# User's Manual

# Anybus Protocol


Manual Code: MB00101E00 V_1.7

# SUMMARY

**The Anybus-CompactCom software interface is designed to be network protocol independent, allowing the drive to support all major networking systems using the same software driver, without loss of functionality.**
**The typical role of a network interface is to exchange information in different ways:**

- Acyclical data management **= generally these are slowly configuration messages. The available communication objects are taken from Modbus Dictionary Object.**
- Diagnostic messages **= these are particular messages produced when an alarm appears or disappears**
- Cyclic exchanging **= consists of few data (maximum 10 words) exchanged frequently (from 1ms cycle). It's possible to map the desired objects referring to those found in the CAN Dictionary, indicating the Index and Subindex**

# 1 ANYBUS- COMPACTCOM CONFIGURATION

## 1.1 NODE CONFIGURATION

To enable the manage of Anybus-CompactCom module, set connection **C64=3**

With OPDExplorer it's possible to set the following parameters:

| Name | Description |
|---|---|
| **NODE_SLAVE_ADDR** | **device address** |
| **NODE_BAUDRATE** | **communication baud rate (network depending)** |
| **DATA_CONSISTANCE** | **consistency of the data exchanged** |
| **EN_BIG_ENDIAN** | with this representation the first byte transmitted is the most significant |

**Ethernet configuration:**

| | |
|---|---|
| **IP_ADDR** | IP Address , default = 192.168.0.1 |
| **SUBNET_MASK** | Subnet Mask, default = 255.255.255.0 |
| **GATEWAY** | Gateway, default = 0.0.0.0 |
| **DHCP** | DHCP, default = 1 (enabled) |

**And to see the node state:**

| | |
|---|---|
| **ANYBUS_EN** | **Anybus module presents and enabled (C64=3)** |
| **ANYBUS_STATE** | **Fieldbus node state:**<br><br>**SETUP = Anybus Setup in progress**.<br><br>**NW_INIT = The Anybus module is currently performing**<br><br>**network-related initialisation tasks.**<br><br>**WAIT_PRCS = The network Process Data channel is temporarily inactive**<br><br>**IDLE = The network interface is idle. The exact interpretation of this state is network specific.**<br><br>**PRCS_ACT= The network Process Data channel is active and error free.**<br><br>**ERROR = There is at least one serious network error** |

**After executing configuration:**

**• Save the data in FLASH (C63=1)**
**• Turn the drive off and on.**

# 2 ACYCLICAL DATA MANAGEMENT

**With acyclical data management it's possible read and write objects form the following Modbus Dictionary Object. Access is always made with one word register at time, if the internal objects is 32 bits long it's necessary to execute two consecutive access, taking into account the little-endian internal representation.**

## 2.1 MODBUS DICTIONARY

| ADI (hex) | Name | Description | Access |
|---|---|---|---|
| **0 ÷ C7** | **Tab_par** | **Actual values of the parameters** | **reading/writing** |
| **C8 ÷ 12B** | **Tab_con** | **Actual values of the connection** | **reading/writing** |
| **12C ÷ 190** | **Tab_dati_applicazione** | **Actual values of the application parameters** | **reading/writing** |
| **200** | **stato** | **Variable of the drive's status** | **reading** |
| **202** | **allarmi** | **Drive alarms' status** | **reading** |
| **203** | **abilitazione_allarmi** | **Word for enabling drive's alarms** | **reading** |
| **206 ÷ 216** | **Tab_codice_allarmi** | **Alarm subcodes table** | **reading** |
| **2C0** | **f_fieldbus** | **Speed reference in % of $n_{MAX}$ in 16384** | **reading/writing** |
| **2C1** | **limit_fieldbus** | **torque limit in % di Tnom in 4095** | **reading/writing** |
| **2C2** | **trif_fieldbus** | **torque reference in % di Tnom in 4095** | **reading/writing** |
| **2C3 ÷ 2C4** | **quota_att** | **Actual position** | **reading** |
| **2C5** | **ingressi** | **Logical status of the 8 inputs of the terminal board** | **reading** |
| **2C7** | **uscite_hw** | **Logical status of the 4 digit outputs** | **reading** |
| **300 ÷ 301** | **Inp_dig** | **Reading inputs logical functions** | **reading** |
| **320 ÷ 321** | **Out_dig** | **Reading standard outputs logical functions** | **reading** |
| **340÷ 341** | **Out_dig_appl** | **Reading application outputs logical functions** | **reading** |
| **360 ÷ 361** | **Inp_dig_field** | **Writing inputs logical functions** | **writing** |
| **380 ÷ 400** | **Tab_int** | **Actual values of the internal data** | **reading** |
| **C00 ÷ C64** | **Tab_osc** | **Actual values of the monitor data** | **reading** |
| **B00 ÷ B27** | **tabProcessData** | **Process data address** | **reading/writing** |
| **B60 ÷ B69** | **Dati_processo_Rx** | **Received process data** | **reading/writing** |
| **B80 ÷ B89** | **Dati_processo_Tx** | **Transmitted process data** | **reading** |
| **2000 ÷ 2FA0** | **Area applicativa** | **Application data available** | **reading/writing** |

**The correspondence between the internal objects ADI (Application Data Object) and physical addresses depends on the fieldbus used. Please refer to specific fieldbus paragraph.**

# 3 DIAGNOSTIC MESSAGES

**This service provides a standardized way of reporting diagnostic events to the network. Exactly how this is represented on the network differs.The event code created is processed by the Anybus module, to transfer correct network-specific information about the event to the network used:**

| Event codes | Description | OPDE alarms |
|---|---|---|
| **0x23** | **Current, device output side** | **A0 , A3 e A6** |
| **0x32** | **Voltage inside the device** | **A10 e A11** |
| **0x40** | **Temperature** | **A05** |
| **0x50** | **Device Hardware** | **A1, A2, A8, A9, A13** |
| **0x61** | **Internal Software** | **A4, A7, A12, A14, A15** |

# 4 CYCLIC EXCHANGING

Cyclic exchanging consists of few data (maximum 10 words) exchanged quickly and frequently (from 1ms cycle): I/O, diagnostic, set point, internal value….
These references are used by control only if it is enabled connection “Enable Fieldbus references”.
It’s possible to map the desired objects with OPDExplorer or with acyclic communication referring to ADI B00 ÷ B27, choosing the words to exchange, referring to objects found in the CAN Dictionary

| ADI | Name | Description |
|---|---|---|
| **B00** | **RX0_INDEX** | **Receive Object0 Index** |
| **B01** | **RX0_SUB_INDEX** | **Receive Object0 Sub-Index** |
| **B02** | **RX1_INDEX** | **Receive Object1 Index** |
| **B03** | **RX1_SUB_INDEX** | **Receive Object1 Sub-Index** |

……..
……..

| | | |
|---|---|---|
| **B12** | **RX9_INDEX** | **Receive Object9 Index** |
| **B13** | **RX9_SUB_INDEX** | **Receive Object9 Sub-Index** |

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| | | |
|---|---|---|
| **B14** | **TX0_INDEX** | **Transmit Object0 Index** |
| **B15** | **TX0_SUB_INDEX** | **Transmit Object0 Sub-Index** |
| **B16** | **TX1_INDEX** | **Transmit Object1 Index** |
| **B17** | **TX1_SUB_INDEX** | **Transmit Object1 Sub-Index** |

……..
……..

| | | |
|---|---|---|
| **B26** | **TX9_INDEX** | **Transmit Object9 Index** |
| **B27** | **TX9_SUB_INDEX** | **Transmit Object9 Sub-Index** |

**To configure Process Area:**

- **Set transmission and reception objects, indicating CAN Dictionary Objects Index and Subindex (the sub-index is the array index).**
- **Store data in permanent memory (C63=1)**
- **Switch-off and than switch-on again the drive.**

**After drive restart see mapping results into OPDExplorer watching the following internal values:**

| Name | Displayed | Description |
|---|---|---|
| **MAP_ERROR_CODE** | **Ok** | **configuration ok** |
| | **OBJ_NOTFOUND** | **the object indicated on the following MAP_ERROR_OBJ was not found in the dictionary** |
| | **OBJ_NOTMAPPABLE** | **the object indicated on the following MAP_ERROR_OBJ is not mappable** |
| | **OBJ_INVDATASIZE** | **the object indicated on the following MAP_ERROR_OBJ is larger than double word** |
| | **OBJ_NOTWRITABLE** | **the object indicated on the following MAP_ERROR_OBJ is not writable** |
| | **OBJ_NOTREADABLE** | **the object indicated on the following MAP_ERROR_OBJ is not readable** |
| | **MAXRX_DATA** | **Too many words in reading process area (more than 10)** |
| | **MAXTX_DATA** | **Too many words in transmitting process area (more than 10)** |
| **MAP_ERROR_OBJ** | **Mapping Error Object** | |

**In the following there is CAN Dictionary**
**At application level it's possible to extend the CAN Dictionary objects.**

## 4.1 CANOPEN DICTIONARY

**The words reported in bold type can be mapped in Process area**

| Index (hex) | Object | Type | Name | Description | Access |
|---|---|---|---|---|---|
| **200D** | **ARRAY** | **INTEGER16** | **Tab_par [200]** | **Actual values of the parameters** | **Reading/writing** |
| **200E** | **ARRAY** | **INTEGER16** | **Tab_con [100]** | **Actual values of the connection** | **Reading/writing** |
| 200F | ARRAY | INTEGER16 | Tab_int [128 | **Actual values of the internal words** | **Reading** |
| 2010 | ARRAY | INTEGER16 | Tab_inp_dig [32] | **Actual values of the logical input's functions** | **Reading** |
| 2011 | ARRAY | INTEGER16 | Tab_out_dig [32] | **Actual values of the logical output's functions** | **Reading** |
| 2012 | ARRAY | INTEGER16 | Tab_osc [100 | **Actual values of the checked words** | **Reading** |
| 2013 | VAR | UNSIGNED16 | ingressi | **Logical status of the 8 inputs of the terminal board** | **Reading** |
| 2014 | VAR | UNSIGNED16 | ingressi_hw | **Logical status of the 3 inputs from the power** | **Reading** |
| 2015 | VAR | UNSIGNED16 | uscite_hw | **Logical status of the 4 digit outputs** | **Reading** |
| 2016 | VAR | UNSIGNED32 | Out_dig_appl | **Reading application logical output functions** | **Reading** |
| 2017 | VAR | UNSIGNED16 | stato | **Variable of the drive's status** | **Reading** |
| 2018 | VAR | UNSIGNED16 | allarmi | **Drive alarms' status** | **Reading** |
| 2019 | VAR | UNSIGNED16 | abilitazione_allarmi | **Word for enabling drive's alarms** | **Reading** |
| 201A | VAR | INTEGER16 | f_fieldbus | **Speed reference in % of $n_{MAX}$ in 16384** | **Reading/writing** |
| 201B | VAR | INTEGER16 | limit_fieldbus | **torque limit in % di Tnom in 4095** | **Reading/writing** |
| 201C | VAR | INTEGER16 | trif_fieldbus | **torque reference in % di Tnom in 4095** | **Reading/writing** |
| 201D | VAR | INTEGER16 | theta_fieldbus | **Speed reference in electr. pulses x Tpwm** | **Reading/writing** |
| 201E | ARRAY | INTEGER16 | Tab_dati_applicazione [100] | **Data Area available for the application** | **Reading/writing** |
| 201F | VAR | UNSIGNED32 | Inp_dig_field | **Writing logical input functions** | **Writing** |
| 2020 | VAR | UNSIGNED32 | Inp_dig | **Reading logical input functions** | **Reading** |
| 2021 | VAR | UNSIGNED32 | Out_dig | **Reading standard logical output functions** | **Reading** |
| 2022 | VAR | UNSIGNED16 | word_vuota | **Unused Word** | **Reading/writing** |
| 2023 | VAR | UNSIGNED32 | double_vuota | **Unused Double word** | **Reading/writing** |
| 2025 | ARRAY | INTEGER16 | Tab_codice_allarmi[16] | **Alarm subcodes Table** | **Reading** |
| 2026 | VAR | INTEGER32 | quota_att | **Actual position** | **Reading** |
| **2027** | **ARRAY** | **UNSIGNED16** | **tabProcessData** | **Process data address** | **Reading/writing** |

**In the following some objects are explained:**

- **Index** 0x200F **"**Tab_int**" on internal values (word)**

| Name | Description | UM | Scale |
|---|---|---|---|
| FW_REV | D00 - Software version | | 256 |
| ACTV_POW | D01 - Active power delivered | kW | 16 |
| PRC_TOT_APP_SPD_REF | D02 - Speed reference value before ramp | % MOT_SPD_MAX | 163.84 |
| PRC_END_SPD_REF | D03 - Speed reference value after ramp | % MOT_SPD_MAX | 163.84 |
| PRC_MOT_SPD | D04 - Speed reading | % MOT_SPD_MAX | 163.84 |
| PRC_T_REF | D05 - Torque request | % MOT_T_NOM | 40.96 |
| PRC_IQ_REF | D07 - Request torque current Iq rif | % DRV_I_NOM | 40.96 |
| PRC_ID_REF | D08 - Request magnetizing current Id rif | % DRV_I_NOM | 40.96 |
| V_REF | D09 - Voltage reference value at max. rev. | % MOT_E_NOM | 40.96 |
| PRC_APP_T_REF | D10 - Torque reference value (application generated) | % MOT_T_NOM | 40.96 |
| MOT_I | D11 - Current module | A rms | 16 |
| REF_FRQ_IN | D12 - Frequency in input | KHz | 16 |
| EL_FRQ | D13 - Rotor flux frequency | Hz | 16 |
| PRC_APP_FRQ_SPD_REF | D14 - Frequency speed reference value (application generated) | % MOT_SPD_MAX | 163.84 |
| PRC_IQ | D15 - Current torque component | % DRV_I_NOM | 40.96 |
| PRC_ID | D16 - Current magnetizing component | % DRV_I_NOM | 40.96 |
| MOT_V | D17 - Stator voltage reference value module | V rms | 16 |
| PRC_MOT_V | D18 - Stator voltage reference value module | % MOT_E_NOM | 40.96 |
| MOD_INDEX | D19 - Modulation index | | 40.96 |
| PRC_VQ_REF | D20 - Vq rif | % DRV_E_NOM | 40.96 |
| MOT_SPD | D21 - Motor rotation speed | rpm | 1 |
| PRC_VD_REF | D22 - Vd rif | % DRV_E_NOM | 40.96 |

| | | | |
|---|---|---|---|
| MOT_POS | D23 - Actual position | ±16384 | 1 |
| DC_BUS | D24 - Bus voltage | V | 16 |
| DRV_TEMP | D25 - Radiator temperature reading | °C | 16 |
| MOT_TEMP | D26 - Motor temperature | °C | 16 |
| PRC_DRV_I_THERM | D28 - Motor thermal current | % soglia All | 40.96 |
| PRC_DRV_I_MAX | D29 - Current limit | % DRV_I_NOM | 40.96 |
| PRC_DRV_T_MAX | D30 - Maximum torque | % MOT_T_NOM | 40.96 |
| PRC_DRV_I_T_MAX | D31 - Maximum torque by current limit | % MOT_T_NOM | 40.96 |
| PRC_APP_T_MAX | D32 - Maximum torque limit by application | % MOT_T_NOM | 40.96 |
| PRC_APP_SPD_REF | D33 - Speed reference (application generated) | % MOT_SPD_MAX | 163.84 |
| PRC_MOT_T | D35 - Actual torque produced | % MOT_T_NOM | 40.96 |
| MOT_TURN_POS | D36 - Absolute mechanical position (on current revolution) | ±16384 | 1 |
| MOT_N_TURN | D37 - Number of revolutions | | 1 |
| OFFSET_SINCOS_ENC | D38 - Compensation Sin/Cos analog/digital term | pulses | 1 |
| SENSOR_FRQ_IN | D39 - Input frequency | kHz | 16 |
| REG_CARD_TEMP | D40 - Regulation card temperature | °C | 16 |
| MOT_PRB_RES | D41 - Thermal probe resistance | Ohm | 1 |
| AI1 | D42 - Analog Input AI1 | % | 163.84 |
| AI2 | D43 - Analog Input AI2 | % | 163.84 |
| AI3 | D44 - Analog Input AI3 | % | 163.84 |
| SPD_ISR | D45 - Speed routine duration | us | 64 |
| I_ISR | D46 - Current routine duration | us | 64 |
| I_LOOP_BAND | D47 - Current loop bandwidth | Hz | 1 |
| PRC_APP_T_MIN | D48 - Minimum torque limit by application | % MOT_T_NOM | 40.96 |
| WORK_HOURS | D49 - Work Hours | hours | 1 |
| ENC_HALL_SECTOR | D50 - Encoder and Hall sens sector read | | 1 |
| SENS2_SPD | D51 - Second sensor rotation speed | rpm | 1 |
| SENS2_TURN_POS | D52 - Second sensor Absolute mechanical position (on current revolution) | 16384 | 1 |
| SENS2_N_TURN | D53 - Second sensor Number of revolutions | 16384 | 1 |
| SENS2_FRQ_IN | D54 - Second sensor Frequency input | KHz | 16 |
| SENS1_ZERO_TOP | D55 - Sensor1 Zero Top | pulses | 1 |
| SENS2_ZERO_TOP | D56 - Sensor2 Zero Top | pulses | 1 |
| SYNC_DELAY | D57 - Delay from SYNC reception to Speed routine execution | us | 1 |
| PWM_SYNC_OFFSET | D58 - PWM offset for SYNC delay control | pulses | 1 |
| SERIAL_NUMBER | D59 - Drive Serial Number | | 1 |
| FLD_CARD | D60 - Fieldbus Card | | 1 |
| APPL_REV | D61 - Application Revision | | 40.96 |
| HW_SENSOR2 | D62 - Sensor2 presence | | 1 |
| HW_SENSOR1 | D63 - Sensor1 presence | | 1 |

**At application level could be defined other 64 internal values from D64 to D127.**

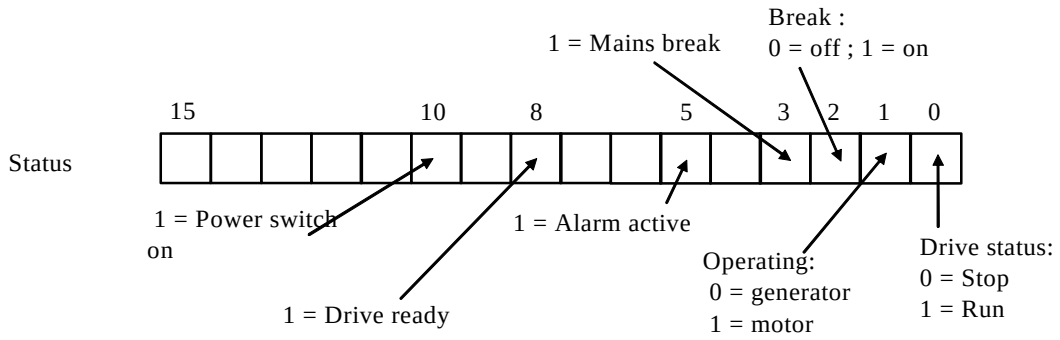
- **Index** 0x2012 “Tab_osc**” on monitor values**

| Name | Description | UM | Scale |
|---|---|---|---|
| ACT_POS | O00 Actual mechanical position read by sensor | 100%=180 | 327.67 |
| ELECTRIC_POS | O01 Actual electrical position read by sensor | 100%=180 | 327.67 |
| PRC_TOT_APP_SPD_REF | O02 Reference speed value before ramps | % MOT_SPD_MAX | 163.84 |
| PRC_END_SPD_REF | O03 Reference speed value after ramps | % MOT_SPD_MAX | 163.84 |
| PRC_MOT_SPD | O04 Filtered Rotation speed | % MOT_SPD_MAX | 163.84 |
| PRC_T_REF | O05 Torque request | % MOT_T_NOM | 40.96 |
| PRC_IQ_REF | O07 Torque current request | % DRV_I_NOM | 40.96 |
| PRC_ID_REF | O08 Flux current request | % DRV_I_NOM | 40.96 |
| PRC_V_REF | O09 Request voltage at maximum rev. | % MOT_E_NOM | 40.96 |
| ALARMS | O10 Internal value: alarms | | 1 |
| PRC_MOT_I | O11 Current module | % DRV_I_NOM | 40.96 |
| ZERO_TOP | O12 Zero top | pulses | 1 |
| PRC_IU | O13 U phase current reading | % DRV_I_MAX | 40.96 |
| INPUTS | O14 Physical inputs | | 1 |
| PRC_IQ | O15 Torque component of current reading | % DRV_I_NOM | 40.96 |
| PRC_ID | O16 Magnetizing component of current reading | % DRV_I_NOM | 40.96 |
| TU | O17 U phase voltage duty-cycle | | 327.67 |
| PRC_MOT_V | O18 Stator voltage reference value module | % MOT_E_NOM | 40.96 |

| | | | |
|---|---|---|---|
| MOD_INDEX | O19 Modulation index | | 40.96 |
| PRC_VQ_REF | O20 Request Q axis voltage (Vq_rif) | % DRV_E_NOM | 40.96 |
| PRC_POWER | O21 Delivered power | %MOT_POW_NOM | 40.96 |
| PRC_VD_REF | O22 Request D axis voltage (Vd_rif) | % DRV_E_NOM | 40.96 |
| PRC_T_OUT | O23 Torque produced | % MOT_T_NOM | 40.96 |
| PRC_DC_BUS | O24 Bus voltage | %900V | 40.96 |
| PRC_DRV_TEMP | O25 Radiator temperature reading | %37.6° | 40.96 |
| PRC_MOT_TEMP | O26 Motor temperature reading | % 80° | 40.96 |
| PRC_DRV_I_THERM | O28 Motor thermal current | % soglia All | 40.96 |
| PRC_DRV_I_MAX | O29 Current limit | % DRV_I_NOM | 40.96 |
| PRC_DRV_T_MAX | O30 CW maximum torque | % MOT_T_NOM | 40.96 |
| PRC_DRV_T_MIN | O31 CCW maximum torque | % MOT_T_NOM | 40.96 |
| OUTPUTS | O32 Physical outputs | | 1 |
| PRC_IV | O34 V phase current reading | % DRV_I_MAX | 40.96 |
| PRC_IW | O35 W phase current reading | % DRV_I_MAX | 40.96 |
| ALFA_FI | O36 Actual electrical position (alfa_fi ) [ | | 327.67 |
| AI1 | O37 Analog input A.I.1 | 100%=16383 | 163.84 |
| AI2 | O38 Analog input A.I.2 | 100%=16383 | 163.84 |
| AI3 | O39 Analog input A.I.3 | 100%=16383 | 163.84 |
| SYS_SPD_PERC_REF | O41 Application speed reference value (sysSpeedPercReference) | % MOT_SPD_MAX | 163.84 |
| SYS_T_PERC_REF | O42 Application torque reference value (sysTorqueReference) | % MOT_T_NOM | 40.96 |
| SYS_T_MAX | O43 Application torque limit reference value (sysMaxTorque) | % MOT_T_NOM | 40.96 |
| SYS_SPD_REF_PULS | O44 Frequency speed reference value from application (sysSpeedRefPulses) | Pulses per TPWM | 1 |
| SYS_POS_REF_PULS | O45 Overlapped space loop reference value from application (sysPosRefPulses) | Pulses per TPWM | 1 |
| RES_AMPLITUDE | O46 Amplitude to the square of sine and cosine feedback signals | 1=100% | 1 |
| RES_SIN | O47 Sen_theta | | 1 |
| RES_COS | O48 Cos_theta | | 1 |
| PRC_MOT_SPD | O49 Rotation speed not filtered | % MOT_SPD_MAX | 163.84 |
| PULSES_RD | O50 Delta pulses read in PWM period in frequency input | Pulses per PWM | 1 |
| MEM_POS_LSW | O51 Overlapped space loop memory lsw | electrical pulses | 1 |
| MEM_POS_MSW | O52 Overlapped space loop memory msw | electrical pulses | 1 |
| INCR_SIN | O53 Incremental SIN theta Sin/Cos Encoder | | 1 |
| INCR_COS | O54 Incremental COS theta Sin/Cos Encoder | | 1 |
| INIT_RESET | O55 Initial reset ended | | 1 |
| PTM_TH_PRB | O56 PTM motor thermal probe | | 40.96 |
| PTR_TH_PRB | O57 PTR radiator thermal probe | | 40.96 |
| SENS_PULSES_RD | O58 Pulses read by sensor | | 1 |
| PRC_SENS2_SPD | O59 SENS2 Rotation speed not filtered | % MOT_SPD_MAX | 163.84 |
| ACT_SENS2_POS | O60 SENS2 Actual position | | 327.67 |
| SENS2_SIN | O61 SENS2 Sin_theta | | 1 |
| SENS2_COS | O62 SENS2 Cos_theta | | 1 |
| SYNC_DELAY | O63 Delay on SYNC reception | | 1 |
| SYS_T_MIN | O64 Application minimum torque limit reference value | % MOT_T_NOM | 40.96 |
| BRAKE_EN | O65 Energy dissipated on breaking resistance | Joule | 1 |

**At application level could be defined other 32 monitor values from O68 to O99.**

- **Index** 0x2017 **is available as** status word **of the drive with the following meaning**:




- **Index** 0x2018 **is available as the status of the different** alarms **of the drive bit by bit; for example, the status of A8 alarm is shown by the bit n.8 of the word**
- **Index** 0x2019 **the alarm enabling mask. Again the meaning is bit by bit.**
- **Index** 0x201A "f_fieldbus" **= speed reference in percent of the max speed set. Base representation is equal to16384; thus 16384 is equal to 100%**
- **Index** 0x201D "theta_fieldbus" **= reference in pulses per period of PWM, with 65536 pulses per revolution**
- **Index** 0x201C "trif_fieldbus" **= torque reference in percent of the nominal torque of the motor. Base of Representation = 4095 : thus 4095 is = 100%**
- **Index** 0x201A "limit_fieldbus" **= torque limit in percent of the nominal torque of the motor ( it is in alternative to the other existing limits, the most restricted is the one that values). Representation base is 4095 : thus 4095 = 100%**

## Configuration example

**At OPD level, wanting to get in the process data in the first 2 words the logical input functions and in the third word the speed reference and to have in output in the first 2 words the logical output functions and in the third the actual speed, should be set:**

| | | |
|---|---|---|
| **RX0_INDEX** | 201F | **logical input functions** |
| **RX0_SUB_INDEX** | 0 | |
| **RX1_INDEX** | 201A | **speed reference** |
| **RX1_SUB_INDEX** | 0 | |

| | | |
|---|---|---|
| **TX0_INDEX** | 2021 | **logical output functions** |
| **TX0_SUB_INDEX** | 0 | |
| **TX1_INDEX** | 2012 | **actual speed** |
| **TX1_SUB_INDEX** | 4 | |

# 5 DEVICENET

## 5.1 NODE CONFIGURATION

With OPDExplorer it's possible to set:

| Name | Description |
|---|---|
| NODE_SLAVE_ADDR | MacID |
| NODE_BAUDRATE | admitted values:<br><br>00 = "125 Kbps"<br><br>01 = "250 Kbps"<br><br>02 = "500 Kbps"<br><br>03 = "Autobaud" |

## 5.2 ACYCLIC COMMUNICATION

This paragraph specifies the CIP-objects implementation in the Anybus module.
Mandatory objects are:

- "Identity Object (01h)"
- "Message Router (02h)"
- "DeviceNet Object (03h)"
- "Assembly Object (04h)"
- "Connection Object (05h)"
- "Parameter Object (0Fh)"
- "Acknowledge Handler Object (2Bh)"

**Vendor specific objects:**

- "**ADI Object (A2h)**"

**ADIs are represented on DeviceNet through the ADI Object (CIP-object). Each instance within this**

objects corresponds directly to an instance in the Application Data Object on the host application side.

## 5.3 CYCLIC COMMUNICATION

**Process Data is represented on DeviceNet through dedicated instances in the Assembly Object. Note** that each ADI element is mapped on a byte-boundary, i.e. each BOOL occupies



Via dell'Oreficeria, 41
36100 Vicenza - Italy
Tel +39 0444 343555
Fax +39 0444 343509
www.bdfdigital.com