

## SUMMARY

<b>1.</b>	<b>GENERAL INFORMATION</b> .....	<b>1-1</b>
1.1.	CAN BUS LAYERS (ISO/OSI REFERENCE).....	1-1
1.2.	MECHANISMS OF DATA EXCHANGE.....	1-2
1.3.	HARDWARE SPECIFICATIONS.....	1-2
1.4.	SOFTWARE SPECIFICATIONS.....	1-2
1.5.	MEASURED TRANSMISSION TIMES.....	1-3
<b>2.</b>	<b>DRIVE CONFIGURATION</b> .....	<b>2-1</b>
2.1.	CONFIGURATION OF THE NODE.....	2-1
2.2.	ENABLING THE COMMUNICATION.....	2-4
<b>3.</b>	<b>OBJECT DICTIONARY</b> .....	<b>3-1</b>
3.1.	TYPES OF PARAMETERS.....	3-1
3.2.	MEANS OF THE TABLE FIELDS.....	3-1
3.3.	PARAMETERS "P".....	3-2
3.4.	CONNECTIONS.....	3-4
3.5.	DISPLAYS "D".....	3-6
3.6.	ALARMS "A".....	3-7

## 1. GENERAL INFORMATION

The acronym CAN means Controller Area Network. With the Can Bus net it is possible to exchange information between Slaves and a Master. In this kind of net the Master is utilized to configure the net and to check the correct operations of the Slaves.

The maximum number of nodes in the Can Bus net is:  $n^{\circ} \text{ max\_node} = 127$ .

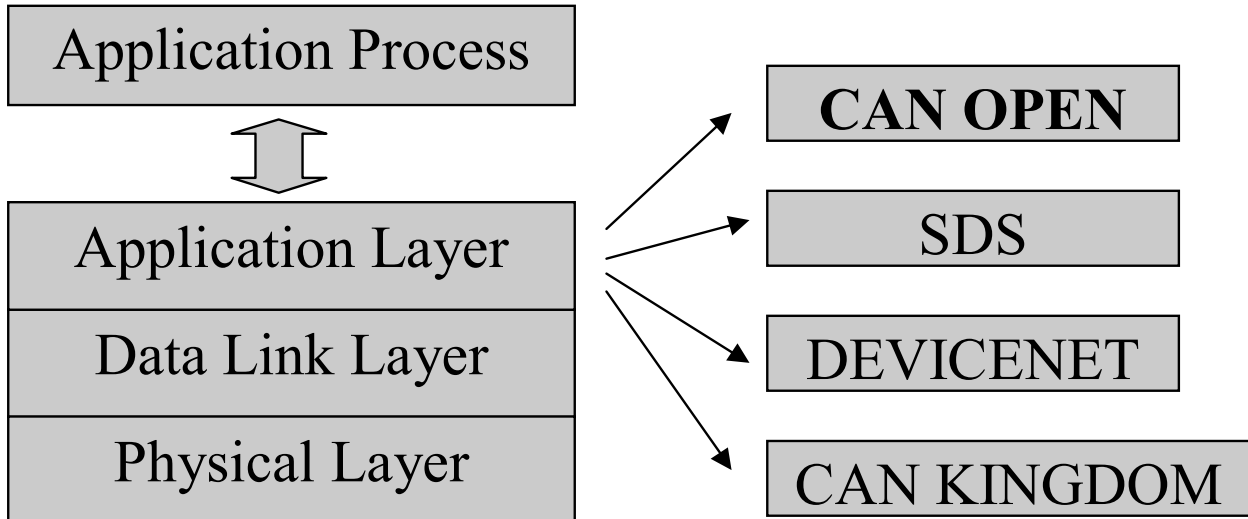
Typical values of transmission speed for real time applications are from 200 KBit/s to 1MBit/s; the SDB works by default with a transmission speed of 500KBit/s. The transmission speed is related to the maximum transmission cable length.

Baudrate	Distance
250 KBit/s	260/270 m
500 KBit/s	120/130 m
1 MBit/s	30/40 m

In the Can Bus net an address doesn't identify a precise station, but in the transmitted message is contained an identifier, that marks the content of the communication and determines the priority of the message. This message is processed by all the slaves enabled to accept it.

### 1.1. CAN BUS LAYERS (ISO/OSI REFERENCE)

The Can Bus refers to a standard communication architecture(ISO/OSI), which is based on seven layers each of them has its own function. Mainly for speed problems, the Can Bus communication architecture uses only three layers of the standard architecture, and precisely the Physical layer, the Data Link layer and the Application layer.



The Application layer interfaces itself with the different application processes e.g.: Drives, board of I/O etc...  
The Physical layer decides the physical transmission meaning, e.g. duplex twisted and shielded pair cable e/o, optical fiber and others, specifying its characteristics.

The Data Link layer doesn't attend to the data type, but it takes care of their transmission, because the transmission takes place in safe way and according to the Can Bus net protocol.

The Application layer develops the interface with the user applications, and can be of different kinds, that can be distinguished mainly in Can-Open, Sds, DeviceNet and Can Kingdom and others.....

The SDB drives implements as Application layer Can-Open, that it is based on the CAL (Can Application Layer).

## 1.2. MECHANISMS OF DATA EXCHANGE

The mechanisms of data exchange in the Can Bus net are essentially two: the Service Data Object Communication (SDO) and Process Data Object Communication (PDO). Their main characteristics are: priority, number of data bytes and transfer type.

Service Data Object (SDO)	Process Data Object (PDO)
<ul style="list-style-type: none"> <li>Low priority, high volume of data</li> </ul>	<ul style="list-style-type: none"> <li>High priority, low volume of data</li> </ul>
<ul style="list-style-type: none"> <li>Possibility to access all objects through index and subindex addressing.</li> </ul>	<ul style="list-style-type: none"> <li>Objects are direct-mapped into message bytes.</li> </ul>
<ul style="list-style-type: none"> <li>Data transfers greater than 8 bytes of data using multiple CAN telegrams via CMS.</li> </ul>	<ul style="list-style-type: none"> <li>Data transfers up to 8 bytes of data using a single CAN telegram</li> </ul>

## 1.3. HARDWARE SPECIFICATIONS

The SDB drive has two connectors D-SUB 9 (male) for the net connection. The pinout of those connector is as follows:

Pin	Signals	Description
1	-	
2	CAN_L	Can low dominant
3	CAN_GND	Can Ground
4	-	
5	CAN_SHLD	Can Shield
6	-	
7	CAN_H	Can high dominant
8	-	
9	CAN_V+	Can external supply (positive)

Termination res: 120Ω 1/4W

Ext. supply: 18 ... 30 V

It is strongly recommended the use of Belden 3082A cable or similar.

There is also a D-SUB 9 (female) connector for the flash memory programming: through this connector is possible to connect the board to a PC RS232 serial port (COM1, COM2, ...) to upload to the converter the Can Bus node configuration.

## 1.4. SOFTWARE SPECIFICATIONS

The CanBus node configuration is loaded in a flash memory inside the converter. During the normal operation it is possible, through serial connection to a PC, to modify the Can Bus node configuration. These changes will become active at the next board startup. The use of the configuration program **configure.exe** is explained later. The configuration fields are:

- **NODEID:** Is the node identifier, it's used to fulfil certain services (es. Start, Stop, Node Guarding...). The default value is 10.
- **BAUDRATE:** It is the transmission speed expressed in Bit/s, during the configuration it is possible to choose between 10000 and 1000000 Bit/ses. The default value is 500000 Bit/s.

- **PDO Identifier:** The SDB has the possibility to use from 1 to 4 PDOs, and for each one it is possible to indicate an identifier value. An example of possible values according to standard Can-Open is:

PDO1(rx)	513-639
PDO1(tx)	385-511
PDO2(rx)	769-895
PDO2(tx)	641-767

- **SDO Identifier:** The SDB has the possibility to use from 1 to 4 SDOs, and for each one it is possible to indicate an identifier value. An example of possible values in according to standard Can-Open is:

SDO(rx)	1537-1663
SDO(tx)	1409-1535

- **PDO Communication Parameters:** These parameters define the data transmission type, for instance if the transmission takes place repeatedly following a certain period of time or if it takes place after receiving a certain message (called SYNC).
- **PDO Mapping:** In this phase the objects (e.g..parameters of the drive), that must be transmitted through PDO, are defined. The objects are inside a " dictionary " and they are individualized through an index and a sub-index, therefore for mapping we mean the association between a PDO and an index and a sub-index of the parameters.

### 1.5. MEASURED TRANSMISSION TIMES

For the PDOs, the elaboration time is 1,3ms, while for SDO case the elaboration time is 3,2ms.

## 2. DRIVE CONFIGURATION

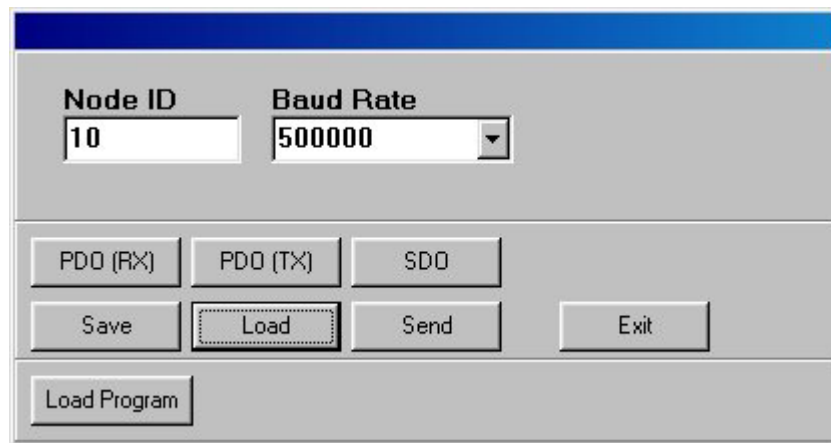
### 2.1. CONFIGURATION OF THE NODE

The program used to configure the drive as a CANBUS node is “configure.exe”; this program allows: setting node ID, baud rate, Tx PDOs, Rx PDOs and SDOs for the CanOpen interface. It is mandatory to configure node ID, baud rate and default SDOs.

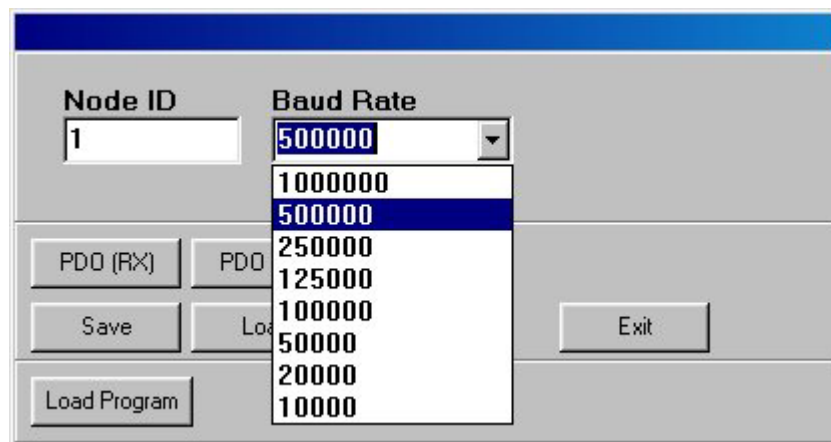
The configuration connector (D-Sub 9 female) is a normal RS232:

Pin	Signals
2	Tx
3	Rx
5	Gnd

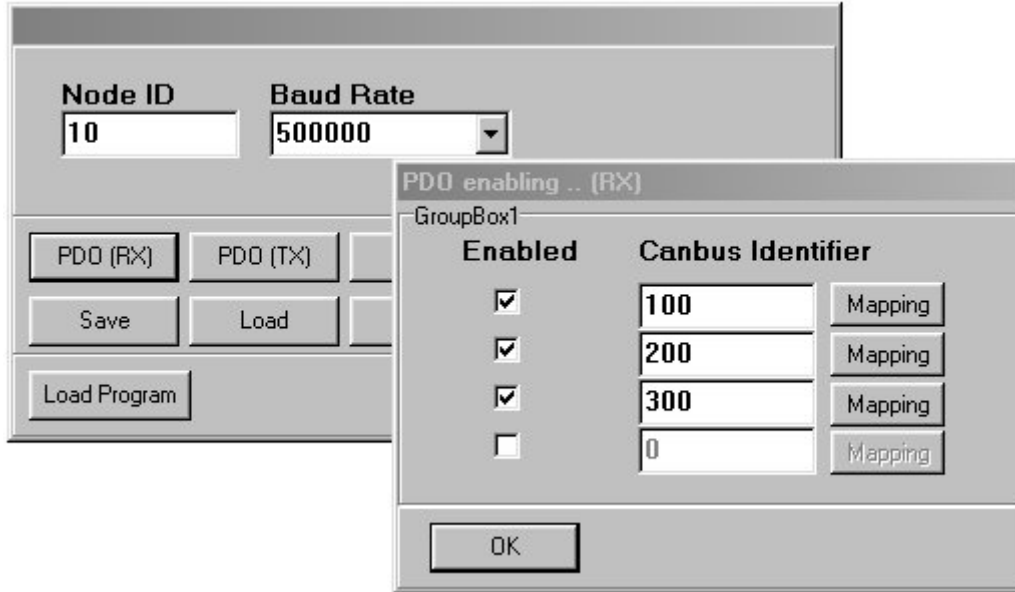
This is the startup window:



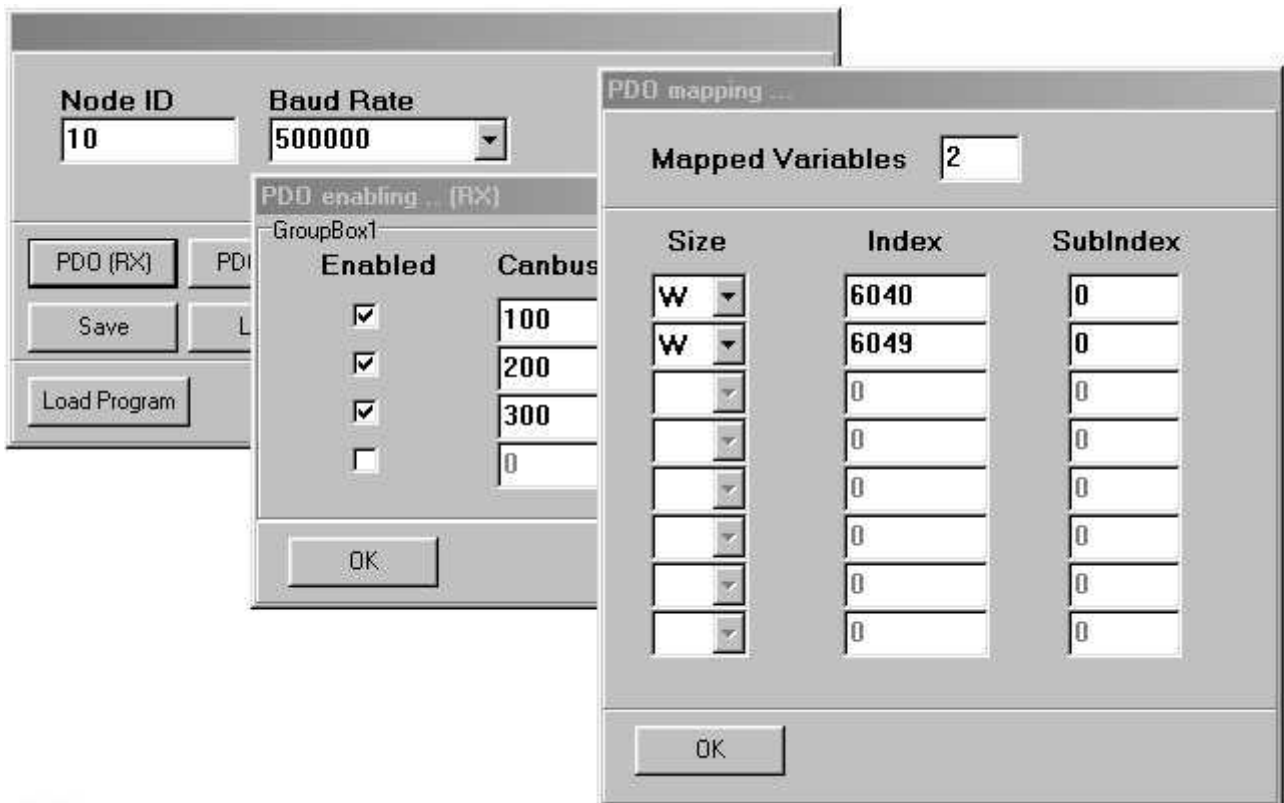
It is mandatory to set the node ID and the baud rate:



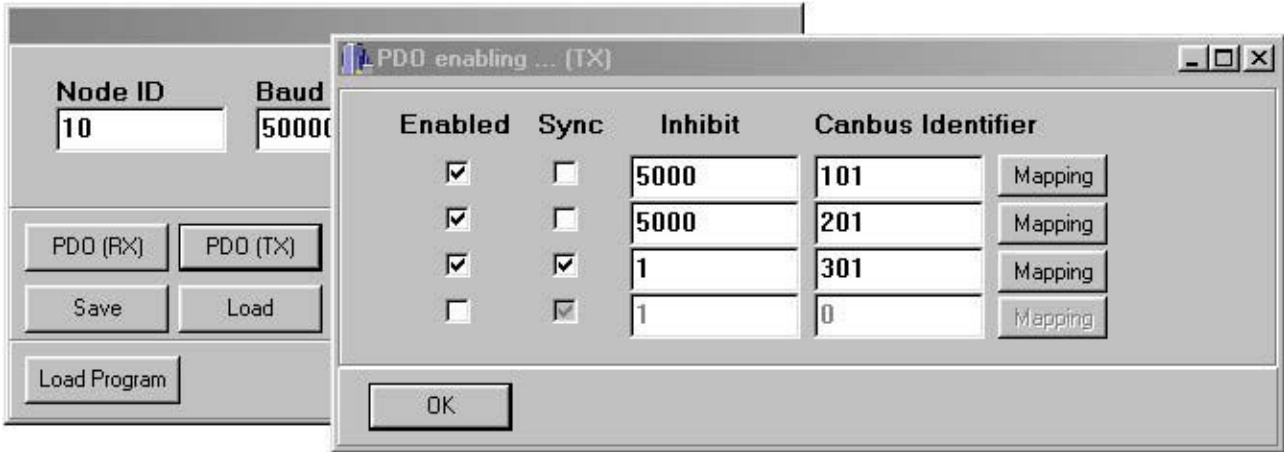
Clicking the “PDO (RX)” button pops up the window to enable the PDOs settings:



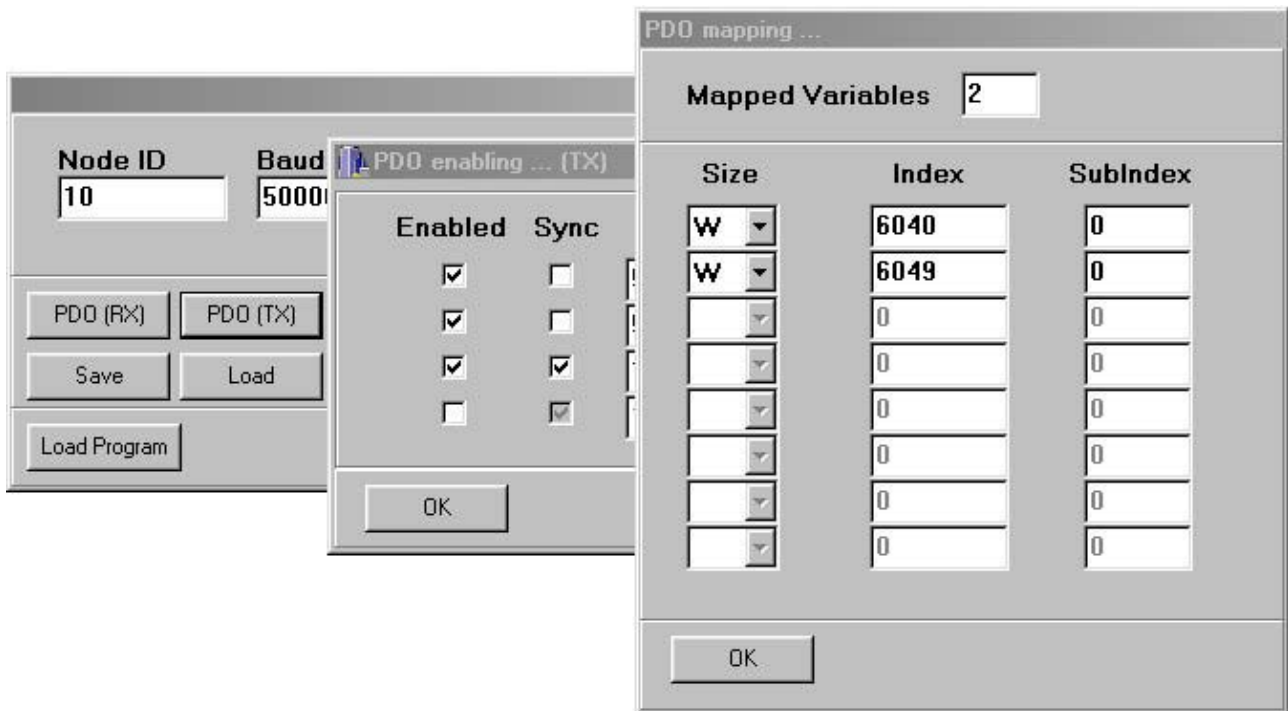
The PDOs can be mapped clicking the “mapping” button. The object dictionary is specified afterwards.



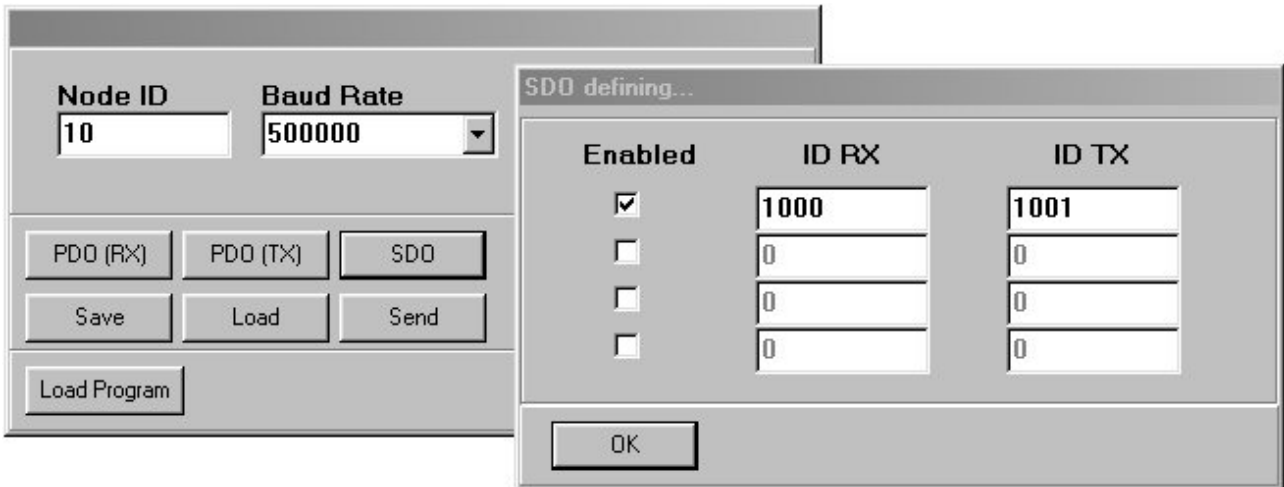
Clicking the “PDO (TX)” button pops up the window to enable PDOs settings. If the Sync option the corresponding PDO is transmitted when a Sync message (ID = 128) is received, else is transmitted cyclically, with the period set in the “inhibit” field (1=100 microseconds). If the Sync option is enabled, the Inhibit time is ignored.



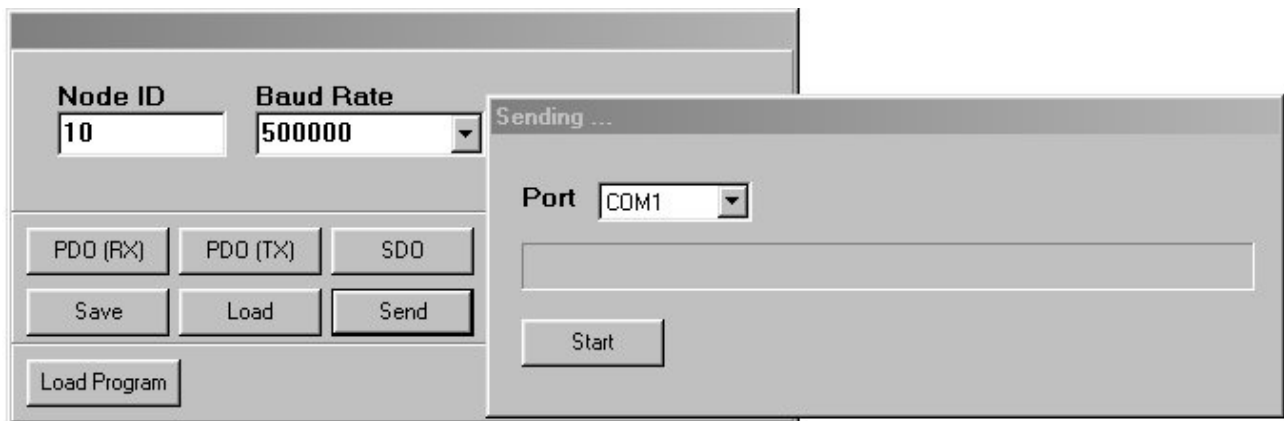
The PDOs can be mapped clicking the “mapping” button:



Clicking the “SDO” button pops up the window to enable SDOs settings:



When the settings are complete, the configuration can be uploaded to the drive, clicking the “Send” button.



Configurations can be saved and loaded from the PC hard disk through commands “Save” and “Load”.

## 2.2. ENABLING THE COMMUNICATION

In order to communicate with the CANBUS net the drive must be configured setting the connection **c76** as follows:

The connection **c76** is protected by the customer code number, thus set **P50 = 95** before.



### 3. OBJECT DICTIONARY

#### 3.1. TYPES OF PARAMETERS

	Type	Description
P	Parameters	Numerical values
c	Connections	Logic switches with 2 or more contacts. They are used to select among more possibilities.
d	Displays	Internal drive values (voltage, current, speed,...)
A	Alarms	Diagnostics of the drive
i	Inputs	State of logic inputs and of logic functions
o	Outputs	State of logic outputs and of logic functions

#### 3.2. MEANS OF THE TABLE FIELDS

Column "**PAR**" contains the parameter name as it is displayed on the keypad.

Column "**DESCRIPTION**" contains a brief description of the parameter.

Column "**RANGE**" contains maximum and minimum limits, and the units of the parameter.

Column "**BS**" contains a letter or a number :

- A letter means that the parameter is a number "x" whose value is a percent of a base scale number.

from internal number to percent value	from percent value to internal number
$\text{percent value} = 100 * x / \text{base scale}$	$x = \text{percent value} * \text{base scale} / 100$

base scale table

letter	description
A	Base scale = 16383
B	Base scale = 4095

- A number means that the parameter is a number "x" whose value is scaled by a power of 10 :

from internal number to real value	from real value to internal number
$\text{real value} = x / 10^n$	$x = \text{real value} * 10^n$

conversion ratio table

number	description
0	$n = 0 \quad \text{par} = x$
1	$n = 1 \quad \text{par} = x / 10$
2	$n = 2 \quad \text{par} = x / 100$

Column "**Note**" contains the informations about the writing protections of parameters:

- n = parameter value can be changed only if drive is off-line
- r = parameter value can be changed only if the customer code number is set in **P50**
- t = parameter value can be changed only if the TDE MACNO code number is set in **P80**

Parameter **P99** contains the customer code number (**P50**). On demand this code can be customized.

Columns "**Can Idx**" and "**Can SubIdx**" contain the index of the parameter (object) in the object dictionary. This index are used for SDO access and for PDO mapping.

Column "**Size**" contains the size of the object: this information must be specified in the PDO mapping.

**3.3. PARAMETERS "P"**

P	DESCRIPTION	RANGE	BS	NOTE	Can Idx	Can SubIdx	Size
P1	Velocità JOG 1 <i>JOG 1 speed</i>	±100.0%	A		6601	00	Word
P2	Velocità JOG 2 <i>JOG 2 speed</i>	±100.0%	A		6602	00	Word
P3	Velocità JOG 3 <i>JOG 3 speed</i>	±100.0%	A		6603	00	Word
P4	Offset riferimento analogico, 0.1mV <i>Analog speed reference offset, 0.1mV</i>	±19999	0		6604	00	Word
P5	Limite di velocità max CW <i>Max CW speed</i>	0.0%÷105%	A		6605	00	Word
P6	Limite di velocità max CCW <i>Max CCW speed</i>	0.5%÷105%	A		6606	00	Word
P7	Quota per movimento A <i>Target position A</i>	±19999 i.e.	0		6607	00	Word
P8	Quota per movimento B <i>Target position B</i>	±19999 i.e.	0		6608	00	Word
P9	Offset rispetto a zero resolver (ricerca di zero) <i>Offset with respect to resolver zero (zero search)</i>	0÷19999 i.e.	0		6609	00	Word
P10	Guadagno per posizionamento (kv) <i>Gain for positioning (kv)</i>	1÷100	0		660A	00	Word
P11	Tempo di accelerazione CW <i>CW acceleration time</i>	50÷19999 ms	0		660B	00	Word
P12	Tempo di decelerazione CW <i>CW deceleration time</i>	50÷19999 ms	0		660C	00	Word
P13	Tempo di accelerazione CCW <i>CCW acceleration time</i>	50÷19999 ms	0		660D	00	Word
P14	Tempo di decelerazione CCW <i>CCW deceleration time</i>	50÷19999 ms	0		660E	00	Word
P15	Quota da eseguire dopo il sensore di stop <i>Position offset when stopped with external sensor</i>	0÷19999 i.e.	0		660F	00	Word
P16	N.U.		0		6610	00	Word
P17	Quota per mov. 0 (in numero giri) <i>Destination position 0 (revolutions)</i>	±19999	0		6611	00	Word
P18	Quota per mov. 1 (in numero giri) <i>Destination position 1 (revolutions)</i>	±19999	0		6612	00	Word
P19	N.U.		0		6613	00	Word
P20	Livello per abilitazione P23, P24 <i>Speed level for enabling P23, P24</i>	0÷200.0 %	B		6614	00	Word
P21	Guadagno prop. di velocità (BANK 0) <i>Speed loop proportional gain (BANK 0)</i>	0.5÷100.0	1		6615	00	Word
P22	Costante di anticipo reg. velocità (BANK 0) <i>Speed loop lead time constant (BANK 0)</i>	4.0÷150.0 ms	1		6616	00	Word
P23	Guadagno prop. di velocità (BANK 1) <i>Speed loop proportional gain (BANK 1)</i>	0.5÷100.0	1		6617	00	Word
P24	Costante di anticipo reg. velocità (BANK 1) <i>Speed loop lead time constant (BANK 1)</i>	4.0÷150.0 ms	1		6618	00	Word
P25	Costante di tempo per filtro dello stadio di velocità <i>Time constant for speed loop filter</i>	0.4÷20 ms	1		6619	00	Word
P27	Valore iniziale dell'integrale del regolatore di velocità <i>Starting value of speed regulator integral</i>	±100.0%	B	n	661A	00	Word
P30	Tempo di rampa teorica (comp. di inerzia) <i>Time of ideal acceleration ramp (inertia compensation)</i>	0÷19999 ms	0		661E	00	Word
P31	Offset segnale di coppia T.REF (A.I.1) <i>Torque signal offset T.REF (A.I.1)</i>	±100.0%	B		661F	00	Word
P32	Coefficiente correttivo segnale di coppia T.REF (A.I.1) <i>Torque signal correction coefficient T.REF (A.I.1)</i>	±400.0%	B		6620	00	Word
P33	Offset segnale di limite corrente I.LIM (A.I.2) <i>Current limit signal offset I.LIM (A.I.2)</i>	±100.0%	B		6621	00	Word
P34	Coefficiente correttivo segnale di limite I.LIM (A.I.2) <i>Limit signal correction coefficient I.LIM (A.I.2)</i>	±400.0%	B		6622	00	Word
P35	Limite massimo di corrente CW <i>Max CW current</i>	0÷100.0%	B		6623	00	Word
P36	Limite massimo di corrente CCW <i>Max CCW current</i>	0÷100.0%	B		6624	00	Word
P41	Livello minima velocità <i>Minimum speed level</i>	0÷100.0%	B		6629	00	Word

P42	Livello massima velocità ammessa (allarme sovravelocità) <i>Maximum allowed speed level (Overspeed alarm)</i>	0÷120.0%	B		662A	00	Word
P43	Livello inf. range velocità per relè velocità <i>Lower speed value for speed relay</i>	±100.0%	B	n	662B	00	Word
P44	Livello sup. range velocità per relè velocità <i>Upper speed value for speed relay</i>	±100.0%	B	n	662C	00	Word
P45	Livello inf. range di corrente per relè di corrente <i>Lower current value for current relay</i>	±100.0%	B	n	662D	00	Word
P46	Livello superiore range di corrente per relè di corrente <i>Upper current value for current relay</i>	±100.0%	B	n	662E	00	Word
P47	Numero di punti dopo il trigger (funzione oscilloscopio) <i>Number of points after the trigger (oscilloscope function)</i>	1÷2000	1	n	662F	00	Word
P48	Livello di trigger (funzione oscilloscopio) <i>Trigger level (oscilloscope function)</i>	±100.0%	B	n	6630	00	Word
P49	Tempo di campionamento (funzione oscilloscopio) (n * 200us) <i>Sample time (oscilloscope function) (n * 200us)</i>	1÷1000 ms	0	n	6631	00	Word
P50	Chiave cliente per accesso ai parametri riservati <i>Customer code number for reserved parameters (r)</i>	0÷9999	0	n	6632	00	Word
P51	Numero di identificazione dell'azionamento per la seriale <i>Customer code number for reserved parameters (r)</i>	1÷255	0	r	6633	00	Word
P52	Velocità massima motore <i>Maximum motor speed</i>	375÷19000	0	r	6634	00	Word
P53	Numero poli motore <i>Number of motor poles</i>	2÷12	0	r	6635	00	Word
P54	Numero poli resolver <i>Number of resolver poles</i>	2÷12	0	r	6636	00	Word
P55	Sfasamento resolver <i>Resolver phase shift</i>	±180.0	1	r	6637	00	Word
P56	Corrente nom. motore in % della corrente nom. azionamento <i>Motor rated current in % of drive rated current</i>	10.0%÷100.0%	B	r	6638	00	Word
P57	Costante di tempo termica del motore <i>Motor thermal time constant</i>	1.0÷600.0 sec.	1	r	6639	00	Word
P58	Parametro di taratura del motore (Lff * Inm / Vnm) <i>Motor tuning parameter (Lff * Inm / Vnm)</i>	0.0-100.0%	B	r	663A	00	Word
P59	Costante di tempo del motore $T_i=Lff/Rff$ <i>Motor time constant <math>T_i=Lff/Rff</math></i>	1-100	0	r	663B	00	Word
P60	Tensione corrispondente alla velocità massima (rif. an.) <i>Voltage corresponding to the maximum speed (an. ref.)</i>	2500÷10000	0	r	663C	00	Word
P61	Numeratore per rapporto master/slave (rif. in frequenza) <i>Numerator for frequency reference (gear ratio)</i>	0÷16383	0		663D	00	Word
P62	Tensione nominale del motore (Vnmot/Vnaz) <i>Motor rated voltage (Vnmot/Vnaz)</i>	0.0%-100.0%	B	r	663E	00	Word
P63	Coefficiente correttivo per anello di corrente <i>Correction coefficient for current loop</i>	0.0%-400.0%	B	r	663F	00	Word
P64	Denominatore per rapporto master/slave (rif. in frequenza) <i>Denominator for frequency reference (gear ratio)</i>	0÷16383	1	r	6640	00	Word
P65	Tensione nominale DC bus <i>Nominal DC bus voltage</i>	250÷680	1	r	6641	00	Word
P70	Tempo di ritardo sulla risp. seriale (modbus) <i>Delay time on the serial response (modbus)</i>	0÷1000	1	r	6642	00	Word
P71	Num. coefficiente quote <i>Numerator (gear ratio for positioner)</i>	19999	0		6647	00	Word
P72	Tempo di ritardo per start movimento <i>Delay time on the movement start</i>	19999	0		6648	00	Word
P75	Finestra per errore di posizionamento (o19) <i>Positioning error window (o19)</i>	0÷19999	0	r	665A	00	Word
1P00	Chiave di accesso ai parametri riservati TDEMACNO (t) <i>code number for TDEMACNO reserved parameter (t)</i>	0÷9999	0	n	6673	00	Word
1P01	Coefficiente correttivo rif. Analogico <i>Analog ref. correction coefficient</i>	50.0%÷199.0%	B	t	6674	00	Word
1P02	Coefficiente lettura corrente <i>Current correction coefficient</i>	100.0%÷200.0 %	B	t	6675	00	Word
1P03	Corrente nominale azionamento in % della corrente limite <i>Drive rated current in % of the maximum current</i>	20.0%÷100.0%	B	t	6676	00	Word
1P04	Costante di tempo per sovraccarico di corrente <i>Time constant for current overload</i>	1.0÷10 sec.	1	t	6677	00	Word
1P05	Coeff. Misura tensione DC bus <i>DC bus voltage measurement coeff.</i>	50.0%÷200.0%	B	t	6678	00	Word

1P06	Minima tensione DC bus (% della tensione nominale DC bus P65) <i>DC bus minimum voltage (% of rated DC bus voltage P65)</i>	60.0%÷130.0%	B	t	6679	00	Word
1P07	Massima tensione DC bus (% di P112) <i>DC bus maximum voltage (% P112)</i>	50.0%-120.0%	B	t	667A	00	Word
1P08	coeff. misura pastiglia termica PTC (radiatore) <i>Thermal sensor (PTC) coeff.</i>	65.0%÷150.0%	B	t	667B	00	Word
1P09	Soglia di temperatura per allarme A4 <i>Alarm A4 threshold (drive overtemperature)</i>	0-1	0	t	667C	00	Word
1P10	Frequenza di PWM <i>PWM frequency</i>	0.0%-100.0%	B	t	667D	00	Word
1P12	Tensione di frenatura (% della tensione nominale DC bus P65) <i>Clamping Voltage (% of rated DC bus voltage P65)</i>	0÷9999	0	t	667F	00	Word
1P13	Corrente massima azionamento per visualizzazione d23 <i>Maximum drive current for d23 display</i>	0.0÷100.0 A		t	6680	00	Word
1P14	Scelta 0=Vel/ 1=Corr <i>Choice 0=Vel/ 1=Corr</i>	0÷1		t	6681	00	Word
1P15	Corrente di coppia (P104=1) <i>Torque current (P104=1)</i>	0.0%÷100.0%		t	6682	00	Word
1P16	Compensazione dei tempi morti <i>Dead time compensation</i>	0÷200		t	6683	00	Word
1P17	Compensazione offset del riferimento analogico <i>Analog ref. offset compensation</i>	±4095		t	6684	00	Word
1P18	Compensazione offset interno del segnale A.I.1 <i>A.I.1 internal offset compensation</i>	±4095		t	6685	00	Word
1P19	Compensazione offset interno del segnale A.I.2 <i>A.I.2 internal offset compensation</i>	±4095		t	6686	00	Word
1P20	Compensazione offset interno del segnale da T/F <i>V/F internal offset compensation</i>	±4095		t	6687	00	Word
1P21	Numero di serie dell'azionamento	0÷19999		t	6688	00	Word
1P30	Chiave cliente per parametri riservati (r) <i>Customer code number for reserved parameters (r)</i>	0÷9999		t	6689	00	Word

### 3.4. CONNECTIONS

C	DESCRIPTION	RANGE	Note	Can Idx	Can SubIdx	Size
c01	Configurazione dell'ingresso logico L.I.1 <i>Logic input 1 configuration</i>	1÷25	r	6512	00	Byte
c02	Configurazione dell'ingresso logico L.I.2 <i>Logic input 2 configuration</i>	0	r	6513	00	Byte
c03	Configurazione dell'ingresso logico L.I.3 <i>Logic input 3 configuration</i>	1÷25	r	6514	00	Byte
c04	Configurazione dell'ingresso logico L.I.4 <i>Logic input 4 configuration</i>	1÷25	r	6515	00	Byte
c05	Configurazione dell'ingresso logico L.I.5 <i>Logic input 5 configuration</i>	1÷25	r	6516	00	Byte
c06	Configurazione dell'ingresso logico L.I.6 <i>Logic input 6 configuration</i>	1÷25	r	6517	00	Byte
c07	Configurazione dell'ingresso logico L.I.7 <i>Logic input 7 configuration</i>	1÷25	r	6518	00	Byte
c08	Configurazione dell'ingresso logico L.I.8 <i>Logic input 8 configuration</i>	1÷25	r	6519	00	Byte
c21	Configurazione dell'uscita logica L.O.1 <i>Logic output 1 configuration</i>	± 18	r	6526	00	Byte
c22	Configurazione dell'uscita logica L.O.2 <i>Logic output 2 configuration</i>	± 18	r	6527	00	Byte
c23	Configurazione dell'uscita logica L.O.3 <i>Logic output 3 configuration</i>	± 18	r	6528	00	Byte
c24	Configurazione dell'uscita logica L.O.4 <i>Logic output 4 configuration</i>	± 18	r	6529	00	Byte
c40	Configurazione dell'uscita analogica VOUTA <i>VOUTA configuration</i>	1÷20	r	6539	00	Byte
c41	Configurazione dell'uscita analogica VOUTB <i>VOUTB configuration</i>	1÷20	r	653A	00	Byte

c44	Fase del segnale top di zero (encoder simulato) <i>Phase shift of the zero signal (simulated encoder)</i>	0. 0° 1. 90° 2. 180° 3. 270°	r	653D	00	Byte
c45	Inversione del segnale di rif. esterno (in OR con il segnale REV) <i>External speed ref. inversion (OR-ed with signal REV)</i>	0 non invertito / <i>not inverted</i> 1 invertito / <i>inverted</i>	r	653E	00	Byte
c46	Inv. del canale B dell'encoder sim. <i>Simulated encoder channel B inversion</i>	0 non invertito / <i>not inverted</i> 1 invertito / <i>inverted</i>	r	653F	00	Byte
c47	Risoluzione encoder per ingresso in frequenza e posizionatore <i>Encoder resolution for frequency input and positioner</i>	0 0 1 64 2 128 3 256 4 512 5 1024 6 2048 7 4096	r	6540	00	Byte
c48	Risoluzione encoder simulato <i>Simulated encoder resolution</i>	0 0 1 64 2 128 3 256 4 512 5 1024 6 2048 7 4096 8 8192 9 16384	r	6541	00	Byte
c49	Sceita riferimento esterno <i>External reference selection</i>	0 analogico / <i>analog</i> 1 2 canali / <i>2 channels</i> 2 freq e dir. / <i>pulse &amp; dir.</i>	n	6542	00	Byte
c50	esclusione allarmi A4,A5,A7,A9 <i>Alarm disabilitation A4,A5,A7,A9</i>	0÷31		6543	00	Byte
c51	Esclusione della parte integrale del regolatore di velocità <i>Exclusion of the integral part in the speed regulator</i>	0 inserito / <i>on</i> 1 escluso / <i>off</i>		6544	00	Byte
c52	contatto software di marcia (in serie a L.I.2) <i>Run enabling command (in series with L.I.2)</i>	0 stop 1 marcia / <i>run</i>		6545	00	Byte
c53	contatto software in parallelo a REF1 <i>Software switch in parallel with REF1</i>	0 disabilitato / <i>off</i> 1 abilitato / <i>on</i>		6546	00	Byte
c54	contatto software in parallelo a REF2 <i>Software switch in parallel with REF2</i>			6547	00	Byte
c55	contatto software in serie a LS1 <i>Software switch in series with LS1</i>	0 aperto / <i>open</i> 1 chiuso / <i>closed</i>		6548	00	Byte
c56	contatto software in serie a LS2 <i>Software switch in series with LS2</i>			6549	00	Byte
c57	abilitazione dello stadio rampa <i>Ramp stage inclusion</i>	0 disabilitato / <i>disabled</i> 1 abilitato / <i>enabled</i>		654A	00	Byte
c58	arresto con o senza decelerazione <i>Stop with or without deceleration</i>	0 senza / <i>without</i> 1 con / <i>with</i>		654B	00	Byte
c59	arresto sui finecorsa con o senza rampa <i>Stop on limit switches with or without ramp</i>	0 senza / <i>without</i> 1 con / <i>with</i>		654C	00	Byte
c60	contatto software in serie a "Abilitazione esterno" <i>Software switch in series with "External Enable"</i>	0 aperto / <i>open</i> 1 chiuso / <i>closed</i>		654D	00	Byte
c61	abilitazione limite di corrente da ingresso A.I.2 <i>Enable for external current limit (from A.I.2)</i>	0 disabilitata / <i>disabled</i> 1 abilitata / <i>enabled</i>		654E	00	Byte
c62	abilitazione ingresso coppia da A.I.1 <i>Enable for torque input (from A.I.1)</i>	0 disabilitata / <i>disabled</i> 1 abilitata / <i>enabled</i>		654F	00	Byte
c63	delta velocità relativo o assoluto (per relè di velocità) <i>Relative or absolute speed data (for speed relay)</i>	0 relativo / <i>relative</i> 1 assoluto / <i>absolute</i>		6551	00	Byte
c64	Azione al superamento del limite termico del motore <i>Behaviour of the drive in case of motor overtemperature alarm</i>	0 non blocca / <i>no block</i> 1 allarme A6 / <i>A6 alarm</i>		6552	00	Byte

c65	Selezione modo Posizionatore punto-punto o Velocità <i>Point-to-point positioner / Speed mode selection</i>	0 Velocità / <i>speed</i> 1 Posizionatore / <i>positioner</i>		6553	00	Byte
c66	Selezione sorgente per trigger (funzione oscilloscopio) <i>Source for trigger (oscilloscope function)</i>	2 ingresso log. / <i>logic input</i> 3 primo allarme / <i>first alarm</i> 4 livello CH1/ <i>CH1 level</i> 5 livello CH2 / <i>CH2 level</i>		6554	00	Byte
c67	Direzione per ricerca di zero <i>Zero search direction</i>	0 CCW, LS2 1 CW, LS1		6555	00	Byte
c68	Quote posizionatore relative/assolute <i>Incremental/absolute positioning</i>	0 relative / <i>relative</i> 1 assolute / <i>absolute</i>		6556	00	Byte
c69	Grandezza da visualizzare in marcia <i>Value displayed in run state</i>	1÷20 vedi tabella d0÷d20 <i>see table d0÷d20</i>		6557	00	Byte
c71	Blocca drive con "minima tensione" <i>Behaviour of the drive in case of undervoltage</i>	0 disabilitato / <i>disabled</i> 1 abilitato / <i>enabled</i>		6558	00	Byte
c72	Scelta start ricerca di zero <i>Zero search starting mode</i>	0 Normale / <i>Normal</i> 1 All'entrata in marcia		6559	00	Byte
c73	Scelta modo per ricerca di zero <i>Zero search mode</i>	0 da zero res. + finec. 1 da fine corsa 2 primo zero res.		655A	00	Byte
c74	Scelta protocollo seriale <i>Serial protocol</i>	0 MODBUS		655B	00	Byte
c76	Scelta bus di campo <i>Fieldbus</i>	0 No fieldbus 1 Canopen 2 Profibus DP		655C	00	Byte
c77	tipo di selezione del movimento da lanciare <i>multiposition selection mode</i>	0 ingressi logici / <i>logic inputs</i> 1 sequenza / <i>sequence</i>		655D	00	Byte
c78	Scelta baud rate seriale <i>serial line baud rate</i>	0 9600 / 1 stop bit 1 19200 / 1 stop bit 2 38400 / 1 stop bit 3 57600 / 1 stop bit 4 115200 / 1 stop bit 5 9600 / 2 stop bit 6 19200 / 2 stop bit 7 38400 / 2 stop bit 8 57600 / 2 stop bit 9 115200 / 2 stop bit		655E	00	Byte
c79	Pendenza per trigger (funzione oscilloscopio) <i>trigger slope (oscilloscope function)</i>	0 salita / <i>positive edge</i> 1 discesa / <i>negative edge</i>		655F	00	Byte
c80	Abilitazione dati di processo (profibus) <i>Process data enable (profibus)</i>	0 disabilitati / <i>disabled</i> 1 abilitati / <i>enabled</i>		6560	00	Byte
c81	Abilitazione software ottimizzato per CN <i>enabling of the software for NC</i>	0 normale / <i>normal</i> 1 CN abilitato / <i>NC enabled</i>		6561	00	Byte

### 3.5. DISPLAYS "D"

D	DESCRIPTION	CAMPO	rappr	Can Idx	Can SubIdx	Tipo
d00	Versione software <i>Software version</i>		2	6575	00	Word
d01	Riferimento analogico di velocità (SREF, /SREF) (%) <i>Analog speed reference (SREF, /SREF) (%)</i>	±100.0%	A	6576	00	Word
d02	Rif. di velocità a monte dello stadio rampa (%) <i>Speed ref. before the ramp stage (%)</i>	±100.0%	A	6577	00	Word
d03	Rif. di velocità a valle dello stadio rampa (%) <i>Speed ref. after the ramp stage (%)</i>	±100.0%	A	6578	00	Word
d04	Velocità del motore (%) <i>Motor speed (%)</i>	±100.0%	B	6579	00	Word
d05	Velocità del motore (RPM) <i>Motor speed (RPM)</i>	0÷19000	0	657A	00	Word
d06	I <sup>2</sup> t del motore (%) <i>Motor I<sup>2</sup>t (%)</i>	±100.0%	B	657B	00	Word
d07	Riferimento di coppia (A.I.1) (%) <i>Value of the external torque reference (A.I.1) (%)</i>	±100.0%	B	657C	00	Word
d08	Limite di corrente da ingresso A.I.2 (%) <i>External current limit (from A.I.2) (%)</i>	0÷100.0%	B	657D	00	Word
d09	Limite finale CW di corrente (%) <i>Current limit CW %</i>	0÷100.0%	B	657E	00	Word
d10	Limite finale CCW di corrente (%) <i>Current limit CCW %</i>	0÷(-100.0)%	B	657F	00	Word

d11	Riferimento di corrente in entrata al reg. di corrente (%) <i>Current reference at the input of the current regulator (%)</i>	±100.0%	B	6580	00	Word
d12	Tensione sul DC bus (V) <i>DC bus voltage (V)</i>	0÷999	0	6581	00	Word
d13	lettura posizione resolver (i.e.) <i>Resolver position (encoder pulses)</i>		0	6582	00	Word
d14	Corrente reale di coppia Iq (%) <i>Actual torque current Iq (%)</i>	±1/2 impulsi c11	0	6583	00	Word
d15	Corrente reale diretta Idm (%) <i>Actual direct current Id (%)</i>	±100.0%	B	6584	00	Word
d16	Tensione di coppia Vq (%) <i>Torque voltage Vq (%)</i>	±100.0%	B	6585	00	Word
d17	Tensione diretta Vd (%) <i>Direct voltage Vd (%)</i>	±100.0%	B	6586	00	Word
d18	Tensione imposta al motore Vm (%) <i>Motor voltage Vm (%)</i>	±100.0%	B	6587	00	Word
d19	Quota attuale (imp.encoder) <i>Actual position (encoder pulses)</i>	0÷100.0%	B	6588	00	Word
d20	Quota attuale (multipli di 20000) <i>Actual position (multiples of 20000)</i>	±19999	0	6589	00	Word
d21	Quota attuale moltiplicata per il rapporto P71/P72 <i>Actual position multiplied by ratio P71/P72</i>	±19999	0	658A	00	Word
d22	Temperatura radiatore (°C) <i>Heatsink temperature (°C)</i>	0.0÷120.0	0	658B	00	Word
d23	Corrente in uscita sul motore (A) (Ipeak = P113) <i>Motor torque current (A) (Ipeak = P113)</i>	0.0÷50.0	0	658C	00	Word
d26	Linea seriale attiva (RS232, RS485) <i>Active serial line (RS232, RS485)</i>	232,485	1	658D	00	Word

### 3.6. ALARMS "A"

A	ALLARMS	STATUS (H=ON L=OFF)	Can Idx	Can SubIdx	Tipo
A01	Autotaratura fallita <i>Autotuning failure</i>	L-H	6595	00	Bit0
A02	RAM o EEPROM in errore <i>RAM or EEPROM error</i>	L-H	6595	00	Bit1
A03	Sovracorrente su una fase motore <i>Overcurrent in the motor phases</i>	L-H	6595	00	Bit2
A04	Sovratemperatura radiatore <i>Heatsink overtemperature</i>	L-H	6595	00	Bit3
A05	Sensore termico motore <i>Motor thermal sensor</i>	L-H	6595	00	Bit4
A06	Sovratemperatura motore (I <sup>2</sup> t) <i>Motor overtemperature (I<sup>2</sup>t)</i>	L-H	6595	00	Bit5
A07	Mancanza cavo resolver <i>Resolver cable failure</i>	L-H	6595	00	Bit6
A08	Mancanza abilitazione esterna <i>External enable failure</i>	L-H	6595	00	Bit7
A09	Sovravelocità <i>Overspeed</i>	L-H	6596	00	Bit0
A10	Minima tensione DC bus <i>DC bus undervoltage</i>	L-H	6596	00	Bit1
A11	Sovratensione DC bus <i>DC bus overvoltage</i>	L-H	6596	00	Bit2
A12	Configurazione ingressi logici non corretta <i>Logic input configuration error</i>	L-H	6596	00	Bit3
A13	Impostazione poli motore/resolver non corretta <i>Number of motor or resolver poles incorrect</i>	L-H	6596	00	Bit4
A14	Collegamenti U, V, W non corretti <i>U, V, W connections error</i>	L-H	6596	00	Bit5
A15	Test della RAM interna fallito (non resettabile) <i>Internal RAM test failed (not resettable)</i>	L-H	6596	00	Bit6

	LOGIC INPUT	STATUS (H=ON L=OFF)	Can Idx	Can SubIdx	Tipo
--	-------------	---------------------	---------	------------	------

i01	Stato ingresso logico L.I.1 <i>State of Logic input L.I.1</i>	L-H	6598	00	Bit0
i02	Stato ingresso logico L.I.2 <i>State of Logic input L.I.2</i>	L-H	6598	00	Bit1
i03	Stato ingresso logico L.I.3 <i>State of Logic input L.I.3</i>	L-H	6598	00	Bit2
i04	Stato ingresso logico L.I.4 <i>State of Logic input L.I.4</i>	L-H	6598	00	Bit3
i05	Stato ingresso logico L.I.5 <i>State of Logic input L.I.5</i>	L-H	6598	00	Bit4
i06	Stato ingresso logico L.I.6 <i>State of Logic input L.I.6</i>	L-H	6598	00	Bit5
i07	Stato ingresso logico L.I.7 <i>State of Logic input L.I.7</i>	L-H	6598	00	Bit6
i08	Stato ingresso logico L.I.8 <i>State of Logic input L.I.8</i>	L-H	6598	00	Bit7
i09	Stato del segnale RUN <i>State of RUN signal</i>	L-H	6599	00	Bit0
i10	Stato del segnale TQ.EN <i>State of TQ.EN signal</i>	L-H	6599	00	Bit1
i11	Stato del segnale EXT.EN <i>State of EXT.EN signal</i>	L-H	6599	00	Bit2
i12	Stato del segnale REF1EN <i>State of REF1EN signal</i>	L-H	6599	00	Bit3
i13	Stato del segnale REF2EN <i>State of REF2EN signal</i>	L-H	6599	00	Bit4
i14	Stato del segnale LS1 <i>State of LS1 signal</i>	L-H	6599	00	Bit5
i15	Stato del segnale LS2 <i>State of LS2 signal</i>	L-H	6599	00	Bit6
i16	Stato del segnale EXT.LIMIT <i>State of EXT.LIMIT signal</i>	L-H	6599	00	Bit7
i17	Stato del segnale "ripristino allarmi" <i>State of the signal "Alarms reset"</i>	L-H	659A	00	Bit0
i18	Stato del segnale "start posizionamento" <i>State of the signal "Start movement"</i>	L-H	659A	00	Bit1
i19	N. U.	L-H	659A	00	Bit2
i20	Stato del segnale "Modo di funzionamento velocità / posizionatore" <i>State of the signal "Speed / positioner working mode"</i>	L-H	659A	00	Bit3
i21	Stato del segnale REV <i>State of REV signal</i>	L-H	659A	00	Bit4
i22	Stato del segnale "Abilitazione stadio rampa lineare" <i>State of the signal "Linear ramp stage enable"</i>	L-H	659A	00	Bit5
i23	Stato del segnale "start ricerca di zero" <i>State of the signal "zero search start command"</i>	L-H	659A	00	Bit6
i24	N. U.	L-H	659A	00	Bit7
i25	Stato del segnale "tipo di riferimento esterno (analogico/ come in c49)" <i>State of the signal "external reference type (analog / as in c49)"</i>	L-H	659B	00	Bit0
i26	Stato del segnale "Sensore di fine movimento" <i>State of the signal "End of movement sensor"</i>	L-H	659B	00	Bit1
i27	Stato del segnale "trigger per monitor (funzione oscilloscopio)" <i>State of the signal "scope trigger (oscilloscope function)"</i>	L-H	659B	00	Bit2
i28	Stato del segnale "Pulsante "-" per potenziometro digitale" <i>State of signal "- pushbutton for digital potentiometer"</i>	L-H	659B	00	Bit3
i29	Stato del segnale "Pulsante + per potenziometro digitale" <i>State of signal "+ pushbutton for digital potentiometer"</i>	L-H	659B	00	Bit4
i30	Stato del segnale "reset contatore interno di posizione" <i>State of the signal "internal position counter reset"</i>	L-H	659B	00	Bit5
i31	Stato bit0 (selezione movimento per posizionatore) <i>State of bit0 of movement selector</i>		659B	00	Bit6
i32	Stato bit1 (selezione movimento per posizionatore) <i>State of bit1 of movement selector</i>		659B	00	Bit7
i33	Stato bit2 (selezione movimento per posizionatore) <i>State of bit2 of movement selector</i>		659C	00	Bit0
i34	Stato bit3 (selezione movimento per posizionatore) <i>State of bit3 of movement selector</i>		659C	00	Bit1
i35	Start movimento A <i>Start movement A</i>		659C	00	Bit2



i36	Start movimento B <i>Start movement B</i>		959C	00	Bit3
-----	--	--	------	----	------

	LOGIC OUTPUT	STATUS (H=ON L=OFF)	Can Idx	Can SubIdx	Tipo
o01	Stato uscita logica LO1 <i>State of logic output LO1</i>	L-H	65A0	00	Bit0
o02	Stato uscita logica LO2 <i>State of logic output LO2</i>	L-H	65A0	00	Bit1
o03	Stato uscita logica LO3 <i>State of logic output LO3</i>	L-H	65A0	00	Bit2
o04	Stato uscita logica LO4 <i>State of logic output LO4</i>	L-H	65A0	00	Bit3
o09	Azionamento pronto <i>Drive ready</i>	L-H	65A0	00	Bit4
o10	Sovratemperatura motore <i>Motor overtemperature</i>	L-H	65A0	00	Bit5
o11	Velocità superiore alla minima <i>Speed greather than minimum</i>	L-H	65A0	00	Bit6
o12	Azionamento in marcia (stadio di potenza abilitato) <i>Drive on-line (output stage enabled)</i>	L-H	65A0	00	Bit7
o13	CW/CCW <i>CW/CCW</i>	L-H	65A1	00	Bit0
o14	Regolatore di velocità in saturazione <i>Speed regulator in saturation</i>	L-H	65A1	00	Bit1
o15	Fine rampa <i>Ramp end</i>	L-H	65A1	00	Bit2
o16	Velocità entro gamma <i>Speed in range relay</i>	L-H	65A1	00	Bit3
o17	Corrente entro gamma <i>Current in range relay</i>	L-H	65A1	00	Bit4
o18	Motore bloccato in battuta <i>Motor blocked</i>	L-H	65A1	00	Bit5
o19	Errore di posizionamento <i>Positioning error</i>	L-H	65A1	00	Bit6
o20	Rampa attiva <i>Ramp active</i>	L-H	65A1	00	Bit7
o21	N.U.	L-H	65A2	00	Bit0
o22	Movimento A eseguito <i>Movement A completed</i>	L-H	65A2	00	Bit1
o23	Movimento B eseguito <i>Movement B completed</i>	L-H	65A2	00	Bit2
o24	Stato del circuito di precarica <i>State of the soft-start circuit</i>	L-H	65A2	00	Bit3
o25	Buffer impulsi vuoto (ingresso in frequenza) <i>Pulse buffer empty (frequency input)</i>	L-H	65A2	00	Bit4
o26	Circuito di frenatura attivo <i>Clamping circuit active</i>	L-H	65A2	00	Bit5
o27	Ricerca di zero attiva <i>Zero search in execution</i>	L-H	65A2	00	Bit6
o28	Motore fermo con controllo di posizione (posizionatore attivo) <i>Motor at zero speed controlled in position (positioner active)</i>	L-H	65A2	00	Bit7

## **SDB CANBUS MANUAL V01**

If you have any questions about equipment installation or working,  
do not hesitate to contact us:

[brushless.products@tdemacno.it](mailto:brushless.products@tdemacno.it)

**TDE MACNO**

s.p.a. tecnologie digitali elettroniche

via dell'oreficeria, 41 36100 Vicenza tel.0444/343555

store: via dell'oreficeria, 27/B

Internet.address: [www.tdemacno.com](http://www.tdemacno.com)

Internet E-Mail: [brushless@tdemacno.it](mailto:brushless@tdemacno.it)

telefax 0444/343509

Without explicit writing authorisation from TDE MACNO is forbidden duplicate or memorise in any information system , any parts of this manuals.

TDE MACNO reserved itself the power of change in any moment the contents of this manual without particular warning

TDE MACNO declines any liability for errors in this manual and for the possible consequences.