

**JX2-CNT1**  
**Version Update**  
**from V. 2.09 to V. 2.11**



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# 1 Introduction

Version Updates - Survey			
Version	Functions	upgraded	corrected
V 2.11	Frequency measurement	✓	
	Register <a href="#">3xx8</a> "Filter frequency"	✓	
	Master-Slave operation	✓	
	Register <a href="#">3xx3</a> "Status of the dual-channel counter"	✓	

## 2 Expansions

### 2.1 Frequency Measurement

For the dual-channel counter, frequency measuring has been implemented. Frequency measuring is always carried out in the background. The display of the frequency values is deactivated by setting bit 15 in register 3xx3 "Status/Control register".

If the display is active, the frequency can be read in register 3xx0, while the time base for determining the frequency can be read and changed in register 3xx1. If the display has been deactivated, registers 3xx0 and 3xx1 have their original contents again.

<b>Register 3xx3 Bit 15 = 0</b>	
<b>Register 3xx0: Count of Dual-Channel Counter</b>	
Functions	Description
Read	Maximum count of dual-channel counter
Write	New count of dual-channel counter
Value range	- 8,388,608 ... +8,388,607 (increments)
Value after reset	0

<b>Register 3xx3 Bit 15 = 1</b>	
<b>Register 3xx0: Frequency of the Dual-Channel Counter</b>	
Functions	Description
Read	Actual frequency of the dual-channel counter
Write	Illegal
Value range	- 8,388,608 ... +8,388,607 (increments / time base)
Value after reset	0

The frequency is calculated by the following formula:

$$\text{Register } 3xx0 = \frac{\text{Counter Value}_n - \text{Counter Value}_{n-1}}{\text{Register } 3xx1 \times 10 \text{ ms}}$$

Value Counter Value<sub>n-1</sub> is acquired by value Register 3xx1 × 10 ms earlier than value Counter Value<sub>n</sub>

<b>Register 3xx3 Bit 15 = 0</b>	
<b>Register 3xx1: Offset Value of Dual-Channel Counter</b>	
Functions	Description
Read	Present offset value of dual-channel counter
Write	New offset value of dual-channel counter
Value range	- 8,388,608 ... +8,388,607 (increments)
Value after reset	0

<b>Register 3xx3 Bit 15 = 1</b>	
<b>Register 3xx1: Time Base for the Frequency of the Dual-Channel Counter</b>	
Functions	Description
Read	Actual time base for measuring the frequency of the dual-channel counter
Write	New time base value for measuring the frequency
Value range	1 ... 255 (10 ms)
Value after reset	10 (=100 ms)

The time base can be set to a multiple of 10 ms. For value 1, this means: As a frequency, the number of increments is displayed, which have been counted within 10 ms.

### Example

For the first JX2-CNT1 module after the CPU, the speed is to be read by a time base of 1 second.

```

...
BIT_SET (3003, 15)           // Activating the
                             // frequency register
                             // access

REGISTER_LOAD (3001, 100)    // Set the time base to 1
                             // second

BIT_CLEAR (3003, 15)        // Deactivating the
                             // frequency register
                             // access

...
BIT_SET (3003, 15)           // Activating the
                             // frequency register
                             // access

WHEN REG 3000 > 1000 THEN    // Wait for a speed > 1000
                             // increments per second
                             // to be reached

...

```

## 2.2 Register 3xx8 "Filter Frequency"

The value range of the filter frequency for the dual channel counter has been changed.

Register 3xx8: Filter Frequency	
Functions	Description
Read	Actual value of the filter frequency
Write	New value of filter frequency
Value range	0: No filter frequency 192: $f_{nutz} = 1 \text{ MHz}$ ... 32,704: $f_{nutz} = 7,812.5 \text{ Hz}$
Value after reset	0

The smallest frequency that can be set has been incremented from 3,906.25 Hz to 7,812.5 Hz; this means that the highest permitted value for this register is 32,704 and not 65,472 any more.

The formula for determining the values that must be entered here for the respective frequencies, has *not* changed; please refer to the JX2-CNT1 manual.

## 2.3 Register 3xx3 "Status of the Dual-Channel Counter"

The status register has been expanded to become a status/control register for the dual-channel counter. Two new controller bits for activating and deactivating functions have been implemented.

Further, a new status bit has been added.

Register 3xx3: Status / Controller	
Functions	Description
Read	Actual status, respectively controller information
Write	Setting, respectively resetting, of bits 14 – 15 and resetting of bits 0, 4, and 6.
Value range	0 ... 23
Value after reset	0

During writing, Bits 0, 4, and 6 are automatically reset, no matter, whether they had been pre-set for writing or not.

- Bit 0: Counter value is strobed
- Bit 3: Counter is set to zero
- Bit 4: Strobing value is overwritten  
(Strobing signal before reset of strobe message)
- Bit 6\*: The zero-crossings are disturbed (simultaneous changeover between K1 and K2), or else, the speed is too high (only if input filters are active)
- Bit 14\*: Selection of the actual position "Type of Transmission"  
0 = The actual position is not synchronized

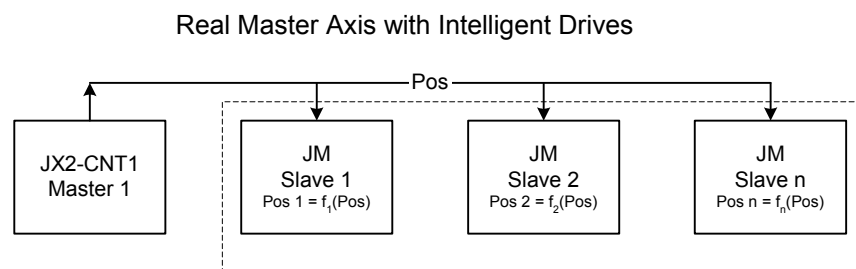
- 1 = The actual position has been synchronised  
 - Bit 15\*: Activating, respectively deactivating, the frequency display:  
 0 = The frequency display is deactivated  
 1 = The frequency display is activated

\* New Bits

## 2.4 Master-Slave Operation

The JX2-CNT1 can already be applied with JX2-SV1 or CAN-DIMA modules, for example, as masters in master-slave operation. In this case, the actual position value of the dual-channel counter is transmitted to one or more than one axis modules at the system bus.

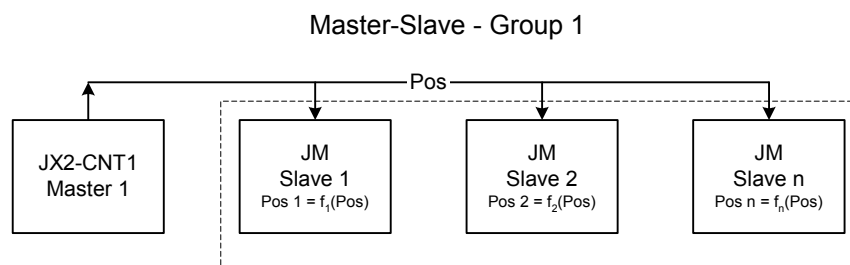
As of this version, the JX2-CNT1 can also be used as a motion master for JetMove 200. In this case, the JX2-CNT1 transmits its position to one or more than one JetMove 200. In this case, the JX2-CNT1 module is automatically set as time master. This is a default setting.



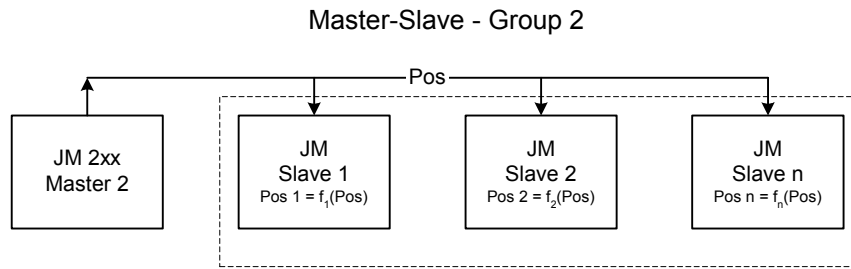
**Fig. 1** Fehler! Es wurde keine Folge festgelegt.: **Example of master-slave operation with JetMove 200 and JX2-CNT1 as motion masters**

In master-slave operation with JetMove 200, there can be two master-slave groups. Within one group, there is only one motion master and one or more than one motion slaves. Among all groups, there may only be one time master. This means that only one JX2-CNT1 module can be used in one group of system busses in master-slave operation, as this will automatically be the time-master. If another master-slave group is needed, a JetMove 200 can be used. This is set for the second group as a motion master (e.g. as master number 2). Yet, this motion master must not be set as a time-master. The motion slaves must also be assigned corresponding to their motion master.

For further explanations regarding master-slave operation in connection with JetMove 200, please refer to the documents "jm2xx\_at\_the\_nano\_bi\_2034\_user\_information.pdf", respectively "jm2xx\_at\_jetcontrol\_bi\_2043\_user\_information.pdf".







**Fig. 2 Fehler! Es wurde keine Folge festgelegt.: Example of master-slave operation with JetMove 200 and two master-slave groups**

By means of bit 14 of register 3xx3 "Status / Control Register", the JX2-CNT1 module can be set to functioning either in the conventional master-slave operation or in connection with JetMove 200.

Transmitting the actual position value to the system bus in master-slave operation of JetMove 200 is activated as in the conventional master-slave operation by setting the virtual output 3 of the module.

For conventional master-slave operation, register 3xx5 has got another meaning as for operation by JetMove 200.

<b>Register 3xx3 Bit 14 = 0</b>	
<b>Register 3xx5: Transmitting Rate of the Actual Position</b>	
Functions	Description
Read	Present value of the transmitting rate
Write	New value of transmitting rate
Value range	0 ... 5 (ms) At value 0, transmission is carried out as quickly as possible: approximately 250 µsec.
Value after reset	0

<b>Register 3xx3 Bit 14 = 1</b>	
<b>Register 3xx5: Master Number</b>	
Functions	Description
Read	Actual master number
Write	Set master number
Value range	0, 1 ... 2 (master number) At 0, transmission is not active, even if a virtual output 3 has been set.
Value after reset	0

**Example**

The first JX2-CNT1 module after the CPU is used as motion master of master number 1 in master-slave operation by JetMove 200.

```
...  
BIT_SET (3003, 14)           // Setting the master-  
                             slave operation by  
                             JetMove 200  
  
REGISTER_LOAD (3005, 1)     // Define the CNT module  
                             to be motion master  
                             number 1  
  
OUT 203                     // Activate transmitting  
                             the value of the actual  
                             position to the system  
                             bus  
  
...
```