Instruction manual

Function blocks
EasyMode and IO-Link Parameter
RFID-head IQT1-…-IO-V1 on
ICE3 IO-Link Master

IO-Link RFID-head IQT1-…-IO-V1

Project Name:	**IO-Link RFID-head ISO15693 13,56MHz**
Date:	**02.09.2019**
Creator:	**Karsten Reinhardt**

Version history

Version	Release date	Comment
A	**02.09.2019**	Initial Version

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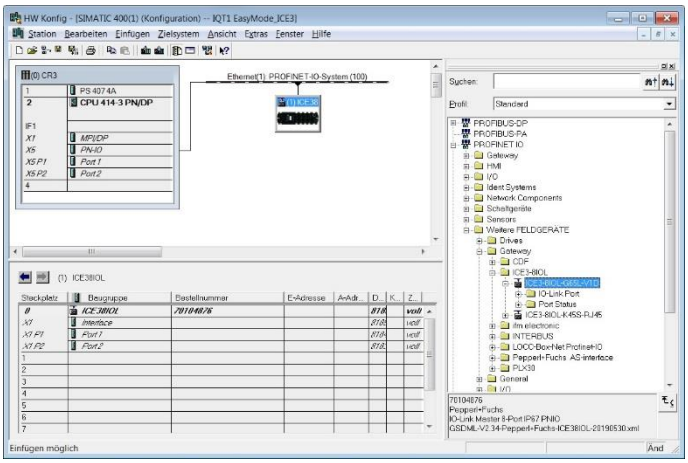
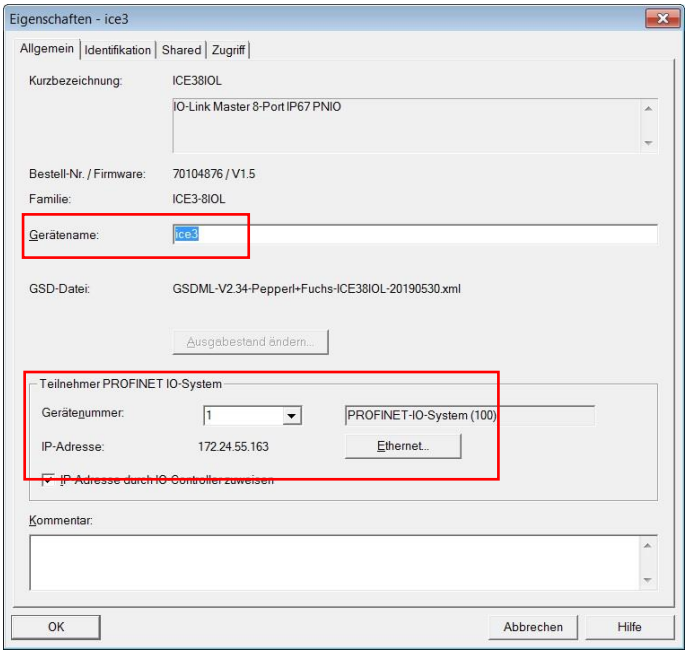
1. Hardware configuration ICE3 IO-Link Master



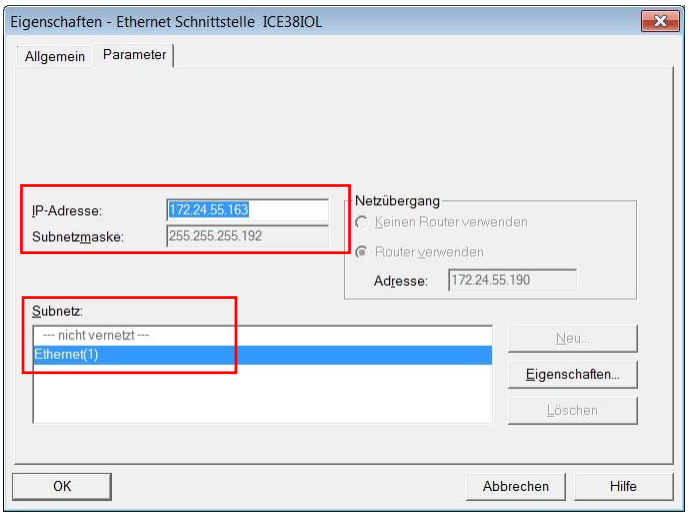
The symbol for the ICE3 IO-Link Master must be added to the Profinet IO system within the hardware project engineering of the control project. The placeholder for the ICE3 Master can be found in the menu "Profinet IO" → "Other field devices" → "Gateway" → "ICE3-8IOL" "ICE3-8IOL-G65-L-V1D".

For the communication with the ICE3 IO-Link Master via Profinet the assignment of a Profinet name within the project engineering is necessary. To do this, click on the symbol of the master.

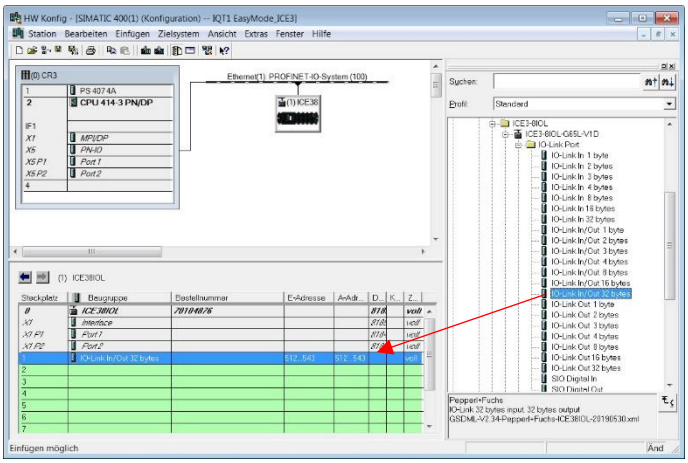


The Profinet name is first set in this area. In the following example, the name "ice3" is used. The network parameters (IP address, subnet mask and gateway address) must also be set. These settings are stored within the control project and transferred to the device when the connection to the IO-Link Master is established.

Please note:
For a successful connection setup, the Profinet name in the project engineering as well as the Profinet name stored in the ICE3 Master must be identical.

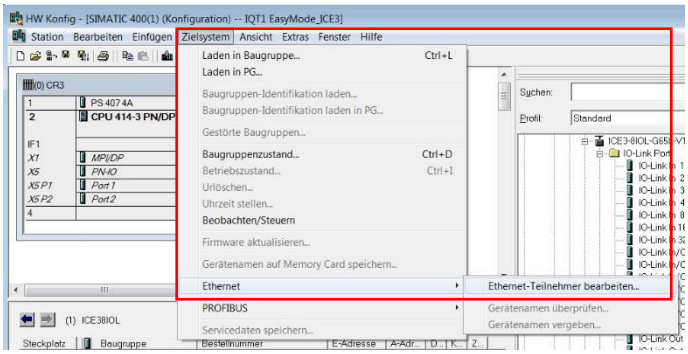


Setting the IP address of the IO-Link Master. The master must be connected to the subnet of the controller (here: Ethernet1).

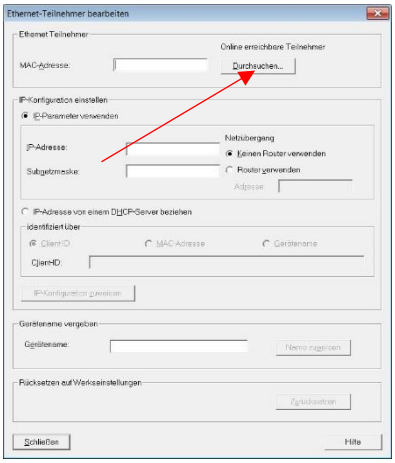


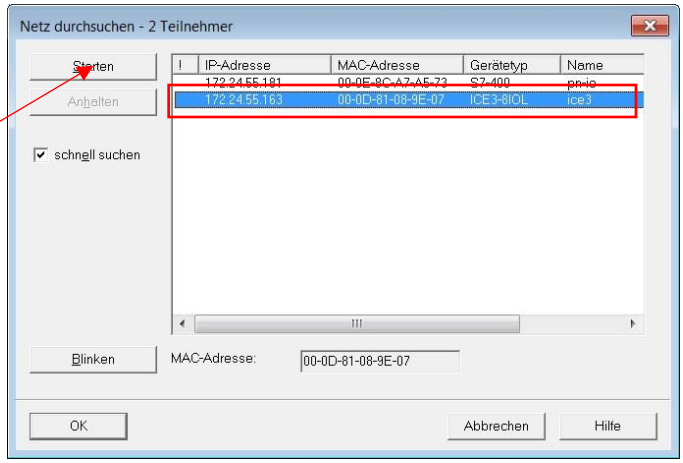
For the connection of the IQT1-...-IO-V1 RFID head, a telegram length must be specified for data transmission. The RFID head supports IO-Link Version 1.1 and has a process data width of 32 bytes for input and output data.
The communication module "IO-Link In/Out 32 Bytes" must assigned to slot 1 from the subdirectory "IO-Link Port". The slot is identical to the port number on the IO-Link master.

If ports of the IO-Link Master are not used, the corresponding slots in the control configuration remain unused.

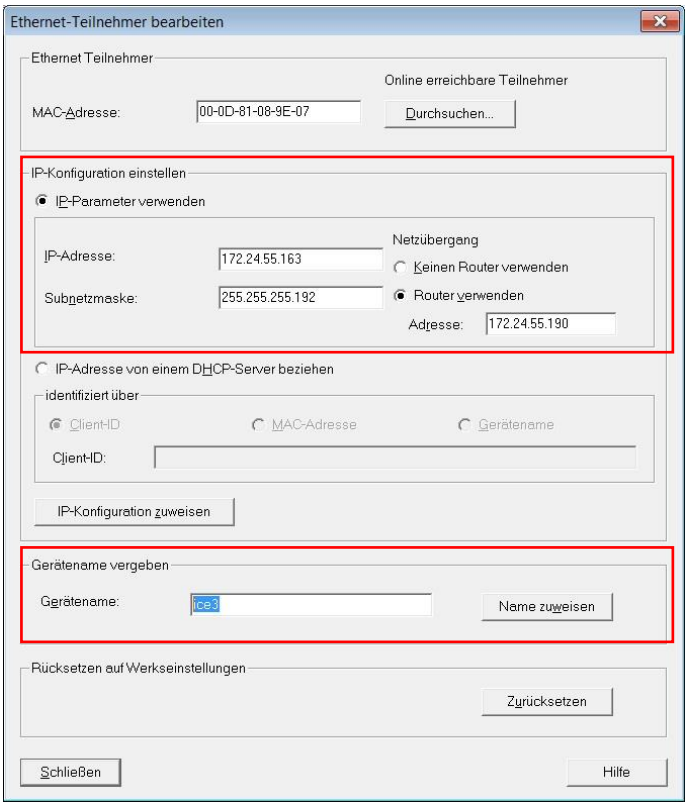


After configuring the IO-Link master in the controller, the network setting must carried out in the IO-Link master. This can be done via the hardware configuration within Step 7 Classic. For this, a window for searching a network called up via the menu "PLC" → "Ethernet" → "Edit Ethernet stations".

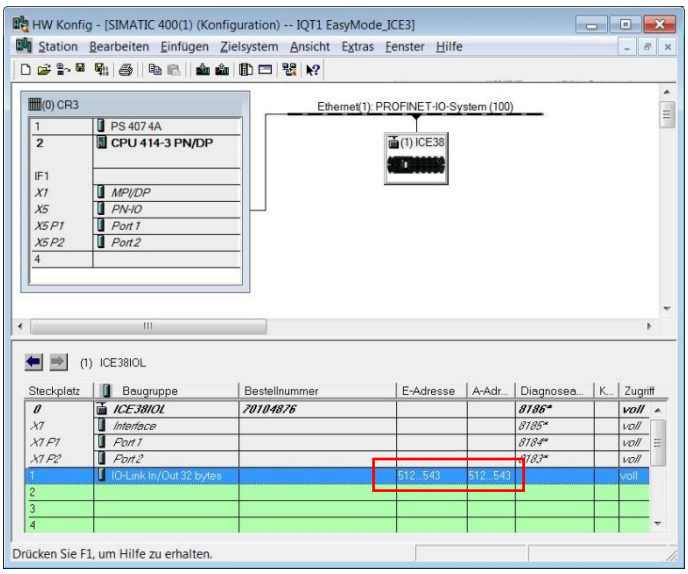




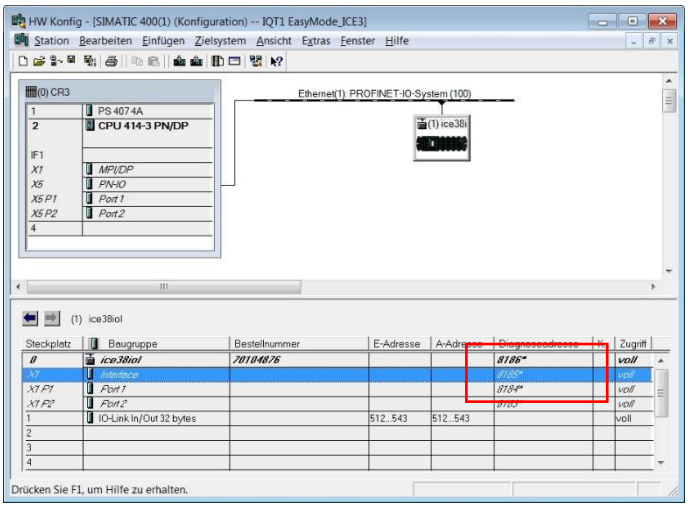
A click on "Browse" searches the connected network for devices supporting Profinet. A list of the participants then displayed. Select the ICE3 IO-Link Master as device type "ICE3-8IOL-..." and confirm with OK.



Similar to the control project engineering, identical network parameters as well as the identical Profinet name must be set. After the parameters have transferred, a corresponding feedback is given.

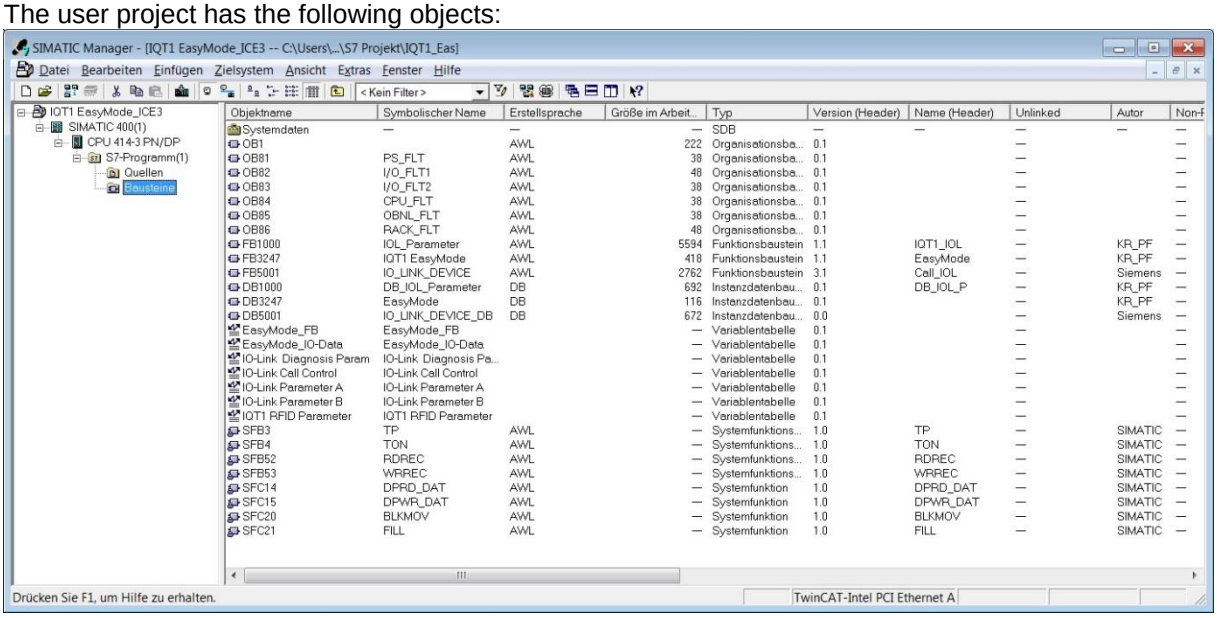


In the following example, the RFID head connected to port 1 of the IO-Link master. The start address for the process input data field and for the process output data field is 512 (decimal) each. These values must parameterized in hexadecimal form to the inputs "I_w_AddressInput" and "I_w_AddressOutput" of the FB1000 "IQT1_EasyMode". The input and output data fields can also occupy different address ranges.



The IO-Link parameters controlled via the diagnostic address of the "Interface" module. The diagnostic address (8185) parameterized to the input "i_I_ID" of the FB1000 "IOL_Parameter" in decimal formatting.

The user project has the following objects:



2. FB1000 – „IOL_Parameter“

Within the control project, there is a FB1000 "IOL_Parameter". This function block called together with the data block DB1000 "DB_IOL_Parameter". This function block can read out and change the IO-Link parameters of the RFID head IQT1-...-IO-V1. The following figure shows the call of the function block.

```
⊟ Netzwerk 1: call function block for IO-Link Parameter IQT1-...-IO-V1 IO-Link

      CALL  "IOL_Parameter" , "DB_IOL_Parameter"          FB1000 / DB1000    --
       i_I_ID                :=8185
       i_I_PORT              :=1
       b_I_StartReadParameter :="StartReadParameter"     M106.0             --
       b_I_StartWriteParameter:="StartWriteParameter"    M106.1             --
       b_O_Busy              :="Busy_Parameter"          M106.2             --
       b_O_Finish            :="Finish_Parameter"        M106.3             --
       b_O_Error             :="Error_Parameter"         M106.4             --
```

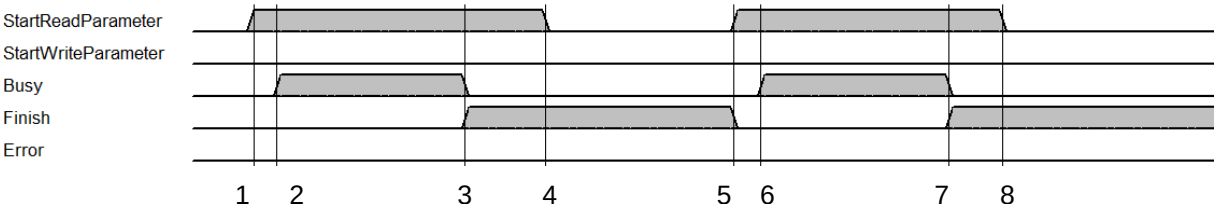
The following table shows the meaning of the input and output variables:

Name	Input / Output	Data type	Significance
i_I_ID	Input	Integer	Diagnostic address "Interface" module; visible in hardware configuration ICE3 Master
i_I_PORT	Input	Integer	Number of the IO-Link port to which the IQT1-...-IO-V1 RFID head is connected.
b_I_StartReadParameter	Input	Bool	When signal changes from 0 → 1 Start read access to IO-Link parameter; then reset to 0 again
b_I_StartWriteParameter	Input	Bool	With signal change from 0 → 1 Start write access to IO-Link parameter; then reset to 0 again
b_O_Busy	Output	Bool	0 := no access to IO-Link parameter active 1 := Access to IO-Link parameter active; read or write access running
b_O_Finish	Output	Bool	0 := Initial value (no access to the IO-Link parameters has been performed yet); access to IO-Link parameter is running 1 := Access to IO-Link parameter terminated
b_O_Error	Output	Bool	0 := no error occurred when accessing parameters 1 := Error when accessing IO-Link parameter

2.1 Read IO-Link Parameter

The read access to the IO-Link parameters of the RFID head IQT1-...-IO-V1 started by the input variable "b_I_StartReadParameter" of the FB1000. The execution is finished as soon as the output signal "b_O_Finish" changes from 0 to 1.

The following figure shows the flow chart for a read access to the IO-Link parameters.



Event	Significance
1	Start read access by edge change from 0 to 1 at input "StartReadParameter"; input remains permanently set; before re-execution or when executing a write access, the input must be reset from outside to 0; first execution since Finish is in output state 0
2	Busy = 1; read access is currently being executed
3	Busy = 0, Finish = 1 and Error = 0; read execution successfully completed; the Finish output remains set until another read or write execution is started.

4	The “StartReadParameter” input is reset to 0 from the outside; preparation for a new execution of a read access.
5	Start Read access by edge change from 0 to 1 at input "StartReadParameter"; output Finish changes from 1 to 0
6	Busy = 1; read access is currently being executed
7	Busy = 0, Finish = 1 and Error = 0; read execution successfully completed; the Finish output remains set until another read or write execution is started.
8	The “StartReadParameter” input is reset to 0 from the outside; preparation of a new execution of a read access

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	false	true
M 106.1	"StartWriteParameter"	BOOL	false	
M 106.2	"Busy_Parameter"	BOOL	false	
M 106.3	"Finish_Parameter"	BOOL	false	
M 106.4	"Error_Parameter"	BOOL	false	

Read access before first execution:
“StartRead” parameter is set to 1; “Busy” and “Finish” are not set;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	true	true
M 106.1	"StartWriteParameter"	BOOL	false	
M 106.2	"Busy_Parameter"	BOOL	true	
M 106.3	"Finish_Parameter"	BOOL	false	
M 106.4	"Error_Parameter"	BOOL	false	

Read access active:
“StartReadParameter” and “Busy” are set to 1; Execution is currently running and “Finish” is set to 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	true	true
M 106.1	"StartWriteParameter"	BOOL	false	
M 106.2	"Busy_Parameter"	BOOL	false	
M 106.3	"Finish_Parameter"	BOOL	true	
M 106.4	"Error_Parameter"	BOOL	false	

Read access terminated:
“StartRead” parameter still set to 1; “Busy” switches back to 0 and “Finish” to 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	false	false
M 106.1	"StartWriteParameter"	BOOL	false	
M 106.2	"Busy_Parameter"	BOOL	false	
M 106.3	"Finish_Parameter"	BOOL	true	
M 106.4	"Error_Parameter"	BOOL	false	

Reset “StartReadParameter”:
The "StartReadParameter" input reset to 0; Finish remains set to 1.

The read-in parameters are located within the DB1000 "DB_IOL_Parameter". The read-in parameters divided into standard parameters and device-specific parameters. Every IO-Link device supports the standard parameters. The device-specific parameters only apply to the RFID heads IQT1-...-IO-V1.

Standard parameter:

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
294.0	stat	arDeviceAccessLocks_12[0]	BYTE	B#16#0	B#16#00
295.0	stat	arDeviceAccessLocks_12[1]	BYTE	B#16#0	B#16#00

Parameter 12 „Device Access Locks“

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
296.0	stat	arVendorName_16[0]	CHAR	''	'P'
297.0	stat	arVendorName_16[1]	CHAR	''	'e'
298.0	stat	arVendorName_16[2]	CHAR	''	'p'
299.0	stat	arVendorName_16[3]	CHAR	''	'p'
300.0	stat	arVendorName_16[4]	CHAR	''	'e'
301.0	stat	arVendorName_16[5]	CHAR	''	'r'
302.0	stat	arVendorName_16[6]	CHAR	''	'l'
303.0	stat	arVendorName_16[7]	CHAR	''	'+'
304.0	stat	arVendorName_16[8]	CHAR	''	'F'
305.0	stat	arVendorName_16[9]	CHAR	''	'u'
306.0	stat	arVendorName_16[10]	CHAR	''	'c'
307.0	stat	arVendorName_16[11]	CHAR	''	'h'
308.0	stat	arVendorName_16[12]	CHAR	''	's'
309.0	stat	arVendorName_16[13]	CHAR	''	B#16#00

Parameter 16 "Vendor Name":
Manufacturer name of the IO-Link device; here: Pepperl+Fuchs

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
328.0	stat	arVendorText_17[0]	CHAR	''	'h'
329.0	stat	arVendorText_17[1]	CHAR	''	't'
330.0	stat	arVendorText_17[2]	CHAR	''	't'
331.0	stat	arVendorText_17[3]	CHAR	''	'p'
332.0	stat	arVendorText_17[4]	CHAR	''	':'
333.0	stat	arVendorText_17[5]	CHAR	''	'/'
334.0	stat	arVendorText_17[6]	CHAR	''	'/'
335.0	stat	arVendorText_17[7]	CHAR	''	'w'
336.0	stat	arVendorText_17[8]	CHAR	''	'w'
337.0	stat	arVendorText_17[9]	CHAR	''	'w'
338.0	stat	arVendorText_17[10]	CHAR	''	'.'
339.0	stat	arVendorText_17[11]	CHAR	''	'p'
340.0	stat	arVendorText_17[12]	CHAR	''	'e'
341.0	stat	arVendorText_17[13]	CHAR	''	'p'
342.0	stat	arVendorText_17[14]	CHAR	''	'p'
343.0	stat	arVendorText_17[15]	CHAR	''	'e'
344.0	stat	arVendorText_17[16]	CHAR	''	'r'
345.0	stat	arVendorText_17[17]	CHAR	''	'l'
346.0	stat	arVendorText_17[18]	CHAR	''	'-'
347.0	stat	arVendorText_17[19]	CHAR	''	'f'
348.0	stat	arVendorText_17[20]	CHAR	''	'u'
349.0	stat	arVendorText_17[21]	CHAR	''	'c'
350.0	stat	arVendorText_17[22]	CHAR	''	'h'
351.0	stat	arVendorText_17[23]	CHAR	''	's'
352.0	stat	arVendorText_17[24]	CHAR	''	'.'
353.0	stat	arVendorText_17[25]	CHAR	''	'c'
354.0	stat	arVendorText_17[26]	CHAR	''	'o'
355.0	stat	arVendorText_17[27]	CHAR	''	'm'

Parameter 17 "Vendor Text":
Additional text for manufacturer information: here: http://www.pepperl-fuchs.com
Reference to the manufacturer's website

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
360.0	stat	arProductName_18[0]	CHAR	''	'I'
361.0	stat	arProductName_18[1]	CHAR	''	'Q'
362.0	stat	arProductName_18[2]	CHAR	''	'T'
363.0	stat	arProductName_18[3]	CHAR	''	'1'
364.0	stat	arProductName_18[4]	CHAR	''	'-'
365.0	stat	arProductName_18[5]	CHAR	''	'F'
366.0	stat	arProductName_18[6]	CHAR	''	'P'
367.0	stat	arProductName_18[7]	CHAR	''	'-'
368.0	stat	arProductName_18[8]	CHAR	''	'I'
369.0	stat	arProductName_18[9]	CHAR	''	'O'
370.0	stat	arProductName_18[10]	CHAR	''	'-'
371.0	stat	arProductName_18[11]	CHAR	''	'V'
372.0	stat	arProductName_18[12]	CHAR	''	'1'
373.0	stat	arProductName_18[13]	CHAR	''	B#16#00

Parameter 18 "Product Name":
Product name of the connected RFID head;
IQT1-FP-IO-V1;
IQT1-F61-IO-V1;
IQT1-18GM-IO-V1

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
392.0	stat	arProductID_19[0]	CHAR	''	'2'
393.0	stat	arProductID_19[1]	CHAR	''	'9'
394.0	stat	arProductID_19[2]	CHAR	''	'9'
395.0	stat	arProductID_19[3]	CHAR	''	'9'
396.0	stat	arProductID_19[4]	CHAR	''	'2'
397.0	stat	arProductID_19[5]	CHAR	''	'9'
398.0	stat	arProductID_19[6]	CHAR	''	B#16#00

Parameter 19 "Product ID":
Article number of the RFID head

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
424.0	stat	arProductText_20[0]	CHAR	''	'R'
425.0	stat	arProductText_20[1]	CHAR	''	'F'
426.0	stat	arProductText_20[2]	CHAR	''	'I'
427.0	stat	arProductText_20[3]	CHAR	''	'D'
428.0	stat	arProductText_20[4]	CHAR	''	' '
429.0	stat	arProductText_20[5]	CHAR	''	'r'
430.0	stat	arProductText_20[6]	CHAR	''	'e'
431.0	stat	arProductText_20[7]	CHAR	''	'a'
432.0	stat	arProductText_20[8]	CHAR	''	'd'
433.0	stat	arProductText_20[9]	CHAR	''	'/'
434.0	stat	arProductText_20[10]	CHAR	''	'w'
435.0	stat	arProductText_20[11]	CHAR	''	'r'
436.0	stat	arProductText_20[12]	CHAR	''	'i'
437.0	stat	arProductText_20[13]	CHAR	''	't'
438.0	stat	arProductText_20[14]	CHAR	''	'e'
439.0	stat	arProductText_20[15]	CHAR	''	' '
440.0	stat	arProductText_20[16]	CHAR	''	's'
441.0	stat	arProductText_20[17]	CHAR	''	't'
442.0	stat	arProductText_20[18]	CHAR	''	'a'
443.0	stat	arProductText_20[19]	CHAR	''	't'
444.0	stat	arProductText_20[20]	CHAR	''	'i'
445.0	stat	arProductText_20[21]	CHAR	''	'o'
446.0	stat	arProductText_20[22]	CHAR	''	'n'

Parameter 20 "Product Text":
Additional text for the connected device; product description; here: RFID read/write station

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
456.0	stat	arSerialNumber_21[0]	CHAR	''	'4'
457.0	stat	arSerialNumber_21[1]	CHAR	''	'0'
458.0	stat	arSerialNumber_21[2]	CHAR	''	'0'
459.0	stat	arSerialNumber_21[3]	CHAR	''	'0'
460.0	stat	arSerialNumber_21[4]	CHAR	''	'0'
461.0	stat	arSerialNumber_21[5]	CHAR	''	'0'
462.0	stat	arSerialNumber_21[6]	CHAR	''	'6'
463.0	stat	arSerialNumber_21[7]	CHAR	''	'6'
464.0	stat	arSerialNumber_21[8]	CHAR	''	'7'
465.0	stat	arSerialNumber_21[9]	CHAR	''	'5'
466.0	stat	arSerialNumber_21[10]	CHAR	''	'2'
467.0	stat	arSerialNumber_21[11]	CHAR	''	'8'
468.0	stat	arSerialNumber_21[12]	CHAR	''	'0'
469.0	stat	arSerialNumber_21[13]	CHAR	''	'8'
470.0	stat	arSerialNumber_21[14]	CHAR	''	B#16#00

Parameter 21 "Serial Number":
Serial number of the RFID head; 14-digit unique number

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
520.0	stat	arHardwareRevision_22[0]	CHAR	''	'H'
521.0	stat	arHardwareRevision_22[1]	CHAR	''	'W'
522.0	stat	arHardwareRevision_22[2]	CHAR	''	'0'
523.0	stat	arHardwareRevision_22[3]	CHAR	''	'1'
524.0	stat	arHardwareRevision_22[4]	CHAR	''	'.'
525.0	stat	arHardwareRevision_22[5]	CHAR	''	'0'
526.0	stat	arHardwareRevision_22[6]	CHAR	''	'1'
527.0	stat	arHardwareRevision_22[7]	CHAR	''	B#16#00

Parameter 22 "Hardware Revision":
Hardware status of the RFID head; here: HW01.01

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
552.0	stat	arFirmwareRevision_23[0]	CHAR	''	'1'
553.0	stat	arFirmwareRevision_23[1]	CHAR	''	'8'
554.0	stat	arFirmwareRevision_23[2]	CHAR	''	'3'
555.0	stat	arFirmwareRevision_23[3]	CHAR	''	'3'
556.0	stat	arFirmwareRevision_23[4]	CHAR	''	'2'
557.0	stat	arFirmwareRevision_23[5]	CHAR	''	'9'
558.0	stat	arFirmwareRevision_23[6]	CHAR	''	'8'
559.0	stat	arFirmwareRevision_23[7]	CHAR	''	'.'
560.0	stat	arFirmwareRevision_23[8]	CHAR	''	''
561.0	stat	arFirmwareRevision_23[9]	CHAR	''	'1'
562.0	stat	arFirmwareRevision_23[10]	CHAR	''	'4'
563.0	stat	arFirmwareRevision_23[11]	CHAR	''	'.'
564.0	stat	arFirmwareRevision_23[12]	CHAR	''	'0'
565.0	stat	arFirmwareRevision_23[13]	CHAR	''	'6'
566.0	stat	arFirmwareRevision_23[14]	CHAR	''	'.'
567.0	stat	arFirmwareRevision_23[15]	CHAR	''	'1'
568.0	stat	arFirmwareRevision_23[16]	CHAR	''	'8'
569.0	stat	arFirmwareRevision_23[17]	CHAR	''	'f'
570.0	stat	arFirmwareRevision_23[18]	CHAR	''	'1'
571.0	stat	arFirmwareRevision_23[19]	CHAR	''	'8'
572.0	stat	arFirmwareRevision_23[20]	CHAR	''	'3'
573.0	stat	arFirmwareRevision_23[21]	CHAR	''	'3'
574.0	stat	arFirmwareRevision_23[22]	CHAR	''	'2'
575.0	stat	arFirmwareRevision_23[23]	CHAR	''	'7'
576.0	stat	arFirmwareRevision_23[24]	CHAR	''	'8'
577.0	stat	arFirmwareRevision_23[25]	CHAR	''	'.'
578.0	stat	arFirmwareRevision_23[26]	CHAR	''	''
579.0	stat	arFirmwareRevision_23[27]	CHAR	''	'2'
580.0	stat	arFirmwareRevision_23[28]	CHAR	''	'5'
581.0	stat	arFirmwareRevision_23[29]	CHAR	''	'.'
582.0	stat	arFirmwareRevision_23[30]	CHAR	''	'0'
583.0	stat	arFirmwareRevision_23[31]	CHAR	''	'5'
584.0	stat	arFirmwareRevision_23[32]	CHAR	''	'.'
585.0	stat	arFirmwareRevision_23[33]	CHAR	''	'1'
586.0	stat	arFirmwareRevision_23[34]	CHAR	''	'9'
587.0	stat	arFirmwareRevision_23[35]	CHAR	''	B#16#00

Parameter 23 "Firmware Revision":
Firmware status of the RFID head
1833298. 14.06.18
1833278. 25.05.19

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
616.0	stat	arApplSpecTag_24[0]	CHAR	''	'Y'
617.0	stat	arApplSpecTag_24[1]	CHAR	''	'o'
618.0	stat	arApplSpecTag_24[2]	CHAR	''	'u'
619.0	stat	arApplSpecTag_24[3]	CHAR	''	'r'
620.0	stat	arApplSpecTag_24[4]	CHAR	''	''
621.0	stat	arApplSpecTag_24[5]	CHAR	''	'a'
622.0	stat	arApplSpecTag_24[6]	CHAR	''	'u'
623.0	stat	arApplSpecTag_24[7]	CHAR	''	't'
624.0	stat	arApplSpecTag_24[8]	CHAR	''	'o'
625.0	stat	arApplSpecTag_24[9]	CHAR	''	'm'
626.0	stat	arApplSpecTag_24[10]	CHAR	''	'a'
627.0	stat	arApplSpecTag_24[11]	CHAR	''	't'
628.0	stat	arApplSpecTag_24[12]	CHAR	''	'i'
629.0	stat	arApplSpecTag_24[13]	CHAR	''	'o'
630.0	stat	arApplSpecTag_24[14]	CHAR	''	'n'
631.0	stat	arApplSpecTag_24[15]	CHAR	''	''
632.0	stat	arApplSpecTag_24[16]	CHAR	''	''
633.0	stat	arApplSpecTag_24[17]	CHAR	''	'o'
634.0	stat	arApplSpecTag_24[18]	CHAR	''	'u'
635.0	stat	arApplSpecTag_24[19]	CHAR	''	'r'
636.0	stat	arApplSpecTag_24[20]	CHAR	''	''
637.0	stat	arApplSpecTag_24[21]	CHAR	''	'p'
638.0	stat	arApplSpecTag_24[22]	CHAR	''	'a'
639.0	stat	arApplSpecTag_24[23]	CHAR	''	's'
640.0	stat	arApplSpecTag_24[24]	CHAR	''	's'
641.0	stat	arApplSpecTag_24[25]	CHAR	''	'i'
642.0	stat	arApplSpecTag_24[26]	CHAR	''	'o'
643.0	stat	arApplSpecTag_24[27]	CHAR	''	'n'
644.0	stat	arApplSpecTag_24[28]	CHAR	''	''
645.0	stat	arApplSpecTag_24[29]	CHAR	''	B#16#00

Parameter 24 "Application Specific Tag":
Freely programmable additional text; here:
Your automation, our passion
Can used by the user for additional information (e.g. installation location)

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
648.0	stat	arDeviceStatus_36	BYTE	B#16#0	B#16#00
650.0	stat	arDetailDeviceStatus_37[0]	BYTE	B#16#0	B#16#00
651.0	stat	arDetailDeviceStatus_37[1]	BYTE	B#16#0	B#16#00
652.0	stat	arDetailDeviceStatus_37[2]	BYTE	B#16#0	B#16#00

Parameter 36 "Device Status" and Parameter 37 "Detailed Device Status
IO-Link status information about the RFID head

Device-specific parameters:

Within the DB1000 "DB_IOL_Parameter" there is a structure for each device-specific Parameter. These divided into an "RD" area and a "WR" area. Within the data structure, "RD" (Read) are the parameter values that read out from the RFID head. This is the currently valid configuration. The "WR" (Write) area contains the parameter values that transferred to the RFID head when a write operation executed. This corresponds to a new configuration.

Parameter 201 „Tag Type“: Setting the data carrier type

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
268.0	stat	bt_TagType_RD_201	BYTE	B#16#0	B#16#14
269.0	stat	bt_TagType_WR_201	BYTE	B#16#0	B#16#14

The "TagType" parameter used to set the chip type of the data carrier. The RFID head IQT1-...-IO-V1 supports various chip types. Chip type "20" is set on delivery. Thus, the Fixcode of all ISO15693 compatible data carriers can read out.

Name	Tag Type	Value (HEX)	Access	Fixcode	Data	Block size	Chip	Frequency
	20	16#14	Read Fixcode	8 Byte	-	-	All ISO15693 data carrier	13,56MHz
IQC21	21	16#15	Read Fixcode Read / Write Data	8 Byte	112 Byte	4	I-Code SLI(X)	13,56MHz
IQC22	22	16#16	Read Fixcode Read / Write Data	8 Byte	256 Byte	4	Tag-It HF-I Plus	13,56MHz
IQC23	23	16#17	Read Fixcode Read / Write Data	8 Byte	224 Byte	4	My-d SRF55V02P	13,56MHz
IQC24	24	16#18	Read Fixcode Read / Write Data	8 Byte	928 Byte	4	My-d SRF55V10P	13,56MHz

IQC27	27	16#1B	Read Fixcode Read / Write Data	8 Byte	288 Byte	4	EM4135	13,56MHz
IQC31	31	16#1F	Read Fixcode Read / Write Data	8 Byte	32 Byte	4	Tag-It HF-I Standard	13,56MHz
IQC32	32	16#20	Read Fixcode Read / Write Data	8 Byte	32 Byte	4	Tag-It HF-I Pro	13,56MHz
IQC33	33	16#21	Read Fixcode Read / Write Data	8 Byte	2000 Byte	8	MB89R118	13,56MHz
IQC34	34	16#22	Read Fixcode Read / Write Data	8 Byte	232 Byte	4	MB89R119	13,56MHz
IQC35	35	16#23	Read Fixcode Read / Write Data	8 Byte	160 Byte	4	I-Code SLI-S	13,56MHz
IQC36	36	16#24	Read Fixcode Read / Write Data	8 Byte	32 Byte	4	I-Code SLI-L	13,56MHz

Parameter 203 „Easy Mode“: Setting Easy- or Expert mode

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
270.0	stat	bt_EasyMode_RD_203	BYTE	B#16#0	B#16#80
271.0	stat	bt_EasyMode_WR_203	BYTE	B#16#0	B#16#80

The "Easy Mode" parameter can used to switch between Easy and Expert mode. The Easy mode preset at the factory and allows simplified data access to the data carrier. This means that no additional function block is required for data transmission.
The "Expert Mode" allows access to large amounts of data using a handshake procedure. This requires the use of a function block to transfer the data.

Parameter	Index	Value (HEX)	Significance
203	Bt_EasyMode_RD_203	16#80	Easy mode active; factory setting; allows simplified data access to a maximum of 28 bytes of user data or fixed code
203	Bt_EasyMode_RD_203	16#00	Expert mode active; setting for transmission of large amounts of data via handshake method; use of a function block required

Parameter 204 „Read Task“: Setting Execution Read task

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
272.0	stat	arReadTask_RD_204[0]	BYTE	B#16#0	B#16#00
273.0	stat	arReadTask_RD_204[1]	BYTE	B#16#0	B#16#08
274.0	stat	arReadTask_RD_204[2]	BYTE	B#16#0	B#16#00
275.0	stat	arReadTask_RD_204[3]	BYTE	B#16#0	B#16#00
276.0	stat	arReadTask_RD_204[4]	BYTE	B#16#0	B#16#80
278.0	stat	arReadTask_WR_204[0]	BYTE	B#16#0	B#16#00
279.0	stat	arReadTask_WR_204[1]	BYTE	B#16#0	B#16#08
280.0	stat	arReadTask_WR_204[2]	BYTE	B#16#0	B#16#00
281.0	stat	arReadTask_WR_204[3]	BYTE	B#16#0	B#16#00
282.0	stat	arReadTask_WR_204[4]	BYTE	B#16#0	B#16#80

The "Read task" parameter used to configure read access to the data carrier. This includes the setting whether the Fixcode or the user data read. In addition, the number of bytes to read and the start address defined. Additionally it is possible to activate an Autostart function. Thus, a permanent read command executed automatically after a reset of the supply voltage without additional control.

Parameter	Index	Value (HEX)	Significance
204	arReadTask_RD_204[0]	16#00	Access of read task to user data (user data); factory setting is 16#00
204	arReadTask_RD_204[0]	16#80	Access task execution to Fixcode

204	arReadTask_RD_204[1]	16#00 … 16#1C	Number of bytes of user data to be read in; value must be a multiple of 4; when using the IQC33 data carrier, a multiple of 8 must be set; factory setting is 16#08 for access to 8 bytes of user data
204	arReadTask_RD_204[2] arReadTask_RD_204[3]	16#0000 …. 16#FFFF	Start address on data carrier when accessing user data (user data); value must be a multiple of 4; when using the IQC33 data carrier, a multiple of 8 must be set; factory setting is the value 16#0000
204	arReadTask_RD_204[4]	16#80	Autostart function active; the Autostart function can be used to activate a permanent reading execution; additional control is then no longer required; factory setting is 16#80
204	arReadTask_RD_204[4]	16#00	Autostart function deactivated; read or write must be started by triggering the "Read" or "Write" bit in the output data field

Parameter 205 „Write Task“: Setting Execution Write task

Adresse	De	Name	Typ	Anfangswert	@Aktualwert
284.0	stat	arWriteTask_RD_205[0]	BYTE	B#16#0	B#16#00
285.0	stat	arWriteTask_RD_205[1]	BYTE	B#16#0	B#16#08
286.0	stat	arWriteTask_RD_205[2]	BYTE	B#16#0	B#16#00
287.0	stat	arWriteTask_RD_205[3]	BYTE	B#16#0	B#16#00
288.0	stat	arWriteTask_WR_205[0]	BYTE	B#16#0	B#16#00
289.0	stat	arWriteTask_WR_205[1]	BYTE	B#16#0	B#16#08
290.0	stat	arWriteTask_WR_205[2]	BYTE	B#16#0	B#16#00
291.0	stat	arWriteTask_WR_205[3]	BYTE	B#16#0	B#16#00

Parameter 205 "Write Task" configures the write access to the data carrier. Only the user data can accessed by writing. In addition, the number of bytes to written and the start address are set. The configuration of the Autostart function is not possible for the write task. The write task activated via the "Start write" bit in the process output data field. The Autostart function must switched off beforehand.

Parameter	**Index**	**Value (HEX)**	**Significance**
205	arWriteTask_RD_205[0]	16#00	Access write request to user data (user data); no change possible; factory setting 16#00
205	arWriteTask_RD_205[1]	16#00 … 16#1C	Number of bytes of user data to be written; value must be a multiple of 4; when using the IQC33 data carrier, a multiple of 8 must be set; factory setting 16#08
205	arWriteTask_RD_205[2] arWriteTask_RD_205[3]	16#0000 …. 16#FFFF	Start address on data carrier when accessing user data (user data); value must be a multiple of 4; when using the IQC33 data carrier, a multiple of 8 must be set; factory setting 16#0000

2.2 Write IO-Link Parameter

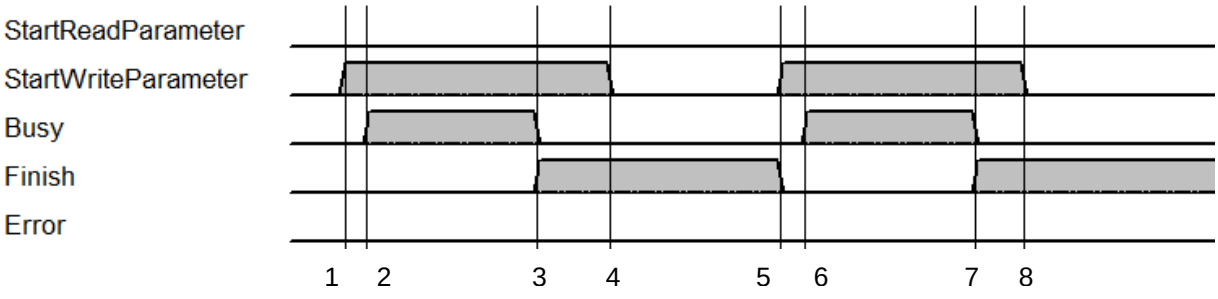
Before a write access to the IO-Link parameters of the RFID head takes place, the parameter values must defined. The parameter values can assigned within the FB1000 "IOL_Parameter". The parameter values to transfer to the RFID head must assigned to the "WR" data structure of the parameter within the DB1000 "DB_IOL_Parameter". The following figure shows the assignment for the device-specific parameters.

```
L     20
T     #bt_TagType_WR_201          #bt_TagType_WR_201 -- Write TagType

L     B#16#80
T     #bt_EasyMode_WR_203         #bt_EasyMode_WR_203 -- Write EasyMode

L     B#16#0
T     #arReadTask_WR_204[0]       #arReadTask_WR_204[0] -- Write Read Task
L     B#16#8
T     #arReadTask_WR_204[1]       #arReadTask_WR_204[1] -- Write Read Task
L     B#16#0
T     #arReadTask_WR_204[2]       #arReadTask_WR_204[2] -- Write Read Task
L     B#16#0
T     #arReadTask_WR_204[3]       #arReadTask_WR_204[3] -- Write Read Task
L     B#16#80
T     #arReadTask_WR_204[4]       #arReadTask_WR_204[4] -- Write Read Task

L     B#16#0
T     #arWriteTask_WR_205[0]      #arWriteTask_WR_205[0] -- Write Write Task
L     B#16#8
T     #arWriteTask_WR_205[1]      #arWriteTask_WR_205[1] -- Write Write Task
L     B#16#0
T     #arWriteTask_WR_205[2]      #arWriteTask_WR_205[2] -- Write Write Task
L     B#16#0
T     #arWriteTask_WR_205[3]      #arWriteTask_WR_205[3] -- Write Write Task
```

The assignment of the parameters can also carried out dynamically outside the FB. For this purpose, the above displayed single carriers must deleted from the FB1000 "IOL_Parameter". The parameter values must transferred to the "WR" data structures (Write) within the DB1000. The valid value range for the parameter can found in the tables in chapter "Read IO-Link Parameter".

The write access to the IO-Link parameters of the RFID head IQT1-...-IO-V1 started by the input variable "b_I_StartWriteParameter" of the FB1000. The execution terminated as soon as the output signal "b_O_Finish" changes from 0 to 1.

The following figure shows the flow chart for a write access to the IO-Link parameters.



Event	Significance
1	Start write access by edge change from 0 to 1 at input "StartWriteParameter"; input remains permanently set; before re-execution or when executing a read access, the input must be set back to 0 from outside; first execution since finish is 0 in the output state
2	Busy = 1; write access is currently being executed
3	Busy = 0, Finish = 1 and Error = 0; write execution successfully completed; the Finish output remains set until another read or write execution is started.
4	The StartWrite parameter input reset to 0 from the outside; preparation for a new execution of a write access.
5	Start write access by edge change from 0 to 1 at input "StartWriteParameter"; output Finish changes from 1 to 0
6	Busy = 1; write access is currently being executed
7	Busy = 0, Finish = 1 and Error = 0; write execution successfully completed; the Finish output remains set until another read or write execution is started.
8	The StartWrite parameter input reset to 0 from the outside; preparation for a new execution of a write access.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	false	
M 106.1	"StartWriteParameter"	BOOL	false	true
M 106.2	"Busy_Parameter"	BOOL	false	
M 106.3	"Finish_Parameter"	BOOL	false	
M 106.4	"Error_Parameter"	BOOL	false	

Before first execution of a write access:
StartWrite parameter is set to 1; busy and finish are not set;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	false	
M 106.1	"StartWriteParameter"	BOOL	true	true
M 106.2	"Busy_Parameter"	BOOL	true	
M 106.3	"Finish_Parameter"	BOOL	false	
M 106.4	"Error_Parameter"	BOOL	false	

Write access active:
StartWrite parameters and busy are set to 1; execution is currently running and finish is set to 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	false	
M 106.1	"StartWriteParameter"	BOOL	true	true
M 106.2	"Busy_Parameter"	BOOL	false	
M 106.3	"Finish_Parameter"	BOOL	true	
M 106.4	"Error_Parameter"	BOOL	false	

Write access terminated:
StartWrite parameter still set to 1; Busy changes back to 0 and Finish to 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 106.0	"StartReadParameter"	BOOL	false	
M 106.1	"StartWriteParameter"	BOOL	false	false
M 106.2	"Busy_Parameter"	BOOL	false	
M 106.3	"Finish_Parameter"	BOOL	true	
M 106.4	"Error_Parameter"	BOOL	false	

Reset StartWrite parameter:
The "StartWriteParameter" input reset to 0; Finish remains set to 1.

3. Easy-Mode – Process data structure

The process data is transferred between the IQT1-...-IO-V1 RFID head and the controller via the process data fields. There is a process data field for input data, i.e. from the direction of the head to the controller, and a process data field for output data, i.e. from the direction of the controller to the RFID head. Both process data fields have a fixed length of 32 bytes. This length is constant and is always 32 bytes. A deviating length parameterization is not possible.
The following table shows the structure of the process data field for the output data:

Byte	Content							
0	0	0	0	0	0	0	Start Write	Start Read
1	Unused							
2	Unused							
3	unused							
4	Write Data							
5	Write Data							
6	Write Data							
….	Write Data							
31	Write Data							

If the "Autostart" function activated, no output data must sent. The head performs a permanent read access to user data (factory setting, 8-byte length) or fixed code. When using the "Autostart" function, the bits "Start Read" and "Start Write" have no relevance.

The "Autostart" function can switched off via parameter 204 "Read Task". If the function is switched off, a read task or a write task can be started via the "Start reading" or "Start writing" bit.

A read or write task is executed as long as the corresponding start bit is set. The task can only aborted by resetting the corresponding start bit.

The parameters required for data carrier access such as "memory area", "number of bytes" and "start address" be set for the read task via parameter 204 and for the write task via parameter 205.

The following table shows the structure of the process data field for the input data:

Byte	Content							
0	0	0	0	0	Error	Active	Write Valid	Read Valid
1	Length data							
2	Unused							
3	Unused							
4	Read Data							
5	Read Data							
6	Read Data							
…	Read Data							
31	Read Data							

As soon as a read or write task is started and executed, this is indicated by the "Active" bit. This bit remains set for the entire period of the task execution. Only when the read or write task is aborted does the "Active" bit reset itself.
If a read task is active, the "Read Valid" bit is set if the data carrier is within the detection range and the data has read. The bit remains set for the duration of the data carrier's stay in the detection area. This bit only reset again, when the data carrier leaves the detection range.

The bit "Write Valid" behaves identically. It is set when the data carrier is in the detection zone and the data has successfully written to the data carrier. The reset takes place as soon as the data carrier leaves the detection zone again.

The byte "Length data" contains the length specification of the read data in bytes. The length depends on the number of bytes set via parameter 204. When accessing the Fixcode, the length is 8 bytes and when accessing the user data, the length is a multiple of 4 bytes (or 8 bytes when using an IQC33 transponder).

An error may occur during the execution of a read or write task. The „Error“ bit indicates the error state. If there is an error state, additional error information transmitted via the input data field. This information contains an error code as well as an error description in plain text (ASCII character). A check of the error description provides an indication of the cause of the error condition.

The following table shows the structure of the process data field of the input data in the error state:

Byte	**Content**							
0	0	0	0	0	Error	Active	Write Valid	Read Valid
1	Length data							
2	Unused							
3	Unused							
4	Error Code (HEX)							
5	Error String							
6	Error String							
…	Error String							
31	Error String							

4. FB3247 – „IQT1_EasyMode“

Within the control project, there is a FB3247 "IQT1_EasyMode". This function block called together with the data block DB3247 "EasyMode". This function block can control the IQT1-...-IO-V1 RFID head if the "EasyMode" operating mode is activated for the head.

In the delivery state of the RFID head, the Autostart function activated. The head itself automatically start a reading task. If the Autostart function switched off, read and write task can controlled by the function block.

The following figure shows the call of the FB3247 "IQT1_EasyMode" together with the DB3247 "EasyMode" within the OB1.

```
⊟ Netzwerk 2 : call function block "Easy-Mode" for IQT1-...-IO-V1 IO-Link RFID

     CALL  "IQT1 EasyMode" , "EasyMode"    FB3247 / DB3247    -- Function block for handling data transmission EasyMode
      I_w_AddressInput :=W#16#200
      I_w_AddressOutput:=W#16#200
      I_b_StartRead    :="StartRead"       M100.0             -- Start Read Task
      I_b_StartWrite   :="StartWrite"      M100.1             -- Start Write Task
      O_b_ReadValid    :="ReadValid"       M100.2             -- Data Read successfully; Tag present
      O_b_WriteValid   :="WriteValid"      M100.3             -- Data Write successfully; Tag present
      O_b_Active       :="Active"          M100.4             -- Read or Write Task active
      O_b_Error        :="Error"           M100.5             -- Error occure during task
      O_B_FrameLength  :="FrameLength"     MB101              -- Length of response information
      O_W_ReadCounter  :="ReadCounter"     MW102
      O_W_WriteCounter :="WriteCounter"    MW104
```

The following table shows the meaning of the input and output variables:

Name	Input / Output	Data type	Significance
I_w_AddressInput	Input	Word	Start address Input data field of the 32 byte IO module from the HW configuration; parameterization in hexadecimal representation
I_w_AddressOutput	Input	Word	Start address Output data field of the 32 byte IO module from the HW configuration; parameterization in hexadecimal representation
I_b_StartRead	Input	Bool	Start reading task; execution of the reading task starts with an edge change of 0 → 1; end reading task with an edge change of 1 → 0;
I_b_StartWrite	Input	Bool	Start write task; with edge change from 0 → 1 the execution of the write task starts; end of write task with edge change 1 → 0;
O_b_ReadValid	Output	Bool	Successful reading; 1 := Data carrier within detection zone and data successfully read; 0 := Data carrier outside detection zone; no data read
O_b_WriteValid	Output	Bool	Writing successful; 1 := Data carrier inside detection zone and data successfully written; 0 := data carrier outside detection zone; no data written
O_b_Active	Output	Bool	Read or write task active; 1 := Read or write task active; 0 := no read or write task active; RFID head off
O_b_Error	Output	Bool	Error; 1 := Error occurred during read or write task 0 := no error condition active
O_B_FrameLength	Output	Byte	Length of the imported data; Indication of the length of the read-in data in bytes; in the event of an error, the length of the error message is indicated.
O_W_ReadCounter	Output	Integer	Counter for readings; Number of successful read accesses during execution of a read task
O_W_WriteCounter	Output	Integer	Counter for writings; Number of successful write accesses during the execution of a write task

5. Example: Read user data with Autostart function

In the delivery state of the IQT1-...-IO-V1, the Autostart function activated and 8 bytes of the user data read in starting from memory address 0. The following figure shows the setting of the device-specific IO-Link parameters in the delivery state.

```
L     20                        //TagType 20 ISO15693 compatible
T     #bt_TagType_WR_201

L     B#16#80                   //Easy Mode; 0x80 = Easy Mode; 0x00 = Expert Mode
T     #bt_EasyMode_WR_203

L     B#16#0                    //Memory; 0x00 = User Memory; 0x80 = UID
T     #arReadTask_WR_204[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arReadTask_WR_204[1]
L     B#16#0                    //StartAddress High Byte
T     #arReadTask_WR_204[2]
L     B#16#0                    //StartAddress Low Byte
T     #arReadTask_WR_204[3]
L     B#16#80                   //AutoStart; 0x00 = OFF; 0x80 = ON
T     #arReadTask_WR_204[4]

L     B#16#0                    //Memory; 0x00 User Memory
T     #arWriteTask_WR_205[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arWriteTask_WR_205[1]
L     B#16#0                    //StartAddress High Byte
T     #arWriteTask_WR_205[2]
L     B#16#0                    //StartAddress Low Byte
T     #arWriteTask_WR_205[3]
```

Read 8 byte user data starting from address 0 with Autostart function:
TagType_WR_201 := 20
Data carrier type 20
EasyMode_WR_203 := B#16#80
EasyMode activated
ReadTask_WR_204[0] := B#16#0
Access to user data
ReadTask_WR_204[1] := B#16#8
Access to 8 bytes
ReadTask_WR_204[2] := B#16#0
ReadTask_WR_204[3] := B#16#0
Start address 0
ReadTask_WR_204[4] := B#16#80
Autostart active

The RFID head start the reading task automatically. Control by the "I_b_StartRead" input of the FB3247 is not required.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Initial state after device start-up; no data carrier within detection range
ReadValid := False;
Active := True;
FrameLength := 0;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	8	
MW 102	"ReadCounter"	HEX	W#16#0001	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier A read
ReadValid := True;
Active := True;
FrameLength := 8:
ReadCounter := 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0001	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier A has left range
ReadValid := False;
Active := True;
FrameLength := 0;
ReadCounter := 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	8	
MW 102	"ReadCounter"	HEX	W#16#0002	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier B read in
ReadValid := True;
Active := True;
FrameLength := 8:
ReadCounter := 2;

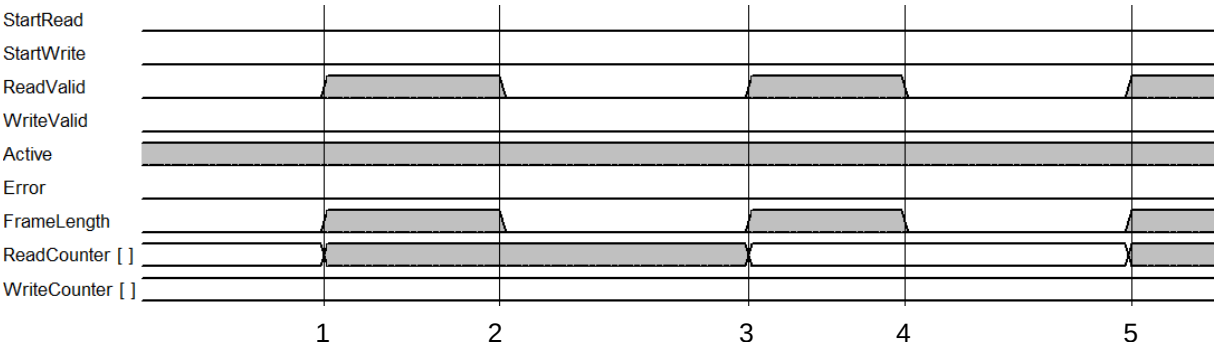
Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
16.0	stat	INDATA.ReadData[0]	BYTE	B#16#0	B#16#31
17.0	stat	INDATA.ReadData[1]	BYTE	B#16#0	B#16#32
18.0	stat	INDATA.ReadData[2]	BYTE	B#16#0	B#16#33
19.0	stat	INDATA.ReadData[3]	BYTE	B#16#0	B#16#34
20.0	stat	INDATA.ReadData[4]	BYTE	B#16#0	B#16#35
21.0	stat	INDATA.ReadData[5]	BYTE	B#16#0	B#16#36
22.0	stat	INDATA.ReadData[6]	BYTE	B#16#0	B#16#37
23.0	stat	INDATA.ReadData[7]	BYTE	B#16#0	B#16#38
24.0	stat	INDATA.ReadData[8]	BYTE	B#16#0	B#16#00

The read-in data are located within the DB3247. The data can copied from the structure INDATA.ReadData[].

Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
16.0	stat	INDATA.ReadData[0]	BYTE	B#16#0	B#16#00
17.0	stat	INDATA.ReadData[1]	BYTE	B#16#0	B#16#00
18.0	stat	INDATA.ReadData[2]	BYTE	B#16#0	B#16#00
19.0	stat	INDATA.ReadData[3]	BYTE	B#16#0	B#16#00
20.0	stat	INDATA.ReadData[4]	BYTE	B#16#0	B#16#00
21.0	stat	INDATA.ReadData[5]	BYTE	B#16#0	B#16#00
22.0	stat	INDATA.ReadData[6]	BYTE	B#16#0	B#16#00
23.0	stat	INDATA.ReadData[7]	BYTE	B#16#0	B#16#00
24.0	stat	INDATA.ReadData[8]	BYTE	B#16#0	B#16#00

If there is no data carrier in the detection zone, all values within the structure INDATA.ReadData[] are set to the value B#16#00.

The following figure shows the flowchart for accessing several data carriers one after the other.



Event	Significance
1	Data carrier A enters the detection zone and the data read. ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 1;
2	Data carrier A leaves the detection zone of the RFID head ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 1;
3	Data carrier B enters the detection zone and the data read. ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 2;
4	Data carrier B leaves the detection zone of the RFID head ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 2;
5	Data carrier C enters the data entry area and the data read. ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 3;

The number of bytes to be read in is set by the parameter "ReadTask_WR_204[1]" within the FB1000. A maximum of 28 bytes of user data can read in.

```
L     20                        //TagType 20 ISO15693 compatible
T     #bt_TagType_WR_201

L     B#16#80                   //Easy Mode; 0x80 = Easy Mode; 0x00 = Expert Mode
T     #bt_EasyMode_WR_203

L     B#16#0                    //Memory; 0x00 = User Memory; 0x80 = UID
T     #arReadTask_WR_204[0]
L     B#16#1C                   //Number of Bytes; 0x00 up to 0x1C
T     #arReadTask_WR_204[1]
L     B#16#0                    //StartAddress High Byte
T     #arReadTask_WR_204[2]
L     B#16#0                    //StartAddress Low Byte
T     #arReadTask_WR_204[3]
L     B#16#80                   //AutoStart; 0x00 = OFF; 0x80 = ON
T     #arReadTask_WR_204[4]

L     B#16#0                    //Memory; 0x00 User Memory
T     #arWriteTask_WR_205[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arWriteTask_WR_205[1]
L     B#16#0                    //StartAddress High Byte
T     #arWriteTask_WR_205[2]
L     B#16#0                    //StartAddress Low Byte
T     #arWriteTask_WR_205[3]
```

Read 28 bytes User data starting from address 0 with Autostart function:
TagType_WR_201 := 20
Data carrier type 20
EasyMode_WR_203 := B#16#80
EasyMode activated
ReadTask_WR_204[0] := B#16#0
Access to user data
ReadTask_WR_204[1] := B#16#8
Access to 8 bytes
ReadTask_WR_204[2] := B#16#0
ReadTask_WR_204[3] := B#16#0
Start address 0
ReadTask_WR_204[4] := B#16#80
Autostart active

If a data carrier enters the detection zone and the data has read in, the output signals at FB3247 have the following states:

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	28	
MW 102	"ReadCounter"	HEX	W#16#0002	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier read
ReadValid := True;
Active := True;
FrameLength := 28:
ReadCounter := 2;
The value of "ReadCounter" depends on the number of previous read accesses.

6. Example: Read Fixcode with Autostart function

In addition to the user data, it is also possible to read the Fixcode of the data carrier. The Fixcode is an 8-byte long number that is unique to every ISO15693 compliant 13.56MHz data carrier. To read out the Fixcode, the access to the Fixcode must change within parameter 204 "Read Task". The Autostart function remains switched on.

```
L     20                        //TagType 20 ISO15693 compatible
T     #bt_TagType_WR_201

L     B#16#80                   //Easy Mode; 0x80 = Easy Mode; 0x00 = Expert Mode
T     #bt_EasyMode_WR_203

L     B#16#80                   //Memory; 0x00 = User Memory; 0x80 = UID
T     #arReadTask_WR_204[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arReadTask_WR_204[1]
L     B#16#0                    //StartAddress High Byte
T     #arReadTask_WR_204[2]
L     B#16#0                    //StartAddress Low Byte
T     #arReadTask_WR_204[3]
L     B#16#80                   //AutoStart; 0x00 = OFF; 0x80 = ON
T     #arReadTask_WR_204[4]

L     B#16#0                    //Memory; 0x00 User Memory
T     #arWriteTask_WR_205[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arWriteTask_WR_205[1]
L     B#16#0                    //StartAddress High Byte
T     #arWriteTask_WR_205[2]
L     B#16#0                    //StartAddress Low Byte
T     #arWriteTask_WR_205[3]
```

Read Fixcode (UID) with Autostart function:

TagType_WR_201 := 20
Data carrier type 20
EasyMode_WR_203 := B#16#80
EasyMode activated
ReadTask_WR_204[0] := B#16#80
Access to Fixcode
ReadTask_WR_204[1] := B#16#8
ReadTask_WR_204[2] := B#16#0
ReadTask_WR_204[3] := B#16#0
Start address and length not relevant
ReadTask_WR_204[4] := B#16#80
Autostart active

The reading task for reading the Fixcode (UID) automatically started by the RFID head. Control by the "I_b_StartRead" input of the FB3247 is not required.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Initial state after device start-up; no data carrier within detection range
ReadValid := False;
Active := True;
FrameLength := 0;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	8	
MW 102	"ReadCounter"	HEX	W#16#0001	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier A read
ReadValid := True;
Active := True;
FrameLength := 8:
ReadCounter := 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0001	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier A has left detection range
ReadValid := False;
Active := True;
FrameLength := 0;
ReadCounter := 1;

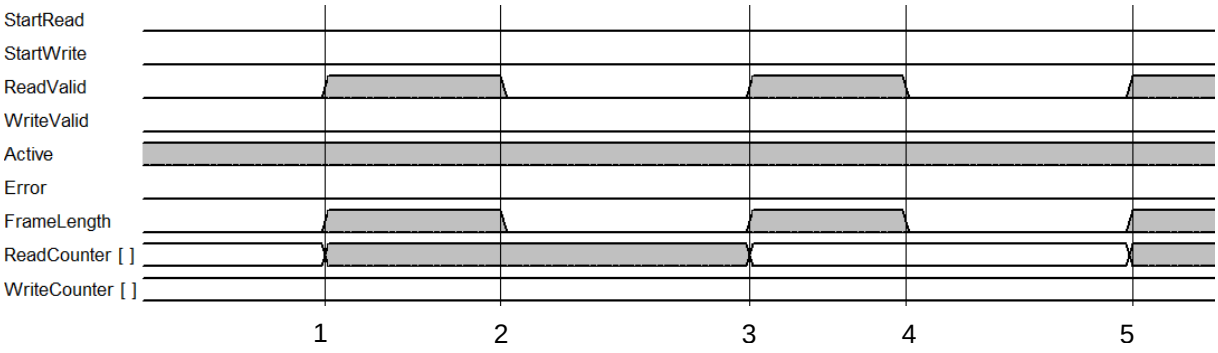
Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	8	
MW 102	"ReadCounter"	HEX	W#16#0002	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier B read
ReadValid := True;
Active := True;
FrameLength := 8:
ReadCounter := 2;

Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
16.0	stat	INDATA.ReadData[0]	BYTE	B#16#0	B#16#E0
17.0	stat	INDATA.ReadData[1]	BYTE	B#16#0	B#16#04
18.0	stat	INDATA.ReadData[2]	BYTE	B#16#0	B#16#01
19.0	stat	INDATA.ReadData[3]	BYTE	B#16#0	B#16#50
20.0	stat	INDATA.ReadData[4]	BYTE	B#16#0	B#16#BD
21.0	stat	INDATA.ReadData[5]	BYTE	B#16#0	B#16#2D
22.0	stat	INDATA.ReadData[6]	BYTE	B#16#0	B#16#F3
23.0	stat	INDATA.ReadData[7]	BYTE	B#16#0	B#16#CD
24.0	stat	INDATA.ReadData[8]	BYTE	B#16#0	B#16#00

The imported Fixcode (UID) is located in the data structure "INDATA.ReadData[]". The Fixcode always has a length of 8 bytes and starts with the value B#16#E0. The Fixcode can copied from the data structure for further processing.

The following figure shows the flowchart for accessing several data carriers one after the other.



Event	Significance
1	Data carrier A enters the detection zone and Fixcode A read in. ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 1;
2	Data carrier A leaves the detection zone of the RFID head ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 1;
3	Data carrier B enters the detection zone and Fixcode B read in. ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 2;
4	Data carrier B leaves the detection zone of the RFID head ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 2;
5	Data carrier C enters the detection and Fixcode C read in. ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 3;

7. Example: Read user data without Autostart function

In the delivery state of the IQT1-...-IO-V1, the Autostart function activated and 8 bytes of the user data read in starting from memory address 0. The Autostart function must switched off by the IO-Link parameter 204 "Read Task".

```
L     20                        //TagType 20 ISO15693 compatible
T     #bt_TagType_WR_201

L     B#16#80                   //Easy Mode; 0x80 = Easy Mode; 0x00 = Expert Mode
T     #bt_EasyMode_WR_203

L     B#16#0                    //Memory; 0x00 = User Memory; 0x80 = UID
T     #arReadTask_WR_204[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arReadTask_WR_204[1]
L     B#16#0                    //StartAddress High Byte
T     #arReadTask_WR_204[2]
L     B#16#0                    //StartAddress Low Byte
T     #arReadTask_WR_204[3]
L     B#16#0                    //AutoStart; 0x00 = OFF; 0x80 = ON
T     #arReadTask_WR_204[4]

L     B#16#0                    //Memory; 0x00 User Memory
T     #arWriteTask_WR_205[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arWriteTask_WR_205[1]
L     B#16#0                    //StartAddress High Byte
T     #arWriteTask_WR_205[2]
L     B#16#0                    //StartAddress Low Byte
T     #arWriteTask_WR_205[3]
```

Read 8 bytes user data starting from address 0 without Autostart function:
TagType_WR_201 := 20
Data carrier type 20
EasyMode_WR_203 := B#16#80
EasyMode activated
ReadTask_WR_204[0] := B#16#0
Access to user data
ReadTask_WR_204[1] := B#16#8
Access to 8 bytes
ReadTask_WR_204[2] := B#16#0
ReadTask_WR_204[3] := B#16#0
Start address 0
ReadTask_WR_204[4] := B#16#0
Autostart switched off

The RFID head itself due to the Autostart function switched off no longer start the reading task. It is necessary to start the read task via the "I_b_StartRead" input on the FB3247.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Initial state after device start-up; no read task active
ReadValid := False;
Active := False;
FrameLength := 0;
ReadCounter := 0;
The read task starts as soon as "StartRead" is set to True.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Read task active; no data carrier in the detection zone
StartRead := True;
ReadValid := False;
Active := True;
FrameLength := 0;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	8	
MW 102	"ReadCounter"	HEX	W#16#0001	
MW 104	"WriteCounter"	HEX	W#16#0000	

Read task active; data carrier A inside detection zone and data read in
StartRead := True;
ReadValid := True;
Active := True;
FrameLength := 8;
ReadCounter := 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0001	
MW 104	"WriteCounter"	HEX	W#16#0000	

Read task active; no data carrier in the detection zone
StartRead := True;
ReadValid := False;
Active := True;
FrameLength := 0;
ReadCounter := 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	8	
MW 102	"ReadCounter"	HEX	W#16#0002	
MW 104	"WriteCounter"	HEX	W#16#0000	

Read task active; data carrier B inside detection zone and data read in
StartRead := True;
ReadValid := True;
Active := True;
FrameLength := 8;
ReadCounter := 2;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	false
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0002	
MW 104	"WriteCounter"	HEX	W#16#0000	

Read task stopped
StartRead := False;
ReadValid := False;
Active := False;
FrameLength := 0;
ReadCounter := 2;

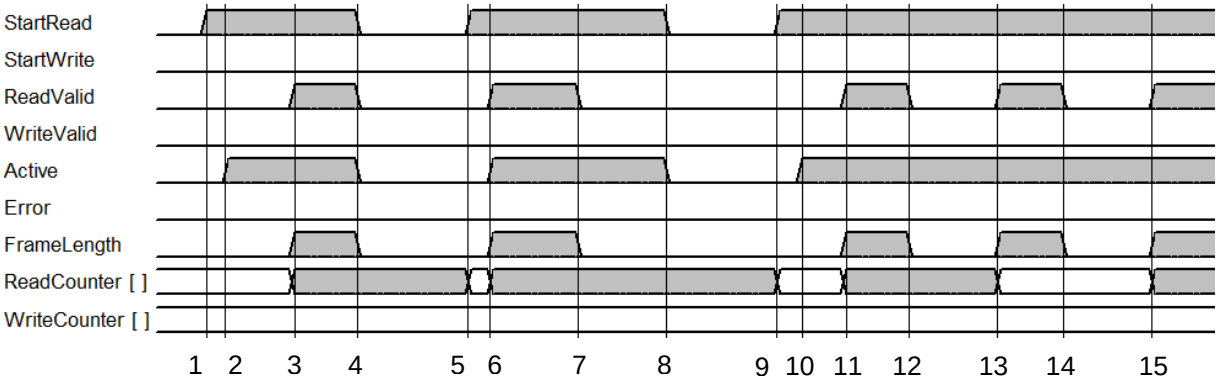
Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
16.0	stat	INDATA.ReadData[0]	BYTE	B#16#0	B#16#01
17.0	stat	INDATA.ReadData[1]	BYTE	B#16#0	B#16#02
18.0	stat	INDATA.ReadData[2]	BYTE	B#16#0	B#16#03
19.0	stat	INDATA.ReadData[3]	BYTE	B#16#0	B#16#04
20.0	stat	INDATA.ReadData[4]	BYTE	B#16#0	B#16#05
21.0	stat	INDATA.ReadData[5]	BYTE	B#16#0	B#16#06
22.0	stat	INDATA.ReadData[6]	BYTE	B#16#0	B#16#07
23.0	stat	INDATA.ReadData[7]	BYTE	B#16#0	B#16#08
24.0	stat	INDATA.ReadData[8]	BYTE	B#16#0	B#16#00

The read-in data are located within the DB3247. The data can copied from the structure INDATA.ReadData[].

Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
16.0	stat	INDATA.ReadData[0]	BYTE	B#16#0	B#16#00
17.0	stat	INDATA.ReadData[1]	BYTE	B#16#0	B#16#00
18.0	stat	INDATA.ReadData[2]	BYTE	B#16#0	B#16#00
19.0	stat	INDATA.ReadData[3]	BYTE	B#16#0	B#16#00
20.0	stat	INDATA.ReadData[4]	BYTE	B#16#0	B#16#00
21.0	stat	INDATA.ReadData[5]	BYTE	B#16#0	B#16#00
22.0	stat	INDATA.ReadData[6]	BYTE	B#16#0	B#16#00
23.0	stat	INDATA.ReadData[7]	BYTE	B#16#0	B#16#00
24.0	stat	INDATA.ReadData[8]	BYTE	B#16#0	B#16#00
25.0	stat	INDATA.ReadData[9]	BYTE	B#16#0	B#16#00

If there is no data carrier in the detection zone, all values within the structure INDATA.ReadData[] are set to the value B#16#00.

The following figure shows the flowchart for accessing data carriers in various situations.



Event	Significance
1	Start read task StartRead := True
2	Read task is activated; no data carrier inside detection zone StartRead := True; ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 0;
3	Read task is activated; data carrier A read in StartRead := True; ReadValid := True; Active := True FrameLength := 8; ReadCounter := 1;
4	Read task completed StartRead := False; ReadValid := False; Active := False; FrameLength := 0; ReadCounter := 1;
5	Start read task StartRead := True; ReadValid := False; Active := False; FrameLength := 0; ReadCounter := 0;
6	Read task is activated; data carrier B read in StartRead := True; ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 1;
7	Read task is activated; data carrier B has left the detection zone. StartRead := True; ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 1;
8	Read task completed StartRead := False; ReadValid := False; Active := False; FrameLength := 0; ReadCounter := 1;
9	Start read task StartRead := True; ReadValid := False; Active := False; FrameLength := 0; ReadCounter := 0;
10	Read task is activated; no data carrier inside detection zone StartRead := True; ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 0;
11	Read task is activated; data carrier C read in StartRead := True; ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 1;
12	Read task is activated; data carrier C has left the detection zone StartRead := True; ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 1;
13	Read task is activated; data carrier D read in StartRead := True; ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 2;
14	Read task is activated; data carrier D has left the detection zone StartRead := True; ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 2;
15	Read task is activated; data carrier E read in StartRead := True; ReadValid := True; Active := True; FrameLength := 8; ReadCounter := 3;

8. Example: Write user data

In the delivery state of the IQT1-...-IO-V1, the Autostart function activated and 8 bytes of the user data read in starting from memory address 0. The Autostart function must switched off by the IO-Link parameter 204 "Read Task".

```
L     20                        //TagType 20 ISO15693 compatible
T     #bt_TagType_WR_201

L     B#16#80                   //Easy Mode; 0x80 = Easy Mode; 0x00 = Expert Mode
T     #bt_EasyMode_WR_203

L     B#16#0                    //Memory; 0x00 = User Memory; 0x80 = UID
T     #arReadTask_WR_204[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arReadTask_WR_204[1]
L     B#16#0                    //StartAddress High Byte
T     #arReadTask_WR_204[2]
L     B#16#0                    //StartAddress Low Byte
T     #arReadTask_WR_204[3]
L     B#16#0                    //AutoStart; 0x00 = OFF; 0x80 = ON
T     #arReadTask_WR_204[4]

L     B#16#0                    //Memory; 0x00 User Memory
T     #arWriteTask_WR_205[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arWriteTask_WR_205[1]
L     B#16#0                    //StartAddress High Byte
T     #arWriteTask_WR_205[2]
L     B#16#0                    //StartAddress Low Byte
T     #arWriteTask_WR_205[3]
```

Write 8 bytes user data starting from address 0
TagType_WR_201 := 20
Data carrier type 20
EasyMode_WR_203 := B#16#80
EasyMode activated
ReadTask_WR_204[4] := B#16#0
Autostart switched off
WriteTask_WR_205[0] := B#16#0
Access to user data
WriteTask_WR_205[1] := B#16#8
Access to 8 bytes
WriteTask_WR_205[2] := B#16#0
WriteTask_WR_205[3] := B#16#0
Start address 0

Before the write task is executed, the data to be written to the data carrier must be assigned to the structure "OUTDATA.WriteData[]" of DB3247.

Operand	Symbol	Anzeigef	Statuswert	Steuerwert
DB3247.DBB 48	"EasyMode".OUTDATA.WriteData[0]	HEX	B#16#31	B#16#31
DB3247.DBB 49	"EasyMode".OUTDATA.WriteData[1]	HEX	B#16#32	B#16#32
DB3247.DBB 50	"EasyMode".OUTDATA.WriteData[2]	HEX	B#16#33	B#16#33
DB3247.DBB 51	"EasyMode".OUTDATA.WriteData[3]	HEX	B#16#34	B#16#34
DB3247.DBB 52	"EasyMode".OUTDATA.WriteData[4]	HEX	B#16#35	B#16#35
DB3247.DBB 53	"EasyMode".OUTDATA.WriteData[5]	HEX	B#16#36	B#16#36
DB3247.DBB 54	"EasyMode".OUTDATA.WriteData[6]	HEX	B#16#37	B#16#37
DB3247.DBB 55	"EasyMode".OUTDATA.WriteData[7]	HEX	B#16#38	B#16#38
DB3247.DBB 56	"EasyMode".OUTDATA.WriteData[8]	HEX	B#16#00	

Assignment of the write data via a variable table. The data is located within DB3247 in the data structure "OUTDATA.WriteData[]".

Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
48.0	stat	OUTDATA.WriteData[0]	BYTE	B#16#0	B#16#31
49.0	stat	OUTDATA.WriteData[1]	BYTE	B#16#0	B#16#32
50.0	stat	OUTDATA.WriteData[2]	BYTE	B#16#0	B#16#33
51.0	stat	OUTDATA.WriteData[3]	BYTE	B#16#0	B#16#34
52.0	stat	OUTDATA.WriteData[4]	BYTE	B#16#0	B#16#35
53.0	stat	OUTDATA.WriteData[5]	BYTE	B#16#0	B#16#36
54.0	stat	OUTDATA.WriteData[6]	BYTE	B#16#0	B#16#37
55.0	stat	OUTDATA.WriteData[7]	BYTE	B#16#0	B#16#38
56.0	stat	OUTDATA.WriteData[8]	BYTE	B#16#0	B#16#00

Online view of the write data within the data structure "OUTDATA.WriteData[]".

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	true
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Initial state after device start-up; no write task active
WriteValid := False;
Active := False;
FrameLength := 0;
ReadCounter := 0;
The write task starts as soon as "StartWrite" is set to True.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	true	true
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Write task active; no data carrier in the detection zone
StartWrite := True;
WriteValid := False;
Active := True;
FrameLength := 0;
WriteCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	true	true
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	true	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0001	

Write task active; data carrier A inside detection zone and data written
StartWrite := True;
WriteValid := True;
Active := True;
FrameLength := 0;
WriteCounter := 1;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	true	true
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0001	

Write task active; no data carrier in the detection zone
StartWrite := True;
WriteValid := False;
Active := True;
FrameLength := 0;
WriteCounter := 1;

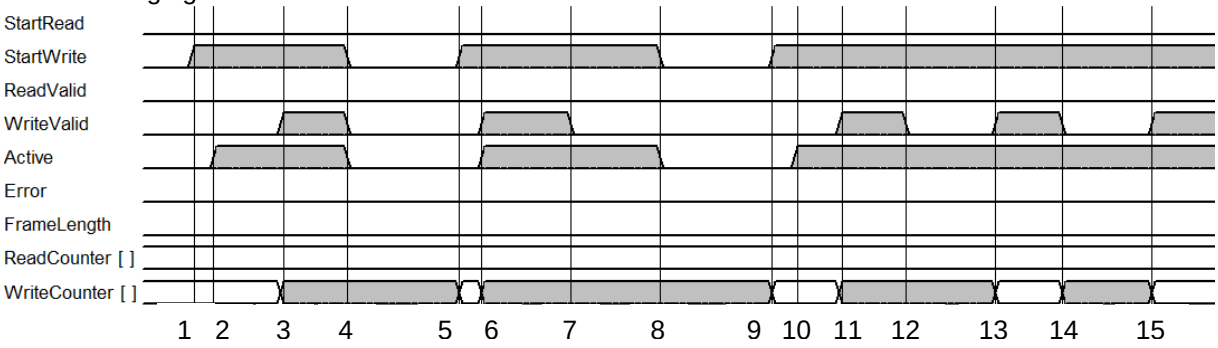
Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	true	true
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	true	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0002	

Write task active; data carrier B inside detection zone and data written
StartWrite := True;
WriteValid := True;
Active := True;
FrameLength := 0;
WriteCounter := 2;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	
M 100.1	"StartWrite"	BOOL	false	false
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0002	

Write task finished
StartWrite := False;
WriteValid := False;
Active := False;
FrameLength := 0;
WriteCounter := 2;

The following figure shows the flowchart for write access to data carrier in various situations.



Event	Significance
1	Start write task StartWrite := True
2	Write task is activated; no data carrier inside detection zone StartWrite := True; WriteValid := False; Active := True; FrameLength := 0; WriteCounter := 0;
3	Write task is activated; data carrier A written StartWrite := True; WriteValid := True; Active := True; FrameLength := 0; WriteCounter := 1;
4	Write task finished StartWrite := False; WriteValid := False; Active := False; FrameLength := 0; WriteCounter := 1;
5	Start write task StartWrite := True; WriteValid := False; Active := False; FrameLength := 0; WriteCounter := 0;
6	Write task is activated; data carrier B written StartWrite := True; WriteValid := True; Active := True; FrameLength := 0; WriteCounter := 1;
7	Write task is activated; data carrier B leaves detection zone StartWrite := True; WriteValid := False; Active := True; FrameLength := 0; WriteCounter := 1;
8	Write task finished StartWrite := False; WriteValid := False; Active := False; FrameLength := 0; WriteCounter := 1;
9	Start write task StartWrite := True; WriteValid := False; Active := False; FrameLength := 0; WriteCounter := 0;
10	Write task activated; no data carrier inside detection zone StartWrite := True; WriteValid := False; Active := True; FrameLength := 0; WriteCounter := 0;
11	Write task activated; data carrier C written StartWrite := True; WriteValid := True; Active := True; FrameLength := 0; WriteCounter := 1;
12	Write task activated; data carrier C leaves detection zone StartWrite := True; WriteValid := False; Active := True; FrameLength := 0; WriteCounter := 1;
13	Write task activated; data carrier D written StartWrite := True; WriteValid := True; Active := True; FrameLength := 0; WriteCounter := 2;
14	Write task activated; data carrier D leaves detection zone StartWrite := True; WriteValid := False; Active := True; FrameLength := 0; WriteCounter := 2;
15	Write task is activated; data carrier E written StartWrite := True; WriteValid := True; Active := True; FrameLength := 0; WriteCounter := 3;

The memory address of the data carrier from which the data is written is defined by the parameters "WriteTask_WR_205[2]" and "WriteTask_WR_205[3]". The address is byte-related and must be either a multiple of 4 or 8 (IQC33).

```
L     20                        //TagType 20 ISO15693 compatible
T     #bt_TagType_WR_201

L     B#16#80                   //Easy Mode; 0x80 = Easy Mode; 0x00 = Expert Mode
T     #bt_EasyMode_WR_203

L     B#16#0                    //Memory; 0x00 = User Memory; 0x80 = UID
T     #arReadTask_WR_204[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arReadTask_WR_204[1]
L     B#16#0                    //StartAddress High Byte
T     #arReadTask_WR_204[2]
L     B#16#0                    //StartAddress Low Byte
T     #arReadTask_WR_204[3]
L     B#16#0                    //AutoStart; 0x00 = OFF; 0x80 = ON
T     #arReadTask_WR_204[4]

L     B#16#0                    //Memory; 0x00 User Memory
T     #arWriteTask_WR_205[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arWriteTask_WR_205[1]
L     B#16#0                    //StartAddress High Byte
T     #arWriteTask_WR_205[2]
L     B#16#4                    //StartAddress Low Byte
T     #arWriteTask_WR_205[3]
```

Write 8 bytes user data starting from address 4

TagType_WR_201 := 20
Data carrier type 20

EasyMode_WR_203 := B#16#80
EasyMode activated

ReadTask_WR_204[4] := B#16#0
Autostart switched off

WriteTask_WR_205[0] := B#16#0
Access to user data

WriteTask_WR_205[1] := B#16#8
Access to 8 bytes

WriteTask_WR_205[2] := B#16#0

WriteTask_WR_205[3] := B#16#4
Start address 4

9. Example: Error message via process data field

The IQT1-...-IO-V1 RFID head sends an error message via the process data field to the controller as soon as an error condition occurs when a read or write task is executed. The error message consists of an error code and a short description of the error, which coded in ASCII characters. At the same time, the output "O_b_Error" is set on the FB3247 "IQT1_EasyMode". The output "O_B_FrameLength" indicates the length of the error message.

The following is an example of an error message from the RFID head. A number of 4 bytes to be read in (ReadTask_WR_204[1] := B#16#4) was set. This number is not compatible with the data carriers IQC33. This data carrier type requires a multiple of 8 as the amount of data to read in. The data carrier IQC21 then placed in the detection zone. This can read with the same setting, since it requires a multiple of 4 as the amount of data to read in. The Autostart function has switched off.

```
L     20                        //TagType 20 ISO15693 compatible
T     #bt_TagType_WR_201

L     B#16#80                   //Easy Mode; 0x80 = Easy Mode; 0x00 = Expert Mode
T     #bt_EasyMode_WR_203

L     B#16#0                    //Memory; 0x00 = User Memory; 0x80 = UID
T     #arReadTask_WR_204[0]
L     B#16#4                    //Number of Bytes; 0x00 up to 0x1C
T     #arReadTask_WR_204[1]
L     B#16#0                    //StartAddress High Byte
T     #arReadTask_WR_204[2]
L     B#16#0                    //StartAddress Low Byte
T     #arReadTask_WR_204[3]
L     B#16#0                    //AutoStart; 0x00 = OFF; 0x80 = ON
T     #arReadTask_WR_204[4]

L     B#16#0                    //Memory; 0x00 User Memory
T     #arWriteTask_WR_205[0]
L     B#16#8                    //Number of Bytes; 0x00 up to 0x1C
T     #arWriteTask_WR_205[1]
L     B#16#0                    //StartAddress High Byte
T     #arWriteTask_WR_205[2]
L     B#16#0                    //StartAddress Low Byte
T     #arWriteTask_WR_205[3]
```

Read 4 bytes user data starting from address 0 without Autostart function:
TagType_WR_201 := 20
Data carrier type 20
EasyMode_WR_203 := B#16#80
EasyMode activated
ReadTask_WR_204[0] := B#16#0
Access to user data
ReadTask_WR_204[1] := B#16#4
Access to 8 bytes
ReadTask_WR_204[2] := B#16#0
ReadTask_WR_204[3] := B#16#0
Start address 0
ReadTask_WR_204[4] := B#16#0
Autostart switched off

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Initial state after device start-up; no read task active
ReadValid := False;
Active := False;
FrameLength := 0;
ReadCounter := 0;
The read job starts as soon as "StartRead" is set to True.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Read task active; no data carrier in the detection zone
StartRead := True;
ReadValid := False;
Active := True;
Error := False;
FrameLength := 0;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	true	
MB 101	"FrameLength"	DEZ	16	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier IQC33 in detection zone; error status
StartRead := True;
ReadValid := False;
Active := False;
Error := True
FrameLength := 16;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier IQC33 leaves detection zone; no error condition active

StartRead := True;
ReadValid := False;
Active := True;
Error := False
FrameLength := 0;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	
M 100.2	"ReadValid"	BOOL	true	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	4	
MW 102	"ReadCounter"	HEX	W#16#0001	
MW 104	"WriteCounter"	HEX	W#16#0000	

Data carrier IQC21 in detection zone; data read in

StartRead := True;
ReadValid := True;
Active := True;
Error := False;
FrameLength := 4;
ReadCounter := 1;

Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
16.0	stat	INDATA.ReadData[0]	BYTE	B#16#0	B#16#04
17.0	stat	INDATA.ReadData[1]	BYTE	B#16#0	B#16#69
18.0	stat	INDATA.ReadData[2]	BYTE	B#16#0	B#16#6E
19.0	stat	INDATA.ReadData[3]	BYTE	B#16#0	B#16#76
20.0	stat	INDATA.ReadData[4]	BYTE	B#16#0	B#16#61
21.0	stat	INDATA.ReadData[5]	BYTE	B#16#0	B#16#6C
22.0	stat	INDATA.ReadData[6]	BYTE	B#16#0	B#16#69
23.0	stat	INDATA.ReadData[7]	BYTE	B#16#0	B#16#64
24.0	stat	INDATA.ReadData[8]	BYTE	B#16#0	B#16#20
25.0	stat	INDATA.ReadData[9]	BYTE	B#16#0	B#16#63
26.0	stat	INDATA.ReadData[10]	BYTE	B#16#0	B#16#6F
27.0	stat	INDATA.ReadData[11]	BYTE	B#16#0	B#16#6D
28.0	stat	INDATA.ReadData[12]	BYTE	B#16#0	B#16#6D
29.0	stat	INDATA.ReadData[13]	BYTE	B#16#0	B#16#61
30.0	stat	INDATA.ReadData[14]	BYTE	B#16#0	B#16#6E
31.0	stat	INDATA.ReadData[15]	BYTE	B#16#0	B#16#64
32.0	stat	INDATA.ReadData[16]	BYTE	B#16#0	B#16#00

The error message is located in the data structure "INDATA.ReadData[]". The error code is located within the variable "ReadData[0]". In this example, the error code is B#16#04 and signals a parameter error.

Starting from element "ReadData[1]" an error text transmitted. The error text transferred in ASCII. The length of the text depends on the error.

Operand	Symbol	Anzeigef	Statuswert
DB3247.DBB 16	"EasyMode".INDATA.ReadData[0]	HEX	B#16#04
DB3247.DBB 17	"EasyMode".INDATA.ReadData[1]	ZEICHEN	'i'
DB3247.DBB 18	"EasyMode".INDATA.ReadData[2]	ZEICHEN	'n'
DB3247.DBB 19	"EasyMode".INDATA.ReadData[3]	ZEICHEN	'v'
DB3247.DBB 20	"EasyMode".INDATA.ReadData[4]	ZEICHEN	'a'
DB3247.DBB 21	"EasyMode".INDATA.ReadData[5]	ZEICHEN	'l'
DB3247.DBB 22	"EasyMode".INDATA.ReadData[6]	ZEICHEN	'i'
DB3247.DBB 23	"EasyMode".INDATA.ReadData[7]	ZEICHEN	'd'
DB3247.DBB 24	"EasyMode".INDATA.ReadData[8]	ZEICHEN	' '
DB3247.DBB 25	"EasyMode".INDATA.ReadData[9]	ZEICHEN	'c'
DB3247.DBB 26	"EasyMode".INDATA.ReadData[10]	ZEICHEN	'o'
DB3247.DBB 27	"EasyMode".INDATA.ReadData[11]	ZEICHEN	'm'
DB3247.DBB 28	"EasyMode".INDATA.ReadData[12]	ZEICHEN	'm'
DB3247.DBB 29	"EasyMode".INDATA.ReadData[13]	ZEICHEN	'a'
DB3247.DBB 30	"EasyMode".INDATA.ReadData[14]	ZEICHEN	'n'
DB3247.DBB 31	"EasyMode".INDATA.ReadData[15]	ZEICHEN	'd'
DB3247.DBB 32	"EasyMode".INDATA.ReadData[16]	HEX	B#16#00

View the error message using a variable table. The display format has changed to ASCII characters. The error text is "invalid command". This makes it clear that read access to 4 bytes of user data is not possible when using the IQC33 data carrier.

An error message also generated if both inputs "StartRead" and "StartWrite" are set simultaneously. Only one task may activated at a time.

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	false	true
M 100.1	"StartWrite"	BOOL	false	true
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Initial state after device start-up; no task active
ReadValid := False;
WriteValid := False;
Active := False;
Error := False;
FrameLength := 0;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	true	true
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	false	
M 100.5	"Error"	BOOL	true	
MB 101	"FrameLength"	DEZ	19	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Error state; read and write activated
ReadValid := False;
WriteValid := False
Active := False;
Error := True
FrameLength := 19;
ReadCounter := 0;

Operand	Symbol	Anzeigeformat	Statuswert	Steuerwert
M 100.0	"StartRead"	BOOL	true	true
M 100.1	"StartWrite"	BOOL	false	false
M 100.2	"ReadValid"	BOOL	false	
M 100.3	"WriteValid"	BOOL	false	
M 100.4	"Active"	BOOL	true	
M 100.5	"Error"	BOOL	false	
MB 101	"FrameLength"	DEZ	0	
MW 102	"ReadCounter"	HEX	W#16#0000	
MW 104	"WriteCounter"	HEX	W#16#0000	

Error condition eliminated; read task only activated
ReadValid := False;
WriteValid := False
Active := True;
Error := False;
FrameLength := 0;
ReadCounter := 0;

Adresse	Dek	Name	Typ	Anfangswert	@Aktualwert
16.0	stat	INDATA.ReadData[0]	BYTE	B#16#0	B#16#04
17.0	stat	INDATA.ReadData[1]	BYTE	B#16#0	B#16#72
18.0	stat	INDATA.ReadData[2]	BYTE	B#16#0	B#16#65
19.0	stat	INDATA.ReadData[3]	BYTE	B#16#0	B#16#61
20.0	stat	INDATA.ReadData[4]	BYTE	B#16#0	B#16#64
21.0	stat	INDATA.ReadData[5]	BYTE	B#16#0	B#16#20
22.0	stat	INDATA.ReadData[6]	BYTE	B#16#0	B#16#41
23.0	stat	INDATA.ReadData[7]	BYTE	B#16#0	B#16#4E
24.0	stat	INDATA.ReadData[8]	BYTE	B#16#0	B#16#44
25.0	stat	INDATA.ReadData[9]	BYTE	B#16#0	B#16#20
26.0	stat	INDATA.ReadData[10]	BYTE	B#16#0	B#16#77
27.0	stat	INDATA.ReadData[11]	BYTE	B#16#0	B#16#72
28.0	stat	INDATA.ReadData[12]	BYTE	B#16#0	B#16#69
29.0	stat	INDATA.ReadData[13]	BYTE	B#16#0	B#16#74
30.0	stat	INDATA.ReadData[14]	BYTE	B#16#0	B#16#65
31.0	stat	INDATA.ReadData[15]	BYTE	B#16#0	B#16#20
32.0	stat	INDATA.ReadData[16]	BYTE	B#16#0	B#16#73
33.0	stat	INDATA.ReadData[17]	BYTE	B#16#0	B#16#65
34.0	stat	INDATA.ReadData[18]	BYTE	B#16#0	B#16#74
35.0	stat	INDATA.ReadData[19]	BYTE	B#16#0	B#16#00

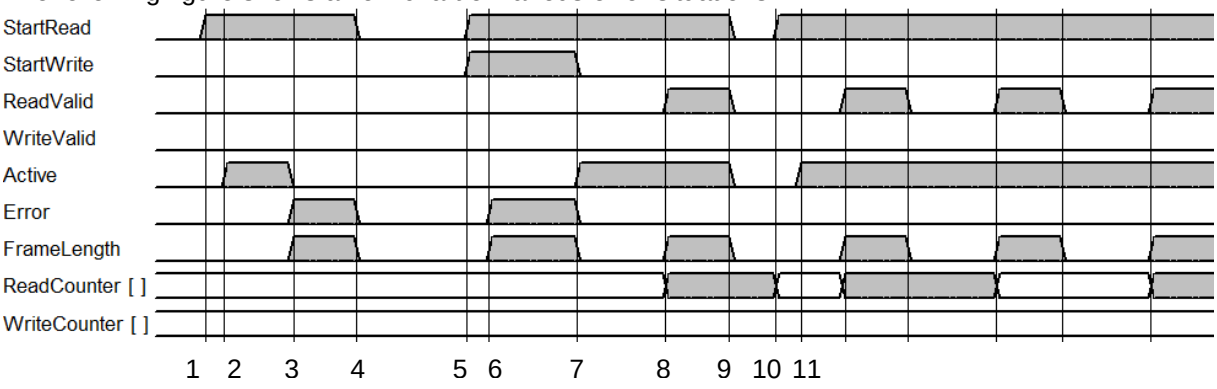
The error message is located in the data structure "INDATA.ReadData[]". The error code is located within the variable "Read-Data[0]". In this example, the error code is B#16#04 and signals a parameter error.

Starting from element "ReadData[1]" an error text is transmitted. The error text transferred in ASCII. The length of the text depends on the error.

Operand	Symbol	Anzeigeformat	Statuswert
DB3247.DBB 16	"EasyMode".INDATA.ReadData[0]	HEX	B#16#04
DB3247.DBB 17	"EasyMode".INDATA.ReadData[1]	ZEICHEN	'r'
DB3247.DBB 18	"EasyMode".INDATA.ReadData[2]	ZEICHEN	'e'
DB3247.DBB 19	"EasyMode".INDATA.ReadData[3]	ZEICHEN	'a'
DB3247.DBB 20	"EasyMode".INDATA.ReadData[4]	ZEICHEN	'd'
DB3247.DBB 21	"EasyMode".INDATA.ReadData[5]	ZEICHEN	' '
DB3247.DBB 22	"EasyMode".INDATA.ReadData[6]	ZEICHEN	'A'
DB3247.DBB 23	"EasyMode".INDATA.ReadData[7]	ZEICHEN	'N'
DB3247.DBB 24	"EasyMode".INDATA.ReadData[8]	ZEICHEN	'D'
DB3247.DBB 25	"EasyMode".INDATA.ReadData[9]	ZEICHEN	' '
DB3247.DBB 26	"EasyMode".INDATA.ReadData[10]	ZEICHEN	'w'
DB3247.DBB 27	"EasyMode".INDATA.ReadData[11]	ZEICHEN	'r'
DB3247.DBB 28	"EasyMode".INDATA.ReadData[12]	ZEICHEN	'i'
DB3247.DBB 29	"EasyMode".INDATA.ReadData[13]	ZEICHEN	't'
DB3247.DBB 30	"EasyMode".INDATA.ReadData[14]	ZEICHEN	'e'
DB3247.DBB 31	"EasyMode".INDATA.ReadData[15]	ZEICHEN	' '
DB3247.DBB 32	"EasyMode".INDATA.ReadData[16]	ZEICHEN	's'
DB3247.DBB 33	"EasyMode".INDATA.ReadData[17]	ZEICHEN	'e'
DB3247.DBB 34	"EasyMode".INDATA.ReadData[18]	ZEICHEN	't'
DB3247.DBB 35	"EasyMode".INDATA.ReadData[19]	HEX	B#16#00

View the error message using a variable table. The display format has changed to ASCII characters. The error text is "read AND write set". This makes it clear that a read and a write task controlled simultaneously.

The following figure shows a flow chart of various error situations:



Event	Significance
1	Start read task StartRead := True
2	Read task activated; no data carrier inside detection range StartRead := True; ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 0;
3	Data carrier IQC33 enters detection zone; error state StartRead := True; ReadValid := False; Active := True; Error := True; FrameLength := 16; ReadCounter := 0;
4	Read task finished StartRead := False; ReadValid := False; Active := False; Error := False; FrameLength := 0; ReadCounter := 0;
5	Start read and write task StartRead := True; StartWrite := True;
6	Read and write task activated; error message transmitted StartRead := True; StartWrite := True; Active := False; Error := True; FrameLength := 19; ReadCounter := 0;
7	Stop write task; read task still activated StartRead := True; StartWrite := False; Active := True; Error := False; FrameLength := 0; ReadCounter := 0;
8	Data carrier inside detection zone StartRead := True; ReadValid := True; Active := True; Error := False; FrameLength := 8; ReadCounter := 1;
9	Sto read task StartRead := False; ReadValid := False; Active := False; Error := False; FrameLength := 0; ReadCounter := 1;
10	Start read task StartRead := True; ReadCounter := 0;
11	Read task activated; no tag inside detection zone StartRead := True; ReadValid := False; Active := True; FrameLength := 0; ReadCounter := 0;

10. Trouble shooting

Index	Error description	Correction
1	Website of the ICE3 IO-Link Master cannot be called up	1. set the rotary switch of the ICE3 master to 0 2. factory setting IP address is 192.168.1.250 3. test connection via PING to IP address 4. otherwise setting the last 3 digits of the IP address via the coding switches 5. alternatively via Primary Setup Tool or Proneta Scan for connected devices
2	A user name and password are required when accessing the website.	1. in the factory setting, no password has been assigned for any user level 2. an admin password must be assigned for complete access to the device functions 3. To reset the password to the factory setting (i.e. no password), set the rotary switches to position 888; then switch on the power supply.
3	IQT1-...-IO-V1 correctly connected to the ICE3 IO-Link master, but no LED on the head lit.	1. Check in the menu "Diagnostics" → "IO-Link" whether the parameter "Port Mode" has the setting "IOLink" at the corresponding port (e.g. port 1). 2. If the IQT1-...-IO-V1 connection is correct, a green LED flashes every 2 seconds and a blue LED constantly and continuously (if Autostart is active).
4	No blue LED on the IQT1-...-IO-V1; only the green LED flashes.	1. the blue LED on the head indicates the execution of a read or write task 2. Check if Autostart function is active. If Autostart is deactivated, the read or write task must be started via the process output data field. 3. switching on via IO-Link parameter 204 "read task"
5	No orange LED if data carrier is within detection range	1. orange LED signals successful access to the data carrier 2. Check whether the appropriate data carrier type is set. Read out IO-Link parameter 201 and compare with data carrier list in chapter 4. 3. Check whether the number of bytes matches the block size of the data carrier. IQC33 requires a number of bytes as a multiple of 8 bytes. All other data carriers as multiples of 4
6	Writing the data carrier does not work	1. check whether the set data carrier type (parameter 201) matches the existing data carrier 2. change by parameter 201
7	Byte 0 of the input process data has the value 0x40	1. the Expert mode is active instead of the Easy mode 2. change to Easy Mode by parameter 203 "Easy Mode" with value 0x80
8	Access to the process output data field for starting write and read task is not possible.	1. an admin password must be assigned for access to the process output data field (PDO) 2. password assignment takes place in the menu "Advanced" → "Accounts 3. open the website again and log in with your admin password 4. the release must be enabled in the "Configuration" → "Misc" menu 5. The selection "Enable PDO Write" must be set to "Enable".
9	IO-Link IQT1-...-IO-V1 parameters are not displayed or cannot be changed	1. for easy access to the IO-Link parameters, the IODD file must be uploaded to the web server 2. switch to the menu "Attached Devices" → "IODD Files" for this purpose 3. select and upload the IODD file
10	The name of the IODD file highlighted in red.	1. the IODD file consists of several files including image files 2. the red mark indicates that parts of the IODD file (e.g. image file) are missing 3. Delete the old IODD file from the web server and upload the complete IODD folder again. 4. the complete.zip file can be uploaded