EL.CON

ELETTRONICA PER L'AUTOMAZIONE

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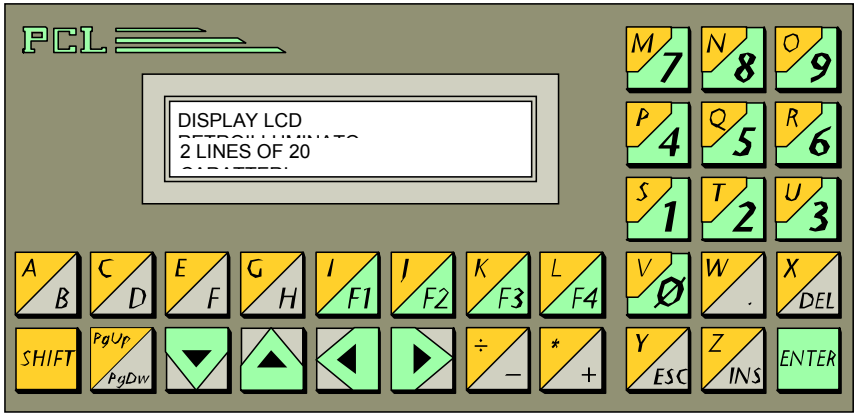
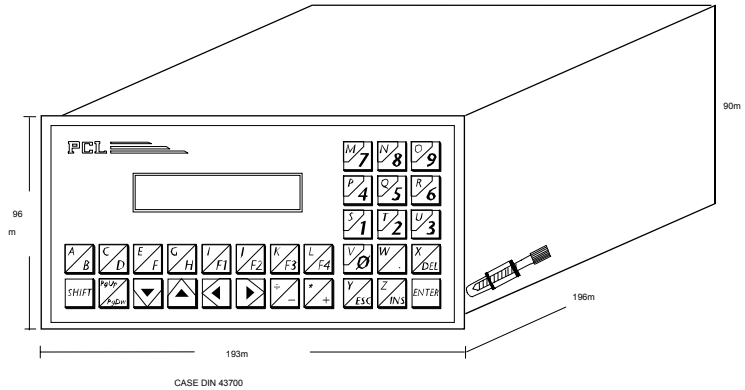
NUMERICAL CONTROL PCL

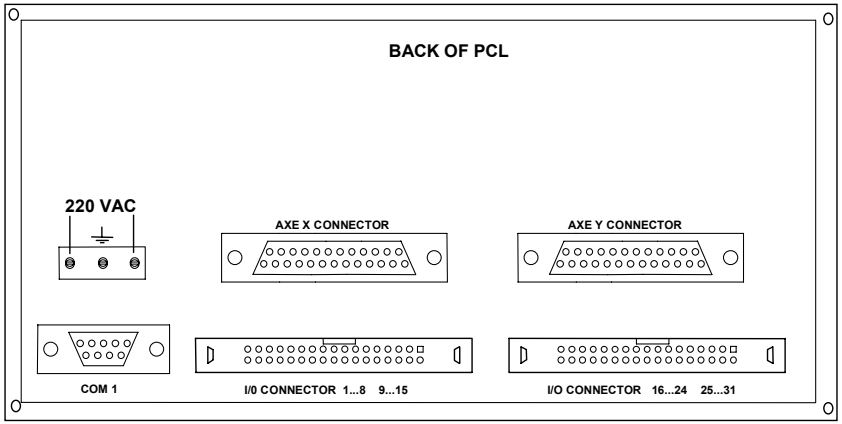
KEY PAD PCL



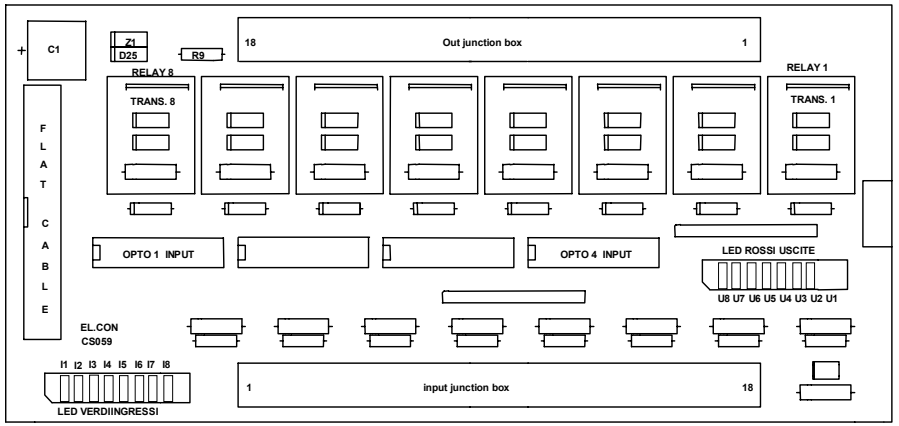
CE

Directive CEE 89/336


90m
96
m
193m
196m
CASE DIN 43700

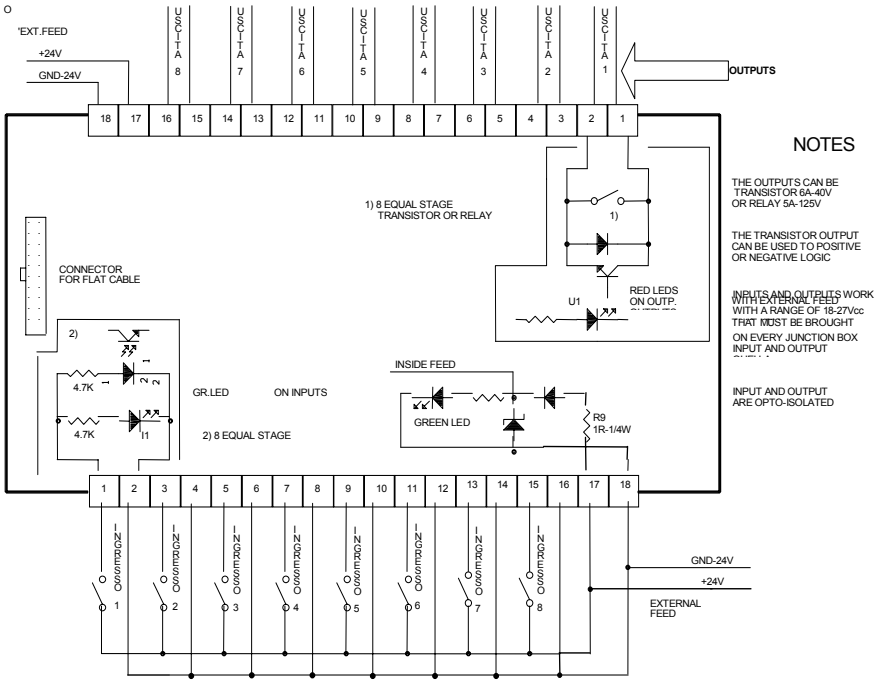

BACK OF PCL
220 VAC
AXE X CONNECTOR
AXE Y CONNECTOR
COM 1
I/0 CONNECTOR 1...8 9...15
I/O CONNECTOR 16...24 25...31

I/O MODUL



Modul I/O dimension, support included.
Large = 158mm high = 77mm deep (Thickness) = 45mm

ELECTRIC PLAN OF MODUL I/O



PCL : GENERAL DESCRIPTION

The numerical control PCL is a microprocessor system intended for position control. Created to be applicated on machinery axes, it controls the trajectory through a continuos cycle that permits to modify the motor speed by the same philosophy of numerical controls with elevated services intended for axes interpolation function.
The device has got inside :

- Two counter systems for bi-directional encoder with 32 bit capacity,
- Two "DAC" 12 bit + sign to run varying analog signals (-10V and +10V),
- Optoisalated transistors or relays inputs and outputs, the number is changeable from 8 to 30 plus 2 optoisalated outputs and 2 optoisalated inputs for enable signal and servodriver OK.
- One or two optoisalated serial interfaces RS232,
- Keypad with 31 keys in double function,
- High contrast LCD display with two lines of 20 characters each.

The numerical control memory intended for user programs is divided in static RAM (32KB, 128KB, 512KB) and EPROM (128KB, 512KB). With this great memory capacity is possible to create very large programs for sophisticated applications.
The device is available in two versions: PCL/1 for 1 axe and PCL/2 for 2 axes.
The basilar version has only one output to enable the motordriver and one input for motordriver OK, there are two external expandetion modules I/O connected through flat cable.
The maximum number of modules I/O connectable is four.
This modul I/O is supplied with plastic supports for fixing inside the cabinet, is provided with leds signal for input/output conditions, and is equipped with extractable connectors.
Every configurations are supplied with four analog inputs (8 bit) where is connectable one or two potentiometers in order to set the axes speed during the move without conditioning the programmed positioning.
The PCL permits to program the inside PLC through LADDER language with the help of a personal computer and a specific software that EL.CON supplies on request.
The compilated PLC is transferred in the PCL memory through the serial line RS232 and it is immediately activated.
In the same way, is possible to make the automatic cycle of work with the choice of messages and cycles.
The PCL allows to use an external floppy disk driver (model "Clever Disk") to back up the programs created on PCL, or to load programs created with an office personal computer.The requested formatting is MS-DOS® (format 720KB o 1.44MB). In order to program on personal computer and to back up on floppy disk, EL.CON supplies a specific software with the "Clever Disk".

MS-DOS® *Microsoft Corporation trades mark.*

TECNICAL FEATURES

-) max. n. 32 optoisolated inputs Imax=15mA V= 10...27Vcc
-) n. 2 inputs for encoder 12Vcc open-coll. , push-pull o 5V line-driver
freq.max = 100KHz
-) max. n. 32 optoisolated outputs . Transistors 0.6A or relays 5A-125VAC
-) n. 1 o 2 analog outputs with DAC 12 bit + sign. Signal -10V...+10V
-) n. 4 analog inputs 8 bit (is possible to settle axes speed with a potentiometer.)
-) n. 1 o 2 serial RS232 (by switching), with BAUD RATE 300/115200
-) feed 220VAC 15VA +/-10%
-) working temperature max. 45 centigrade

USE OF THE POSITION DISPLAY

When the machine is switched on , the main menu appears:

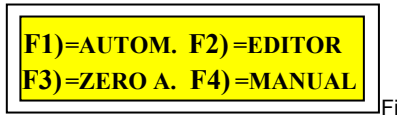


Fig.1

With **ESC** key the menu appears as follows:

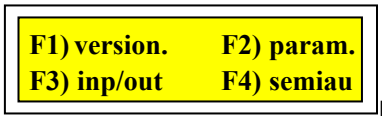


Fig.2

From those main menus is possible to access the various machine functions.
F1 automatic function to execute the cycle of a stored program (Fig.3)
With **ESC** key come back to the main menu.

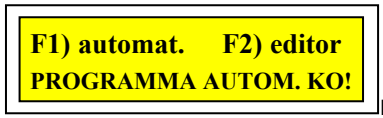


Fig.3

When (like over fig.) it appears “PROGRAMMA AUTOM. KO”, the stored program is not valid: it is necessary to come back to the main menu and transfer through serial line a valid cycle.
In order to create this cycle, use EL.CON software.
When cycle is valid (Fig.4) dial identification programs code and than confirm with **ENTER** key,
the program will be immediately active.
During the automatic cycle is possible to lay out the inputs situation with **A** key, the outputs situation with **B** key, the counters with **C** key, the timer with **D** key, set-reset with **E** key, false output and false input (support memory) with **F,G,H,I** keys.

From Fig.1, **F2** key allows accessing the program editor (writing) to execute automatically the numerical control asks the program code to create, the display appears like Fig.4

Fig.4

On the second line will appear the code that must be confirmed with **ENTER** key.

In the editor phase, from Fig.4 is possible to access to a program management with **PgUp** key. Fig.4bis.

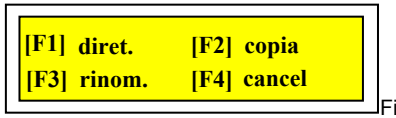


Fig.4bis

With **F1** key it appears the programs list already written and stored (max 100), it is possible to read only 6 names on the screen but with **PgUp** key is possible to read the others.
When there is the option FLOPPY, repeating **F1** *key is possible to read the program director on disk.*
From Fig.4bis is possible to copy a program on an other program using **F2** key. It is necessary to dial the starting name and the final name.
When there is FLOPPY option, it is possible to copy a program from PCL memory to a floppy disk. To execute this operation write ***A:*** *in front of the name of final program (in order to write* ***A:*** *press* **SHIFT** *and* **A** *contemporaneitly, and then* **SHIFT** *with ÷ contemporaneitly).*
For example using a program PROVA, the different possibilities of key ***[F2] copia*** *are:*

PROVA → PROVA1	*copy from memory to memory changing name*
PROVA → A:PROVA	*copy from memory to floppy with the same name*
PROVA → A:PROVA1	*copy from memory to floppy changing name*
A:PROVA → A:PROVA1	*copy from floppy to floppy changing name*
A:PROVA → PROVA	*copy from floppy to memory with the same name*
A:PROVA → PROVA1	*copy from floppy to memory changing name*
.* → A:*.	*copy all programs from memory to floppy with the same name*
A:*.* → *.*	*copy all programs from floppy to memory with the same name*

From Fig.4bis it is possible to change a program's name with **F3** key. The old name and the new name are requested if the final program already exist., it is always requested to confirm.
When there is FLOPPY option , it is possible to rename a program on floppy disk. Writing ***A:*** *in front of the old and the new names.*
(in order to write ***A:*** *press* **SHIFT** *and* **A** *contemporaneitly and then* **SHIFT** *with ÷ contemporaneitly.)*
For example using a program PROVA , the different possibilities of **[F3] rename** *are:*

PROVA → PROVA1	*rename in memory*
A:PROVA → A:PROVA1	*rename on floppy disk*

From Fig.4bis, it is possible to delete a program in memory pressing **F4** key. It is always requested the name of the program to delete. If you wish to delete all the programs in memory, press the following ***.*** and confirm with **ENTER**.

When there is FLOPPY option it is possible to delete the programs on floppy disk writing ***A:*** *in front of the program's names to delete. (in order to write* ***A:*** *press* **SHIFT** *and* **A** *contemporaneitly and then* **SHIFT** *with ÷ contemporaneitly).*

For example using a program PROVA , the different possibilities of **[F4] delete** *are::*

PROVA	*delete the program of memory*
.	*delete all the programs of memory*
A:PROVA	*delete a program on floppy disk*
A:.**	*delete all programs on floppy disk*

From Fig.1, press **F3** to access to axes reset function (zero function), Fig.5

Fig.5

The axes reset function can be mechanical or manual. The mechanical function search the set point limit switch or encoder notch. When key **F1** is pressed, the following screen appears:

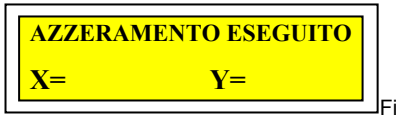


Fig.6

With function **F2** (from Fig.5) the SET POINT can be programmed in the current feeder position without performing any movement. The dialled value, confirmed with **ENTER** key is written on counter, (see Fig.7)

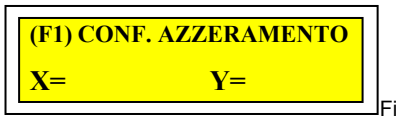


Fig.7

The value dialled from keyboard and with **ENTER** confirmed is written on the counters after confirmation with **F1**. With ➔ and ← keys i possible to change the selection of the axe.

From Fig.1, pressing **F4** is possible to access in the manual axes moving function and in the forced control output,to use for testing; the screen appears like Fig.8

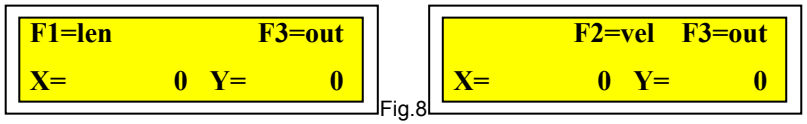


Fig.8

With **F1** and **F2** is possible to select the moving speed, slow or fast as defined from the respective parameters, the keys **+** and **–** move the axe to the wished direction. In the first screen of Fig.8 the selected speed is slow in the second screen the selected speed is fast. It is possible to decrement or increase a pre-setting value, writing a new value confirmed with **ENTER.**

Pressing + increase, pressing **-** decrement. The key **DEL** come back to the normal condition.

It is possible to position the axe to an absolute point dialling the wished level and pressing **SHIFT** with **+** contemporaneitly to move the axe to the positive point, **SHIFT** and - to the negative point

Example level 1000, in the first case the axe will be positioned to +1000, in the second case to
-1000.
In the manual function the START to perform a positioning is not requested and the STOP is not handling.

Pressing **F3** key the screen will appear like Fig.9

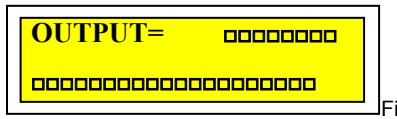


Fig.9

In this function it is possible to active one output (if the existing PLC permits it)moving the cursor on the wished output and pressing ENTER; in the same way it is possible to verify the status of the output. The activation is signalled with the number instead of □. To deactivate the output press again **ENTER**.

Till now we have examined the possibilities necessary to the normal use of the numerical control; the possibilities of Fig.2 and derived functions are intended for technicians and for installation .

From Fig.2, pressing **F1**, the screen appears as Fig. 10

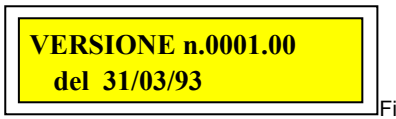


Fig.10

This function gives the software version number existing in memory, with date of production. When are requested a change, a program modify, or an explanation, it is necessary to give EL.CON this version identification number .

From Fig. 2, pressing **F2**, the screen appears as Fig.11

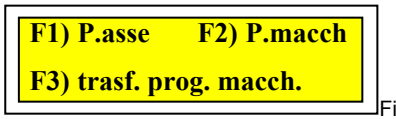


Fig.11

From Fig.11 it is possible to access to many functions.
Pressing **F1** the display appears as Fig. 12.

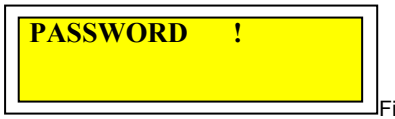


Fig.12

With this function it is possible to read and to write the axes parameters in order to set the speed, the acceleration etc.. To access , dial the password that in the basilar system is **974747**. For every character dialled it will appear **#** ; at the end confirm with **ENTER** key and the screen will appear like Fig.13

Fig.13

Now the data of axes X, Y of parameter 01) are screened . It is possible to move the cursor from X to Y with ➔ and ← , to access to the following parameters use ↓ key, to access to the preceding parameters use ↑ key. The meaning of each parameter is specified in the axe parameter list of this user's guide.

In order to access to the machine parameters function from Fig.11, press **F2** and dial the password like Fig.12. Inside this function use ↑ and ↓ keys in the same way of the axes parameters. The machine parameter meanings are explained in the machine parameters list of this user's guide.

From Fig.11, pressing **F3**, the screen appears like Fig.14

Fig. 14

Now it is possible to transfer ,through serial line, the TEXT of the automatic program editor , the LOGIC of the automatic cycle and the PLC program.
With those files (previously made on external P.C.), it is possible to adapt the user's program to many different requirements. This software can be made by EL.CON or by the designer of machine .
For every of each choice the display appears like Fig.15

Fig.15

The numerical control waits the end of the program's transfer and comes back to Fig.11.

When there is the FLOPPY option, the screen of Fig.11 will be like Fig.15a

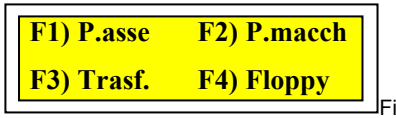


Fig.15a

Pressing **F4)Floppy** *it is possible to work with floppy ,and the screen appears like Fig.15b*

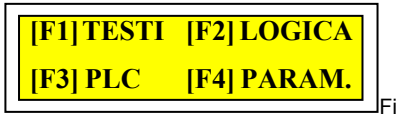


Fig.15b

From Fig.15b pressing **F1** *key, it is possible to display the programs of EDITOR AUTOMATIC (on floppy) with expansion .EDJ, previously created through back up of PCL memory or through P.C. compiler.*

Pressing **F2** *it is possible to display the programs of AUTOMATIC (on floppy) with expansion .AUJ*
Pressing **F3** *it is possible to display the programs of PLC (on floppy) with expansion .PLJ*
Pressing **F4** *it is possible to display the programs (on floppy) with expansion .PAR. The expansion .PAR represent the back up of parameters.*

Pressing **F1...F4**, *the PCL reads the floppy and the screen appears like Fig.15c*

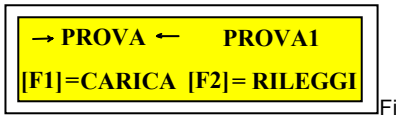


Fig.15c

The name between the arrows in the program's name that will be charged pressing **[F1]=CARICA** *and pressing* **[F2]=RILEGGI** *will be possible to read again the floppy.*
With ➔*and* ➔ *keys it is possible to change the choice of the program on the first line of the display.*
With **SHIFT** *and* **S** *pressed at the same time,it is possible to back up the function from memory to floppy (it is possible to save EDITOR, AUTOMATICO, PLC and PARAMETR).*
The name of the file to back up is requested on the second line of the display that appears like Fig. 15d, the expansion is automatically gived from the program, .EDJ, .AUJ, .PLJ, .PAR

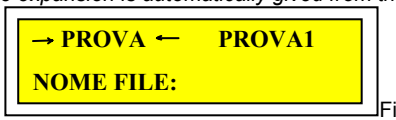


Fig.15d

From Fig.2, pressing **F3**, the display appears like Fig.16

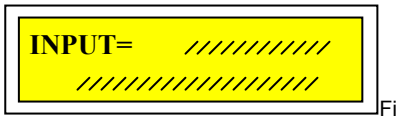


Fig.16

The status of open inputs is represented from ⁄ the status of the closed inputs from —.
This operation is done in real time, the PLC is not operating, this function allows to try manually the inputs. The last 2 inputs are pertinent of AZIONAMENTO O.K., they are not on the flat cable, but they are on 25p connectors.
with **PgDw** key the display appears like Fig.17

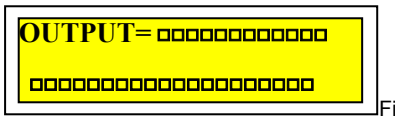


Fig.17

In this function is possible to control the outputs without influences of PLC. The last 2 outputs are pertinent of motordrivers X and Y enable, they are not on flat cable but they are on 25p connectors. When this outputs are forced , the motor drivers and the inputs 31 and 32 are activated.

With **PgUp** key the screen appears like Fig.18

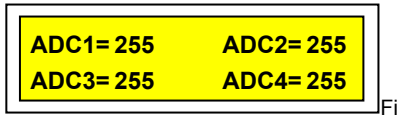


Fig.18

In this screen is represented the value of four ADC channel on PCL.
The value is the digital conversion of the analogue quantity in the respective inputs. The definition is 8 bit, the max. large for input signal is 5V, those are represented from the number 255.

The value 1 represents the function 5V/255=19mV. If the signal to measure is large more than 5V, it is necessary to make an external resistor divider.
Normally the first 2 channel are already assigned to 2 external potentiometer in order to control the speed of the axes. The 2 inputs are enable from parameter. From parameter is possible to use only the first input to set the speed of each axes.
From Fig.2, pressing **F4**, the screen appears like Fig.19

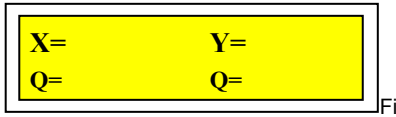


Fig. 19

Now there is the possibility to move in semiautomatic mode. The values of X and Y represent the levels. The dialled and confirmed value goes in Q=, pressing **F1** the axe, or the axes, reach the dialled level in closed space ring.
If the movement is requested by **F2**, the compensation of pursuit error is not done, therefore the space control is said "open ring".
During the movement Q= is becoming I=, that represent the pursuit error.

Pressing **ESC** key it is possible to come back to screen of Fig.2, pressing **ESC** key again it is possible to come back to screen of Fig.1.

AXE PARAMETERS

01) NUMERO DECIMALI (DECIMAL NUMBER)
X= 1 Y= 1
It sets out the numbers after the comma

02) QUOTA DI ZERO (ZEROS QUOTA)
X= 100 Y= 100 (+/- 0...9999999)
Value given to the starting quota, in the chosen measuring unit.

03) RECUPERO GIOCO (CLEARANCE OR PLAY RICUPERO)
X= 0 Y= 0 (+/- 0...9999999)
Value to exceed the quota to ricupero the mechanical play,in the chosen measuring unit. It can be descending or incrementing, it is defined with + or -

04) F.CORSA SOFT.MAX (MAXIM SOFTWARE END DROP)
X= 9999999 Y= 9999999 (+/- 0...9999999)
Value of largest software end drop

05)F.CORSA SOFT.MIN (MINIM SOFTWARE END DROP)
X= -9999999 Y= -9999999 (+/- 0...9999999)
Value of smallest software end drop

06) GUAD. DIN. SALITA (DYNAMIC GAIN OF RISE)
X= 5 Y= 5 (0...255)
Value of proportional gain in the acceleration

07) GUAD. DIN. VELOCITA (DYNAMIC GAIN OF SPEED)
X= 5 Y= 5 (0...255)
Value of proportional gain in the constant speed distance

08) ACCELERAZIONE ms (ACCELERATION)
X= 200 Y= 200 (0...99999999)
Value in millisecond of the acceleration or deceleration

09) INSEG.MASSIMO (MAXIM PURSUIT)
X= 1000 Y= 1000 (0...65535)
Extreme value for pursuit error, in encoder pulse . Over this value the stop comes to disable the axe and and the message appears

10) VELOCITA' MASSIMA (MAXIM SPEED)
X= 40000 Y= 40000 (0...9999999)
Value of the largest speed, in millimetres for minute

11) VELOC. MIN. MANUALE (MANUAL MINIM SPEED)
X= 2000 Y= 2000 (0...9999999)
Value of manual smallest speed, in millimetres for minute

12) VELOC. MAX. MANUALE (MANUAL MAXIM SPEED)
X= 40000 Y= 40000 (0...9999999)
Value of largest manual speed, in millimetres for minute

13) VELOC. DI ZERO (ZERO'S SPEED)
X= 40000 Y= 40000 (0...9999999)
Value of the speed to restarting (SET-POINT), in millimetres for minute

14) SENSO RIC. DI ZERO (SEARCH OF ZERO DIRECTION)
X= 1 Y= 1 (0,1)
Direction to search the zero end drop

15) TIPO DI ZERO 0/115) TIPO DI ZERO 0/1 (ZERO TYPE)
X= 1 Y= 1 (0,1, 2)
Selecting 0 it does not search the end drop but it writes on the counters the value of l parameter 02).
Selecting 1 it searches the end drop starting from axe 1 (X). Selecting 2 it searches the end drop starting from axe 2 (Y). If both axes has been selected with 1, the axes move at the same time.

16) TOLL. SU POSIZIONE (TOLERANCE ON POSITION)
X= 0 Y= 0 (0,255)
Value in encoder pulse, of the tolerance defined when the selected position is reached.

17) GUAD. DIN. ARRESTO (DYNAMIC GAIN OF STOP)
Value of proportional gain applied to inside the stopping space .
X= 0 Y= 0 (0,255)

18) FASCIA DI ARRESTO (STOPPING SPACE)
X= 5 0 Y= 50 (0,65535)
Space, in encoder pulse (in comparison to the final quota) inside of whom is applied the par. 17)

19) ABILIT. RITENUTA (KEPT ENABLE)
X= 0 Y= 0 (0,1)
This parameter allows to keep the motor enable,in arrived position too, (living axe) or to disable it . With 0 it remains enable in all the moving functions (automatic, manual, semiautomatic), with 1 it will be disable.

20) FATT. DI CORREZ. (CORRECTION FACTOR)
X= 1 Y= 1 (0,65535)
Factor multiplier of encoder correction to use together with par. 21) in order to set the number of encoder pulses necessary to obtain the chosen measure unit. Example: with 4000 encoder pulses it is possible to create a moving of 100.0 mm. Setting 4000 in par. 20) and 1000 in par. 21), the result will be 4000 : 4 = 1000. Choosing 1 decimal display in par. 1) it will be screened 100.0
Attention: the numerical control P.C.L. does always the internal multiplication x4 of encoder pulses, therefore a 100 pulses encoder will be in reality 400 encoder pulses.

21) DIVIS. DI CORREZ. (DIVIDER FACTOR)
X= 1 Y= 1 (0,65535)
See par. 20)

22) POTENZ. VEL. 0/1/2 (SPEED POTENTIOMETER)
X= 1 Y= 1 (0,1,2)
It allows using of possible potentiometers connected to the analog inputs in order to set the axes speed. With 0 the potentiometers are excluded , with 1 the axes are controlled by the potentiometer connected to the first canal, with 2 the axe X will be controlled by the potentiometer connected to the first canal and the axe Y will be controlled from the potentiometer connected to the second canal.

23) CALCOLO AUT. KVS=0 (AUTOMATIC CALCULATOR)
X= 1 Y= 1 (0,1,2)
It defines when the numerical control has to calculate automatically the scale bottom of DAC par 24) (max. reference output normally 9V +/- 5%). With 0 the calculation is automatically done, with 1 the value must be manually introduced in order to obtain values different from 9V. Obviously is more simple to set 0 and to use the automatic calculator.

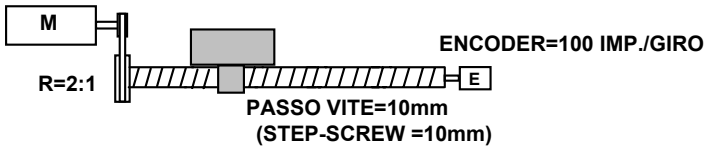
24) KVS
X= 51 Y= 51 (0...65535)
This is the calculation result to obtain the wished reference scale bottom.
If in the par.23) is set 0), this parameter is automatically calculated therefore it does not have to be changed.

25) DIVIS. ENCODER /4
X= 0 Y= 0 (0,1)
With 0 the encoder pulses (in entrance) are multiplied by four, with 1 they are multiplied by one. The parameters **21)** and **22)** act to the base of this multiplier.

USER FOR A PROMPT SETTING OF AXE PARAMETERS

At first it is necessary to configure the right encoder factor to obtain the wished measure unit. Starting from the available numbers of pulses, it is necessary to calculate (or to test) which mechanic moving results.
The factor between the two values must be optimised using the parameters 20) and 21). Those parameters allow correcting small mechanic transmitting errors , because doing factor very near like 65535: 65534= 1.0000152 it is possible to obtain a result nearby the unit . With the inverted factor 65534:65535=0.9999847 it is possible to correct the large, but of the opposite sign. The screened values will be upper than the value of read pulses.

Example :
MOT.=3000 RPM



In the example the motor does 3000 RPM, the screw 1500 rotations, the carriage 15000 mm/min., the encoder 400 pulses for every 10 mm of carriage (step-screw 10), because the P.C.L. does always the multiplication of encoder x4 .
Setting the measure unit 0.1 mm, the parameter 1) will be = 1, in order to obtain a screened of 100, the encoder multiplicator factor will be calculated in the following way :
PAR.20)=400, PAR.21)=100
The parameter 10) VMAX represent the speed in mm/min, therefore 15000 will be directly introduced.

When you have introduced the previous parameters, set the par.6), 7), 17) with 1, so in this way the ring corrections are few .
Set par.19) with 0 to keep the motor always enable, when it is stopped too.
Set par.16) with 1 to let go an error of 0.1 mm on the quota to reach.
Set par.18) with 50 to define a range for gain of stop.
Set par. 8) with an acceptable acceleration value .
Do a manual zero axe in a security machine position,; example for a 4 meters length machine bring manually the axe to 2000, do a manual zero axe writing 2000 .
In SEMIAUTOMATICO do a movement setting a quota to reach. During the movement the value of pursuit error is screened, this must reach, as nearest as possible, zero (setting the motordriver speed in the constant speed range).

If the axe does not reach perfectly the requested quota because of motordriver off-set , being the motor on, it is possible to set this off-set, working on the motordriver. Repeat this action

for the other direction of work. If the axe does no reach the position (it is not inside the requested range)
Enter the EMERGENZA signal in order to interrupt the actual procedure. Repeat the previous procedure increasing the range of the axe (par. 16).
When this operation is over , it is possible to increase 3 proportional gains in order to improve the exactness of the axe .
Valid values could be :
Par. 6) 1 or 2. It is possible to increase up to reach oscillations in acceleration
Par. 7) 1 or 2. It is possible to increase up to reach oscillations in the range of constant speed .
Par. 17) 5 or greater than 5 . It is possible to increase up to reach oscillations near to the final quote.
Repeat the positioning in SEMIAUTOMATICO in order to verify the right parameters setting .

MACHINE PARAMETERS

1) **PARAMETERS BACKUP**
5 (0/5)
Allows to save the parameters in the protected ram memory, or to save the default parameters taking them from the eprom. With 5 the data are saved.

2) COUNTER 1
0
It is possible to set the counter 1

3)...7)
The same as par. 2) but for the other counters till counter 6

08) TIMER 1
0
it is possible to set the timer 1

09)...23)
The same as par. 08) but for the other timer, till to timer 16

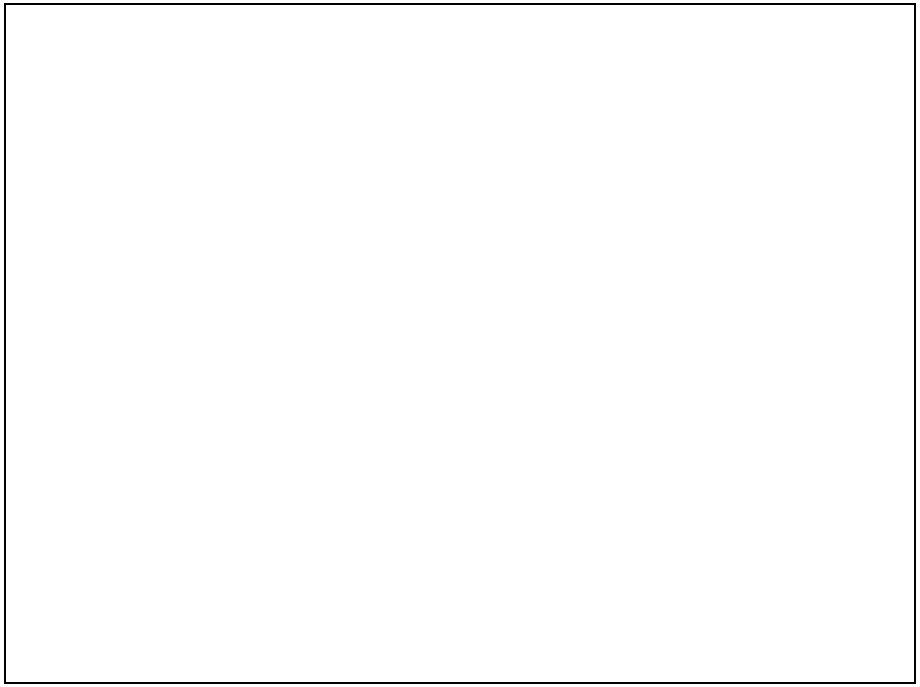
24) FLOPPY DISK 1=SI
0/1
It allows to activate the floppy option (when the software is provided with it)

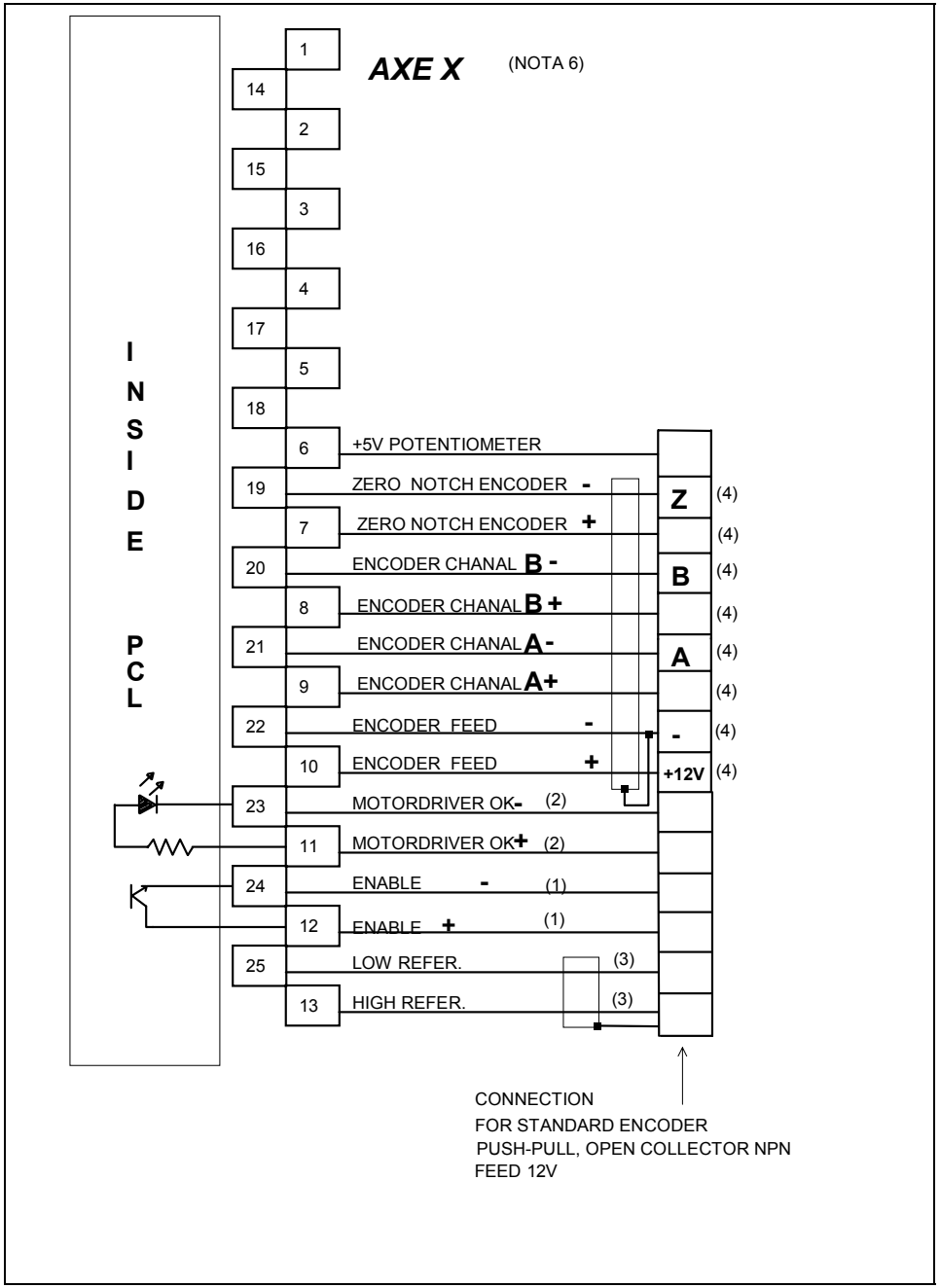
MEMORIES USED FOR DIALOG BETWEEN C.N. AND INTERNAL P.L.C.

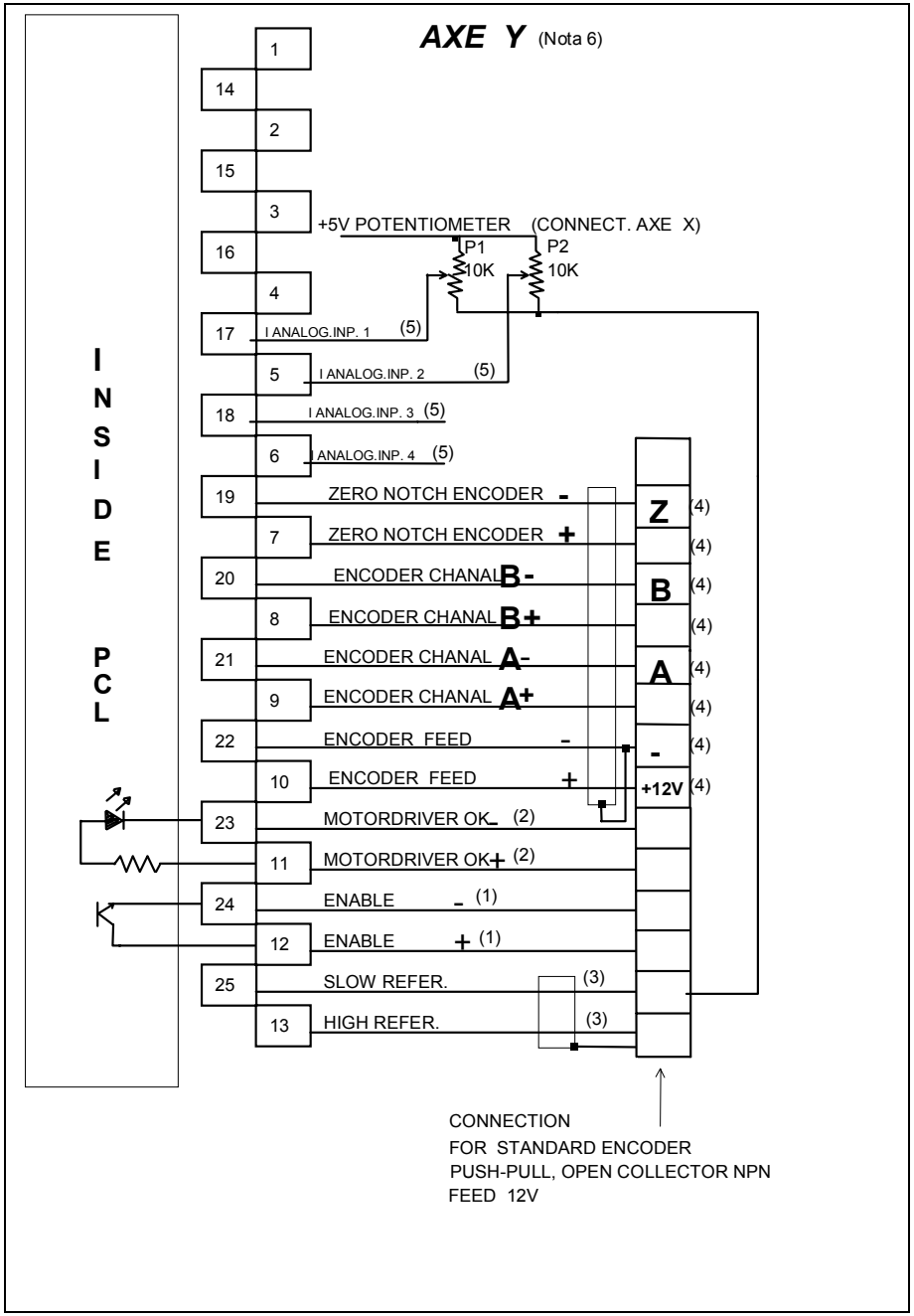
To conditioning the development of P.L.C. inside the machine and vice versa, it is available a quantity of memories, to use as internal inputs and internal outputs .

The memories between 1600 and 1614 are orders that the P.L.C. sends to C.N., the memories between 1500 e 1511 are information about the state, that the Numerical Control gives available for P.L.C.
The following list represent the actual state. (When necessary, for special application, EL.CON will change it introducing new memories)

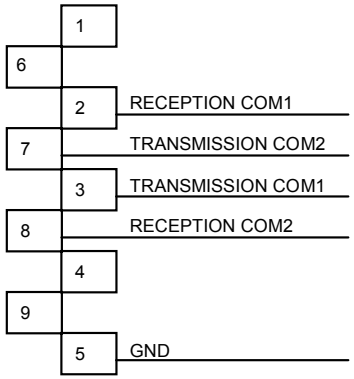
NUMBER CODE	MNEMONICAL CODE	FUNCTION
1600	OSTA	Start chosen axe
1601	OSTO	Stop chosen axe
1602	OEME	Moving axes emergency
1603	OINC	Manual increment of the selected axe
1604	ODEC	Manual decrement " " " "
1605	OFCP0	End drop + axe X
1606	OFCM0	End drop - axe X
1607	OFCR0	End drop of axe X rallenty
1608	OCAM0	End drop of zero axe X
1609	OOFF0	OK to disable axe X in quota
1610	OFCP1	End drop + axe Y
1611	OFCM1	End drop - axe Y
1612	OFCR1	End drop of axe Y rallenty
1613	OCAM1	End drop of zero axe Y
1614	OOFF1	OK to disable axe Y in quota
1500	IMAN	Moving manual function carrying out
1501	ISTO	One or more axes in STOP does not controlled from OSTO
1502	IAUT	Function of automatic cycle carrying out
1503	ISEM	Function of semiautomatic cycle carrying out
1504	IQUO0	Axe X in quota
1505	IERR0	Axe X in error
1506	IZER	Function of reset carrying out
1507	IMOV0	Function of positioning axe X carrying out
1508	IQUO1	Axe Y in quota
1509	IERR1	Axe Y in error
1510	ISTA	In automatic it is true, waiting START
1511	IMOV1	Function of positioning axe Y carrying out



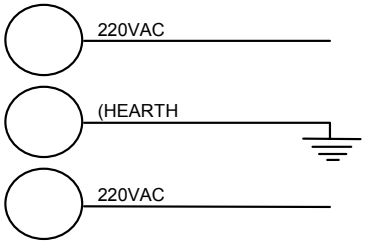

AXE X
(NOTA 6)
INSIDE PCL
1
14
2
15
3
16
4
17
5
18
6 +5V POTENTIOMETER
19 ZERO NOTCH ENCODER -
7 ZERO NOTCH ENCODER +
20 ENCODER CHANAL B -
8 ENCODER CHANAL B +
21 ENCODER CHANAL A -
9 ENCODER CHANAL A +
22 ENCODER FEED -
10 ENCODER FEED +
23 MOTORDRIVER OK- (2)
11 MOTORDRIVER OK+ (2)
24 ENABLE - (1)
12 ENABLE + (1)
25 LOW REFER. (3)
13 HIGH REFER. (3)
Z (4)
(4)
B (4)
(4)
A (4)
(4)
- (4)
+12V (4)
CONNECTION
FOR STANDARD ENCODER
PUSH-PULL, OPEN COLLECTOR NPN
FEED 12V


AXE Y (Nota 6)
INSIDE PCL
1
14
2
15
3
16
4
17
5
18
6
19
7
20
8
21
9
22
10
23
11
24
12
25
13
+5V POTENTIOMETER (CONNECT. AXE X)
P1 10K
P2 10K
I ANALOG.INP. 1 (5)
I ANALOG.INP. 2 (5)
I ANALOG.INP. 3 (5)
I ANALOG.INP. 4 (5)
ZERO NOTCH ENCODER -
ZERO NOTCH ENCODER +
ENCODER CHANAL B-
ENCODER CHANAL B+
ENCODER CHANAL A-
ENCODER CHANAL A+
ENCODER FEED -
ENCODER FEED +
MOTORDRIVER OK- (2)
MOTORDRIVER OK+ (2)
ENABLE - (1)
ENABLE + (1)
SLOW REFER. (3)
HIGH REFER. (3)
Z (4)
B (4)
A (4)
- (4)
+12V (4)
CONNECTION
FOR STANDARD ENCODER
PUSH-PULL, OPEN COLLECTOR NPN
FEED 12V

SERIAL COM1 E COM2



JUNCTION BOX



NOTE :

(1) Optoisolated outputs : Max voltage current = 50 mA
(2) Optoisolated inputs : Vmin = 8V Vmax = 27 V Inputs resistence = 4.7K
(3) Connected protection from motordriver side
(4) Standard encoder feed = 12V-150 mA; standard type OPEN-COLLECTOR NPN
or PUSH-PULL
feed 5V, configuration LINE-DRIVE or OPEN COLLECTOR PNP from request
The signal A+ B+ TACCA DI ZERO+ are available in the LINE-DRIVER models, free in the other models.
(5) Analog inputs 8 BIT Vmin = -0.5V Vmax = +5.5V, input impedance 100K
the inputs 1 e 2 (Junctions 17 e 5) are destined to potentiometers in order to set the X and Y speed (it is possible to use only P1 for both)
(6) 25 pins male connector on PCL

CONFORMITY DECLARATION

Conformity with regulation ISO/IEC Guide 22 e EN 45014

Name of producer EL.CON s.n.c. di Sbreghi Sauro e C.

Address of producer:
EL.CON s.n.c. di Sbreghi Sauro e C.
Via Quattro Vie 3/a - 40050 Castello d'Argile (Bologna - ITALY)

declares that the pruducts :

models: PCL/1, PCL/2, MODULO I/O PER PCL

options: All

are conformed to the following product specifications:

EMC: EN 55022 (1988) Class B/CISPR 22 (1985) Class B
IEC 801-2 (1991) Second edit./pr EN 55101-2 (1990); LIV. 3
IEC 801-3 (1984) /pr EN 55024-3 (1991); LIV. 3
IEC 801-4 (1988) /pr EN 55024-4 (1992); LIV. 3

Notes:
The included products are conformed with regulation EMC 89/336/EEC.
The products are verified in a typical configuration.

Technician responsible : Sauro Sbreghi