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# **SUMMARY:**

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## 1. Using the keypad



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With this information we are able to set the drive in the DEF mode

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#### 1. Restoring default parameters values

- 1) We assume that the drive is not in DEF mode.
- 2) Change these bits as follow (look the user's manual):
  - Pb40.9 = 0 or HW enable
  - Pb39.13 = 0
  - Pb42.12 = 1
  - Pb42.14 = 1
  - Pb42.15 = 1.
- 3) Switch off and on the drive... we can see the label DEF on the keypad (Pr23=15). If you are not able to see all the parameters on the key-pad probably you are in lock mode.... Unlock the key-pad!

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## 2. Motion Wiz

In this chapter we learn to use MotionWiz and take familiarity with the drive.

#### 2. Configuration step (Step1.dat)

We build step by step the file named Step1.dat:

1) Open MotionWiz:



2) We can find and see some information (look the pictures):







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3) Select the drive (HiDrive 2A) and the motor (SMB^60^30^1.4^220).

(You can see the different options between drive and motor type).

Select a drive		Select a motor				
Drive data	Drive settings	Motor data		Motor 1	attings	
		Туре SMB •	Poles	8	Nominal current	1,5 [A]
Type	Nominal current 2 Nominal speed 6000	Size	Winding resistance	12,0	Peak current	2.10 [A]
	Peak current 4 Pover of the brake 75 resistor		Winding inductance	32,3 [mH]	KE	0.81 [Nm/A]
Size	Supply voltage 480	Speed	Brake	© Yes		
	and the second s	3000 -		G No	alle.	
Voltage	Selected drive	Torque	Resolver @	Encoder C	<b>B</b> I	Ok
230_400 ¥	HiDrive2-230_480		Poli resolver	2		Cancel
		Voltage 2004 v	Fase resolver	0		
	Ok Cancel				SMB_60_3	1000_1,4230V

After that you can find your choose in the bottom bar:



Push ENTER button and go to the next step (step 4):

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4) Look at the bar on the top... the file name is "No name\*"; is meaning that is necessary (not obbligation!) save the file. The star displaies that the user has made some change, we can understand better in the next steps.

📽 MotionWiz - [ No name*]							
-Parker S.B.C.	Den Sav	e OnLine	Config.	∕∕ Osc	PicoPlc	ntor Monitor	in an
Operati Speed control Bus setting Alarms Encoder sim.+digital b	ous						
	Motor type: Drive type:	SMB_60_30 HiDrive2-23	000_1,42 0_480	30V	Drive: Com:	n/a n/a	

5) Save this file (Step1) on the PC... push "Save" button:

Salva con n	ome	? 🗙
Salvajn: [	🗅 DimoHiDrive12-07-04 📃 🖛 🗈 📸 🗉	
iledimo Upload AvantiIndi AzionMoto ProvaSBC rtert.dat	TwinAsse1.dat TwinAsse2.dat ietro.dat VarioDriveFiera.dat ore.dat CAN.dat	
<u>N</u> ome file:	Step1	<u>S</u> alva
Sal <u>v</u> a come:	Data file (*.dat)	Annulla

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🗑 MotionWiz - [ C:\Documents and Set	tings\berg	onzi\Deskt	op\Dimo	HiDriv	e12-07	-04\Ste	p1.dat]	
Parker S.B.C.	2	¢,	¥.	$\sim$	La constante	Â,	*	
Close	Open Sav	e OnLine	Config.	Osc	PicoPlc	Monitor	Send	
Operatir	ig mode: S	ipeed contr	ol (Opm (	0)		•		
Speed control Bus setting Alarms Encoder sim.+digital b								
	Motor type: Drive type:	SMB_60_30 HiDrive2-230	00_1,42: )_480	30V C	Drive: Com:	n/a n/a		

Now we can see the result on the main page (the star is not present...):

6) Now we can download the file in the drive: push the button Config and autodetect the serial configuration. After this operation select OK botton and **DON'T PRESS** OnLine ikon!

SBC protocol configuration 🛛 🛛 🔀					
Comunication					
Port	СОМ1 💌				
Baudrate	19200 💌				
Frame settings	E,8,1 💌				
Protocol					
Address	0				
Timeout	1000				
Autodetect					
Start Baudrate	19200				
Address	0				
ОК	Cancel				

Look the top bar... we can see the star after the file name, it's meaning that somthing is changed... the serial configuration parameters are changed!!

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7) In this step we have the file stored in the MotionWiz memory and have the correct parameters for establishing the serial comunication between drive and PC.Select Send button and follow the indication from MotionWiz. Switch off and on the drive, this procedure is necessary because some parameters actualize their values only after this HW procedure.

Send and save       ✓ Parameters       ✓ PicoPLC       □ Cam	VBScript Salvare, spegnere ed accendere il dri
Parameters PicoPLC Save	
Image: Parameters     Close       Image: PicoPLC     Download       Image: Parameters     Image: PicoPLC       Image: PicoPLC     Save	

See the key-pad... the drive is not in DEF mode. Go on step 8.

8) Now we can press OnLine ikon without wary about the text inside of the MsgBox that MotionWiz diplaies:



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9) See the indications inside of this window:

MotionWiz - [ C: Wocumer	nts and Settings\bergonzi\Desktop\DimoHiDrive12-07-04\Step1.dat*]
	Operating mode: Speed control (Opm 0)
Spee Bus setting Alarms Encoder sir	d control
Communication established	Motor type: SMB_60_3000_1.4230V Drive: HiDrive2 - 230_400 Drive type: HiDrive2-230_480 Com: COM1:19200 ADDR:0
omunication	"PC parameters" "Drive parameters"

At this step the MotionWiz and the drive are match together... if you change some parameters on the drive the MotionWiz change according to this change and if you change something on MotionWiz the parameters on the drive change too.Try to menage the windows on the PC.... Step 10

10) Open the Alarms windows and make some changes like resolver error (disconnect the Resolver cable) and see the result on the key-pad...Reset Alarms ikon...



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11) In this step we have the drive in IDLE, the parameters and the Pico-plc in default mode. We can control the motor... try some actions on the MotionWiz... try to change the Pico-plc (change Pb90.3 with 90.0 for stop and run the motor...). Remember that is necessary put the comunications not enable, change the Pico-plc instructions and go in OnLine Try to make some windows changing and see the motor...

12) At this point we can try to put Step1.dat directly on the drive. For do this operation set the DEF mode on the drive by the key-pad and restart MotionWiz.
Select Step1.dat from the PC
Set the serial configuration
Send the file on the drive.
Save, switch off and on the drive
....Try to control the motor ... OK!!

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### 3. Speed control loop calibration

In this chapter we want restore the file named AvantiIndietro.dat, send it to the drive, give some advise about the Pico-plc confidence with MotionWiz Oscilloscope window.

Before going in OnLine see the Pico-plc, try to put new line comments and print it with some label like SW revision author etc. (see the pictures):

	Forget equal 3 + 1 and the ascord liver is explicit for ania ton uncluckwake (PUPPITT)	
1000		
н		
Щ	Nex state of states and the second state to a state	
	988 934 1.0 - C	*
		8
		2
		2
	Partiputation   eventileliste	
	Nelsans 1 . Versioner	0.+
	putery: menue: mergerii Data: 11/	

Be carefull that if you see the Pico-plc after the OnLine action you don't see the comments.... The notes are not store in the drive but they are store only in the file!!. So, if you have restore a file, go OnLine, save the file you have loose the comments!!!

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See the Oscilloscope window:

cilloscopio	
F 🔐 🖬 🕂 🖽   1 2   🏢	READY 27
	Triager
	- Sorgente
	Solgenke
	• CH1
	C CH2
	- Modo trigger
	C Automatico
	C Singola
· · · · · · · · · · · · · · · · · · ·	Fronte
	C Positivo
<mark>─</mark> }	C Negativo
	📀 Entrambi
- +	
	Livello
	500 _ rpm/div
<u>_</u>	
	Posizione
	200 - ms
Verticale	V1 bar V2 bar U bar
CH1 (Velocità) CH2 (Corrente)	
500 1 mm/div 500 1%/div 500 1mm/div 0	
	H2

This waveform is the result with these parameters values:

Impostazion	ne parametri		×			
Parametro	Valore					
16	62	Lettura	Invio			
17	800	Lettura	Invio			
18	3	Lettura	Invio			
		Lettura	Invio			
	ОК					

Modify these values, for example:

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Impostazio	ne parametri		X				
Parametro	Valore						
16	62	Lettura	Invio				
17	2000	Lettura	Invio				
18	3	Lettura	Invio				
		Lettura	Invio				
	OK						

The waveform is:

Oscilloscopio		X
		READY 134
		Trigger Sorgente ⓒ CH1 ⓒ CH2
		Modo trigger C Automatico C Normale C Singola
		Fronte C Postivo C Negativo C Entrambi
		Livello 500 • rpm/div Posizione 200 • ms
Verticale CH1 (Velocità) C 500 rpm/div	CH2 (Corrente) 500 - % /div CH2 (Corrente) 500 - ms/div CH1 CH2	V2 bar H bar 

Change the values for have oscillations:

Impostazio	ne parametri		×
Parametro	Valore		
16	200	Lettura	Invio
17	400	Lettura	Invio
18	3	Lettura	Invio
		Lettura	Invio
	OK		

	· · · ·			Ligger
				CH1
				Modo trigger C Automatico Normale C Singola
•				Fronte C Positivo C Negativo C Entrambi
				Livello 500 : rpm/di
				Posizione 200 📩 ms
Verticale CH1 (Velocità) C	H2 (Corrente)	Drizzontale	V1 bar V	2 bar H b

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Return with the correct values: Pr16=62 and Pr17=800. If we want the better reaction from the system put Pr16=200:

Oscilloscopio	×
	READY 82
	Trigger Sorgente
	Modo trigger C Automatico C Normale C Singola
	Fronte Positivo Negativo Entrambi
	Livello 500 ÷ rpm/div Posizione
Verticale V1 bar	200 ÷ ms V2 bar H bar
500         rpm/div         500         %/div         CH1            CH2          CH2	

Chapter End!!

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## 4. OPM 120 Digital lock and positioner

In this chapter we see a simple example of position.

- 1) Put the drive in the DEF mode.
- 2) Send Step1.dat to the drive
- 3) Save the file on the drive
- 4) Switch off and on the drive
- 5) Go OnLine

🕷 MotionWiz - [ C:\Documents and Set	tings\bergo	nzi\Desktop\Di	moHiDri	ve12-0	7-04\St	. 💶 🗖
Parker S.B.C.	Den Save	OffLine Confi	<b>7</b> g. Osc	PicoPlo	Monitor	in a send
Operatin	ig mode: S	oeed control (Op	m 0)		-	[
Speed control						
Bus setting						
Alarms Encoder sim. +digital b	us	'i				
Communication established	Tipo Motore: Tipo Drive:	SMB_60_3000_1,4 HiDrive2-230_480	230V	Drive: Com:	HiDrive2 - 3 COM1:192	230_400 00 ADDR:0

Select OPM120:

😵 MotionWiz - [ C:\Documents and Set	tings\bergonzi\Desktop\DimoHiDr	rive12-07-04\St 🔳 🗖 🔀
-Parker S.B.C.	Den Save OffLine Config. Osc	PicoPlc Monitor Send
Operatin Speed control Bus setting Alarms Encoder sim. +digital b	ng mode: Speed control (Opm 0) Speed control (Opm 0) Torque control (Opm 10) Digital lock & positioner (O Position control via CANBu	• • ServoTorque) pom 120) • (Opm 140)
Communication established	Tipo Motore: SMB_60_3000_1,4230V Tipo Drive: HiDrive2-230_480	Drive: HiDrive2 - 230_400 Com: COM1:19200 ADDR:0

Confirm the MSGBOX... At this point we have the drive in OPM120 (see the key-pad during this operation!!):

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😫 MotionWiz - [ C:\Documents and Set	tings\bergonzi\Desktop\DimoHiDr	ive12-07-04\St 🔳 🗖 🔀
Parker S.B.C.	P 🖥 🖬 🛋 🌾	📄 🖈 褅
Close	Open Save OffLine Config, Osc	PicoPlc Monitor Send
Operatin	g mode: Digital lock & positioner (C	9pm 120) 🔽
Digital lock & positioner Position control Speed control Bus setting Alarms Encoder sim.+digital bus		
Communication established	Tipo Motore: SMB_60_3000_1,4230V Tipo Drive: HiDrive2-230_480	Drive: HiDrive2 - 230_400 Com: COM1:19200 ADDR:0

Select speed control, Set point and see the Pr40.2 is automatically change...



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Return to the main page and select digital lock & positioner,"the arrow"and trapezional profile generator:



With the HW enable you can put Final Position = 10000 and see the motor... turn clockwise!! If you put 0 the motor turn unclockwise...

You can see the profile with the Oscilloscope window...(Pr213:212=100000)



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### 5. Speed Feedback Change

In this chapter we link another motor to the drive; this motor has a Less Wiring Encoder feedback. The first operation is connect the motor to the drive at terminal X7 (link together PTC pins...). Using the key-pad put the drive in DEF mode:

- Pb39.13 = 0
- Pb42.12 = 1
- Pb42.14 = 1
- Pb42.15 = 1.
- Switch off and on the drive

Open MotionWiz, select drive end motor:

🕷 MotionWiz - [ Senza nome ]		
Parker S.B.C.	e 📄 🔽 Open	
Recent configurations		
<ul> <li>lesswire</li> <li>avantiindietro</li> <li>step1</li> <li>twinasse2</li> <li>twinasse1</li> <li>provasbccan</li> <li>rtert</li> <li>variodrivefiera</li> </ul>	Click here to select a drive	Click here to select a motor
	Motor type: MB_70_3700_2,0400V Drive type: HiDrive2-230_480	' Drive: n/a Com: n/a

Push ENTER button and save these settings in LessWirinig.dat file (Save ikon). Push Config button and autodetect the serial link. Send the file on the drive (Send ikon).

Save and switch off and on the drive

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Go OnLine:



Open the Alarms Window:



You can see error 25 (in the key-pad the message is the same..) and it's correct because we don't have select the feedback. For do this you must go in the speed control window and push feedback:



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Choose	e Mode description	Number of impulses	Lay-out
۲	Resolver (Pb65.15 = 0; Pb65.14 = 0)	None.	Terminal X6
C	SinCos + EnDat (Pb65.15 = 0; Pb65.14 = 1; Pr62 = 0)		
c	SinCos (Pb65.15 = 0; Pb65.14 = 1; Pr62 = 1)		Terminal X7 Choose Power supply
	Less wiring	Pr58 1024	● 5V (Pb 65.7 = 0; Pb65.6 = 0)
0	(Pb65.15 = 0; Pb65.14 = 1; Pr62 = 2)		C 8V (Pb 65.7 = 0; Pb65.6 = 1
c	Incremental encoder in square mode (Pb65.15 = 0; Pb65.14 = 1; Pr62 = 3)		C 12V (Pb 65.7 = 1; Pb65.6 = 1
0	Incremental encoder in square mode (Pb65.15 = 1: Pb65.14 = 0: Pr63 = 3)	Pr59 1024	Terminal X9

In this window select: LessWiring, -2048 (- is...) and 5V:

hoose	Mode description	Number of impulses	Lay-out
С	Resolver (Pb65.15 = 0; Pb65.14 = 0)	None	Terminal X6
0	SinCos + EnDat (Pb65.15 = 0; Pb65.14 = 1; Pr62 = 0)		Taura (2011)
C	SinCos		Terminal X7
	(Pb65.15 = 0; Pb65.14 = 1; Pr62 = 1)		Choose Power supply
~	Less wiring	Pr58 -2048	● 5V (Pb 65.7 = 0; Pb65.6 = 0)
•	(Pb65.15 = 0; Pb65.14 = 1; Pr62 = 2)		C 8V (Pb 65.7 = 0; Pb65.6 = 1)
~	Incremental encoder in square mode		C 12V (Pb 65.7 = 1; Pb65.6 = 0)
0	(Pb65.15 = 0; Pb65.14 = 1; Pr62 = 3)		
~	Incremental encoder in square mode		Tablestableyo
19	(Pb65.15 = 1; Pb65.14 = 0; Pr63 = 3)	Pr59 1024	Terminal X9

Save, switch off and on the drive.... You are in IDLE mode... procedure END!! At this point you can control the motor how displyed to the top of this document: speed, positioner,etc...

The same philosophy is implemented for select the feedback position.... See it in the MotionWiz.. Try to download only the Pico-plc from AvantiIndietro.dat.....

I have build this file AvInLessWiring.dat and we try to restore it on the drive in DEF mode...

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