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# **Next Generation System NGQX CanOpen Slave Reference Manual**

**Can Open Slave**

*Revision 1.00.00*

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# 1 General

The NGQx control can be used as Slave CanOpen DS301-DS401.

In this document there are all CANOPEN objects available to a master CanOpen.

This document doesn't explain CANOPEN and its operation, we assume that technical words included in this document are understandable to the reader.

Eventually refer to CIA documents.

## 2 Object list (DS301)

| INDEX/Subindex | R/W | Nbit | Default | Description     |                             |
|----------------|-----|------|---------|-----------------|-----------------------------|
| 0x1000         | 0   | RO   | 8       | 0               | Device type                 |
| 0x1002         | 0   | RO   | 32      |                 | Manufacturer status reg.    |
| 0x100A         | 0   | RO   | 32      |                 | Version                     |
| 0x1400         | 0   | RO   | 8       | 2               | RX-PDO1 - N.entry           |
|                | 1   | RW   | 32      | 0x200+node      | RX-PDO1 - COB-ID            |
|                | 2   | RW   | 8       | 255             | RX-PDO1 - Transmission type |
| 0x1401         | 0   | RO   | 8       | 2               | RX-PDO2 - N.entry           |
|                | 1   | RW   | 32      | 0x300+node      | RX-PDO2 - COB-ID            |
|                | 2   | RW   | 8       | 255             | RX-PDO2 – Transmission type |
| 0x1402         | 0   | RO   | 8       | 2               | RX-PDO3 - N.entry           |
|                | 1   | RW   | 32      | 0x400+node      | RX-PDO3 - COB-ID            |
|                | 2   | RW   | 8       | 255             | RX-PDO3 - Transmission type |
| 0x1403         | 0   | RO   | 8       | 2               | RX-PDO4 - N.entry           |
|                | 1   | RW   | 32      | 0x500+node      | RX-PDO4 - COB-ID            |
|                | 2   | RW   | 8       | 255             | RX-PDO4 - Transmission type |
| 0x1800         | 0   | RO   | 8       | 5               | TX-PDO1 - N.entry           |
|                | 1   | RW   | 32      | 0x180+node      | TX-PDO1 - COB-ID            |
|                | 2   | RW   | 8       | 255             | TX-PDO1 - Transmission type |
|                | 3   | RW   | 16      | 0               | TX-PDO1 - Inhibit time      |
|                | 4   | RW   | 8       | 0               | Don't use                   |
|                | 5   | RW   | 16      | 0               | TX-PDO1 - Event time        |
| 0x1801         | 0   | RO   | 8       | 5               | TX-PDO2 - N.entry           |
|                | 1   | RW   | 32      | 0x80000280+node | TX-PDO2 - COB-ID            |
|                | 2   | RW   | 8       | 255             | TX-PDO2 - Transmission type |
|                | 3   | RW   | 16      | 0               | TX-PDO2 - Inhibit time      |
|                | 4   | RW   | 8       | 0               | Don't use                   |
|                | 5   | RW   | 16      | 0               | TX-PDO2 - Event time        |
| 0x1802         | 0   | RO   | 8       | 5               | TX-PDO3 - N.entry           |
|                | 1   | RW   | 32      | 0x80000380+node | TX-PDO3 - COB-ID            |
|                | 2   | RW   | 8       | 255             | TX-PDO3 - Transmission type |
|                | 3   | RW   | 16      | 0               | TX-PDO3 - Inhibit time      |
|                | 4   | RW   | 8       | 0               | Don't use                   |
|                | 5   | RW   | 16      | 0               | TX-PDO3 - Event time        |
| 0x1803         | 0   | RO   | 8       | 5               | TX-PDO4 - N.entry           |
|                | 1   | RW   | 32      | 0x80000380+node | TX-PDO4 - COB-ID            |
|                | 2   | RW   | 8       | 255             | TX-PDO4 - Transmission type |
|                | 3   | RW   | 16      | 0               | TX-PDO4 - Inhibit time      |
|                | 4   | RW   | 8       | 0               | Don't use                   |
|                | 5   | RW   | 16      | 0               | TX-PDO4 - Event time        |
| 0x2000         | 0   | RO   | 17      | 9               | Parameters axes X           |
|                | 1   | RW   | 32      | 100             | VMAX – pulse/mS             |
|                | 2   | RW   | 16      | 200             | ACC – mS                    |
|                | 3   | RW   | 16      | 200             | DEC – mS                    |
|                | 4   | RW   | 32      | 50              | VEL – pulse/mS              |
|                | 5   | RW   | 32      | 0x3FFFFFFF      | SERVOE – pulse              |
|                | 6   | RW   | 16      | 10              | KP                          |
|                | 10  | RW   | 16      | 0               | KV                          |
|                | 11  | RW   | 16      | 64              | DIVISOR                     |
|                | 13  | RW   | 32      | 0               | TARGET                      |
|                | 14  | RW   | 32      | 0               | KI                          |
|                | 15  | RW   | 32      | 1               | MSOF                        |
|                | 16  | RW   | 32      | 1               | DSOF                        |
|                | 17  | RW   | 32      | 0               | ANALOG DIR                  |
| 0x2001         | 0   | RO   | 8       | 5               | Data axes X                 |
|                | 1   | RO   | 32      |                 | COUNTX                      |

|        |    |    |      |            |   |
|--------|----|----|------|------------|---|
|        | 2  | RO | 32   |            | POSA                                      |
|        | 3  | RO | 32   |            | ERRP                                      |
|        | 4  | RO | 16   |            | STATE                                     |
| 0x2002 | 0  | WO | 8/40 |            | Commands axes X                           |
| 0x2003 | 0  | RW | 32   | 0          | Target position X                         |
| 0x2100 | 0  | RO | 17   | 6          | Parameters axes Y                         |
|        | 1  | RW | 16   | 100        | VMAX – pulse/mS                           |
|        | 2  | RW | 16   | 200        | ACC – mS                                  |
|        | 3  | RW | 16   | 200        | DEC – mS                                  |
|        | 4  | RW | 32   | 50         | VEL – pulse/mS                            |
|        | 5  | RW | 32   | 0x3FFFFFFF | SERVOE – pulse                            |
|        | 6  | RW | 16   | 10         | KP  |
|        | 7  | RW | 32   | 1          | PARA 6                                    |
|        | 8  | RW | 32   | 1          | PARA 7                                    |
|        | 9  | RW | 32   | 0          | PARA 8                                    |
|        | 10 | RW | 16   | 0          | KV  |
|        | 11 | RW | 16   | 64         | PARA 10                                   |
|        | 12 | RW | 32   | 0          | PARA 11                                   |
|        | 13 | RW | 32   | 0          | TARGET                                    |
|        | 14 | RW | 32   | 0          | KI  |
|        | 15 | RW | 32   | 1          | MSOF                                      |
|        | 16 | RW | 32   | 1          | DSOF                                      |
|        | 17 | RW | 32   | 0          | ANALOG_DIR                                |
| 0x2101 | 0  | RO | 8    | 5          | Data axes X                               |
|        | 1  | RO | 32   |            | COUNTX                                    |
|        | 2  | RO | 32   |            | POSA                                      |
|        | 3  | RO | 32   |            | ERRP                                      |
|        | 4  | RO | 16   |            | STATE                                     |
| 0x2102 | 0  | WO | 8/40 |            | Commands axes Y                           |
| 0x2103 | 0  | RW | 32   | 0          | Target position Y                         |
| 0x3040 | 0  | RO | 4    | 1          | General Parameters                        |
|        | 1  | RW | 8    | (nodo-1)&7 | Byte PDO output                           |
|        | 2  | RW | 16   | 0          | Sync time-out                             |
|        | 3  | RW | 8    | 0          | TXPDO1_MODE (it can be write only with 1) |
|        | 4  | RW | 8    | 0          | Enable 12 bit adc read                    |
| 0x3041 | 0  | RO | 1    | 1          | Filter adc                                |
|        | 1  | RW | 16   | 1          | Filter time in step of 5mSec (1-119)      |
| 0x6100 | 0  | RO | 8    | 1          | Number of digital Inputs x 16             |
|        | 1  | RO | 16   |            | Inputs 1-16                               |
| 0x6200 | 0  | RO | 8    | 1          | Numbe of digital Outputs x8               |
|        | 1  | RW | 8    |            | Outputs 1-8                               |
| 0x6206 | 0  | RO | 8    | 1          |   |
|        | 1  | RW | 8    | 0          | Outputs error mask                        |
| 0x6207 | 0  | RO | 8    | 1          |   |
|        | 1  | RW | 8    | 0          | Outputs error state                       |
| 0x6401 | 0  | RO | 8    | 1          | Number of analog Inputs                   |
|        | 1  | RO | 16   |            | Analog Input                              |
| 0x6411 | 0  | RO | 8    | 2          | Number of analog Outputs                  |
|        | 1  | RW | 16   |            | Analog Output 1 (X)                       |
|        | 2  | RW | 16   |            | Analog Output 2 (Y)                       |



|          |  |  |  |  |  |  |  |
|----------|--|--|--|--|--|--|--|
| 0x2102.0 |  |  |  |  |  |  |  |
|----------|--|--|--|--|--|--|--|

## 5 Axes Command

| Comando (D0) |             | D1 | D2        | D3 | D4 | D5 | D6 | D7 |                              |                |
|--------------|-------------|----|-----------|----|----|----|----|----|------------------------------|----------------|
| 1            | CMD_ENABLE  |    |           |    |    |    |    |    | Axes enable (reset position) |                |
| 2            | CMD_DISABLE |    |           |    |    |    |    |    | Axes diable                  |                |
| 4            | CMD_SETRELE |    |           |    |    |    |    |    | Set enable relay             |                |
| 5            | CMD_RESRELE |    |           |    |    |    |    |    | Reset enablerelay            |                |
| 6            | CMD_PRESET  |    | Quota     |    |    |    |    |    |                              | Reset position |
| 7            | CMD_SETACK  |    |           |    |    |    |    |    | Reset ACK bit                |                |
| 8            | CMD_ENABLEN |    |           |    |    |    |    |    | Axes enable (no reset pos)   |                |
| 9            | CMD_RESET   |    |           |    |    |    |    |    | Reset position               |                |
| 11           | CMD_APOS    |    | Posizione |    |    |    |    |    |                              | Absolute move  |
| 12           | CMD_RPOS    |    | Posizione |    |    |    |    |    |                              | Relative move  |
| 13           | CMD_STOP    |    |           |    |    |    |    |    | Stop with deceleration       |                |
| 16           | CMD_STOPI   |    |           |    |    |    |    |    | Immediate Stop               |                |
| 19           | CMD_APOST   |    |           |    |    |    |    |    | Absolute move at target pos. |                |
| 20           | CMD_RPOST   |    |           |    |    |    |    |    | Relative move at target pos. |                |
| 21           | CMD_PRESETT |    |           |    |    |    |    |    | Preset a target pos.         |                |
| 33           | CMD_ACQON   |    |           |    |    |    |    |    | Enable/reset Fast Acq        |                |
| 34           | CMD_ACQOFF  |    |           |    |    |    |    |    | Disable Fast Acq (default)   |                |

### Stato asse

| B0  | B1   | B2    | B3     | B4   | B5   | B6     | B7     |
|-----|------|-------|--------|------|------|--------|--------|
| ACK | MOVE | ERROR | ENABLE | AXEL | SYNC | ACQ_UP | ACQ_DN |

### Manufacturer status reg.

| BYTE 0       | BYTE 1       | BYTE 2 | BYTE 3            |
|--------------|--------------|--------|-------------------|
| STATE_AXIS_A | STATE_AXIS_B | 0      | bit 7 = STATO NMT |

### Input digitali

| B0 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | B8 | B9 | B10 | B11 | B12 | B13 | B14 | B15 |
|----|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| I0 | I1 | I2 | I3 | I4 | I5 | I6 | I7 |    |    | F0  | F1  | I8  | I9  | I10 |     |

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