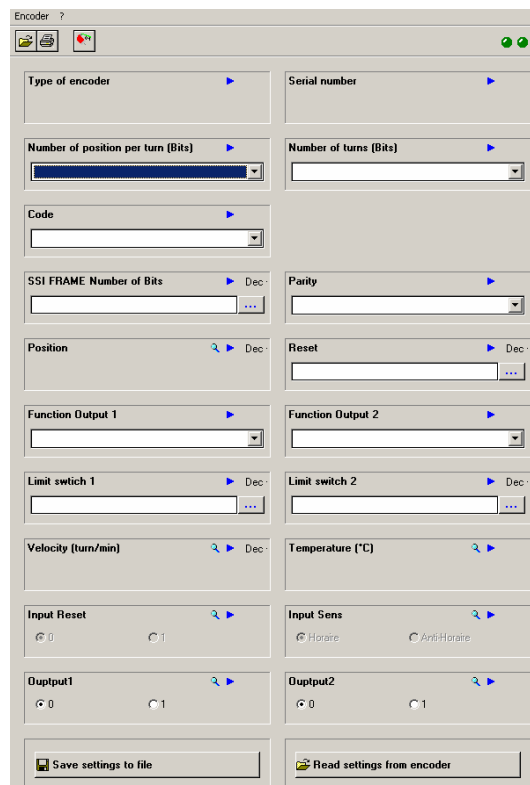# USER MANUAL

Configuration Software
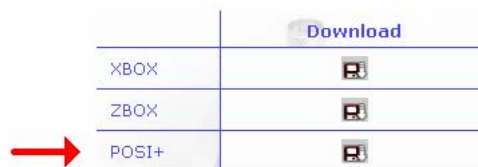
XCONFIG

Version 1.00 AK
Last update :02/03/05

PC software installation

The XCONFIG software is available on our web site www.bei-ideacod.com
You just have to download it

Run the install.exe. The friendly software guides you with the choice of 6 languages:
> Français
> English
> German
> Portuguese
> Spanish
> Italian

Nota : the *.par configuartion files are only available for the moment in english, german and french

When the installation is finished, icons have been added : 1 to run the Xconfig software, 1 to erase the software.

 Click on this icon to run the Xconfig software

 Click on this icon to erase the Xconfig software

Configuration of a programmable encoder with the XCONFIG software

POSI+ encoder can be prgrammed (ex : PHM5_10//PPX…; PHM9_12//PPX…), cf programmable POSI+ datasheet

The encoder programmation is directly done via the serial connection of the PC (9 pinouts RS232)
Before configuring the encoder : all the connections must be well done
Nota : the maximum length between the PC and the encoder must be maximum 15m (*RS232 interface*)

The **PRO-020S001** extension cable permits to connect simply your programmable *POSI+™* encoder to you PC, it is composed of:

-   A power supply to be plugged into the mains (230Vac/12Vdc), this powers the encoder
-   At one side: a M23 12 pins connector to be screwed on the programmable encoder (PHM5, PHO5, PHM9 or PHU9)
-   At the other side a SUBD9 female connector to be plugged on a serial port of your PC

Ordering reference : **PRO-020S001**

CONNECTIONS WITH THE PRO-020S001

(Benchtest programmation)

1.   Connect the 12 pin connector on the encoder
2.   Connect the DB9 on a serial connection of your PC
3.   Connect the power supply
4.   Run the XCONFIG software

Choice of the file . *.PAR

 When XCONFIG starts, a grey window opens, with its title, yool and icons. A file which defines the encoder type must be choosen. Click on the icon ''Open file'' or go in ''Encoder'', ''Open file …''. A file for the programmation of the POSI+ must be choosen, ex : Posi_UK.par is the English version, double-click on this file. XCONFIG knows now wich type of encoder is connected.

Synchronisation

 After that, it is necessary to the XCONFIG software to establish the connection with the encoder, this is done while pressing on the synchronization icon (or selectionning the Synchronise option in the Encoder menu). The first time this option is carried out, XCONFIG asks for the communication port. It is necessary to indicate the port number (where the encocoder is connected). The following times, it isn't necessary to do this anymore, it is enough to click on OK because the program remembers this number. When XCONFIG is in possession of this information, it is synchronized with the encoder, and it fills all the windows – text fields (which were empty before synchronization) by reading the encoder data. We are now ready to configure the encoder!
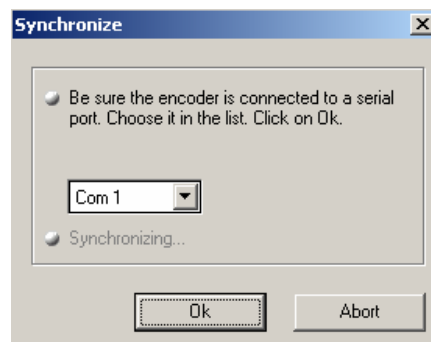
When the synchronization is running, the two green leds (Rx and Tx) flash, datas exchange between XCONFIG and the POSI+ encoder. Xconfig verifies the answer integrity of the encoder (parity, number of bits stop etc). In the case of a wrong data , a red led indicates an error.
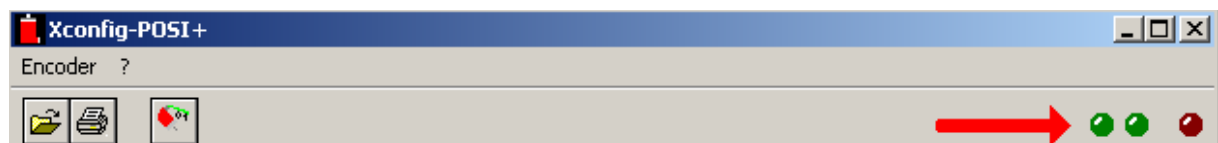
PRINT

 Ounce the synchronization is established, a printing of the parameters can be asked. This printing can be used to catalog the various encoders of a company, it gives the type and the serial number of the encoders

General remarks on XCONFIG

A value is sent AFTER having clicked on .

The small blue triangle ( )is used to read again the data in the coder

It is possible to read several times per seconds certain values while clicking on the small magnifying glass, the 2 Leds passes to the green. It is preferable to completely do it after having configured the encoder. Indeed, when one or more reading are in process, XCONFIG doesn't send systematically the order. It is thus necessary to configure and then carry out readings continuously

The modification of a parameter can involve the modification of an another. For example if the number of revolutions is decreased, the coder can decrease the value of the RAX (in order it could be possible)
RAX (reset to the value ''X'')

XCONFIG sends a configuration order but doesn't read again the configuration of the coder at each order.
XCONFIG sends a configuration order but doesn't read again the configuration of the coder at each order. To be sure that the configuration of the encoder is the same that the one shown in the windows, it is necessary "to synchronize" (F9) so that all the configuration is read again.

The alarm messages which have number superior to 128 are information messages, for example if we decrease the number of turns and it becomes lower than the value of the RAX, the RAX value is automatically modified, this is indicated by an alarm message.

Codeurs SSI

List options configurable and readable by the user

Number of points per turn (from 0 to 13 bits)
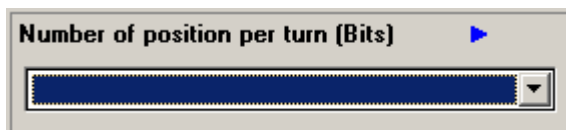
Configuration of the drop-down menu type. A safe system checks that the number of bits in the turn + number of turns is not superior to the SSI frame, then that the value of RaX is not higher than the maximum value (if it is the case the RaX is decreased and an error message announces it). If all is correct, the number of bits is accepted, If not a message describing the error appears and the data is refused. The small blue triangle is used to read again the data in the encoder

Number of revolutions (from 0 to 16 bits)

Number of turns (Bits) ▶

Configuration of the drop-down menu type. A safe system checks that the number of turns + resolution is not superior to the SSI frame, then that the value of RaX is not higher than the maximum value (if it is the case the RaX is decreased and an error message announces it). If all is correct, the number of bits is accepted, If not a message describing the error appears and the data is refused. The small blue triangle is used to read again the data in the encoder

Code

Code ▶

Gray

Configuration of the drop-down menu type. It is possible to configure here the output code, it can be: Gray or Binary

SSI FRAME Number of bits

SSI FRAME Number of Bits ▶ Dec ·

...

The number of bits of SSI frame must correspond to the PLC configuration. If the number of bits is decreased, the number of revolutions can be decreased so that the number of bits of the position is not higher than the SSI frame. The value must be between 1 and 31 bits for a transmission without parity and between 1 and 29 for a transmission with Parity

Parity

Parity ▶

The transmission of the position can be done "Without Parity", with "Even Parity", or "Odd Parity". The parity must correspond to the PLC configuration

RAX value (Reset to a value X)

Reset ▶ Dec ·

... ← **VALIDATION BUTTON**

Any value can be entered in the window. A safety checks that the RAX value is not higher than the maximum position. If all is correct, it is accepted, if not a message describing the error appears and the data is refused. As long as the VALIDATION BUTTON is not pressed, the RAX Value is not sent to the encoder. As soon as the

VALIDATION BUTTON is clicked, the encoder goes to the RAX position. The small blue triangle is used to read again the data in the coder.

OUTPUT FUNCTION 1 / OUTPUT FUNCTION 2

The coder has 2 outputs "OUT1" and "OUT2" which changes their state when limits is passed (cf "OUT1/OUT2")
It is possible to enter limits of several parameters:
Postion: the output changes its state when the position of the encoder exceeds the wished limit
Speed: output changes its state when the speed of the encoder exceeds the wished limit
Temperature: output changes its state when the temperature of the encoder (internal at the level of the electronic board) exceeds the wished limit
Incremental: incremental 2048ppr output
Not used: When the exit is not necessary, that makes it possible to save computing time in the coder

OUT 1 / OUT 2
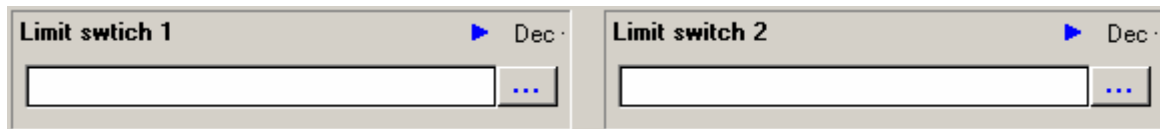
Limit value of the 2 outputs OUT1 Limit switch 1 & OUT2 Limit switch 2.
Position : limit switch value is the encoder position
Speed : limit swith is in RPM
Temperature: Limit switch value is in °C
Incremental or Not used: limit switch not used

OUT1 is at Vcc if the value is < Limit switch 1
OUT2 is at Vcc if the value is >= Limit switch 22
The function change can modify the limit switch value, it should be configured after the function change

USER FUNCTIONS

Save / Load the configuration of an encoder
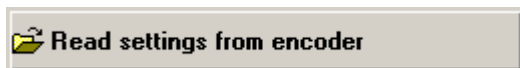
These 2 functions make it possible to save the current configuration in a file and to reload it. At the end of the load XCONFIG asks to synchronize (F9), to show the new configuration of the encoder

Before using one of these 2 orders, take care not to read continuously the encoder parameters.

Non programmable datas / only read access:

Encoder type
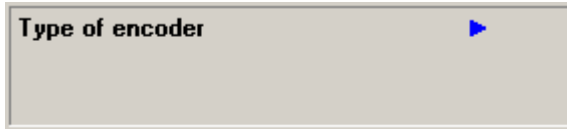
The small blue triangle is used to read again the encoder type

Serial number

The small blue triangle is used to read again the serial number of the encoder

Position
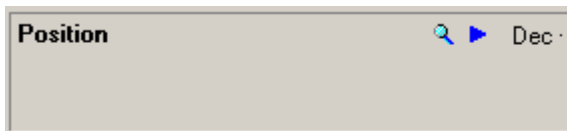
The small blue triangle is used to read again the encoder position. The small magnifying glass makes it possible to force the continuous reading (several times per seconds) of the encoder. The small box marked "Dec" makes it possible to choose the base: Decimal, Hexadecimal or Binary

Speed (RPM)
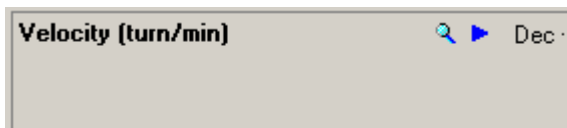
The small blue triangle is used to read again the speed in rpm. The small magnifying glass makes it possible to force the reading continuously (several times per seconds)

Temperature
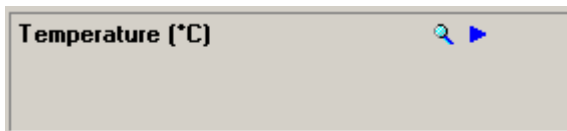
The small blue triangle is used to read again the temperature (°C). The small magnifying glass makes it possible to force the reading continuously (several times per seconds). The temperature is the temperature of one chip inside the encoder on the electronic board, it can be slightly different from the external temperature to the encoder (electronic component heat dissipation). This information is an indication

Input RESET RAX

The small blue triangle is used to read again the state of RAX input. The small magnifying glass makes it possible to force the reading continuously

Direction input

The small blue triangle is used to read again the state of DIRECTION input. The small magnifying glass makes it possible to force the reading continuously

Out 1 / Out 2

The small blue triangle is used to read again the state of the OUT1 / OUT2 output. The small magnifying glass makes it possible to force the reading continues (several times per seconds) of the coder

APPENDIX

Different resolutions

The POSI+ programmable family send datas on a maximum of 29 bits (with parity) or 31 (without parity). The standard value is 25 bits

Lower resolutions are possible. All the combinations between 0 and 13 bits for the absolute and 0 and 16 bits for the number of turns possible, with the condition to not exceed the number of bits of the SSI frame which is configured

Output data shift

The fact of wanting information on a lower number of bits creates unused bits in the frame. Three current shifts, which decide the position of the bits used, are implemented in the program of the encoder

The POSI+ programmable family use the right shift

Here-after, a list of some following shows examples shifting. All the bits represented with "X" are to be masked by the user

Right shift

Exemple avec une trame standard SSI de 25 bits : Right shifting

The ''right shift'' puts the used bits at the place of the LSB (Less Significant Bits)

13 bits encoder configuration

										not used	Absolute													
x	x	x	x	x	x	x	x	x	x	x	x	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0

16bits turn counting configuration

								not used	turns															
x	x	x	x	x	x	x	x	x	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
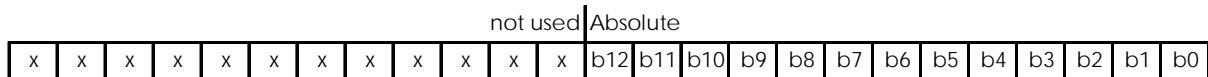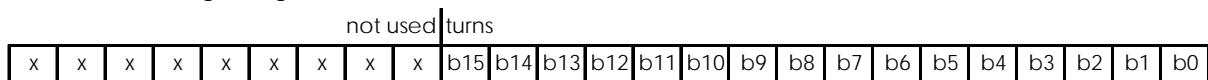
12bits resolution x 13 bit revolution multiturn configuration

|									revolution	Absolu														
b24	b23	b22	b21	b20	b19	b18	b17	b16	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0

8 bit resolution x 8 bit revolution multiturn configuration

							not used	revolution						revolution	resolution									
x	x	x	x	x	x	x	x	x	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0

Left shift

The ''left shift'' puts the used bits at the place of the MSB (Most Significant Bits)

13 bits absolute configuration

												Absolute	not used										
b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	x	x	x	x	x	x	x	x	x	x	x

16 bits turn counting configuration

															revolutions	not used								
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	x	x	x	x	x	x	x	x	x

12 bit resolution x 13 bits revolution multiturn configuration

												revolutions	resolution											
b24	b23	b22	b21	b20	b19	b18	b17	b16	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0

8 bits resolution x 8 bit revolution multiturn configuration

							Revolution	Absolute							Absolute	not used								
b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	x	x	x	x	x	x	x	x	x

Middle shift

The Middle shift defines a middle line between the resolution and the revolutions. The bits are always placed on this line, what forbids more than 12bits for the number of revolutions

13 bits absolute encoder configuration

											Revolution	Resolution											
x	x	x	x	x	x	x	x	x	x	x	x	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0

12 bits turns turn counting configuration

											Revolution	Resolution											
b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	x	x	x	x	x	x	x	x	x	x	x	x	x

12 bit resolution / 12bits turns multiturn configuration

											Revolution	Resolution											
b23	b22	b21	b20	b19	b18	b17	b16	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	x

8 bit resolution / 8bits turns multiturn configuration

											Revolution	Resolution											
x	x	x	x	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	x	x	x	x	x

Nota on the Windows configurations system and the cyclic readind

The Windows configurator is the master between the PC and encoder connection. Each request of information (Request of synchronization, resolution change, etc...) make encoder cycle loose, which has thus less time to refresh the datas. This is why the configurator should not be connected and synchronized when the application turns

The encoder wastes time with the cyclic reading, as long as it transmits all the information, its process speed decreases