

JX2-PROFI1
Version Update
from V. 1.03 to V. 1.05



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1 Introduction

Version Updates - Survey			
Version	Function	upgraded	corrected
V. 1.04	Consistent data transmission	✓	
V. 1.05	Starting behavior		✓

1.1 System Requirements

GSD file as of version 1.2: JETT04F2.GSD

The up-to-date version of this file can be taken from the Service Center of the Jetter homepage <http://www.jetter.de/>.

2 Expansions

2.1 Consistent Data

2.1.1 Definitions

All registers being called **word registers** in connection with the PROFIBUS data exchange, **are 16 bits wide** (value range 0 ..65535). According to the PROFIBUS-DP standard, this data type is called "unsigned 16".

Selection between the designations "input" and "output" is always made from the "bus point of view", respectively from the perspective of the master. This means that inputs are transmitted from the slave to the master, while outputs are transmitted from the master to the slave.

2.1.2 Register Survey

Register Survey				
Reg. #	Name	Ro / RW	new	upgraded
1m100	Status register	Ro		✓
1m101	Command register	RW		✓
1m124	Number of the registers containing the consistent inputs words	RW	✓	
1m125	Number of the registers containing the consistent outputs words	RW	✓	
1m126	Start address of the consistent input words	RW	✓	
1m127	Start address of the consistent output words	RW	✓	
1m128	Address of the consistent input words	RW	✓	
1m129	Address of the consistent output words	RW	✓	
1m134	Error number	Ro		✓

2.1.3 Register Description

Register 1m100: Status Register	
Function	Description
Read	Actual module status
Write	Illegal
Value range	Bit-coded, 24 bits
Value after reset	1

Meaning of the new bits:

Bit 8: Status of the consistent input words
 0: Initial state or input words are transmitted
 1: Input words have been transmitted completely

Bit 9: Status of the consistent output words
 0: Initial state or output words are received
 1: Output words have been received completely

Register 1m101: Command Register	
Function	Description
Read	Command carried out last
Write	New command
Value range	0 .. 255
Value after reset	0

New Commands:

15 :	Transmit consistent input words
16 :	Receive consistent output words

Register 1m124: Amount of Registers containing the Consistent Inputs Words	
Function	Description
Read	Present amount
Write	New amount
Value range	0 .. 122
Value after reset	0

In this register, the size of the register range for the consistent data is specified.

The sum of the values of register 1m124 and 1m128 cannot become greater than the value of register 1m102.

The sum of the values of register 1m124 and 1m126 cannot become greater than 999.

In order to safeguard the consistency on the master-end, the master must be configured adequately by means of the respective configuration program. In this case, it is important for the consistent data range to be located within **one** consistent input module only. These are designated as `INPUT (consistent): xx words`.

While writing into the register, the module checks for the status of the buffer configuration. This might possibly cause an error message and clear bit 0 in the status register. The duration of the check-up depends on the configuration and might therefore delay the process carried out by the application program.

After having initialized the module by writing the station address, this register cannot be written into any more. The values entered after this will be rejected.

Register 1m125: Amount of Registers containing the Consistent Outputs Words	
Function	Description
Read	Present amount
Write	New amount
Value range	0 .. 122
Value after reset	0

In this register, the size of the register range for the consistent data is specified.

The sum of the values of register 1m125 and 1m129 cannot become greater than the value of register 1m103.

The sum of the values of register 1m125 and 1m127 cannot become greater than 999.

In order to safeguard the consistency on the master-end, the master must be configured adequately by means of the respective configuration program. In this case, it is important for the consistent data range to be located within **one** consistent output module only. These are designated as `OUTPUT (consistent): xx words`.

While writing into the register, the module checks for the status of the buffer configuration. This might possibly cause an error message and clear bit 0 in the status register. The duration of the check-up depends on the configuration and might therefore delay the process carried out by the application program.

After having initialized the module by writing the station address, this register cannot be written into any more. The values entered after this will be rejected.

Register 1m126: Start Address of the Consistent Input Words
--

Function	Description
Read	Actual start address
Write	New start address
Value range	300 .. 999
Value after reset	500

In this register, the start register number of the register range for the consistent data is specified.

While writing into the register, the module checks for the status of the buffer configuration. This might possibly cause an error message and clear bit 0 in the status register. The duration of the check-up depends on the configuration and might therefore delay the process carried out by the application program.

After having initialized the module by writing the station address, this register cannot be written into any more. The values entered after this will be rejected.

Register 1m127: Start Address of the Consistent Output Words	
Function	Description
Read	Actual start address
Write	New start address
Value range	300 .. 999
Value after reset	600

In this register, the start register number of the register range for the consistent data is specified.

While writing into the register, the module checks for the status of the buffer configuration. This might possibly cause an error message and clear bit 0 in the status register. The duration of the check-up depends on the configuration and might therefore delay the process carried out by the application program.

After having initialized the module by writing the station address, this register cannot be written into any more. The values entered after this will be rejected.

Register 1m128: Address of the Consistent Input Words	
Function	Description
Read	Actual address
Write	New address
Value range	0 .. 122
Value after reset	0

In this register, the address of the consistent data which are within the range of the PROFIBUS data is specified.

While writing into the register, the module checks for the status of the buffer configuration. This might possibly cause an error message and clear bit 0 in the status register. The duration of the check-up depends on the configuration and might therefore delay the process carried out by the application program.

After having initialized the module by writing the station address, this register cannot be written into any more. The values entered after this will be rejected.

Register 1m129: Address of the Consistent Output Words	
Function	Description
Read	Actual address
Write	New address
Value range	0 .. 122
Value after reset	0

In this register, the address of the consistent data which are within the range of the PROFIBUS data is specified.

While writing into the register, the module checks for the status of the buffer configuration. This might possibly cause an error message and clear bit 0 in the status register. The duration of the check-up depends on the configuration and might therefore delay the process carried out by the application program.

After having initialized the module by writing the station address, this register cannot be written into any more. The values entered after this will be rejected.

Register 1m134: Error Number	
Function	Description
Read	Latest error number
Write	Illegal
Value range	0 .. 255
Value after reset	0

New Error Numbers:

3 :	The input or output ranges of the acyclic services have not been configured correctly. Either an invalid length has been defined, or the start address is not permitted, or the ranges overlap.
12 :	The input or output ranges for the consistent data have not been configured correctly. Either an invalid length has been defined, or the start address is not permitted, or the ranges overlap.

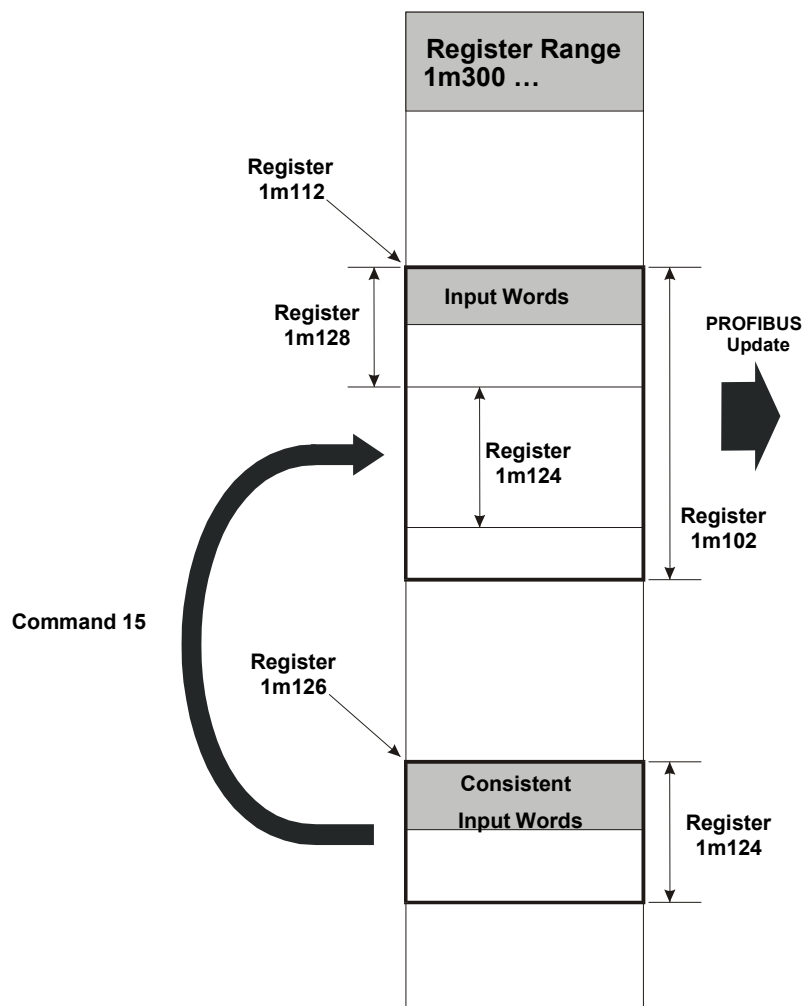
2.1.4 Process Flow

For each consistent data exchange, a separate register range has been made available. This is defined via the start address (1m126, respectively 1m127) and the amount of registers (1m124, respectively 1m125).

By means of the address (1m128, respectively 1m129), the consistent range within the PROFIBUS frame can be selected.

Input Data:

At command 15, the module copies the data out of the consistent input words into the PROFIBUS input word range. They will be transmitted to the master by the next PROFIBUS cycle. During the copying process, bit 8 of the status register is set to 0. Not before bit 8 has been reset to 1, new input data are allowed to be written into the registers.



Comment:

For the sake of consistency, there is no writing access to the range of input words that is to be overwritten by the consistent input words.

Example:

```
; one-time initializing
REGISTER_LOAD (12102, 16) ; number of input words
```

```

REGISTER_LOAD (12112, 300)      ; start address of the input words

REGISTER_LOAD (12126, 500)      ; start address of the consistent data
REGISTER_LOAD (12124, 4)        ; number of consistent data
REGISTER_LOAD (12128, 8)        ; address of the consistent data in the

;   PROFIBUS frame

; Program flow
COPY (4, 1000, 12500)           ; write into consistent data registers
REGISTER_LOAD (12101, 15)       ; copy the consistent input data
WHEN                             ; wait until ...
    BIT_SET (12100, 8)          ; ... the copying processed is completed
THEN

```

Register assignment after initializing:

12300 through 12315 16 PROFIBUS input words
 12500 through 12503 4 consistent PROFIBUS input words

The matching PROFIBUS frame is made up as follows:

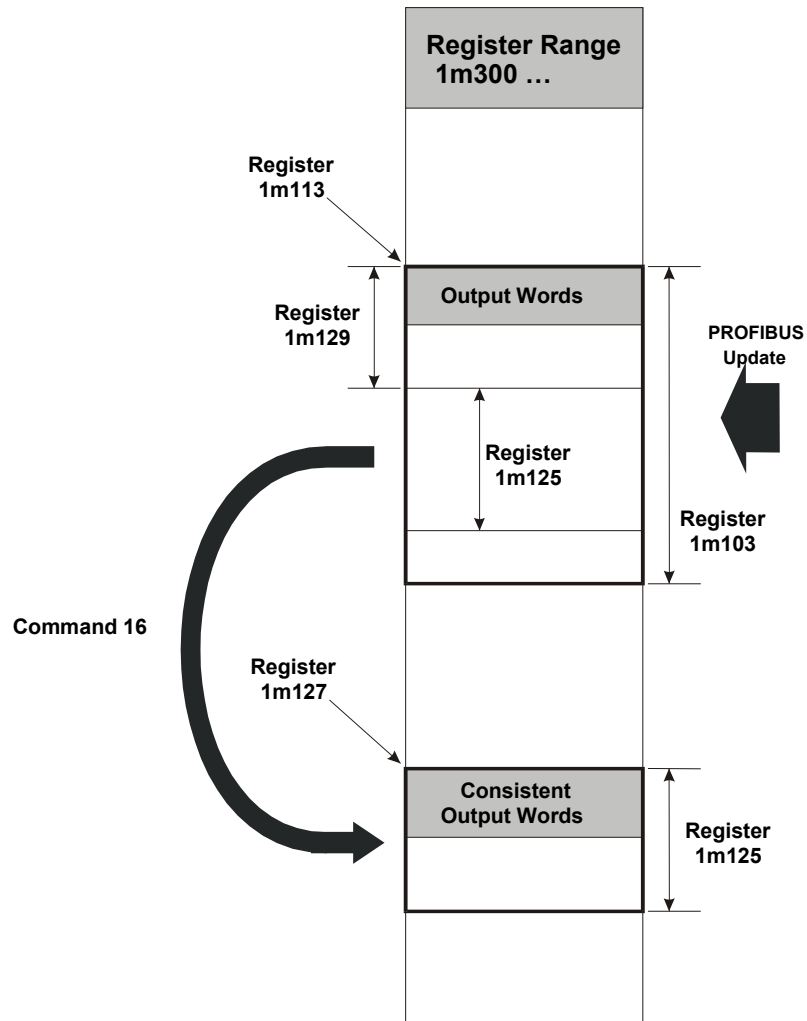
8 words not consistent								4 words consistent				4 words not consistent			
0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

By means of command 15, registers 12500 through 12503 are copied into registers 12308 through 12311. During the following cycle, they are transferred to the master completely.

Registers 12308 through 12311 must not be accessed by writing, as consistency would not be guaranteed in this case.

Output Data:

At issuing command 16, the module will copy the data received by the PROFIBUS master last into the registers of the consistent output words. During the copying process, bit 9 of the status register is set to 0. When the data stored to the registers of the consistent output words are valid, bit 9 is set to 1. While copying is in process, new data will not be accepted by the master; thus, the output words will not be updated.

**Example:**

```

; one-time initializing
REGISTER_LOAD (12103, 12)           ; number of output words
REGISTER_LOAD (12113, 400)         ; Start address of the output words

REGISTER_LOAD (12127, 600)         ; start address of the consistent data
REGISTER_LOAD (12125, 8)           ; number of consistent data
REGISTER_LOAD (12129, 4)           ; address of the consistent data in the
; PROFIBUS frame
; Program run
REGISTER_LOAD (12101, 16)         ; copy the consistent output data
WHEN BIT_SET (12100, 9)           ; wait until ...
THEN                               ; ... the copying processed is completed
COPY (8, 12600, 1100)             ; read out of the consistent data
registers

```

Register assignment after initializing:

12400 through 12411 12 PROFIBUS output words
 12600 through 12607 8 consistent PROFIBUS output words

The matching PROFIBUS frame is made up as follows:

4 words not consistent				8 words consistent							
0	1	2	3	4	5	6	7	8	9	10	11

By means of command 16, registers 12404 through 12411 are copied to registers 12600 through 12607.

Registers 12404 through 12411 can now be used directly as well. These registers always contain the latest data of the master. Yet, they are not consistent, as a new PROFIBUS frame might be received, the content of which could overwrite the contents of the registers.

3 Eliminated Software Bugs

3.1 Starting Behavior

If, at the beginning of the application program, JX2-PROFI1 is accessed, a slave module timeout is generated in the controller.

Up to version 1.04, the module would not be responsive after this any more, which meant that the system had to be re-started.

As of version 1.05, the module will remain responsive. A slave module timeout is generated in the controller. The module ignores the first access. Further accesses function properly again. The system need not be re-started.

Remedy:

the JX2-PROFI1 module must not be accessed immediately. On the contrary, a delay of at least 100 ms must expire before the first access. After this, the module can be used as usual.