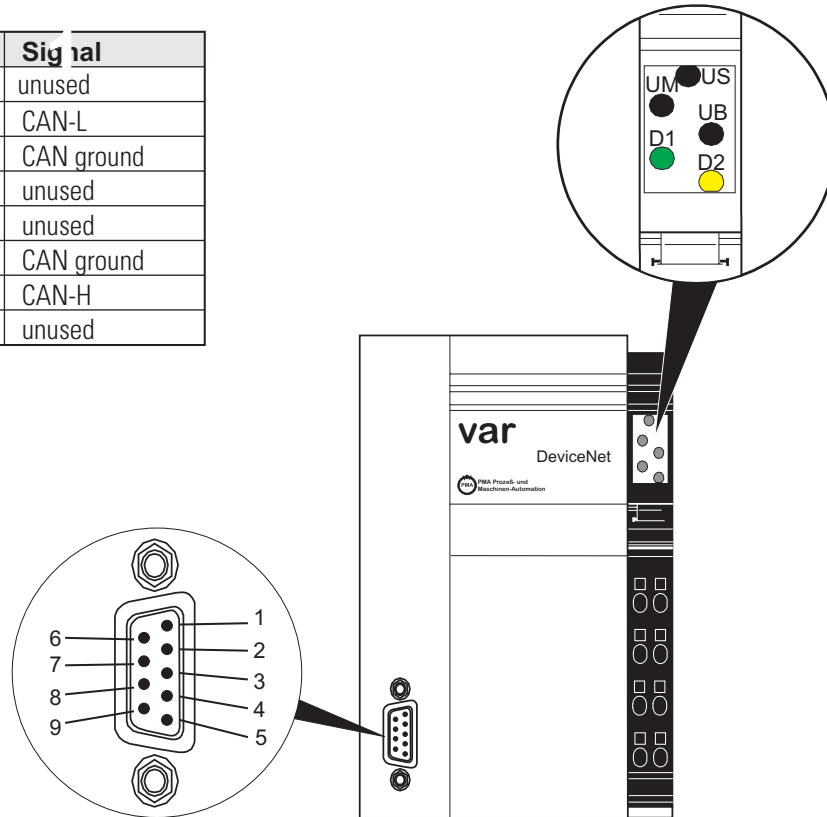


Fig.: Bus coupler

#### LEDs

LED no.	LED colour	Function
US	green	24 V segment voltage provided
UM	green	24V main supply provided (presently not used)
UB	green	24V coupler voltage provided
D1	red	TxD: blinks like data flow "send"
D2	red dot	RxD: blinks like data flow "receive"

**Address, Baudrate** Address and Baudrate have to be configured via the "BlueControl" tool. For operation of the tool, an interface cable must be connected to the local RS232 interface of KS vario.

---

## 2.2.

### Forcing

#### Inputs

All physical inputs can be overwritten (configurable) via DeviceNet. Thus e.g. process value measurement via remote I/O (e.g. VARIO I/O system ) and entry via the bus are possible.

#### Outputs

With output forcing, the fail-safe function setting must be taken into account. If "zero" fail-safe behaviour is selected, all outputs are set to zero in case of bus error or master stop, otherwise, their old value remains unchanged.

---

## 2.3.

### Fail-safe

User parameter setting 'fail-safe' determines the instrument behaviour in case of master bus failure or 'bus stop' .  
Bus failure

In case of bus failure, the instrument operates according to the following rules.

Fail-safe	Reaction in case of bus failure or master stop
Last value	Continue operation with the values sent last.
	Forced analog inputs are set to FAIL.
zero	Forced analog inputs are set to FAIL 1).
	Forced digital inputs are set to zero .
	Forced outputs are set to zero.

### 3. Communication via DeviceNet

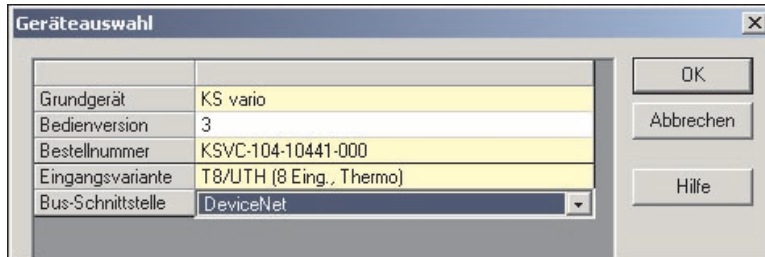
KS vario supports data "polling" and the access via "explicit message".

The data which should be transferred by polling can be selected easily and freely via the "BlueControl" engineering tool. After selection, the engineering can be downloaded into the non-volatile flash memory of KS vario.

#### 3.1. Basic settings for DeviceNet communication in the "BlueControl" engineering tool

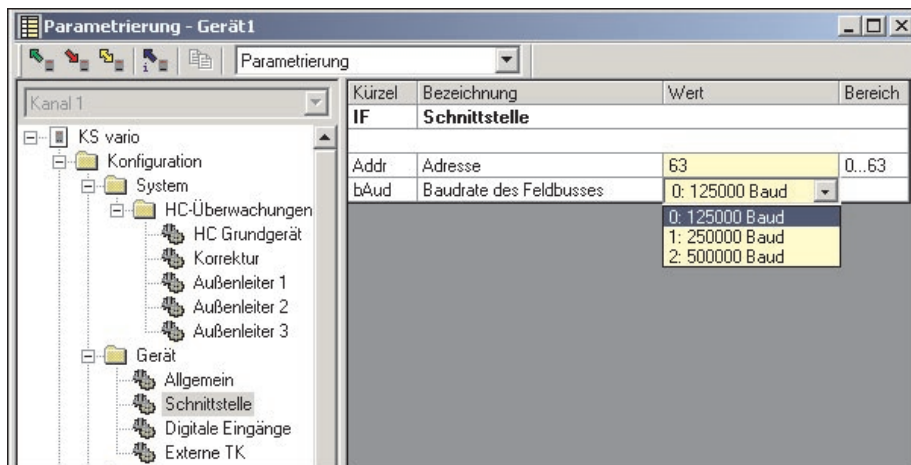
##### Address selection

Select "DeviceNet" bus interface in the window for instrument selection (possible from operating version 3).



##### Adjusting address and Baudrate

Adjust the node address (MAC-Id) and the Baudrate in "Parameter setting" :



The bus data (read/write) which should be transmitted can be composed by selecting them as required. An example for channel-specific data selection is given in the following chapter:



## 3.2.

### Definition of transmitted data in the "BlueControl" engineering tool

With a Rockwell PLC, max. 127 read data or 127 write data can be transmitted. Data transmission is as word data with 16 bits in Fix-Point1 format, i.e. with one digit behind the decimal point.

Although a higher amount of data can be selected in the BlueControl tool (max. 1080), all data exceeding a maximum number of 127 are not taken into account (shown with red background) and truncated.

#### Polling

Selection of any process data and parameters for polling is possible using the BlueControl tool in KS vario. These data are updated continuously in the KS vario cache memory and can be read or written via "polling" by the PLC.

The process data comprise a data range of 1080 (DeviceNet: 127) word data both in the write cache and in the read cache.

In BlueControl, the data which should be read can be selected using 2 methods (write direction accordingly):

- Max. 120 parameters and process data of any channels for writing and max. 120 for reading. The position determines the order of transmission.

The screenshot shows the 'Bus data (read) - koffer.bct' window. The left pane shows a tree view of the 'KS vario' system, with 'Channel data' > 'Controller' selected. The middle pane lists parameters with their descriptions. The bottom pane shows a table of selected data points.

Name	Description
Cntr	Controller
C.Sta	controller status
Ypid	actuating variable
X.Eff	effective process value
SP.EF	effective setpoint
dFF	control deviation
Yman	manual actuating value
DYman	actuator value (delta)
YInc	actuating value increase
YDec	actuating value decrease
P.Cha	The parameters of the controller have changed
T.Sta	status self tuning
Tu1	delay time heating
Vmax1	maximum rate of change heating
Kp1	process gain heating
Msg1	result of selftuning heating
Tu2	delay time cooling
Vmax2	maximum rate of change cooling

No.	Name	Description	Channel	Offset
1	X.Eff	effective process value	1	0
2	Ypid	actuating variable	1	1
3	Pb1	proportional band 1 [phys]	1	2
4	ti1	integral action 1 [s]	1	3
5	td1	derivative action 1 [s]	1	4
6	X.Eff	effective process value	2	5
7	Ypid	actuating variable	2	6
8	Pb1	proportional band 1 [phys]	2	7
9	ti1	integral action 1 [s]	2	8
10	td1	derivative action 1 [s]	2	9
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				

- Additionally or alternatively, any 32 parameters and process data can be selected in common for all channels. For instance, by selection of a datum, e.g. the process values of all (max. 30) channels can be transmitted. In total, up to 960 write and 960 read data can be defined (32 data x 30 channels). With DeviceNet, these data are limited to a total of 127 for each direction.

No.	Name	Description	Channel	Offset
1	X.Eff	effective process value	1..30	10, 15, 20, ..., 155
2	Y.pid	actuating variable	1..30	11, 16, 21, ..., 156
3	Pb1	proportional band 1 [phys]	1..30	12, 17, 22, ..., 157
4	ti1	integral action 1 [s]	1..30	13, 18, 23, ..., 158
5	td1	derivative action 1 [s]	1..30	14, 19, 24, ..., 159
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				

These selected data are available in the cache memory of KS vario in the order defined in BlueControl. The indexes or offsets of the individual data are displayed via the BlueControl tool and can be printed out.

### 3.3.

## Structure of the data cache in KS vario

The process data cover a data range of 1080 word data in the write cache and in the read cache.



As a Rockwell PLC accepts only max. 127 data words per direction, all data in excess of this amount selected by means of the BlueControl tool are not transmitted (displayed with red background), truncated!

Layout of the data cache:

Index read cache	Content
1	Any data of any channels
up to 120 from 121	Selected data (identical for all channels):  All channel 1 data All channel 2 data ... All channel 30 data
max. 127	

Index write cache	Content
1	Any data of any channels
up to 120 from 121	Selected data (identical for all channels):  All channel 1 data All channel 2 data ... All channel 30 data
up to 127	

### 3.4.

## Example

The bus data (read/write) which should be transmitted can be composed by selecting them accordingly. An example for channel-specific data selection is given below:

### Example

The left screenshot shows the 'Busdaten (lesen)' window. The tree view on the left includes 'KS vario', 'Parameter', 'Signale', 'System', 'Digitale Eingänge', 'Ausgänge', 'Status digital', 'Status analog', 'Heizstrom', 'Forcing digital', 'Forcing analog', 'Gerät', 'Alarme', 'Kanaldaten', 'Regler', 'Eingänge', 'Logik', 'Sollwert', and 'Grenzwerte'. The table below shows the following data points:

Nr.	Kürzel	Bezeichnung	Kanal	Offset
1	X.Eif	Effektiver Istwert	1	0
2	Ypid	Stellgröße	1	1
3	C.Sta	Reglerstatus	1	2
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

The right screenshot shows the 'Busdaten (schreiben)' window. The tree view on the left includes 'Außenleiter 2', 'Außenleiter 3', 'Gerät', 'Allgemein', 'Externe TK', 'Kanaldaten', 'Regler', 'Parametersatz 2', 'Eingänge', 'Sollwert', and 'Grenzwerte'. The table below shows the following data points:

Nr.	Kürzel	Bezeichnung	Kanal	Offset
1	SP	Sollwert	1	0
2	Yman	Manuelle Stellgrößenvorgabe	1	1
3	A.Man	Umschaltung auf Hand	1	2
4	C.Off	Regler ausschalten	1	3
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

In the example, 3 read data (to be read from KS vario) and 4 write data (to be written into KS vario) are defined. The resulting I/O poll size must be specified as bytes in the DeviceNet scanner:

The dialog box 'Edit I/O Parameters : 04, KS vario' has the following settings:

- Strobed: Input Size: 0 Bytes, Use Output Bit:
- Polled: Input Size: 6 Bytes, Output Size: 8 Bytes, Poll Rate: Background
- Change of State / Cyclic:  Change of State,  Cyclic, Input Size: 0 Bytes, Output Size: 0 Bytes, Heartbeat Rate: 250 msec

Buttons: OK, Cancel, Restore I/O Sizes, Advanced...

As all bus data are transmitted as "word", 6 bytes for read data (input) and 8 bytes for write data (output) must be specified. The "Poll Rate" should be set to "Background" (the cycle time of KS vario is 100 ms).



**If the number of read/write data selected in the BlueControl tool (total of channel and individual data) does not correspond with the size adjusted in the scanner, I/O data communication is not possible.**

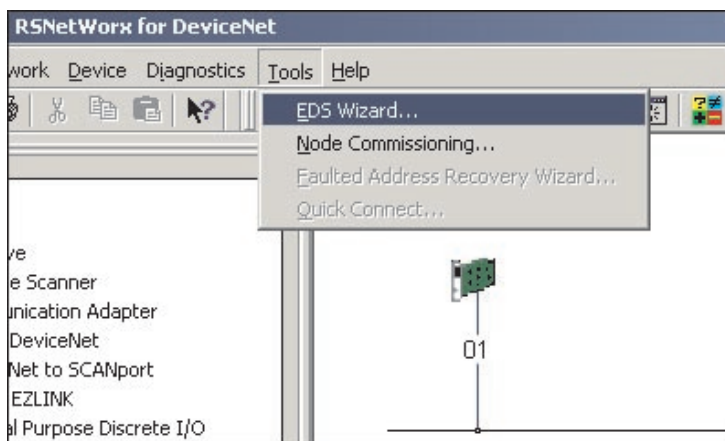
## 3.5.

## Communication with the PLC at the example of Rockwell with RSNetWorx

The settings required for communication of KS vario DeviceNet with a PLC is described at the example of a Rockwell PLC and network configuration tool RSNetWorx. For further details related to the Rockwell components, see the relevant documentation.

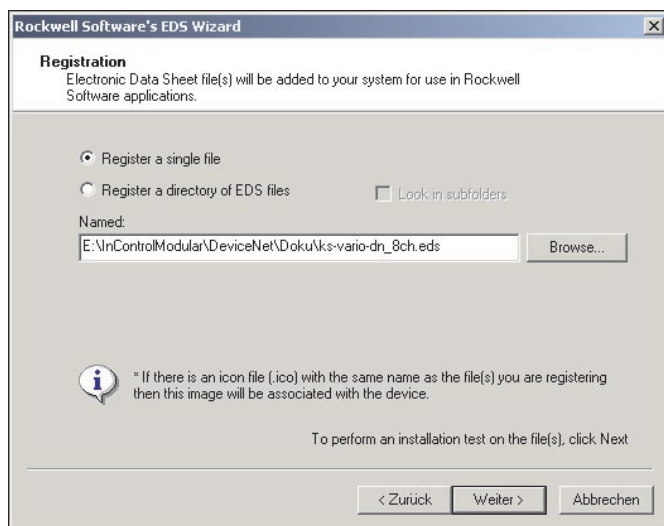
### 3.5.1 EDS installation and network configuration with RSNetWorx

Communication of the PLC with the DeviceNet fieldbus is via the "Scanner", a DeviceNet master node, which is directly allocated to the PLC. The devices connected in the network are made known to the scanner via RSNetWorx.



We recommend specifying KS vario as a new hardware first. This is done using the EDS Wizard, which can be found in the Tools of RSNetWorx.

In the following dialogue, specify the required EDS file. Various possibilities can be selected:

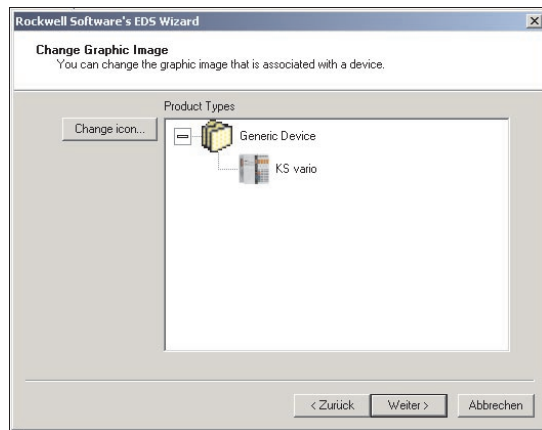


- a) ks-vario-dn\_8ch.eds 8-channel without Conf data
- b) ks-vario-dn\_30ch.eds 30-channel without Conf data
- c) ks-vario-dn\_30ch+config.eds 30-channel with Conf data

**Note:**

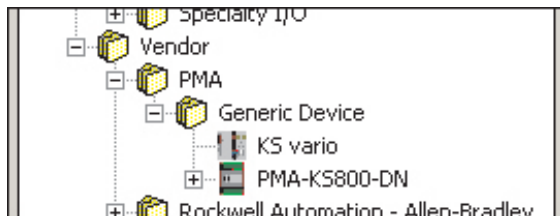
The times required for loading/picture build-up increase considerably from a) to c) ! Up to 30 minutes with c) !

An icon for the newly registered hardware can be defined subsequently:

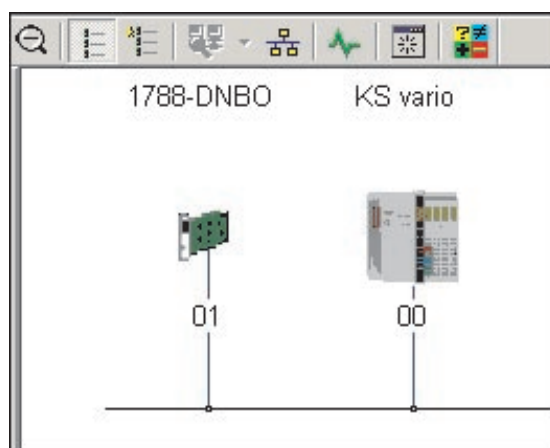


EDS files and icon can be downloaded as a ZIP archive from the PMA homepage.

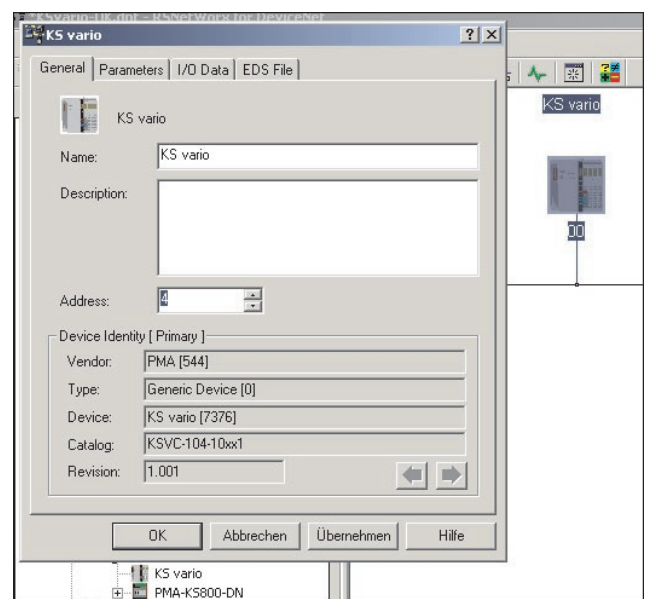
After successful installation of the EDS file, KS vario can be selected by following path "DeviceNet => Vendor => PMA => Generic Device" in the "Hardware" window of RSNetWorx:



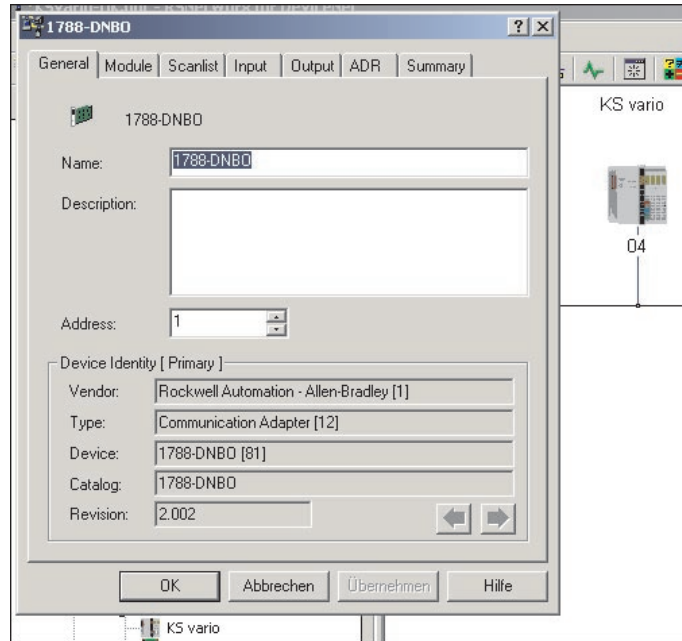
The 2 possibilities for integration into the network are on-line scan or the off-line engineering described in the following chapter. For this, position the new node via drag & drop and change the properties using the context menu (by clicking with the right mouse key) "Properties".



*Example: Changing the MAC-Id into 4*



After positioning all nodes, further configuration is in the DeviceNet scanner.

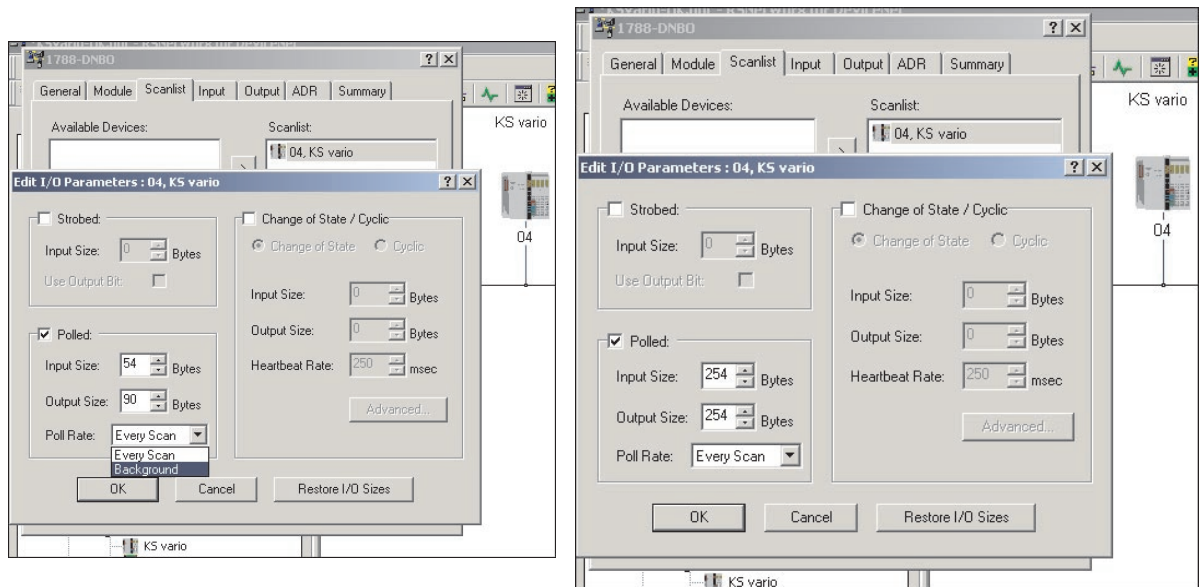


Scanner 1788-DNBO (for example PLC 1794)

In item "Scanlist", the "Available Device" KS vario can be entered into the "Scanlist".

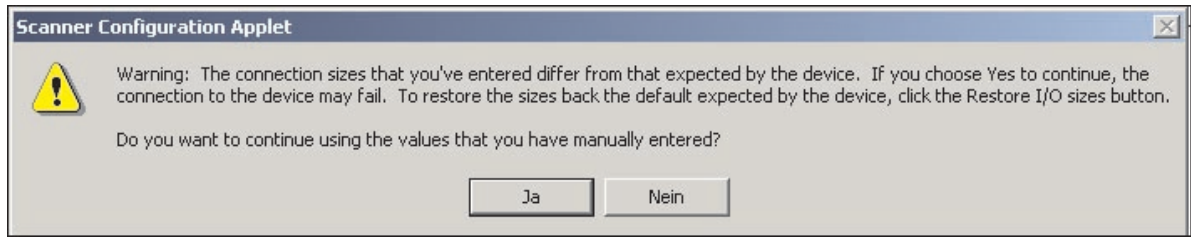
After selecting in the "Scanlist" and pressing "Edit I/O Parameters...", the default setting is displayed:

The Input/Output Size of 254 bytes (127 data words each) is the maximum possible value (read from the EDS) ! The really available sizes are dependent on the bus data composition via BlueControl.



The values must be set to the real sizes, otherwise, communication is not possible ! Moreover, KS vario should not be polled at a higher rate than 80 – 100ms, since new data are available only at intervals of 100ms. This results mostly in "Background" operation, provided that faster I/O operation is required.

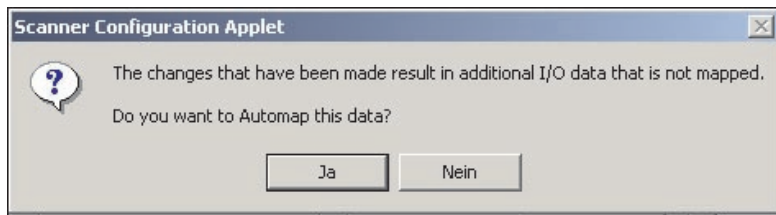
When acknowledging the entry, a warning related to differences of "Connection Size" is displayed, because comparison is using the maximum value from the EDS file. Confirm this warning by clicking on "Ja" (yes).



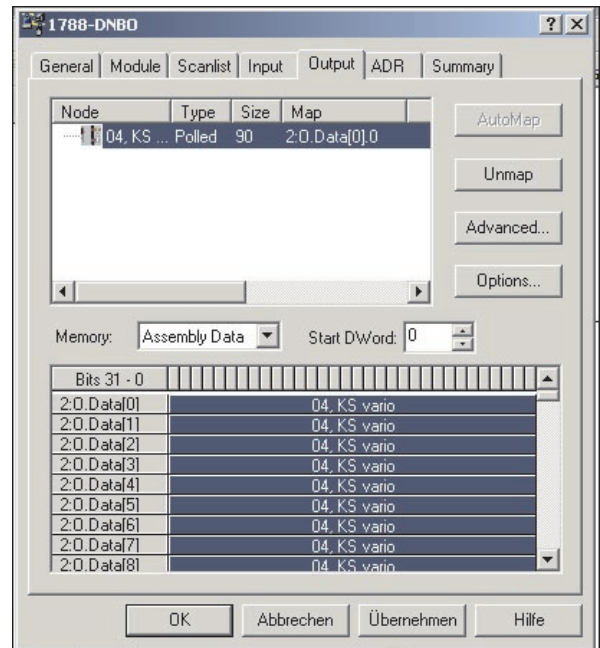
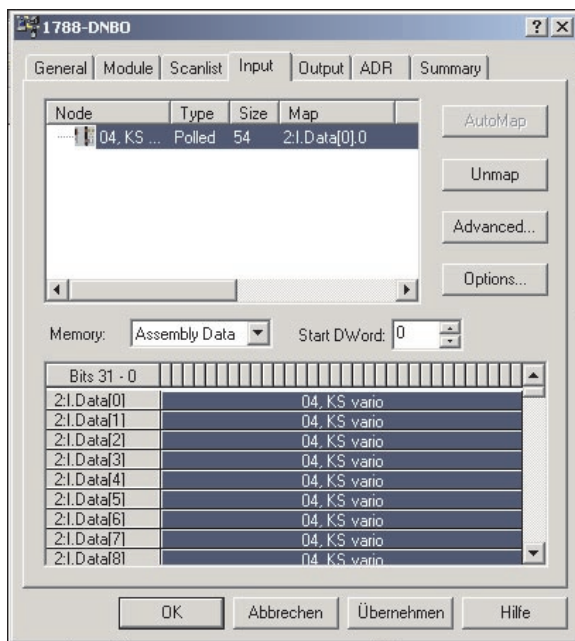
This may be followed by an "Unmap" prompt, Confirm again with "Ja".



Moreover, a prompt for automatic mapping of the new I/O data is displayed. Dependent on project and scope of possible changes, confirm with "Ja (yes)" or "Nein (no)" ("Unmap" and "Automap" can be selected via items "Input" and "Output").

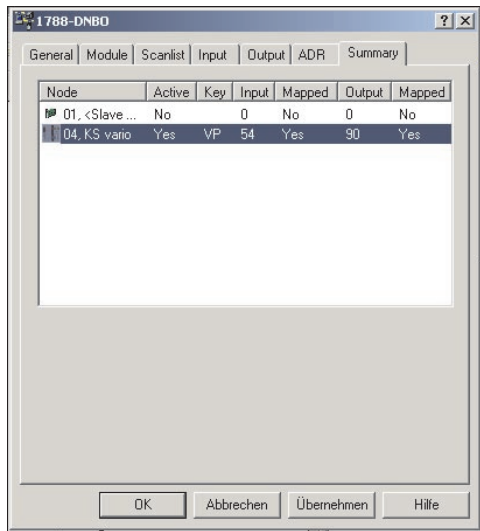


Checking / modifying the I/O mapping is possible via "Input" or "Output":



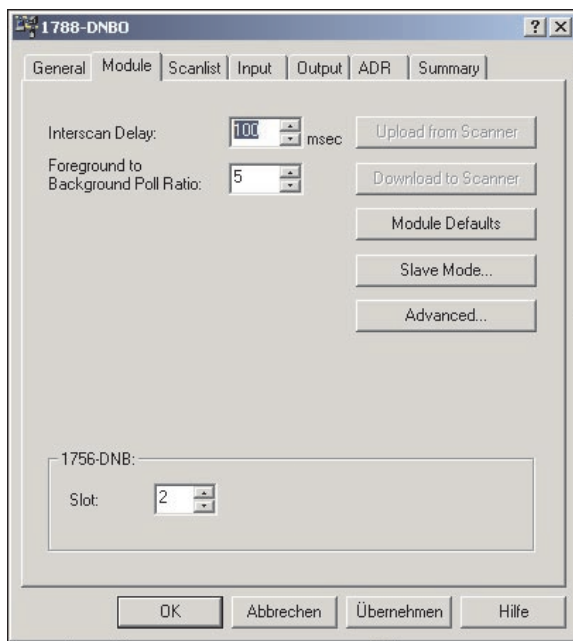


“Summary” provides a summarizing survey of the node I/O mapping:



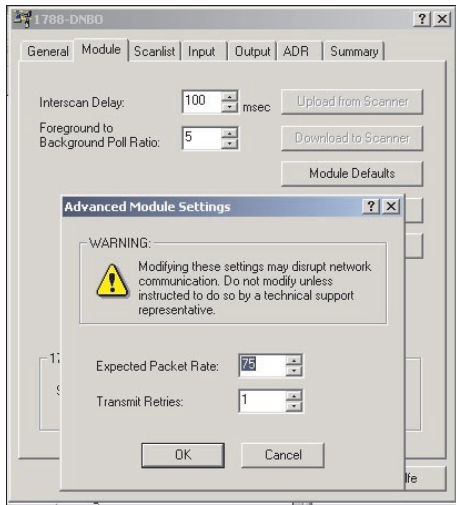
Node	Active	Key	Input	Mapped	Output	Mapped
01.<Slave ...	No		0	No	0	No
04.KS vario	Yes	VP	54	Yes	90	Yes

Adjustment of the general communication parameters for the DeviceNet network is in item “Module”. “Interscan Delay” is the setting for the cyclical poll speed (for “Every Scan” nodes). The “Foreground to Background Poll Ratio” defines the ratio of “Every Scan” and “Background” operated nodes.

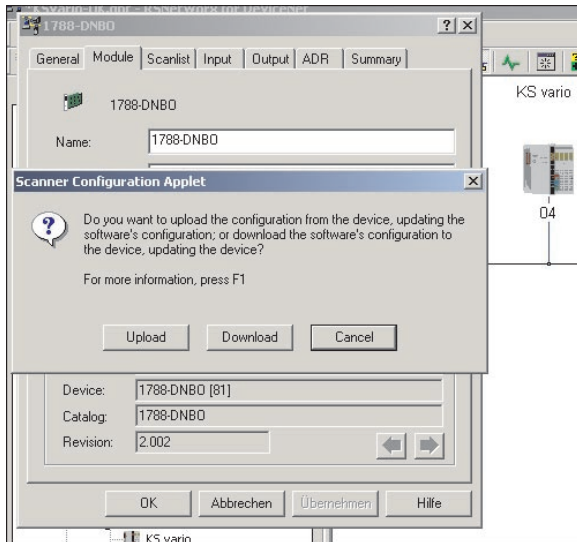


With an “Interscan Delay” of 100ms, the “Every Scan” nodes are polled at intervals of 100ms. “Foreground to Background Poll Ratio” 5 defines “Background” node polling at intervals of 600ms.

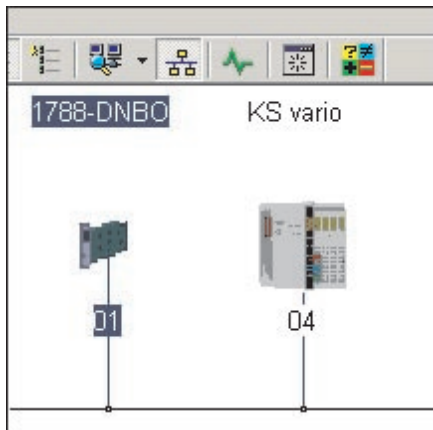
After clicking on "Advanced...", special settings are possible; however, these settings are reserved for DeviceNet experts.



After completing, the scanner configuration must be stored by "Download" in the scanner.



Now, network scanning ("browsing") can be done by switching over to "Online". Found nodes are displayed in parallel to the progress bar.



Network configuration is completed.

### 3.5.2 Example: DeviceNet communication procedure (PLC <--> KS vario)

The communication examples shown below are based on the following settings: scanner set to MAC-Id 1, KS vario set to MAC-Id 4, CAN analyzer (for Explicit Message Access) works with MAC-Id 63.



**KS vario is a “Group 2 Only Server” with a “Predefined Master/Slave Connection Set” in compliance with the ODVA DeviceNet specification.**

#### KS vario boot

ID	Src	Dst	R/R	Service/Data	Data
427		04	Rq	'Dupl.MAC check' Serial 1090f78a Port 00 PMA GmbH	00 20 02 8a f7 90 10
427		04	Rq	'Dupl.MAC check' Serial 1090f78a Port 00 PMA GmbH	00 20 02 8a f7 90 10

After booting, KS vario displays a “Duplicate MAC Check”, which provides the unique serial number in addition to the vendor-Id (0x220 = 544).

#### PLC Connect

ID	Src	Dst	R/R	Service/Data	Data
781	01	04	Rq	'Open expl msg con' DN16/16 Grp 3 SrcMId 4	04 4b 02 34
781	01	04	Rq	'Open expl msg con' DN16/16 Grp 3 SrcMId 4	04 4b 02 34
426	01	04	Rq	'Alloc Master/Slave' Cl 3(DNet) Ins 1 Choice Expl Master 1	01 4b 03 01 01 01
423	04	01	Rsp	'Alloc Master/Slave' DN8/8	01 cb 00
424	01	04	Rq	'Alloc Master/Slave' Cl 3(DNet) Ins 1 Choice Poll Master 1	01 4b 03 01 02 01
423	04	01	Rsp	'Alloc Master/Slave' DN8/8	01 cb 00
424	01	04	Rq	'Get Attr Single' Cl 1(Identity) Ins 1 Attr 1(VendorID)	01 0e 01 01 01
423	04	01	Rsp	'Get Attr Single': 20 02 (0220)	01 8e 20 02
424	01	04	Rq	'Get Attr Single' Cl 1(Identity) Ins 1 Attr 2(DevType)	01 0e 01 01 02
423	04	01	Rsp	'Get Attr Single': 00 00 (0000)	01 8e 00 00
424	01	04	Rq	'Get Attr Single' Cl 1(Identity) Ins 1 Attr 3(ProdCode)	01 0e 01 01 03
423	04	01	Rsp	'Get Attr Single': d0 1c (1cd0)	01 8e d0 1c
424	01	04	Rq	'Set Attr Single' Cl 5(Cnxn) Ins 1 Attr c(wdToAction): 03	01 10 05 01 0c 03
423	04	01	Rsp	'Set Attr Single'	01 90
424	01	04	Rq	'Set Attr Single' Cl 5(Cnxn) Ins 2 Attr 9(ExpPRate): 4b 00 (004b)	01 10 05 02 09 4b 00
423	04	01	Rsp	'Set Attr Single': 4c 00 (004c)	01 90 4c 00
424	01	04	Rq	'Get Attr Single' Cl 5(Cnxn) Ins 2 Attr 7(PrdCnSz)	01 0e 05 02 07
423	04	01	Rsp	'Get Attr Single': 36 00 (0036)	01 8e 36 00
424	01	04	Rq	'Get Attr Single' Cl 5(Cnxn) Ins 2 Attr 8(CnsCnSz)	01 0e 05 02 08
423	04	01	Rsp	'Get Attr Single': 5a 00 (005a)	01 8e 5a 00

The PLC opens communication channels for “Explicit Message” and “Polling” (the first attempt [2 \* open expl msg con] to communicate via UCMM stops with timeout, because KS vario as a “Group 2 Only Server” does not support UCMM). Subsequently, various attributes of identity and connection class are read or written.

#### ExplMsg Read

Example for read access (via “Explicit Message”) on the PMA Vendor-Id.

ID	Src	Dst	R/R	Service/Data	Data
7bf	3f	04	Rq	'Open expl msg con' DN16/16 Grp 3 SrcMId 0	04 4b 02 30
7bf	3f	04	Rq	'Open expl msg con' DN16/16 Grp 3 SrcMId 0	04 4b 02 30
426	3f	04	Rq	'Alloc Master/Slave' Cl 3(DNet) Ins 1 Choice Expl Master 3f	3f 4b 03 01 01 3f
423	04	3f	Rsp	'Alloc Master/Slave' DN8/8	3f cb 00
424	3f	04	Rq	'Get Attr Single' Cl 1(Identity) Ins 1 Attr 1(VendorID)	3f 0e 01 01 01
423	04	3f	Rsp	'Get Attr Single': 20 02 (0220)	3f 8e 20 02
426	3f	04	Rq	'Release Master/Slave' Cl 3(DNet) Ins 1 RelChoice Expl	3f 4c 03 01 01
423	04	3f	Rsp	'Release Master/Slave'	3f cc

#### ExplMsg Write

Example for a write access (via “Explicit Message”) to the MAC-Id ( 4 => 5). After changing, KS vario displays a “Duplicate MAC Check” (new MAC-Id).

ID	Src	Dst	R/R	Service/Data	Data
7bf	3f	04	Rq	'Open expl msg con' DN16/16 Grp 3 SrcMId 0	04 4b 02 30
7bf	3f	04	Rq	'Open expl msg con' DN16/16 Grp 3 SrcMId 0	04 4b 02 30
426	3f	04	Rq	'Alloc Master/Slave' Cl 3(DNet) Ins 1 Choice Expl Master 3f	3f 4b 03 01 01 3f
423	04	3f	Rsp	'Alloc Master/Slave' DN8/8	3f cb 00
424	3f	04	Rq	'Set Attr Single' Cl 3(DNet) Ins 1 Attr 1(MAC ID): 05 00 (0005)	3f 10 03 01 01 05 00
423	04	3f	Rsp	'Set Attr Single'	3f 90
42f		05	Rq	'Dupl.MAC check' Serial 1090f78a Port 00 PMA GmbH	00 20 02 8a f7 90 10
42f		05	Rq	'Dupl.MAC check' Serial 1090f78a Port 00 PMA GmbH	00 20 02 8a f7 90 10

### **I/O polling (request/response)**

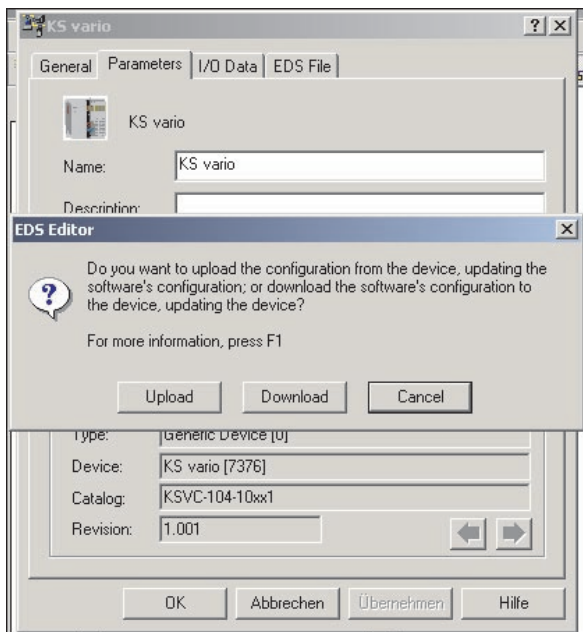
The example illustrates the transmission of 45 write data (90 bytes) and 27 read data (54 bytes). Transmission is as a "fragmented transfer", i.e. each message contains a status byte (start/end/count info) and 7 data bytes.

ID	Src	Dst	R/R	Service/Data	Data
425		04	Rq	IO Poll: 00 00 01 00 02 00 03 00	00 00 01 00 02 00 03 00
425		04	Rq	IO Poll: 41 04 00 05 00 06 00 07	41 04 00 05 00 06 00 07
425		04	Rq	IO Poll: 42 00 08 00 09 00 0a 00	42 00 08 00 09 00 0a 00
425		04	Rq	IO Poll: 43 0b 00 0c 00 00 00 00	43 0b 00 0c 00 00 00 00
425		04	Rq	IO Poll: 44 00 00 00 00 00 00 00	44 00 00 00 00 00 00 00
425		04	Rq	IO Poll: 45 00 00 00 00 00 00 00	45 00 00 00 00 00 00 00
425		04	Rq	IO Poll: 46 00 00 00 00 00 00 01	46 00 00 00 00 00 00 01
425		04	Rq	IO Poll: 47 00 01 00 00 00 00 00	47 00 01 00 00 00 00 00
425		04	Rq	IO Poll: 48 00 00 00 00 00 00 00	48 00 00 00 00 00 00 00
425		04	Rq	IO Poll: 49 00 00 00 00 00 00 00	49 00 00 00 00 00 00 00
425		04	Rq	IO Poll: 4a 00 00 00 00 00 00 00	4a 00 00 00 00 00 00 00
425		04	Rq	IO Poll: 4b 00 00 00 00 00 00 00	4b 00 00 00 00 00 00 00
425		04	Rq	IO Poll: 8c 00 00 00 00 80 01	8c 00 00 00 00 80 01
3c4	04		Rsp	IO Poll: 00 0f 01 ff 00 f0 00 0a	00 0f 01 ff 00 f0 00 0a
3c4	04		Rsp	IO Poll: 41 01 fb 00 ec 00 06 01	41 01 fb 00 ec 00 06 01
3c4	04		Rsp	IO Poll: 42 80 01 e8 86 e8 86 e8	42 80 01 e8 86 e8 86 e8
3c4	04		Rsp	IO Poll: 43 86 e8 86 e8 86 e8 86	43 86 e8 86 e8 86 e8 86
3c4	04		Rsp	IO Poll: 44 e8 86 e8 86 e8 86 e8	44 e8 86 e8 86 e8 86 e8
3c4	04		Rsp	IO Poll: 45 86 e8 86 e8 86 e8 86	45 86 e8 86 e8 86 e8 86
3c4	04		Rsp	IO Poll: 46 e8 86 e8 86 e8 86 e8	46 e8 86 e8 86 e8 86 e8
3c4	04		Rsp	IO Poll: 87 86 00 ff ff 0f	87 86 00 ff ff 0f

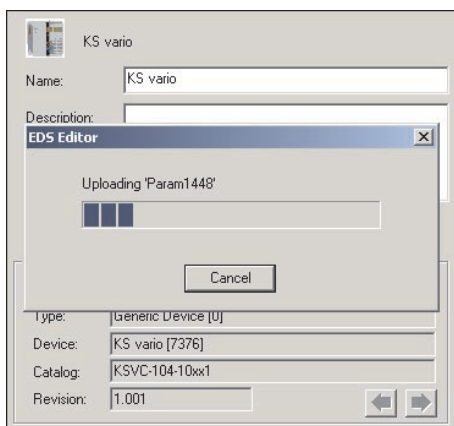
### 3.6.

## Parameter access to KS vario data in RSNetWorx

Due to the complexity of KS vario, the BlueControl engineering tool should be used for configuration an parameter setting, if possible. If necessary, an access to parameters in RXNetWorx is possible as follows:

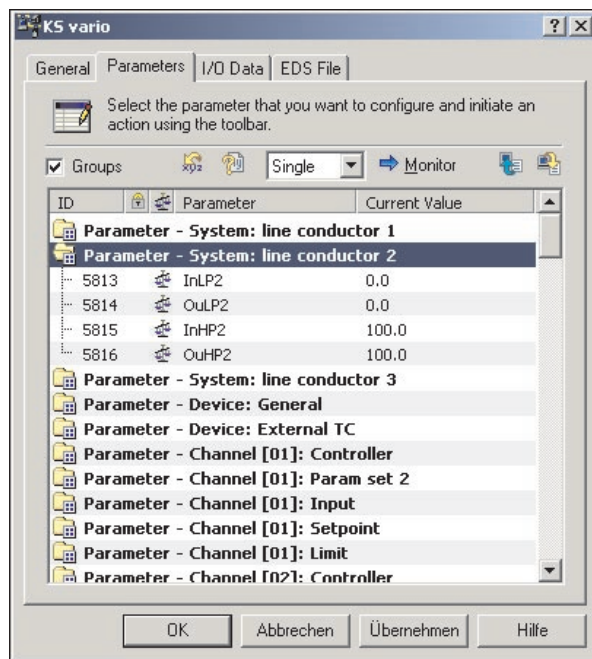


Double click on the KS vario icon and select the "Parameter" icon to open the upload dialogue. Activate "Upload" to read the parameters (configurations) based on the EDS file(s).

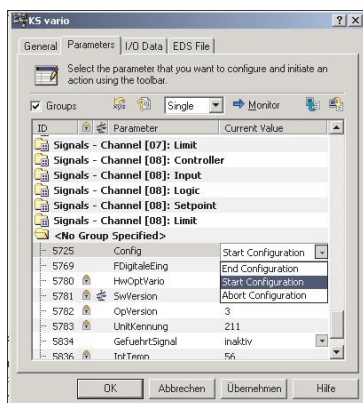


**Dependent on selected EDS file, the upload/display time can be very long (up to 30 min.!).**

After selecting "Groups", click on a group for access to the parameters of this group.



Switch over to "Start Configuration" for writing configuration data. Don't forget "End Configuration" at the end !)



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## 4.

### KS vario DeviceNet “Object directory”

Apart from the standard DeviceNet classes (Identity, Message Router, DeviceNet, Assembly, Connection ...), which are not described in detail in this manual, there are also manufacturer-specific classes, instances and attributes.

The following table provides a survey of KS vario data objects ( parameters, signals, configurations) and related “addresses” (class, instance, attribute). Bus access to these data is possible via “Explicit Messaging”.

For a description of the individual data (not addresses), see the KS vario parameter table.



**A detailed address survey of all data is given in document::**

**Parameter table for KS vario (9499-040-72918)**

**- available from Feb. 2005 on [www.pma-online.de](http://www.pma-online.de)**

**- and on request up to this date**

