Digital connections

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Product	Firmware Version AMK part no.
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KW-R25 (O902)	AE-R25 V2.02 2014/23 (205217)
KW-R26 (O903)	AE-R26 V2.02 2014/23 (205215)
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iX / iC / iDT5	iX V1.00 2011/21 (203699)
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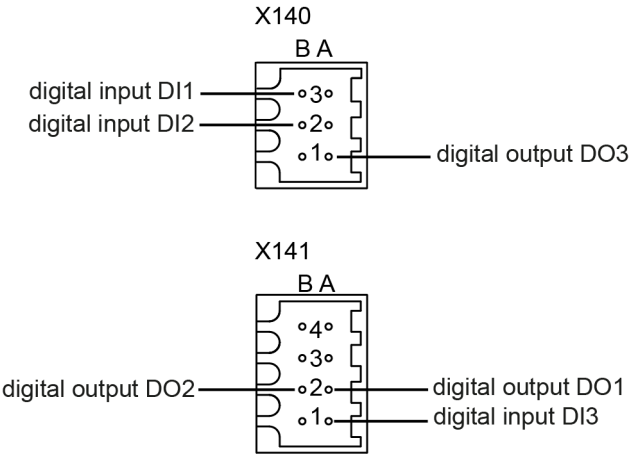
1 Digital connections

Supported hardware:	KW-R06 / KW-R16 / KW-R07 / KW-R17 / iSA / iX / iC / iDT5 / iX(-R3) / iC(-R3) / iDT5(-R3) / ihXT / KW-R24 / KW-R24-R / KW-R25 / KW-R26 /

1.1 Digital connections KW-R06, -R16, R07, -R17

The controller cards KW-R06, -R16, -R07, -R17 have 6 digital connections each. 3 connections are fixed as digital inputs (DI) and 3 connections as digital outputs (DO).

Connection X140 and X141 I/O interface:



Applications:

	Function assignment via functions code	Controller
Digital output	Output real-time bit messages See 'Codes for the configuration of the binary outputs' on page 28.	The controller can set or reset digital outputs by writing ID34120 'Binary output word'. Prerequisite: The parameters mapped in the 'binary output word' must be assigned function code 33942 'Access via PLC'.
Digital input	Perform integrated functions See 'Codes for the configuration of the binary inputs' on page 31.	With the controller, the image of the digital inputs can be evaluated via ID34100 'Binary input word', regardless of whether a function code is parameterized or not.

Compatibility to older firmware

As an alternative to the function code '33942 Access via PLC', code 0 can also be entered

1.1.1 Relevant parameters

Relationships between connection and parameter.

Digital outputs

Display in AIPEX PRO

ID	Name	Value
32864	Output port 3	0
32865	Port 3 bit 0	0
32866	Port 3 bit 1	0
32867	Port 3 bit 2	0
32868	Port 3 bit 3	0
34120	Binary output word	0000 0000 0000 0010

Parameter name	Configuration	Connection	Output	Control by controller
ID32864 'Address output port 3'	• Access via controller • Function assignment via function code	-	-	-
ID32865 'Port 3 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	X141 Pin 2A	DO1	ID34120 'Binary output word' bit 0
ID32866 'Port 3 Bit 1'		X141 Pin 2B	DO2	ID34120 'Binary output word' bit 1
ID32867 'Port 3 Bit 2'		X140 Pin 1A	DO3	ID34120 'Binary output word' bit 2

Configuration ID32864 'Address output port 3'

Code	Meaning
0	Controller can be set / reset digital outputs A digital output must be configured with code 33942 'Access via PLC'.
544	Function assignment via parameter ID32865 - ID32867 Mixed configuration is possible: The controller can access on digital outputs configured with code 33942 'Access via PLC' (alternative code 0).

Digital inputs

Display in AIPEX PRO

ID	Name	Value
32977	Input port 3	32
32978	Port 3 bit 0	32904
32979	Port 3 bit 1	32913
32980	Port 3 bit 2	0
32981	Port 3 bit 3	0
34100	Binary input word	0000 0000 0000 0001

Parameter name	Configuration	Connection	Input	Status
ID32977 'Address input port 3'	Fixed (Function assignment via function code)	-	-	-
ID32978 'Port 3 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary inputs' on page 31.	X140 Pin 3B	DI1	ID34100 'Binary input word' bit 0
ID32979 'Port 3 Bit 1'		X140 Pin 2B	DI2	ID34100 'Binary input word' bit 1
ID32980 'Port 3 Bit 2'		X141 Pin 1A	DI3	ID34100 'Binary input word' bit 2

1.1.2 Additional inputs and outputs

The following address ranges provide additional 16 outputs and 16 inputs, to which a function code can be assigned.

ID32846 'Address output port 1'

ID32855 'Address output port 2'

ID32873 'Address input port 1'

ID32968 'Address input port 2'

The output and input ports can be connected to the AMK option card KW-EA2. This extends the controller card with 8 digital outputs and 12 digital inputs. (Option KW-EA2, AMK Part No. O664).

Without AMK option card KW-EA2, the output and input ports can be read and written as 'virtual inputs and outputs' by the controller.

Configuration:

Address areas	Option card KW-EA2	Virtual Inputs and outputs
ID32846 'Address output port 1'	Digital outputs DO1 - DO8	Virtual outputs DO1 - DO8
ID32855 'Address output port 2'	Without use	Virtual outputs DO9 - DO15
ID32873 'Address input port 1'	Digital outputs DI1 - DI8	Virtual outputs DI1 - DI8
ID32968 'Address input port 2'	Digital outputs DI9 - DI12	Virtual outputs DI9 - DI15

Outputs

Display in AIPEX PRO

ID	Name	Value
32846	Output port 1	0
32847	Port 1 bit 0	0
32848	Port 1 bit 1	0
32849	Port 1 bit 2	0
32850	Port 1 bit 3	0
32851	Port 1 bit 4	0
32852	Port 1 bit 5	0
32853	Port 1 bit 6	0
32854	Port 1 bit 7	0
32855	Output port 2	0
32856	Port 2 bit 0	0
32857	Port 2 bit 1	0
32858	Port 2 bit 2	0
32859	Port 2 bit 3	0
32860	Port 2 bit 4	0
32861	Port 2 bit 5	0
32862	Port 2 bit 6	0
32863	Port 2 bit 7	0
34121	Binary output word 1	0000
34122	Binary output word 2	0000

Parameter name	Configuration	Connection	Output	Control by controller
ID32846 'Address output port 1'	• Access via controller • Function assignment via function code	-	-	-

Parameter name	Configuration	Connection	Output	Control by controller
ID32847 'Port 1 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	X61 Pin 15 1)	DO1	ID34121 'Binary output word 1' bit 0
ID32848 'Port 1 Bit 1'		X61 Pin 16 1)	DO2	ID34121 'Binary output word 1' bit 1
ID32849 'Port 1 Bit 2'		X61 Pin 17 1)	DO3	ID34121 'Binary output word 1' bit 2
ID32850 'Port 1 Bit 3'		X61 Pin 18 1)	DO4	ID34121 'Binary output word 1' bit 3
ID32851 'Port 1 Bit 4'		X61 Pin 19 1)	DO5	ID34121 'Binary output word 1' bit 4
ID32852 'Port 1 Bit 5'		X61 Pin 20 1)	DO6	ID34121 'Binary output word 1' bit 5
ID32853 'Port 1 Bit 6'		X61 Pin 21 1)	DO7	ID34121 'Binary output word 1' bit 6
ID32854 'Port 1 Bit 7'		X61 Pin 22 1)	DO8	ID34121 'Binary output word 1' bit 7

1) Option card KW-EA2, AMK Part-no. O664

Configuration ID32846 'Address output port 1'

Code	Meaning
0	Controller can be set / reset digital outputs
552	Function assignment via parameter ID32847- ID32854  Mixed configuration is possible: The controller can access on digital outputs configured with code 33942 'Access via PLC' (alternative code 0).

Parameter name	Configuration	Connection	Output	Control by controller
ID32855 'Address output port 2'	• Access via controller • Function assignment via function code	-	-	-

Parameter name	Configuration	Connection	Output	Control by controller
ID32856 'Port 2 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	-	-	ID34121 'Binary output word 1' bit 8
ID32857 'Port 2 Bit 1'		-	-	ID34121 'Binary output word 1' bit 9
ID32858 'Port 2 Bit 2'		-	-	ID34121 'Binary output word 1' bit 10
ID32859 'Port 2 Bit 3'		-	-	ID34121 'Binary output word 1' bit 11
ID32860 'Port 2 Bit 4'		-	-	ID34121 'Binary output word 1' bit 12
ID32861 'Port 2 Bit 5'		-	-	ID34121 'Binary output word 1' bit 13
ID32862 'Port 2 Bit 6'		-	-	ID34121 'Binary output word 1' bit 14
ID32863 'Port 2 Bit 7'		-	-	ID34121 'Binary output word 1' bit 15

1) Option card KW-EA2, AMK Part-no. O664

Configuration ID32855 'Address output port 2'

Code	Meaning
0	Controller can be set / reset digital outputs
553	Function assignment via parameter ID32847- ID32854  Mixed configuration is possible: The controller can access on digital outputs configured with code 33942 'Access via PLC' (alternative code 0).

Inputs

Display in AIPEX PRO

ID	Name	Value
32873	Input port 1	0
32874	Port 1 bit 0	0
32875	Port 1 bit 1	0
32876	Port 1 bit 2	0
32877	Port 1 bit 3	0
32878	Port 1 bit 4	0
32879	Port 1 bit 5	0
32880	Port 1 bit 6	0
32881	Port 1 bit 7	0
32968	Input port 2	0
32969	Port 2 bit 0	0
32970	Port 2 bit 1	0
32971	Port 2 bit 2	0
32972	Port 2 bit 3	0
32973	Port 2 bit 4	0
32974	Port 2 bit 5	0
32975	Port 2 bit 6	0
32976	Port 2 bit 7	0
34101	Binary input word 1	0000
34102	Binary input word 2	0000

Parameter name	Configuration	Connection	Input	Control by controller
ID32873 'Address input port 1'	• Access via controller • Function assignment via function code	-	-	-
ID32874 'Port 1 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	X61 Pin 1 [1)]	DI1	ID34101 'Binary input word 1' bit 0
ID32875 'Port 1 Bit 1'		X61 Pin 2 [1)]	DI2	ID34101 'Binary input word 1' bit 1
ID32876 'Port 1 Bit 2'		X61 Pin 3 [1)]	DI3	ID34101 'Binary input word 1' bit 2
ID32877 'Port 1 Bit 3'		X61 Pin 4 [1)]	DI4	ID34101 'Binary input word 1' bit 3
ID32878 'Port 1 Bit 4'		X61 Pin 5 [1)]	DI5	ID34101 'Binary input word 1' bit 4
ID32879 'Port 1 Bit 5'		X61 Pin 6 [1)]	DI6	ID34101 'Binary input word 1' bit 5
ID32880 'Port 1 Bit 6'		X61 Pin 7 [1)]	DI7	ID34101 'Binary input word 1' bit 6
ID32881 'Port 1 Bit 7'		X61 Pin 8 [1)]	DI8	ID34101 'Binary input word 1' bit 7

1) Option card KW-EA2, AMK Part-no. O664

ID32873 'Address input port 1'

Code	Meaning
0	Controller can be set / reset digital inputs
40	set / reset via IO card

Parameter name	Configuration	Connection	Input	Control by controller
ID32968 'Address input port 2'	• Access via controller • Function assignment via function code	-	-	-
ID32969 'Port 2 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	X61 Pin 9 1)	DI9	ID34101 'Binary input word 1' bit 8
ID32970 'Port 2 Bit 1'		X61 Pin 10 1)	DI10	ID34101 'Binary input word 1' bit 9
ID32971 'Port 2 Bit 2'		X61 Pin 11 1)	DI11	ID34101 'Binary input word 1' bit 10
ID32972 'Port 2 Bit 3'		X61 Pin 12 1)	DI12	ID34101 'Binary input word 1' bit 11
ID32973 'Port 2 Bit 4'		-	-	ID34101 'Binary input word 1' bit 12
ID32974 'Port 2 Bit 5'		-	-	ID34101 'Binary input word 1' bit 13
ID32975 'Port 2 Bit 6'		-	-	ID34101 'Binary input word 1' bit 14
ID32976 'Port 2 Bit 7'		-	-	ID34101 'Binary input word 1' bit 15

1) Option card KW-EA2, AMK Part-no. O664

ID32968 'Address input port 2'

Code	Meaning
0	Controller can be set / reset digital inputs
41	set / reset via IO card

1.1.3 Virtual IOs

ID34122 'Binary output word 2'

ID34122 contains 'virtual' binary outputs for control via fieldbus. The outputs are not assigned to any hardware. The binary outputs can be set by the controller by writing ID34122 or the status can be read.

ID34102 'Binary input word 2'

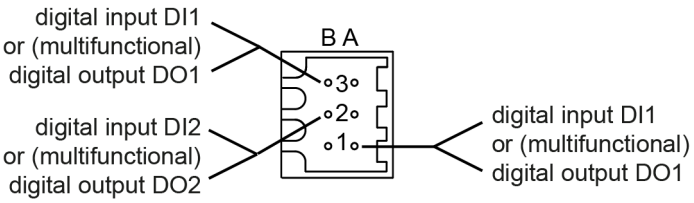
ID34102 contains 'virtual' binary inputs for control via fieldbus. The inputs are not assigned to any hardware. The binary inputs can be set by the controller by writing ID34102 or the status can be read.

1.2 Digital connections KW-R24, -R24-R, -R25, -R26, -R27

The controller cards KW-R24, -R24-R, -R25, -R26, -R27 have 3 digital connections. The connections are multifunctional.

A multifunctional connection can be configured either as a digital input (DI) or as a digital output (DO).

Connection X140 I/O interface:



Applications:

	Function assignment via functions code	Controller
Digital output	Output real-time bit messages See 'Codes for the configuration of the binary outputs' on page 28.	The controller can set or reset digital outputs by writing ID34120 'Binary output word'. Prerequisite: The parameters mapped in the 'binary output word' must be assigned function code 33942 'Access via PLC'.
Digital input	Perform integrated functions See 'Codes for the configuration of the binary inputs' on page 31.	With the controller, the image of the digital inputs can be evaluated via ID34100 'Binary input word', regardless of whether a function code is parameterized or not.

No compatibility with KW-R06, -R16, -R07, -R17

Function code 0 is not supported by the multifunctional connectors.

In a configuration with the code 0, the controller can write ID34120 'Binary output word'. The status is not switched through to the digital outputs.

A digital output must be configured with the function code '33942 Access via PLC'.

Multifunctional connections: possible combinations (Connection X140)

Multifunctional connections				
Pin 1A Pin 2B Pin 3B	3 x digital input (DI) 0 x digital output (DO)	2 x digital input (DI) 1 x digital output (DO)	1 x digital input (DI) 2 x digital output (DO)	0 x digital input (DI) 3 x digital output (DO)

1.2.1 Relevant parameters

Relationships between connection and parameter.

Digital outputs

Display in AIPEX PRO

ID	Name	Value
32864	Output port 3	0
32865	Port 3 bit 0	0
32866	Port 3 bit 1	0
32867	Port 3 bit 2	0
34100	Binary input word	0000 0000 0000 0000
34120	Binary output word	0000 0000 0000 0000

Parameter name	Configuration	Connection	Output	Control by controller	Status [2)]
ID32864 'Address output port 3'	• Access via controller • Function assignment via function code	-	-	-	-

Parameter name	Configuration	Connection	Output	Control by controller	Status [2]
ID32865 'Port 3 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	Pin 3B [1]	DO1	ID34120 'Binary output word' bit 0	D34100 'Binary input word' bit 0
ID32866 'Port 3 Bit 1'		Pin 2B [1]	DO2	ID34120 'Binary output word' bit 1	D34100 'Binary input word' bit 1
ID32867 'Port 3 Bit 2'		Pin 1A [1]	DO3	ID34120 'Binary output word' bit 2	D34100 'Binary input word' bit 2

1) Multifunctional connection
2) The status of the digital outputs is shown in 'Binary input word'.

Configuration ID32864 'Address output port 3'

Code	Meaning
0	Controller can be set / reset digital outputs A digital output must be configured with code 33942 'Access via PLC'.
544	Function assignment via parameter ID32865 - ID32867 Mixed configuration is possible: The controller can access digital outputs configured with code 33942 'Access via PLC'.

Digital inputs

Display in AIPEX PRO

ID	Name	Value
32977	Input port 3	32
32978	Port 3 bit 0	0
32979	Port 3 bit 1	0
32980	Port 3 bit 2	0
34100	Binary input word	0000 0000 0000 0000

Parameter name	Configuration	Connection	Input	Status [2]
ID32977 'Address input port 3'	Fixed (Function assignment via function code)	-	-	-
ID32978 'Port 3 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary inputs' on page 31.	Pin 3B [1]	DI1	ID34100 'Binary input word' bit 0
ID32979 'Port 3 Bit 1'		Pin 2B [1]	DI2	ID34100 'Binary input word' bit 1
ID32980 'Port 3 Bit 2'		Pin 1A [1]	DI3	ID34100 'Binary input word' bit 2

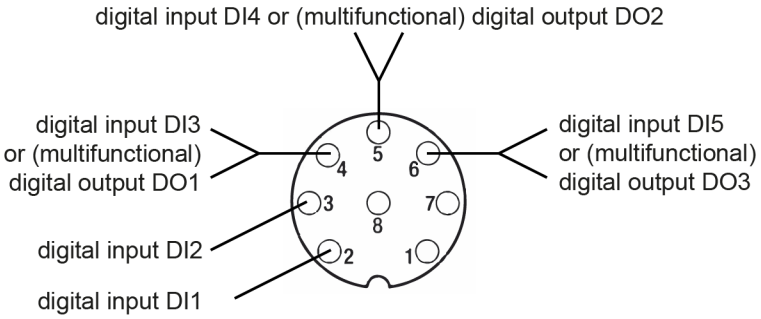
1) Multifunctional connection

1.3 Digital connections iC, iX and iDT5

The AMKASMART devices iC, iX and iDT have 5 digital connections. 2 connections are fixed as digital inputs (DI). 3 connections are multifunctional.

A multifunctional connection can be configured either as a digital input (DI) or as a digital output (DO).

Connection X04 I/O interface:



Applications:

	Function assignment via functions code	Controller
Digital output	Output real-time bit messages See 'Codes for the configuration of the binary outputs' on page 28.	The controller can set or reset digital outputs by writing ID34120 'Binary output word'. Prerequisite: The parameters mapped in the 'binary output word' must be assigned function code 33942 'Access via PLC'.
Digital input	Perform integrated functions See 'Codes for the configuration of the binary inputs' on page 31.	With the controller, the image of the digital inputs can be evaluated via ID34100 'Binary input word', regardless of whether a function code is parameterized or not.

Multifunctional connections: possible combinations (Connection X04)

Fixed-wired connections				
Pin 2 Pin 3	2 x digital inputs (DI)			
Multifunctional connections				
Pin 4 Pin 5 Pin 6	3 x digital input (DI) 0 x digital output (DO)	2 x digital input (DI) 1 x digital output (DO)	1 x digital input (DI) 2 x digital output (DO)	0 x digital input (DI) 3 x digital output (DO)

1.3.1 Relevant parameters

Relationships between connection and parameter.

Digital outputs

Display in AIPEX PRO

ID	Name	Value
32864	Output port 3	0
32865	Port 3 bit 0	0
32866	Port 3 bit 1	0
32867	Port 3 bit 2	0
34100	Binary input word	0000 0000 0000 0000
34120	Binary output word	0000 0000 0000 0000

Parameter name	Configuration	Connection	Output	Control by controller	Status [2]
ID32864 'Address output port 3'	• Access via controller • Function assignment via function code	-	-	-	-

Parameter name	Configuration	Connection	Output	Control by controller	Status 2)
ID32865 'Port 3 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	Pin 4 1)	DO1	ID34120 'Binary output word' bit 0	D34100 'Binary input word' bit 2
ID32866 'Port 3 Bit 1'		Pin 5 1)	DO2	ID34120 'Binary output word' bit 1	D34100 'Binary input word' bit 3
ID32867 'Port 3 Bit 2'		Pin 6 1)	DO3	ID34120 'Binary output word' bit 2	D34100 'Binary input word' bit 4

1) Multifunctional connection
2) The status of the digital outputs is shown in 'Binary input word'.

Configuration ID32864 'Address output port 3'

Code	Meaning
0	Controller can be set / reset digital outputs A digital output must be configured with code 33942 'Access via PLC'.
544	Function assignment via parameter ID32865 - ID32867 Mixed configuration is possible: The controller can access digital outputs configured with code 33942 'Access via PLC'.

Digital inputs

Display in AIPEX PRO

ID	Name	Value
32977	Input port 3	32
32978	Port 3 bit 0	0
32979	Port 3 bit 1	0
32980	Port 3 bit 2	0
32981	Port 3 bit 3	0
32982	Port 3 bit 4	0
34100	Binary input word	0000 0000 0000 0000

Parameter name	Configuration	Connection	Input	Status 2)
ID32977 'Address input port 3'	Fixed (Function assignment via function code)	-	-	-
ID32978 'Port 3 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary inputs' on page 31.	Pin 2	DI1	ID34100 'Binary input word' bit 0
ID32979 'Port 3 Bit 1'		Pin 3	DI2	ID34100 'Binary input word' bit 1
ID32980 'Port 3 Bit 2'		Pin 4 1)	DI3	ID34100 'Binary input word' bit 2
ID32981 'Port 3 Bit 3'		Pin 5 1)	DI4	ID34100 'Binary input word' bit 3
ID32982 'Port 3 Bit 4'		Pin 6 1)	DI5	ID34100 'Binary input word' bit 4

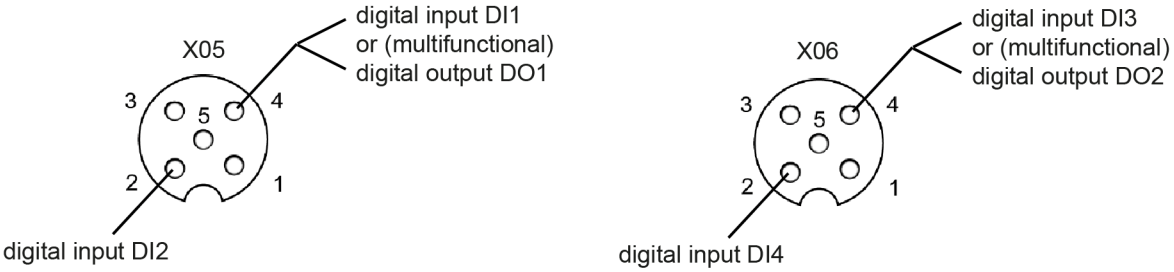
1) Multifunctional connection

1.4 Digital connections iSA

The AMKASMART devices iSA have 4 digital connections. 2 connections are fixed as digital inputs (DI). 2 connections are multifunctional.

A multifunctional connection can be configured either as a digital input (DI) or as a digital output (DO).

Connection X05/X06 I/O interface:



Applications:

	Controller
Digital output	Digital outputs can set by writing ID34120 'Binary output word'. The function code 33942 'local output' must be configured.
Digital input	With the controller, the image of the digital inputs can be evaluated via ID34100 'Binary input word'.

Multifunctional connections: possible combinations (Connection X05/X06)

Fixed-wired connections			
X05 Pin 2 X06 Pin 2	2 x digital inputs (DI)		
Multifunctional connections			
X05 Pin 4 X06 Pin 4	2 x digital input (DI) 0 x digital output (DO)	1 x digital input (DI) 1 x digital output (DO)	0 x digital input (DI) 2 x digital output (DO)

1.4.1 Relevant parameters

Relationships between connection and parameter.

Digital outputs

Display in AIPEX PRO

ID	Name	Value
32865	Port 3 bit 0	0
32866	Port 3 bit 1	0
34100	Binary input word	0000 0000 0000 0000
34120	Binary output word	0000 0000 0000 0000

Parameter name	Configuration	Connection	Output	Control by controller	Status [2]
ID32865 'Port 3 Bit 0'	Function code '33942 local output'	X05 Pin 4 [1]	DO1	ID34120 'Binary output word' bit 0	D34100 'Binary input word' bit 0
ID32866 'Port 3 Bit 1'		X06 Pin 4 [1]	DO2	ID34120 'Binary output word' bit 1	D34100 'Binary input word' bit 1

1) Multifunctional connection
2) The status of the digital outputs is shown in 'Binary input word'.

Digital inputs

Display in AIPEX PRO

ID	Name	Value
32865	Port3 Bit0	0
32866	Port3 Bit1	0
32867	Port3 Bit2	0
32868	Port3 Bit3	0
34100	Binary input word	0000 0000 0000 0000

Parameter name	Configuration	Connection	Input	Status 2)
ID32865 'Port 3 Bit 0'	Function code '0 local input'	X05 Pin 4 1)	DI1	ID34100 'Binary input word' bit 0
ID32866 'Port 3 Bit 1'		X06 Pin 4 1)	DI3	ID34100 'Binary input word' bit 1
ID32867 'Port 3 Bit 2'		X05 Pin 2	DI2	ID34100 'Binary input word' bit 2
ID32868 'Port 3 Bit 3'		X06 Pin 2	DI4	ID34100 'Binary input word' bit 3

1) Multifunctional connection

1.5 Virtual IOs ihXT

The AMKASMART devices ihXT have no physical IOs.
The following address ranges provide 8 virtual outputs and 8 virtual inputs to which a function code can be assigned.
ID32846 'Address output port 1'
ID32873 'Address input port 1'

1.5.1 Relevant parameters

Relationships between connection and parameter.

Digital outputs

Display in AIPEX PRO

ID	Name	Value
32846	Output port 1	0
32847	Port 1 bit 0	0
32848	Port 1 bit 1	0
32849	Port 1 bit 2	0
32850	Port 1 bit 3	0
32851	Port 1 bit 4	0
32852	Port 1 bit 5	0
32853	Port 1 bit 6	0
32854	Port 1 bit 7	0
34121	Binary output word 1	0000

Parameter Name	Configuration	Connection	Output	Control by controller
ID32846 'Address output port 1'	• Access via controller	-	-	-
ID32847 'Port 1 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	virtual	DO1	ID34121 'Binary output word 1' bit 0
ID32848 'Port 1 Bit 1'		virtual	DO2	ID34121 'Binary output word 1' bit 1
ID32849 'Port 1 Bit 2'		virtual	DO3	ID34121 'Binary output word 1' bit 2
ID32850 'Port 1 Bit 3'		virtual	DO4	ID34121 'Binary output word 1' bit 3
ID32851 'Port 1 Bit 4'		virtual	DO5	ID34121 'Binary output word 1' bit 4
ID32852 'Port 1 Bit 5'		virtual	DO6	ID34121 'Binary output word 1' bit 5
ID32853 'Port 1 Bit 6'		virtual	DO7	ID34121 'Binary output word 1' bit 6
ID32854 'Port 1 Bit 7'		virtual	DO8	ID34121 'Binary output word 1' bit 7

Configuration ID32864 'Address output port 3'

Code	Meaning
0	Access by the controller

Digital inputs

Display in AIPEX PRO

ID	Name	Value
32873	Input port 1	0
32874	Port 1 bit 0	0
32875	Port 1 bit 1	0
32876	Port 1 bit 2	0
32877	Port 1 bit 3	0
32878	Port 1 bit 4	0
32879	Port 1 bit 5	0
32880	Port 1 bit 6	0
32881	Port 1 bit 7	0
34101	Binary input word 1	0000

Parameter name	Configuration	Connection	Input	Control by controller
ID32873 'Address input port 1'	• Access via controller	-	-	-

Parameter name	Configuration	Connection	Input	Control by controller
ID32874 'Port 1 Bit 0'	Assignment function code from list: See 'Codes for the configuration of the binary outputs' on page 28.	virtual	DI1	ID34101 'Binary input word 1' bit 0
ID32875 'Port 1 Bit 1'		virtual	DI2	ID34101 'Binary input word 1' bit 1
ID32876 'Port 1 Bit 2'		virtual	DI3	ID34101 'Binary input word 1' bit 2
ID32877 'Port 1 Bit 3'		virtual	DI4	ID34101 'Binary input word 1' bit 3
ID32878 'Port 1 Bit 4'		virtual	DI5	ID34101 'Binary input word 1' bit 4
ID32879 'Port 1 Bit 5'		virtual	DI6	ID34101 'Binary input word 1' bit 5
ID32880 'Port 1 Bit 6'		virtual	DI7	ID34101 'Binary input word 1' bit 6
ID32881 'Port 1 Bit 7'		virtual	DI8	ID34101 'Binary input word 1' bit 7

ID32873 'Address input port 1'

Code	Meaning
0	Controller can be set / reset digital inputs

2 Startup instructions

2.1 Asynchronous access on digital connections with controller

Example configuration with AMKASMART iC:

3 digital outputs (DO1 + DO2 + DO3)

2 digital inputs (DI1 + DI2)

Access with the controller in the PLC_PRG (free-running)

Configuration with AIPEX PRO

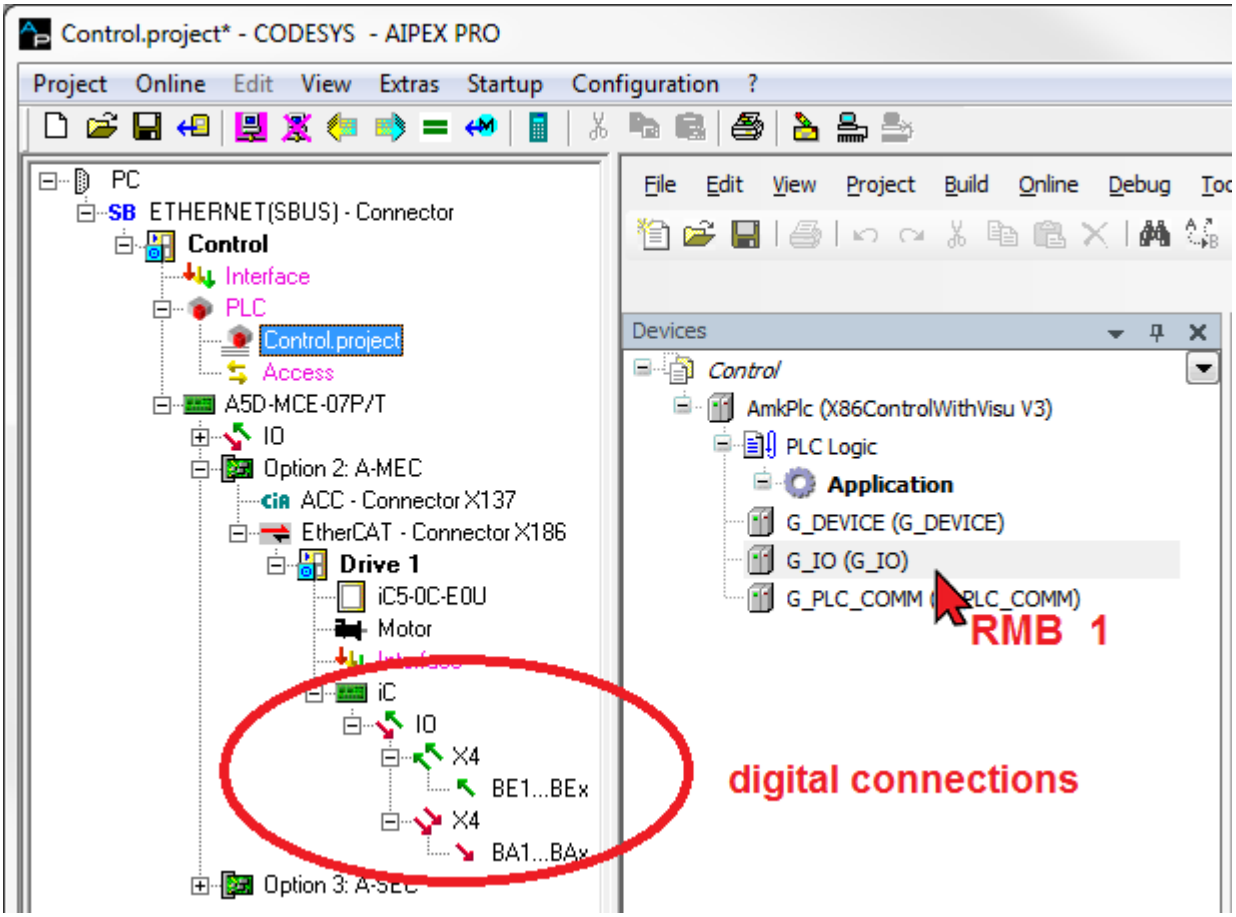
An output must be assigned the function code '33942 Access via PLC'.

Multifunctional connections must not be configured as input and output at the same time.

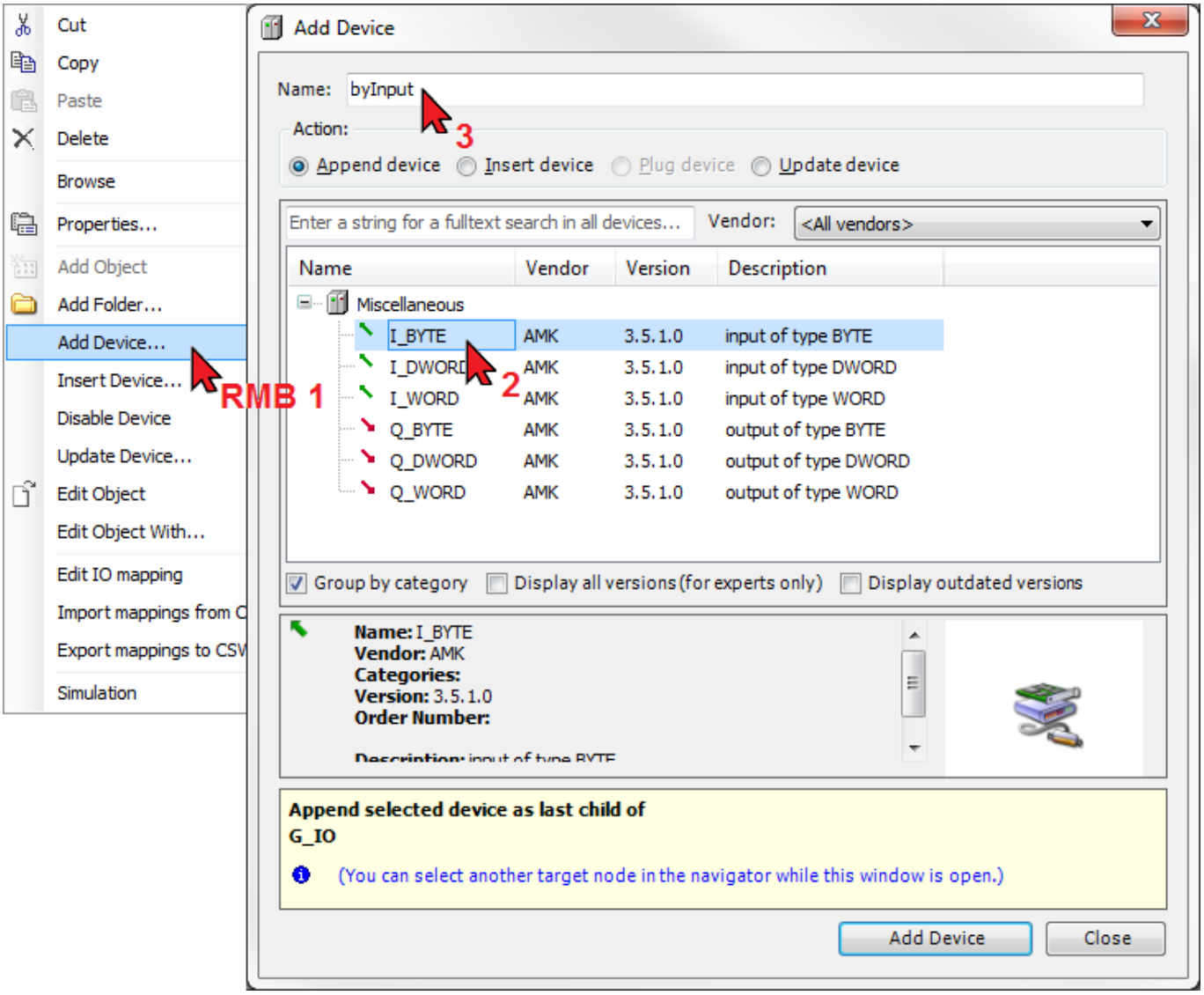
Parameter Selection: Binary inputs assignment; Binary outputs assignment

ID	Name	Value	Type	Remark
32864	Output port 3	0	Dec	Set / Reset of outputs via PLC
32865	Port 3 bit 0	33942	Dec	DO1 - Access via PLC
32866	Port 3 bit 1	33942	Dec	DO2 - Access via PLC
32867	Port 3 bit 2	33942	Dec	DO3 - Access via PLC
32977	Input port 3	32	Dec	
32978	Port 3 bit 0	0 Pin 2	Dec	DI1 - External signal
32979	Port 3 bit 1	0 Pin 3	Dec	DI2 - External signal
32980	Port 3 bit 2	0 Pin 4	Dec	Inactive - ID32865 usable
32981	Port 3 bit 3	0 Pin 5	Dec	Inactive - ID32866 usable
32982	Port 3 bit 4	0 Pin 6	Dec	Inactive - ID32867 usable
33175	List glitch filter time	0	Dec	
34100	Binary input word	0000 0000 0000 0000	Bin	
34120	Binary output word	0000 0000 0000 0000	Bin	
34202	Bit mask port 3	0000	Hex	

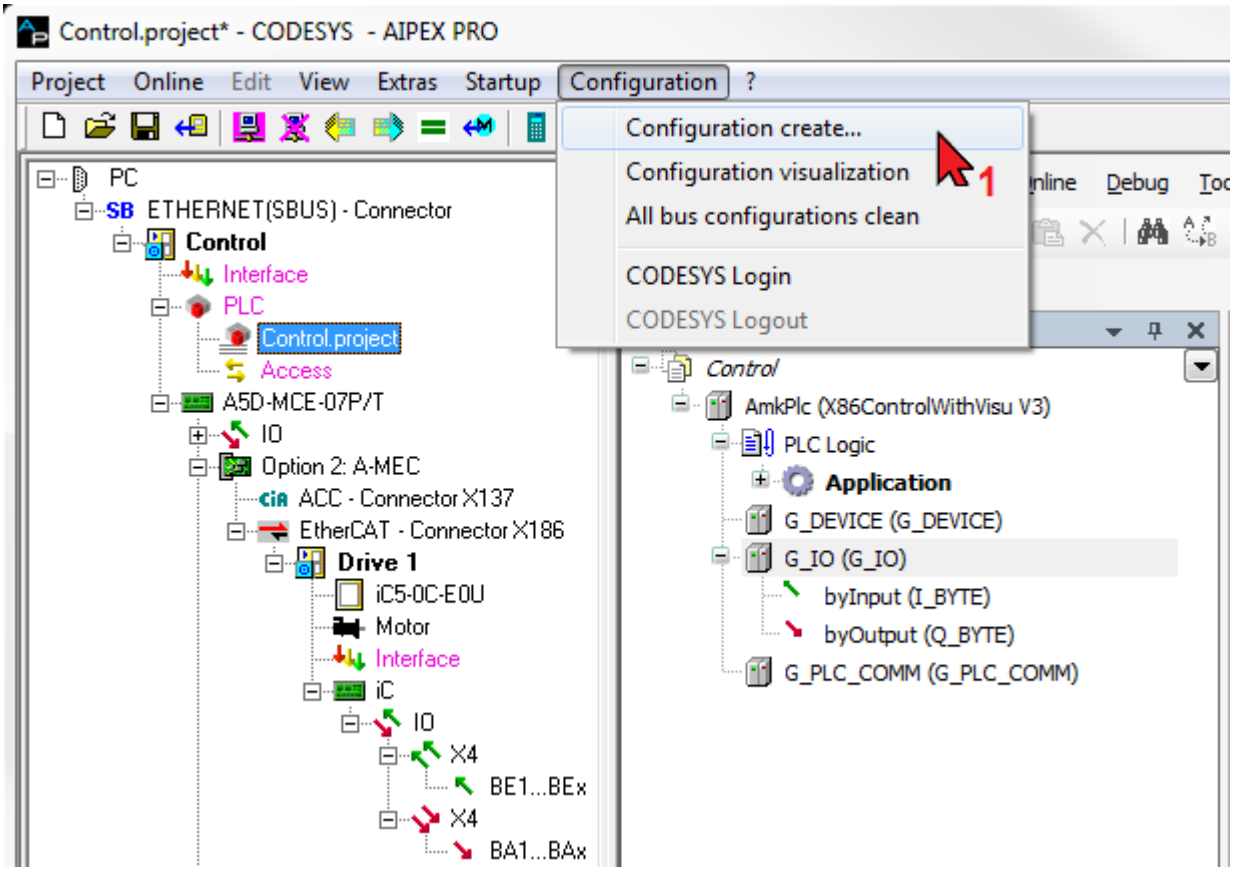
For each input and output block, a variable must be created in CODESYS.
Click the right mouse button on 'G_IO' to insert new variables.



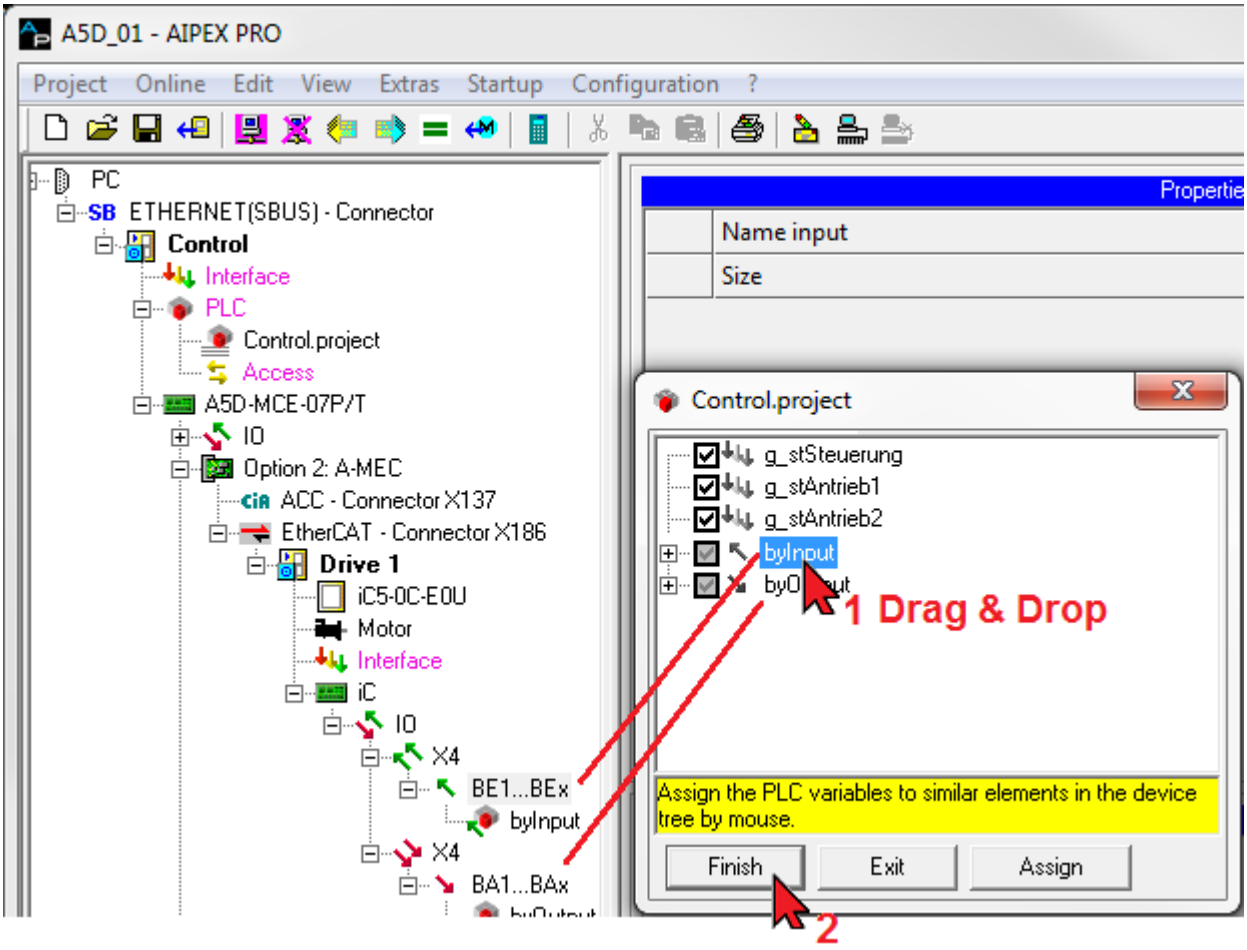
Add the following variables with the 'Add device' function
byInput (I_BYTE): Data is read into the controller by the drive
byOutput (Q_BYTE): Data is written to the drive by the controller



Message configuration create

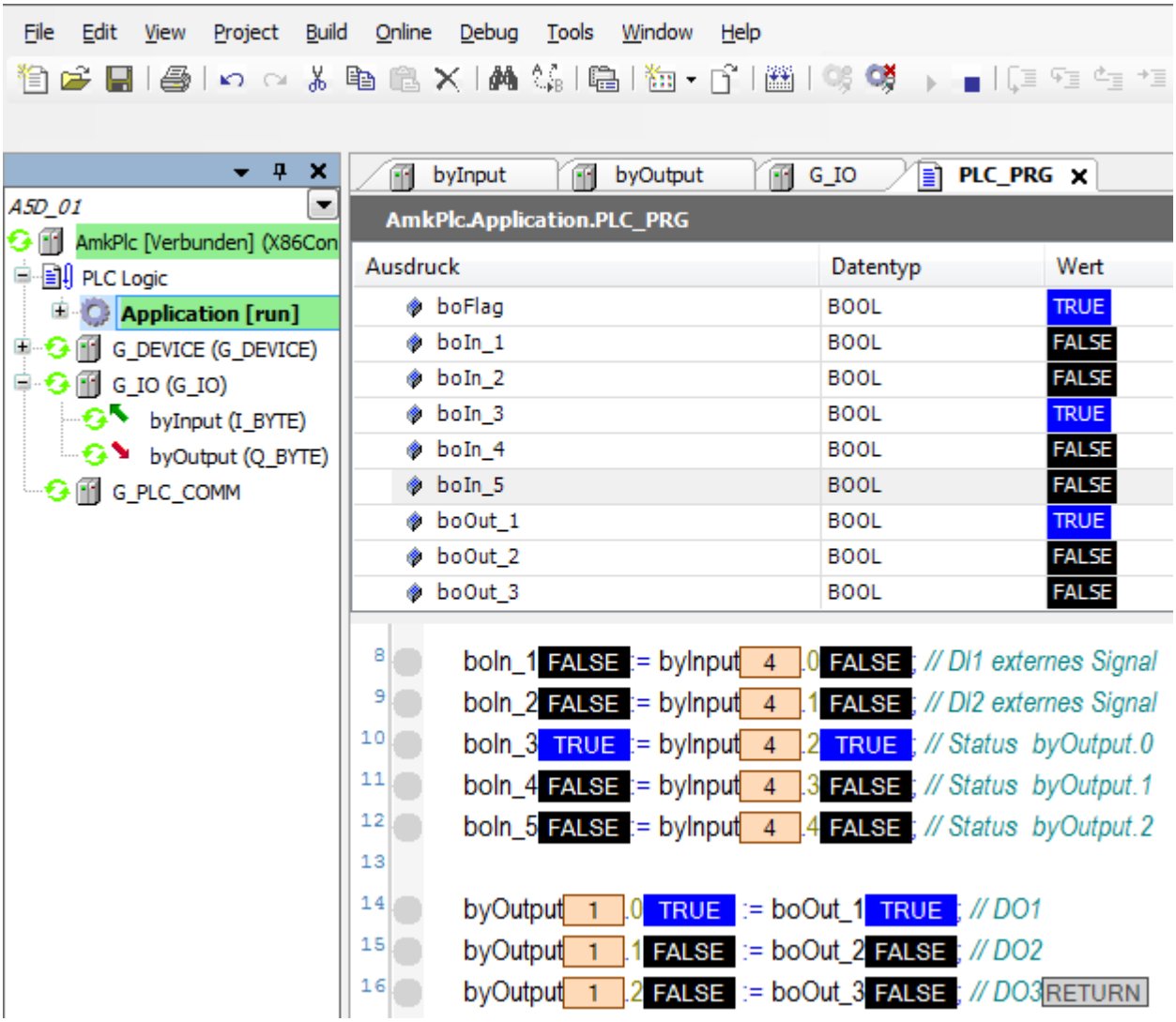


Assign the new created input and output variables to the physically available inputs and outputs.
After creating the message configuration, the system must be restarted.



byInput 'accesses to ID34100 'Binary input word'.
'byOutput' accesses to ID34120 'Binary output word'.

Function test:
boOut_1: = TRUE, status is displayed with boIn_3



2.2 Synchronous access on digital connections with controller

The procedure is the same for all device series, as well as the virtual and for the physically available connections.

Example configuration with a AMKASYN controller card KW-R2x :

2 digital outputs (DO2 + DO3)

1 digital input (DI1)

Access with the controller in the FPLC_PRG (Real-time task)

Configuration with AIPEX PRO

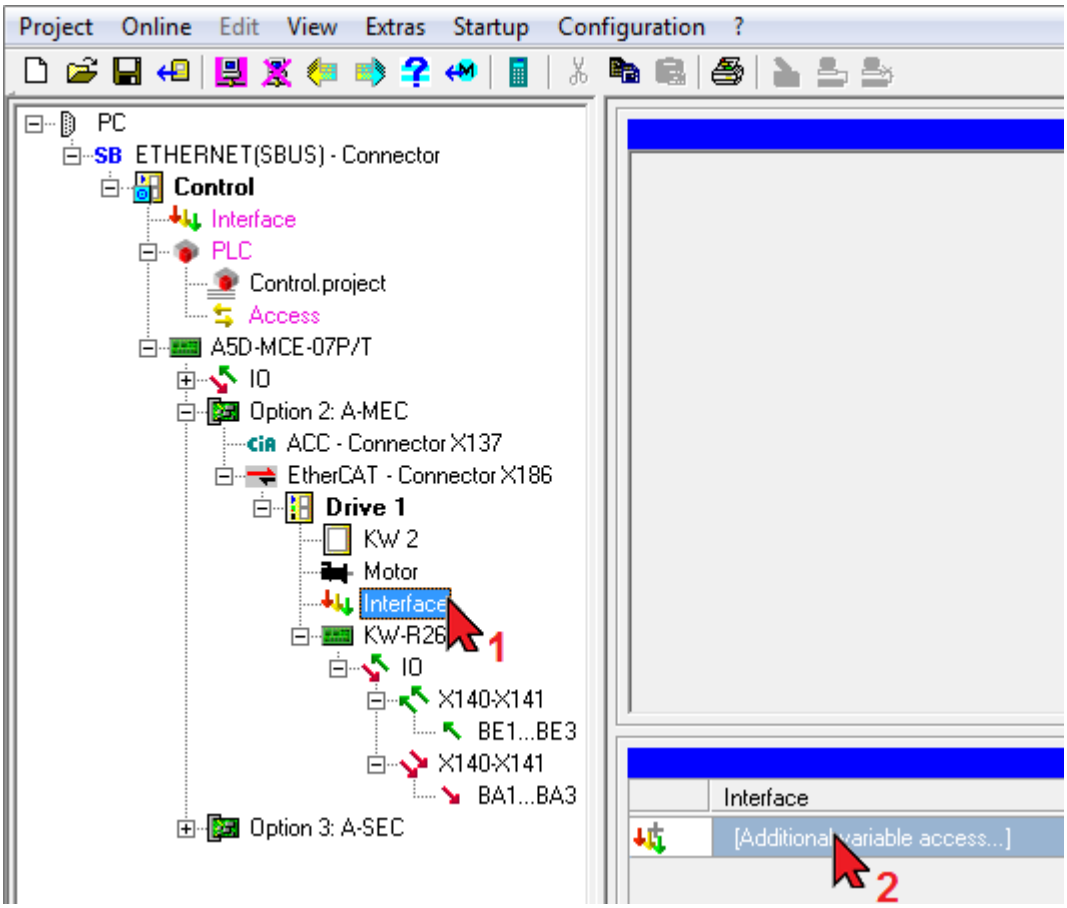
An output must be assigned the function code '33942 Access via PLC'.
Multifunctional connections must not be configured as input and output at the same time.

Parameter Selection: Binary inputs assignment; Binary outputs assignment

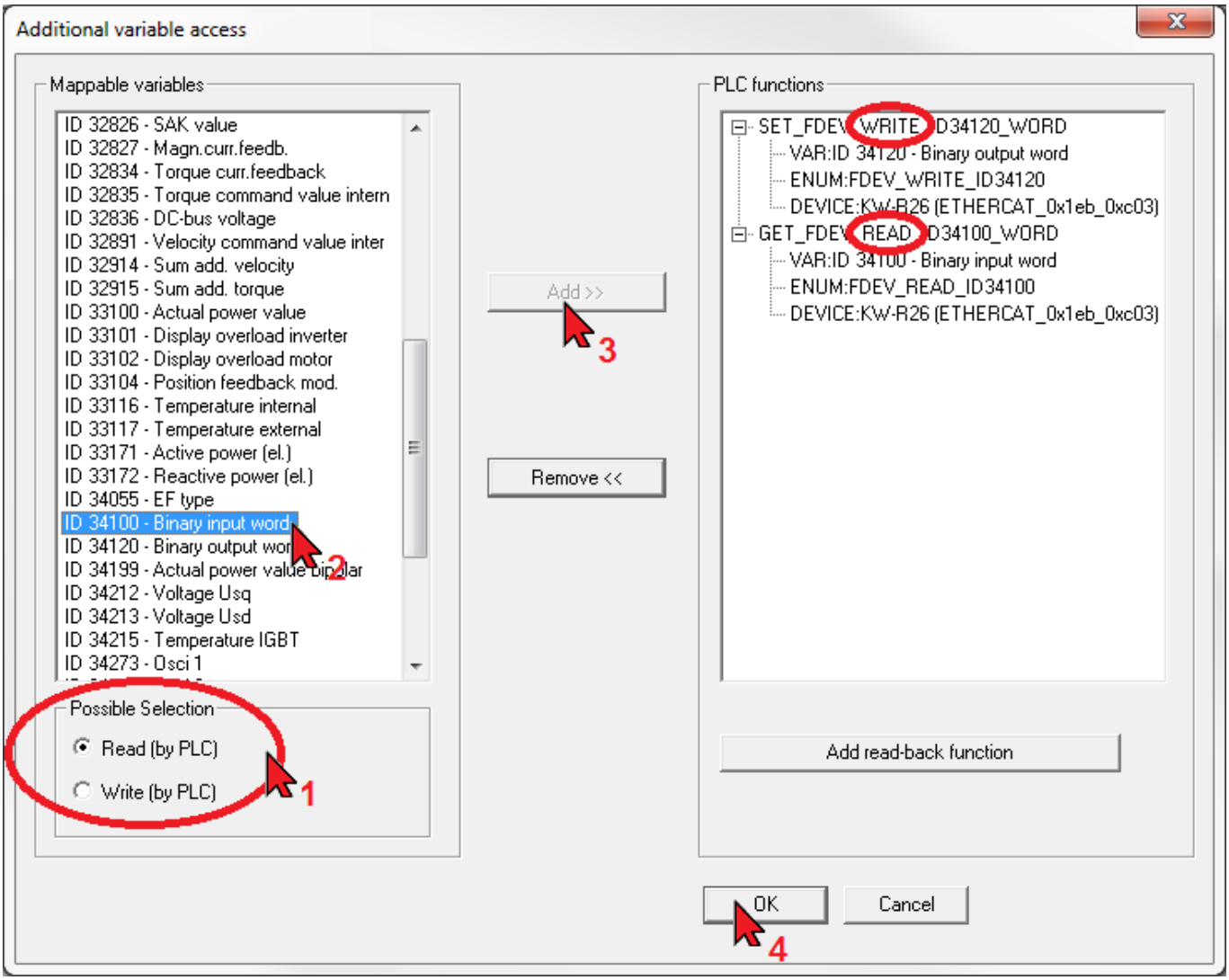
ID	Name	Value	Type	Remark
32864	Output port 3	0	Dec	Set / Reset of outputs via PLC
32865	Port 3 bit 0	0	Dec	Inactive - ID32978 usable
32866	Port 3 bit 1	33942	Dec	DO2 - Access via PLC
32867	Port 3 bit 2	33942	Dec	DO3 - Access via PLC
32977	Input port 3	32	Dec	
32978	Port 3 bit 0	0	Dec	DI1 - External signal
32979	Port 3 bit 1	0	Dec	Inactive - ID32866 usable
32980	Port 3 bit 2	0	Dec	Inactive - ID32867 usable
33175	List glitch filter time	0	Dec	
34100	Binary input word	0000	Hex	
34120	Binary output word	0002	Hex	
34202	Bit mask port 3	0000	Hex	

Pin 3B
Pin 2B
Pin 1A

In the standard libraries, there is not a function block for all the device information that can be mapped in the bus.
The 'Extended variable access' function can be used to create (formal) function blocks to read ID34100 'Binary input word' and write ID34120 'Binary output word'.

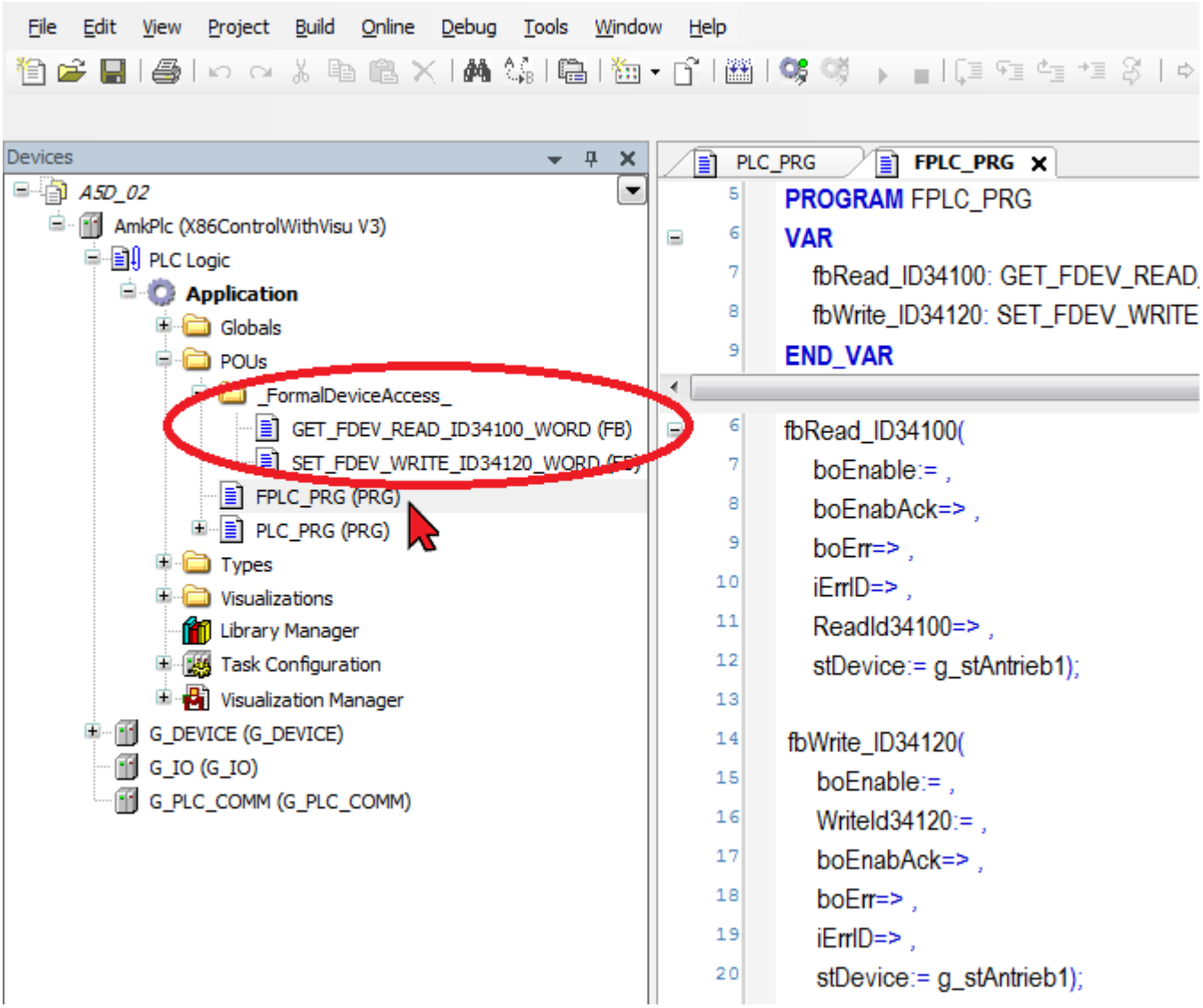


Note the selection 'Read' and 'Write'
Read: ID34100 'Binary input word'
Write: ID34120 'Binary output word'



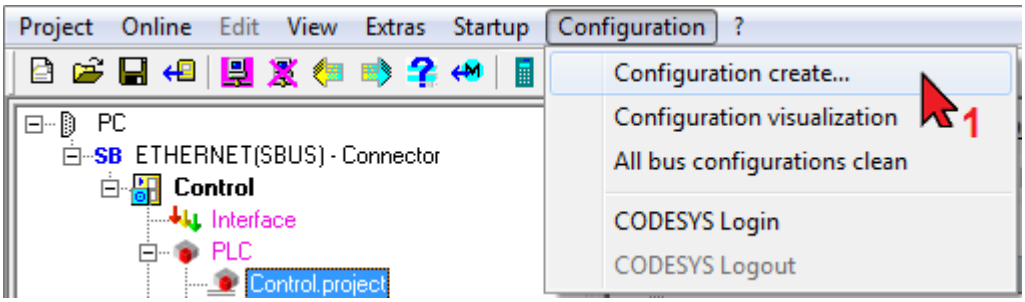
The generated blocks are in the directory 'Application' → 'POUs' → '_FormalDeviceAccess_'

Consistent data transfer is only guaranteed for an instance call in the synchronous program block FPLC_PRG.

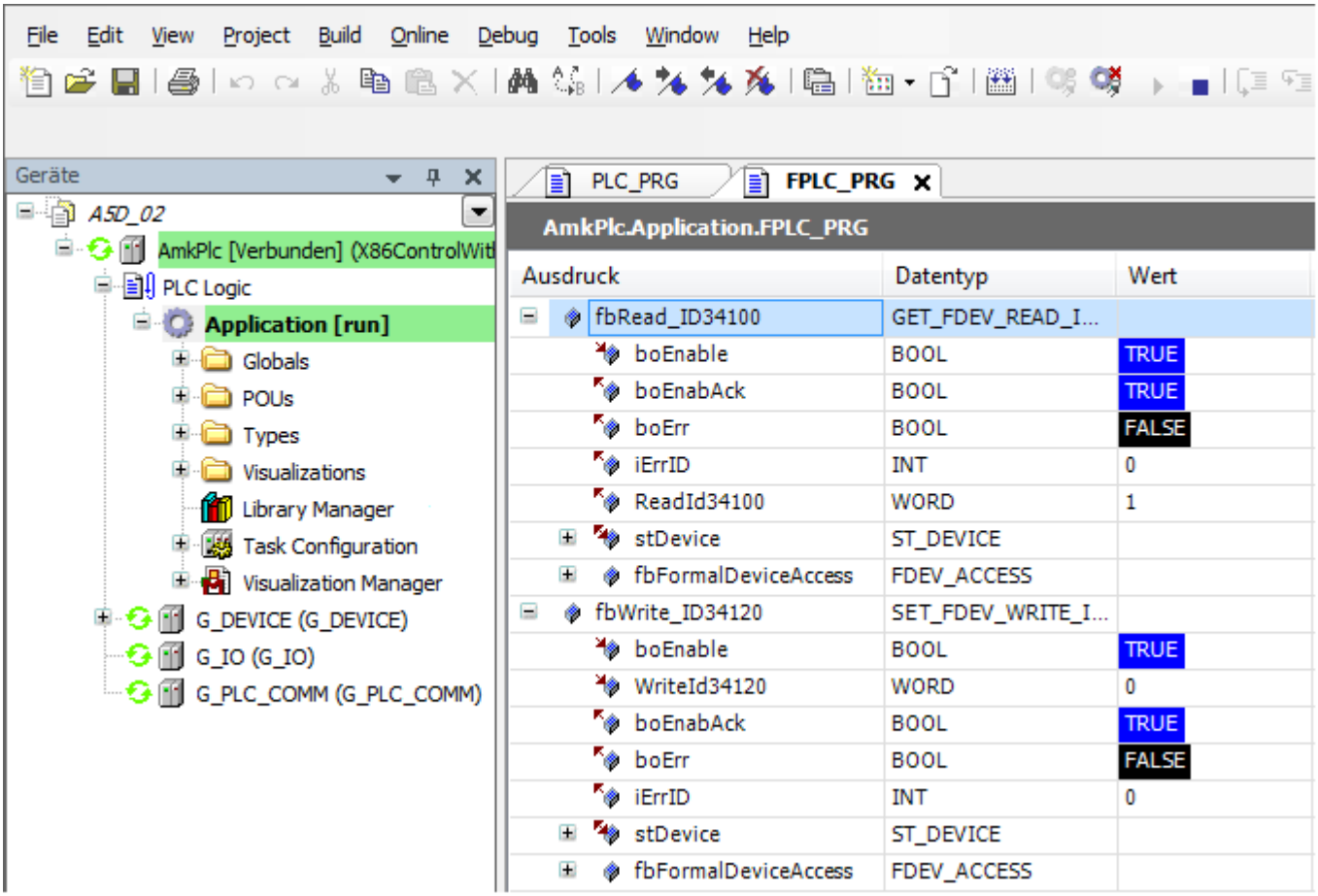


Create message configuration

After creating the message configuration, the system must be restarted.



Function test:
DI1 external signal set
boEnable := TRUE, ReadID34100 = 1



2.3 Function assignment via function code

The procedure is the same for all device series, as well as the virtual and for the physically available connections.

Example configuration with a AMKASMART iC:

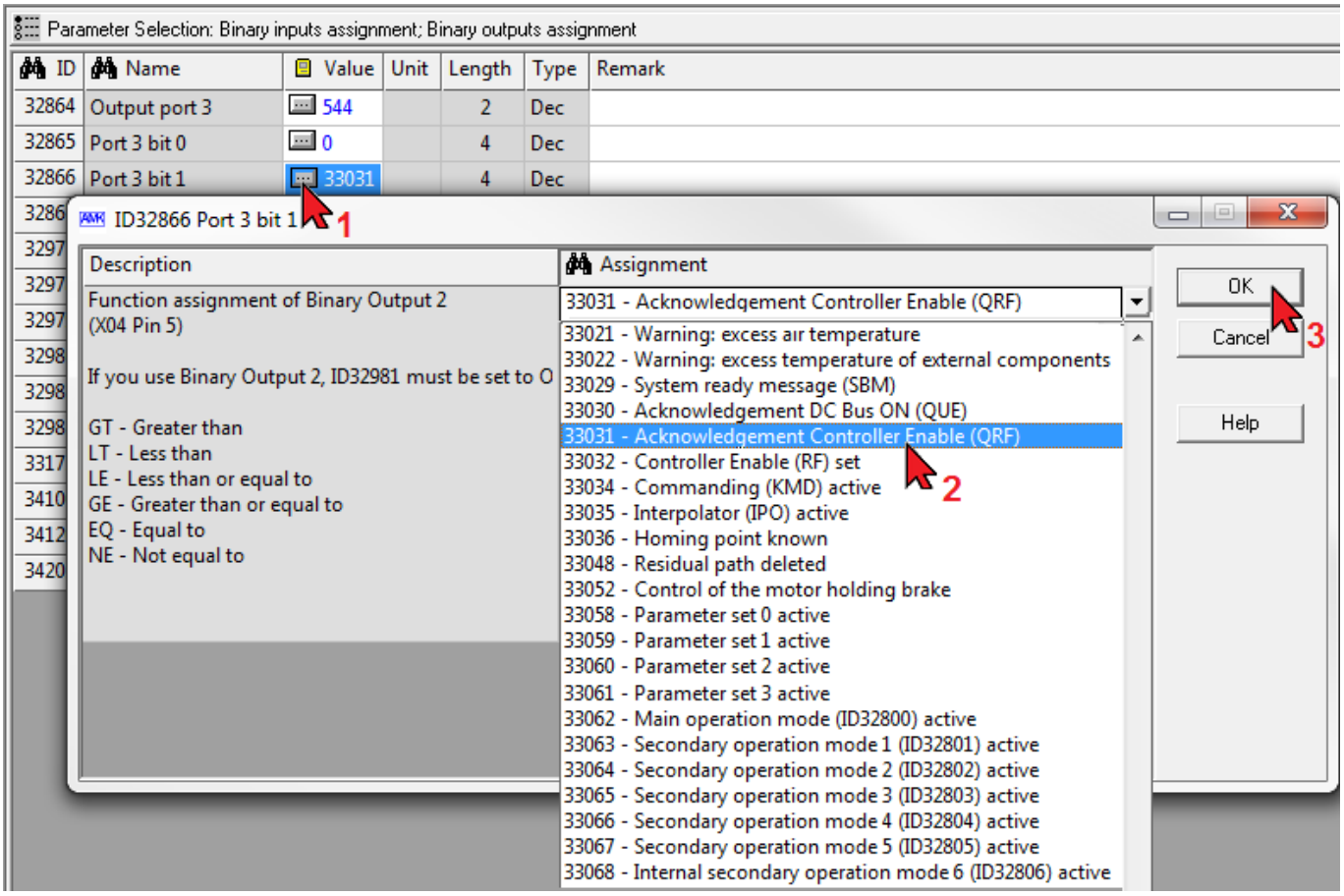
3 digital outputs (DO1 + DO2 + DO3)

Selection: See 'Codes for the configuration of the binary outputs' on page 28.

2 digital inputs (DI1 + DI2)

Selection: See 'Codes for the configuration of the binary inputs' on page 31.

The function codes are configured via input help.
In example Code 33031 - QRF (Acknowledge controller enable)



Multifunctional connections must not be configured as input and output at the same time.

Parameter Selection: Binary inputs assignment; Binary outputs assignment

ID	Name	Value	Unit	Length	Type	Remark
32864	Output port 3	544		2	Dec	Function assignment via parameter
32865	Port 3 bit 0	33031		4	Dec	DO1
32866	Port 3 bit 1	33062		4	Dec	DO2
32867	Port 3 bit 2	336		4	Dec	DO3
32977	Input port 3	32		2	Dec	
32978	Port 3 bit 0	32904 Pin 2		4	Dec	DI1
32979	Port 3 bit 1	32913 Pin 3		4	Dec	DI2
32980	Port 3 bit 2	0 Pin 4		4	Dec	Inactive, ID32865 usable
32981	Port 3 bit 3	0 Pin 5		4	Dec	Inactive, ID32866 usable
32982	Port 3 bit 4	0 Pin 6		4	Dec	Inactive, ID32867 usable
33175	List glitch filter time	0		*2	Dec	
34100	Binary input word	0000 0000 0000 0000		2	Bin	
34120	Binary output word	0000 0000 0000 0000		2	Bin	
34202	Bit mask port 3	0000		2	Hex	

Appendix

2.4 Codes for the configuration of the binary outputs

Codes for the configuration of the binary outputs

Code	Designation	Description
0	Function inactive	No function assigned to the binary output
310	Warning: Motor overload	Maximum load integral i^2t of the motor according to ID114 'Overload limit motor'
311	Warning: excess converter temperature Note: same as code 33017	Temperature of the device rear wall or value according to the temperature model is too high, diagnostic message 2350 'Device temperature warning'
312	Warning: excess motor temperature Note: same as code 33018	Value at the sensor input X12 or according to ID34166 is too high, diagnostic message 2359 'Motor overload warning'
313	Warning: excess air temperature Note: same as code 33021	Diagnosis 1073 'Cooling Air Temperature Warning'
330	$n_{actual} = n_{target}$	$\lvert n_{target} - n_{actual} \rvert <$ ID157 'Velocity window'
331	$n_{actual} < n_{min}$	$\lvert n_{actual} \rvert <$ ID124 'Zero velocity window'
332	$n_{actual} < n_x$	$\lvert n_{target} - n_{actual} \rvert <$ ID125 'Velocity threshold'
333	$M_d \geq M_{dx}$	$M_{actual} \geq$ ID126 'Torque threshold'
334	$M_{Target} \geq M_{Limit}$	$M_{Target} \geq$ ID82 'Positive torque limit' or $M_{Target} \leq$ ID83 'Negative torque limit'
335	$n_{Target} \geq n_{Limit}$	$n_{Target} \geq$ ID38 'Positive velocity limit' or $n_{Target} \leq$ ID39 'Negative velocity limit'
336	In Position	$\lvert x_{targetl} - x_{actual} \rvert <$ ID57 'In position window'
337	$P \geq P_x$	$P_{actual} \geq$ ID158 'Power threshold'
400	Cam	Cam, cam signal, homing switch
403	Homing point known	Homing point is valid
409	Measured value 1 positive edge detected (MT1)	Actual position value is stored in ID130 'Probe value 1 positive edge'
410	Measured value 1 negative edge detected (MT1)	Actual position value is stored in ID131 'Probe value 1 negative edge'
411	Measured value 2 positive edge detected (MT2)	Actual position value is stored in ID132 'Probe value 2 positive edge'
412	Measured value 2 negative edge detected (MT2)	Actual position value is stored in ID133 'Probe value 2 negative edge'
33013	$X_{actual} \leq$ -Soft end position limit switch	ID50 'Negative position limit' reached
33014	Position synchronization	|position control difference| ≤ ID32952 'At synchronous speed window'
33015	$X_{actual} \geq$ +Soft end position limit switch	ID49 'Positive position limit' reached
33016	Warning: Converter overcurrent	Maximum load integral i^2t of the converter according to ID32999 'Overload limit inverter', diagnostic message 2357 'Device overload warning'
33017	Warning: excess converter temperature	Temperature of the device rear wall or value according to the temperature model is too high, diagnostic message 2350 'Device temperature warning'
33018	Warning: excess motor temperature	Value at the sensor input X12 or according to ID34166 'Temperature sensor motor' is too high, diagnostic message 2359 'Motor overload warning'
33021	Warning: excess air temperature	Diagnosis 1073 'Cooling Air Temperature Warning'

Code	Designation	Description
33022	Warning: excess temperature of external components	KW-R06 / KW-R16 / KW-R07 / KW-R17 / KW-R24 / KW-R24-R / KW-R25 / KW-R26 / KW-R27 / Power supply KE(N,S): Brake resistor iX / iC / iDT5 / Reserved
33029	System ready message (SBM)	System ready message
33030	Acknowledgement DC bus ON (QUE)	Acknowledgement DC bus charged
33031	Acknowledgement controller enable (QRF)	Acknowledgement that the drive is operating in control loop
33032	Controller enable (RF) set	Control input of controller enable set
33034	Commanding (KMD) active	Drive function is active
33035	Interpolator (IPO) active	Internal interpolator is active
33036	Homing point known	Homing point is valid
33040	Input bit 0 active	Acknowledgement of binary input E1 according to ID32874 'Port 1 Bit 0'
33041	Input bit 1 active	Acknowledgement of binary input E2 according to ID32875 'Port 1 Bit 1'
33042	Input bit 2 active	Acknowledgement of binary input E3 according to ID32876 'Port 1 Bit 2'
33043	Input bit 3 active	Acknowledgement of binary input E4 according to ID32877 'Port 1 Bit 3'
33044	Input bit 4 active	Acknowledgement of binary input E5 according to ID32878 'Port 1 Bit 4'
33045	Input bit 5 active	Acknowledgement of binary input E6 according to ID32879 'Port 1 Bit 5'
33046	Input bit 6 active	Acknowledgement of binary input E7 according to ID32880 'Port 1 Bit 6'
33047	Input bit 7 active	Acknowledgement of binary input E8 according to ID32881 'Port 1 Bit 7'
33048	Residual distance deleted	| dx | > ID32922 'Residual distance erase window'
33052	Control of the motor holding brake	Controlling motor holding brake BA3 = 0: Motor holding brake is closed by the drive BA3 = 1: Motor holding brake is opened by the drive This parameter is used by the following function: 'Controlling motor holding brake'
33058	Parameter set 0 active	Valid from QRF message
33059	Parameter set 1 active	Valid from QRF message
33060	Parameter set 2 active	Valid from QRF message
33061	Parameter set 3 active	Valid from QRF message
33062	Main operating mode active	ID32800 'AMK main operating mode' is active
33063	Secondary operating mode 1 active	ID32801 'AMK secondary operating mode 1' is active
33064	Secondary operating mode 2 active	ID32802 'AMK secondary operating mode 2' is active
33065	Secondary operating mode 3 active	ID32803 'AMK secondary operating mode 3' is active
33066	Secondary operating mode 4 active	ID32804 'AMK secondary operating mode 4' is active
33067	Secondary operating mode 5 active	ID32805 'AMK secondary operating mode 5' is active
33068	AMK secondary operating mode 6 active	ID32806 'AMK secondary operating mode 6' is active
33069	AMK secondary operating mode 7 active	ID32807 'AMK digital torque control' is active
33070	AMK secondary operating mode 8 active	ID32808 'AMK position control' is active
33071	AMK secondary operating mode 9 active	ID32809 'AMK digital speed control' is active

Code	Designation	Description
33074	Collective warning active	Collective warning (all warning messages OR linked) The warning bit is generated for each warning and remains active until the error is deleted by the user.
33076	Second cycle output	The output changes cyclically between 1 second ON and 1 second OFF
33079	Output 24 V DC	Configurate the binary output as voltage supply (note the max. current load of the devices!)
33131	Stop acknowledgement for positive setpoint processing	Positive setpoint settings in position or speed control are not carried out
33132	Stop acknowledgement for negative setpoint processing	Negative setpoint settings in position or speed control are not carried out
33133	Power output stage enable control signal (EF AND EF2)	The input signal EF AND EF2 is mirrored at the binary output, which, for example, can be read by a PLC.
33135	Power output stage enable control signal (EF2)	KW-R06 / KW-R16 / KW-R07 / KW-R17 / KW-R24 / KW-R24-R / KW-R25 / KW-R26 / KW-R27 / The input signal EF2 is mirrored at the binary output, which, for example, can be read by a PLC. iX / iC / iDT5 / iDP7 / Internal generated STO signal (2nd channel)
33136	Power output stage enable control signal (EF or STO)	The input signal EF or STO is mirrored at the binary output, which, for example, can be read by a PLC.
33142	Acknowledgment software commutation	The function software commutation for synchronous motors with I- or square-wave encoders has been successfully executed, the motor is commutated. If an encoder error, the bit is cleared. The software commutation runs automatically after a 0 → 1 edge of the signal controller enable (RF).
33921	PWM inactive	Display status if the power output stage is energized or free of current = 0 PWM is active, pulses are enabled, power output stage is energized = 1 PWM is inactive, pulses are disabled, power output stage is free of current
33922	Encoder signal invalid	Display status if the encoder signal is valid or an encoder failure occurs = 0 Encoder signal valid = 1 Encoder signal is invalid, encoder failure
33923	Deceleration ramp after RF inactive	Display status if deceleration after internal switch off RF is active = 0 normal operation = 1 Deceleration active, according to ID32782 'Deceleration ramp RF inactive'
33924	Dynamic braking (Regenerative braking if encoder failure)	Display status if the function 'Dynamic braking' is active: = 0 normal operation = 1 Dynamic braking is active
33925	Status of a connected brake	= 0 brake closed = 1 brake opened See 'Codes for the configuration of the binary inputs' on page 31. Code 33906

Code	Designation	Description
33930	Input bit 0 port 3 [3)]	The status of the input bits at the device can be assigned to a binary output
33931	Input bit 1 port 3 [3)]	
33932	Input bit 2 port 3 [3)]	
33933	Input bit 3 port 3 [3)]	
33934	Input bit 4 port 3 [3)]	
33935	Input bit 5 port 3 [3)]	
33936	Input bit 6 port 3 [3)]	
33937	Input bit 7 port 3 [3)]	
33942	Access via plc	The output can be written by a plc controller

3) Available depending on the hardware

2.5 Codes for the configuration of the binary inputs

Codes for the configuration of the binary inputs

Code	Designation	Description
0	Function inactive	No function assigned to the binary input
400	Homing switch (cam)	For cam see 32905
401	Touch probe (MT1)	Measurement signal 1 for touch probe function only at BE3 (ID32980 'Port 3 Bit 2')
402	Touch probe (MT2)	Measurement signal 2 for touch probe function only at BE2 (ID32979 'Port 3 Bit 1')
32903	DC bus ON (UE)	Charge DC bus
32904	Controller enable (RF)	Activate control
32905	Homing switch (cam)	Cam signal, e.g. for the homing cycle
32912	Reset "homing point known"	Clear "homing point known"
32913	Clear error (FL)	Existing errors in the drive are reset
33700	Activate main operating mode	Change operating mode to the main operating mode (ID32800'AMK main operating mode')
33701	Activate secondary operating mode 1	Change operating mode to the auxiliary operating mode 1 (ID32801 'AMK secondary operating mode 1')
33702	Activate secondary operating mode 2	Change operating mode to the auxiliary operating mode 2 (ID32802 'AMK secondary operating mode 2')
33703	Activate secondary operating mode 3	Change operating mode to the auxiliary operating mode 3 (ID32803 'AMK secondary operating mode 3')
33704	Activate secondary operating mode 4	Change operating mode to the auxiliary operating mode 4 (ID32804 'AMK secondary operating mode 4')
33705	Activate secondary operating mode 5	Change operating mode to the auxiliary operating mode 5 (ID32805 'AMK secondary operating mode 5')
33708	Stop / cancel CMD	The drive changes to the operating mode of digital speed control with the setpoint 0 regardless of the current operating mode
33709	Dig. Speed control N = 0 U/min	CMD digital speed control Speed setpoint N-setpoint= 0, ramp active
33710	Dig. Speed control N = ID36	CMD digital speed control Speed setpoint N-setpoint ID36, ramp active
33711	Homing cycle	CMD homing cycle for homing point (Xi=0)
33721	Dig. Torque control M = 0 %Nm	CMD digital torque control Torque setpoint M-setpoint = 0
33722	Dig. Torque control M = ID80	CMD digital torque control Torque setpoint M-setpoint = ID80
33727	Extended I/O control	This parameter is used by the following function: 'Binary I/O control'

Code	Designation	Description
33730	System booting	Complete parameter calculation for inactive controller enable. The recalculation otherwise takes place only after the mains is on, error cleared and RF is activated after changing the parameter.
33735	Control of the motor holding brake	Manual control of the motor holding brake via digital input 0 → 1 edge: Open motor holding brake 1 → 0 edge: Close motor holding brake This parameter is used by the following function: 'Controlling motor holding brake'
33906	Acknowledgement signal of the motor holding brake (QBR)	Acknowledgement motor holding brake (QBR) QBR = 1: Motor holding brake closed QBR = 0: motor holding brake opened (QBR is supplied by the motor holding brake) This parameter is used by the following function: 'Controlling motor holding brake'
33909	Stop positive setpoint processing	If the configured binary input falls to zero volts (low active), the setpoint block takes place in the position or speed control within 2 ms. If the input is set, the setpoint enable takes place within 2 ms.
33910	Stop negative setpoint processing	If the configured binary input falls to zero volts (low active), the setpoint block takes place in the position or speed control within 2 ms. If the input is set, the setpoint enable takes place within 2 ms.
33917	Analog speed control	Selection of the analogue input with the analogue speed control (ID32800 - ID32809 'AMK operating modes')
33938	Extended I/O control	This parameter is used by the following function: 'Binary I/O control'
33939	Extended I/O control	This parameter is used by the following function: 'Binary I/O control'
33940	Hardware limit switch positive direction	The drive is braking according ID32782 'Deceleration ramp RF inactive' until standstill and switch off the controller enable signal, if a signal is active on this input. The controller enable signal must be set again, that the drive can be moved off the hardware limit switch in opposite direction. The hardware limit switch function is not active if the function homing cycle with hardware limit switch evaluation (ID147 bit 9) is active!
33941	Hardware limit switch negative direction	