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Display and KeyPad Manual

ver.1 rev.12/'08

Enclosures to Service Manuals of:

- **McbNET Digital™**
- **Magnum400™**
- **MiniMagnum400™**

Summary

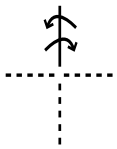
Release	Notes
ver.1 rev.06/'07	First edition.
ver.1 rev.12/'07	Insert notes about analog outputs.
ver.1 rev.12/'08	Notes about parameters inserted.

THIS MANUAL IS EXCLUSIVELY ADDRESSED TO TECHNICAL PERSONNEL WITH AN APPROPRIATE TECHNICAL KNOWLEDGE ON SERVODRIVE.
BEFORE USING THIS MANUAL READ DRIVE'S SERVICE MANUAL.

1 Display

Axor digital drives have a **display LED** which visualises:

- drive's status,
- inserted values,
- alarms.

Symbol	Description
F	The digital input ENABLE is enabled, while the digital input set with the "Ref on" function is disabled.
E	The digital input ENABLE is disabled, while the digital input set with the "Ref on" function is enabled.
[ ]	The digital input ENABLE and the digital input set with the "Ref on" function are both enabled; the motor does not move.
 (segment appears rotating in a clockwise or counter-clockwise direction)	The rotor is turning in a clockwise or counter-clockwise direction.
0ı	This appears when the negative limit switch (NSTOP) is interrupted.
0 ı	This appears when the positive limit switch (PSTOP) is interrupted.
- - -	This appears when the converter is correctly powered on, the digital input ENABLE is disabled and there are no alarms.
24 UP	This appears when there is the +24VDC auxiliary supply, but not the main supply.
ALxx	Alarm xx is active.

2 Key pad

The **4 keys** (**UP**, **DWN**, **SET**, **MODE**) present on drives allow the insertion and variation of the main parameters even without having a PC connected.

UP.....Press once to scroll through the menu upwards.
DW....Press once to scroll through the menu downwards.
SET...Press once to enter the menu or to memorize settings.
MODE...Press once to return to the previous menu.

Example: Suppose we want to change the number of resolver pole.

1) From the tables of the next pages we reach the menu of the desired parameter: **F3** → **d2** (address "**8**").

2) We press once **SET**: **F1** will be visualised.

3) We press twice **UP** in order to visualise **F3**.

4) We press once **SET** in order to enter into the **F3** menu: **d1** will be visualised.

5) We press once **UP** in order to visualise **d2**.

6) Pressing once **SET** the value preceding memorised in the "Nr of resolver pole" parameter will be visualised. By using **UP** and **DWN** we increment or decrement the value of the parameter.

7) We press once **SET** to memorise the new value.

8) We press once **MODE** to return to the preceding menu.

To make active all set parameters at the next start up, memorize them on drive's Eeprom; to do so click on icon "Save data to Eeprom" from Speeder One interface, or insert value 2 at address 69 (F10 ⇨ U4).

3 Key pad menu

The following table illustrates all parameter managing by keypad.

Parameters having apex ([PROGRESSIVE N°]) refer to a note at the end of the chapter.

Menu F1		**Address**	**Min**	**Max**	**Unit**
b1	Drive Version	0	-32768	32767	
b2	Firmware Version	1	-32768	32767	
Menu F2	**COMMUNICATION**				
c1	Drive Address (2) (B)	2	0	127	
c2	Baud Rate RS232 (A)	3	0	32767	
c3	Baud Rate Can (B)	4	50	1000	
c4	Reserved by Can	5	-32768	32767	
c5	Reserved by Can	6	-32768	32767	
Menu F3	**MOTOR**				
d1	Nr. of motor pole (F)	7	0	12	
d2	Nr. of resolver pole (F)	8	2	12	
d3	Encoder pulses/turn (2) (F)	9	256	8192	pulse/turn
d4	I^2t motor	10	0	999	
d5	Phase angle (F)	11	0	3600	electric degree x 10
d6	Feedback type (3) (F)	12	0	20	
Menu F4	**CURRENT LOOP**				
E1	Nominal current (4) (D)	13	1	50	in %
E2	Peak current (5) (D)	14	1	100	in %
E3	Kp current Iq (D)	15	0	999	
E4	Ti current Iq (6) (D)	16	0	999	in ms x 10
E5	Analog In 1 Filter (6) (G)	17	0	1000	in ms x 10
E6	Kp current Id	18	0	999	
E7	Ti current Id (6)	19	0	999	in ms x 10
E8	Parity (A)	20	-32768	32767	
E9	I^2t Drive (D)	21	0	999	sec x 100
E10	Analog In 2 Filter (6) (G)	22	0	1000	in ms x 10
Menu F5	**SPEED LOOP**				
h1	Kp speed (C)	23	0	4000	
h2	Ki speed (C)	24	0	4000	
h3	Kd speed (C)	25	0	4000	
h4	Feedback filter (6) (C)	26	0	999	in ms x 10
h5	Reference filter (6) (C)	27	0	999	in ms x 10
h6	Dead Band An In 1 (G)	28	0	10000	mV
h7	Offset Analog In 1 (7) (G)	29	-32768	32767	
h8	Offset Analog In 2 (7) (G)	30	-32768	32767	
h9	Maximum speed (C)	31	128	8000	rpm
h10	Speed limit +	32	128	8000	rpm
h11	Speed limit -	33	128	8000	rpm
h12	Acceleration ramp (C)	34	0	5000	ms

h13	Deceleration ramp (C)	35	0	5000	ms
h14	Emergency ramp (C)	36	0	5000	ms
h15	Square wave period	37	0	32767	ms
MENU F6	**SPACE LOOP**				
P1	Dynamic gain (H)	38	0	999	
P2	Static gain (H)	39	0	999	
P3	Reserved positioner	40	0	999	
P4	Position feedforward (H)	41	0	150	
P5	Max. position error (H)	42	1000	32767	pulses
P6	Position state	43	-32768	32767	
P7	Position control	44	-32768	32767	
MENU F7	**ELECTRICAL AXIS**				
L1	Pulse/rev Master	45	128	16384	pulse/turn
L2	Numerator gear (H)	46	-32768	32767	
L3	Denominator gear (H)	47	1	32767	
MENU F8	**PULSE/DIRECTION**				
A1	Reserved for Pulse/Dir	48	-32768	32767	
A2	Pulse/Direction filter (6)	49	0	999	in ms x 10
A3	Dead Band An In 2 (G)	50	0	10000	mV
MENU F9	**MONITOR**				
o1	Alarm HI (8)	51	-32768	32767	
o2	Alarm LO (8)	52	-32768	32767	
o3	Bus voltage (29)	53	0	1000	V
o4	Motor temperature	54	-32768	32767	
o5	Drive temperature	55	-32768	32767	
o6	Iu Offset	56	-32768	32767	
o7	Iv Offset	57	-32768	32767	
o8	Current feedback (9)	58	-32768	32767	
o9	Speed feedback	59	-32768	32767	rpm
o10	Position feedback	60	-32768	32767	
o11	Monitor 1	61	-32768	32767	
o12	Monitor 2	62	-32768	32767	
o13	State 1	63	-32768	32767	
o14	State 2	64	-32768	32767	
o15	State digital I/O (10)	65	-32768	32767	
MENU F10	**SETTINGS**				
U1	Analog Out 1 settings (25)	66	0	50	
U2	Analog Out 2 settings (26)	67	0	50	
U3	Encoder Out settings (11) (E)	68	1	8	
U4	Commands (12)	69	-32768	32767	
U5	Reserved (Configurations 1)	70	-32768	32767	
U6	Operative Mode (13)	71	0	20	

U7	HW digital I/O (14)	72	-32768	32767	
U8	I/O dig SW set (15)	73	-32768	32767	
U9	I/O dig SW clr (16)	74	-32768	32767	
MENU F11	**MIX**				
H1	Tar. V_Bus 1 (27)	75	-32768	32767	
H2	Tar. V_Bus 2 (27)	76	-32768	32767	
H3	Tar. drive temperature	77	-32768	32767	
H4	Tar. motor temperature	78	-32768	32767	
H5	Current digital reference (17)	79	-4096	4095	
H6	Speed digital reference (18)	80	-32768	32767	
H7	Position digital reference	81	-32768	32767	
H8	Password	82	-32768	32767	
H9	Historical alarms HI (8)	83	-32768	32767	
H10	Historical alarms LO (8)	84	-32768	32767	
H11	Boot Version (B)	85	-32768	32767	
H12	Main Voltage (28)	86	0	480	Vac
H13	DGT-IN3 settings (19) (M)	87	0	32767	
H14	DGT-IN4 settings (19) (M)	88	0	32767	
MENU F12	**POSITION**				
I1	Reserved positioner	89	-32768	32767	
I2	Homing speed (L)	90	1	1000	rpm
I3	Homing type (20) (L)	91	0	100	
I4	Homing_offset_HI (L)	92	-32768	32767	pulses
I5	Homing_offset_LO (L)	93	-32768	32767	pulses
I6	ModBus_Command	94	-32768	32767	
I7	ModBus_Data_HI	95	-32768	32767	
I8	ModBus_Data_LO	96	-32768	32767	
I9	ModBus_Answer_HI	97	-32768	32767	
I10	ModBus_Answer_LO	98	-32768	32767	
I11	Flash Alarm Code	99	-32768	32767	
I12	Abs position 2	100	-32768	32767	
I13	Abs position 1	101	-32768	32767	
I14	Abs position 0	102	-32768	32767	
I15	Regen resistor	103	-32768	32767	
I16	DGT-IN2 settings (19) (M)	104	-32768	32767	
I17	DGT-IN5 settings (19) (M)	105	-32768	32767	
I18	Homing Acc (L)	106	10	5000	ms
I19	Homing zero speed (L)	107	1	50	rpm
I20	Max search angle (L)	108	0	359	deg
MENU F13					
C1	Reserved by Can	109	-32768	32767	
C2	Reserved by Can	110	-32768	32767	
C3	Reserved by Can	111	-32768	32767	
C4	Reserved by Can	112	-32768	32767	

C5	Reserved by Can	113	-32768	32767	
C6	Reserved by Can	114	-32768	32767	
C7	Reserved by Can	115	-32768	32767	
C8	Reserved by Can	116	-32768	32767	
C9	Reserved by Can	117	-32768	32767	
C10	Reserved by Can	118	-32768	32767	
C11	Reserved by Can	119	-32768	32767	
C12	Reserved by Can	120	-32768	32767	
C13	Reserved by Can	121	-32768	32767	
C14	Reserved by Can	122	-32768	32767	
C14	P_Codice_Alrm_FLASH	123	-32768	32767	
MENU F14					
]1	PULSE In settings (21) (M)	124	-32768	32767	
]2	DGT-OUT1 settings (22) (M)	125	-32768	32767	
]3	DGT-OUT2 settings (22) (M)	126	-32768	32767	
]4	Dir_In_settings (21) (M)	127	-32768	32767	
]5	DGT-IN2_value (23) (M)	128	-32768	32767	
]6	DGT-IN3_value (23) (M)	129	-32768	32767	
]7	DGT-IN4_value (23) (M)	130	-32768	32767	
]8	DGT-IN5_value (23) (M)	131	-32768	32767	
]9	Pulse-In_value (23) (M)	132	-32768	32767	
]10	Dir-In_value (23) (M)	133	-32768	32767	
]11	Vis_Position_hi (30)	134	-32768	32767	turns
]12	Vis_Position_lo (30)	135	-32768	32767	
]13	DGT-OUT1_value (24) (M)	136	-32768	32767	
]14	DGT-OUT2_value (24) (M)	137	-32768	32767	
]15	Vis Analog In 1	138	-32768	32767	
]16	Vis Analog In 2	139	-32768	32767	
MENU F15					
n1	Deflux_1	140	-32768	32767	
n2	Deflux_2	141	-32768	32767	
n3	Deflux_3	142	-32768	32767	
n4	Kp speed 2	143	0	4000	
n5	Ki speed 2	144	0	4000	
n6	Kd speed 2	145	0	4000	
n7	Feedback filter 2	146	0	999	
n8	PID-filter 2	147	0	999	
n9	Switch speed	148	64	8000	
	Reserved for future use	149..159			
n21	Aux_Monitor 1	160	-32768	32767	
n22	Aux_Monitor 1	161	-32768	32767	
	Reserved for future use	162..255			

(2) To activate this parameter **save on EEPROM**, then **turn the drive off and then on**.

(3) Insert 0 to set the *Encoder feedback*, insert 1 to set the *Resolver feedback*.

(4) Insert the value in *percentage* of the rated current furnished by the drive referred to the peak current; example: setting 15%, having a drive size 8/16A, the rated current will be equal to 2,4A (in fact 16x15/100=2,4).

(5) Insert the value in *percentage* of the peak current furnished by the drive; example: setting 75%, having a drive size 8/16A, the peak current will be equal to 12A (in fact 16x75/100=12).

(6) Value expressed *in ms* and *multiplied by 10*.
Example: Suppose we want to set a value equal to 1,2ms ⇨ insert into the predisposed address the value 12 (in fact 1,2x10=12).

(7) The value has to be normalized reference to +/-10V.
Example: Suppose we want to set the offset of the analog input 1 equal to 16mV ⇨ insert on the address F5 → H7 this value:

$$\frac{16m \times 2^{15}}{10} = 53$$

(8) The following table illustrate the meaning of each bit about Parameters: **Alarms HI/Historic Alarms HI**, **Alarms LO/Historic Alarms LO**:

Alarms HI and Historic Alarms HI	
Bit	**Description**
0	Eeprom alarm
1	Overcurrent alarm
2	Drive temperature alarm
3	Hall alarm
4	Encoder alarm
5	I2t drive alarm
6	Motor temperature alarm
7	Regen resistance alarm
8	Min/Max voltage alarm
9	NA
10	NA
11	Resolver alarm
12	NA
13	Following error alarm
14	Limit switch alarm
15	NA

(continue ...)

Alarms LO and Historic Alarms LO	
0	Overcurrent regen resistance alarm (only Magnum400 and MiniMagnum)
1	Holding brake alarm (only Magnum400 and MiniMagnum)
2	In-rush bus alarm (only Magnum400 and MiniMagnum)
3	Auxiliry voltege alarm (alarm Magnum400 and MiniMagnum)
4	NA
5	NA
6	Flash alarm
7	CanBus alarm
8	NA
9	Homing alarm
10	NA
11	NA
12	NA
13	NA
14	NA
15	NA

(9) Feedback current [in Ampere] can be calculated by using this formula:

$$I_{feedback}[A] = \frac{I_{peak} \times \text{Visualised value}}{8192}$$

(10) If:

- bit 0 = 1 on digital input DGT-IN1 there is a high logical signal (hardware and/or software)
- bit 1 = 1 on digital input DGT-IN2 there is a high logical signal (hardware and/or software)
- bit 2 = 1 on digital input DGT-IN3 there is a high logical signal (hardware and/or software)
- bit 3 = 1 on digital input DGT-IN4 there is a high logical signal (hardware and/or software)
- bit 4 = 1 on digital input DGT-IN5 there is a high logical signal (hardware and/or software)
- bit 5 = 1 on digital input DGT-IN6 there is a high logical signal (hardware and/or software)
- bit 6 = 1 on digital input DGT-IN7 there is a high logical signal (hardware and/or software)
- bit 7 = 1 on digital input DGT-IN8 there is a high logical signal (hardware and/or software)
- bit 8 = 1 on digital input DGT-IN9 there is a high logical signal (hardware and/or software)
- bit 9 = 1 on digital input DGT-IN-AUX1 there is a high logical signal (hardware and/or software)
- bit 10 = 1 on digital input DGT-IN-AUX2 there is a high logical signal (hardware and/or software)
- bit 14 = 1 on digital output DGT-OUT1 there is a high logical signal (hardware and/or software)
- bit 15 = 1 on digital output DGT-OUT2 there is a high logical signal (hardware and/or software)

(11) With encoder feedback, insert:
- 1 to divide the encoder pulse per turn by 1;
- 2 to divide the encoder pulse per turn by 2;
- 3 to divide the encoder pulse per turn by 4;
- 4 to divide the encoder pulse per turn by 8;
- 5 to divide the encoder pulse per turn by 16;
- 6 to divide the encoder pulse per turn by 32;
- 7 to divide the encoder pulse per turn by 64;
- 8 to divide the encoder pulse per turn by 128.

With resolver feedback, insert:
- 1 to set 1024 pulses per turn;
- 2 to set 512 pulses per turn;
- 3 to set 256 pulses per turn;
- 4to set 128 pulses per turn;
- 5 to set 64 pulses per turn;
- 6 to set 32 pulses per turn;
- 7 to set 16 pulses per turn;
- 8 to set 8 pulses per turn;

(12) Insert:
- 1 to read EEPROM's parameters
- **2 to memorise parameters into EEPROM**
- 4 to load on EEPROM default parameters
- 8 to execute auto-speed offset
- 16 to execute the autophasing
- 32 to write motion parameters into Flash
- 64 to read motion parameters from Flash
- 256 to execute auto-torque offset

(13) Insert the number of the desired *operative mode*:
- 0 to set Analog Speed
- 1 to set Digital Speed
- 2 to set Analog Torque
- 3 to set Digital Torque
- 4 to set Position Mode
- 5 to set Gearing
- 6 to set Pulse/Dir Mode
- 7 to set Can Open
- 10 to set Square Wave

(14) If:
- bit 0 = 1 there is a voltage on DGT-IN1 pin
- bit 1 = 1 there is a voltage on DGT-IN2 pin
- bit 2 = 1 there is a voltage on DGT-IN3 pin
- bit 3 = 1 there is a voltage on DGT-IN4 pin
- bit 4 = 1 there is a voltage on DGT-IN5 pin
- bit 5 = 1 there is a voltage on DGT-IN6 pin
- bit 6 = 1 there is a voltage on DGT-IN7 pin
- bit 7 = 1 there is a voltage on DGT-IN8 pin
- bit 8 = 1 there is a voltage on DGT-IN9 pin
- bit 9 = 1 there is a voltage on DGT-IN-AUX1 pin
- bit 10 = 1 there is a voltage on DGT-IN-AUX2 pin
- bit 14 = 1 the output DGT-OUT1 is closed
- bit 15 = 1 the output DGT-OUT2 is closed

(15) Insert: - 1 to set the digital input DGT-IN1
- 2 to set the digital input DGT-IN2
- 4 to set the digital input DGT-IN3
- 8 to set the digital input DGT-IN4
- 16 to set the digital input DGT-IN5
- 32 to set the digital input DGT-IN6
- 64 to set the digital input DGT-IN7
- 128 to set the digital input DGT-IN8
- 256 to set the digital input DGT-IN9
- 512 to set the digital input DGT-IN-AUX1
- 1024 to set the digital input DGT-IN-AUX2

Example: if you want to set the digital input DGT-IN5, insert the value 16; if you want to set *contemporary* digital inputs DGT-IN6 and DGT-IN9, insert the value 32+256=288.

Example: if you want to *enable the drive*, insert the value 1.

[16] Insert: - 1 to reset the digital input DGT-IN1
- 2 to reset the digital input DGT-IN2
- 4 to reset the digital input DGT-IN3
- 8 to reset the digital input DGT-IN4
- 16 to reset the digital input DGT-IN5
- 32 to reset the digital input DGT-IN6
- 64 to reset the digital input DGT-IN7
- 128 to reset the digital input DGT-IN8
- 256 to reset the digital input DGT-IN9
- 512 to reset the digital input DGT-IN-AUX1
- 1024 to reset the digital input DGT-IN-AUX2

Example: if you want to reset the digital input DGT-IN4, insert the value 8; if you want to set *contemporary* digital inputs DGT-IN2 and DGT-IN6, insert the value 2+32=34.

Example: if you want to dis*able the drive*, insert the value 1.

(17) Insert the current reference normalized reference the peak current of the drive.
Example: Suppose we want to insert a current digital reference equal to 5A, having a drive size 10/20 (10A= rated current, 20A= peak current) ⇨ at address F11 → H5 insert this value

$$\frac{5 \times 8192}{20} = 2048$$

(18) Insert the speed reference normalized reference the "Speed Limit" parameter set in the "Speed" window (see address 31).
Example: Suppose we want to insert a speed reference equal to 1500rpm, having as max speed 3000rpm ⇨ at address F11 → H6 insert this value:

$$\frac{1500 \times 2^{15}}{3000} = 16384$$

(19) Insert the value of the desired function on inputs **DGT-IN2**, **DGT-IN3**, **DGT-IN4**, **DGT-IN5**:

	Digital inputs			
Function number	**DGT-IN2**	**DGT-IN3**	**DGT-IN4**	**DGT-IN5**
0	0: Off	0: Off	0: Off	0: Off
1	1:Ref-On	1:PStop	1:NStop	1:Brake
2	2:PStop	2:Ref-On	2:Ref-On	2:Ref-On
3	3:NStop	3:NStop	3:PStop	3:PStop
4	4:Brake	4:Brake	4:Brake	4:NStop
5	5:P+N Stop	5:P+N Stop	5:P+N Stop	5:P+N Stop
6	6: Homing Sensor	6: Homing Sensor	6: Homing Sensor	6: Homing Sensor
7	7:Start_JOG	7:Start_JOG	7:Start_JOG	7:Start_JOG
8	8:Start_Task_n°	8:Start_Task_n°	8:Start_Task_n°	8:Start_Task_n°
9	9:Start Task I/O	9:Start Task I/O	9:Start Task I/O	9:Start Task I/O
10	10:Start Sequence	10:Start Sequence	10:Start Sequence	10:Start Sequence
11	11:Start Next	11:Start Next	11:Start Next	11:Start Next
12	12:Emergency	12:Emergency	12:Emergency	12:Emergency
13	13:Start Homing	13:Start Homing	13:Start Homing	13:Start Homing
14	14:Reset Fault	14:Reset Fault	14:Reset Fault	14:Reset Fault
15	15:Speed Inv.	15:Speed Inv.	15:Speed Inv.	15:Speed Inv.
16...31	xx:Reserved	xx:Reserved	xx:Reserved	xx:Reserved

(20) Insert the value reference to desired *homing procedure*:

Parameter value	Homing type
0	No homing
3	Homing clockwise with normally open sensor + zero encoder
4	Homing counter clockwise with normally closed sensor + zero encoder
5	Homing counter clockwise with normally open sensor + zero encoder
6	Homing clockwise with normally closed sensor + zero encoder
7	Homing clockwise with normally open sensor
8	Homing counter clockwise with normally closed sensor
9	Homing counter clockwise with normally open sensor
10	Homing clockwise with normally closed sensor
35	Immediate Homing

(21) Insert the value of the desired function on inputs **DGT-IN-AUX1** and **DGT-IN-AUX2**:

Function number	DGT-IN-AUX1 and DGT-IN-AUX2
0	0: Off
1	1:P+N Stop
2	2:Ref-On
3	3:PStop
4	4:NStop
5	5:Brake
6	6: Homing Sensor
7	7:Start_JOG
8	8:Start_Task_n°
9	9:Start Task I/O
10	10:Start Sequence
11	11:Start Next
12	12:Emergency
13	13:Start Homing
14	14:Reset Fault
15	15:Speed Inv.
16...31	xx:Reserved

(22) Insert the value of the desired function on outputs **DGT-OUT1** and **DGT-OUT2**:

Function number	DGT-OUT1 and DGT-OUT2
0	0: Off
1	1:|Speed|>x
2	2:|Speed|<x
3	3:Homing OK
4	4:I2t
5	5:|Irms%|>x
6	6:|Irms%|<x
7	7:Target OK
8	8:Error
9	9:Ready
10	10:P.A Max
11	11:Reserved
12	12:|Error Pos|>x
13	13:|Error Pos|<x
14	14:Next Target
15...31	xx:Reserved

(23) Insert the auxiliary variable reference to the function set on inputs **DGT-IN2**, **DGT-IN3**, **DGT-IN4**, **DGT-IN5, DGT-IN-AUX1** and **DGT-IN-AUX2 (Attention: Not all setting function need an auxiliary variable)**:

Function	Auxiliary variable
0: Off	No variable.
1:Ref-On	No variable.
2:PStop	No variable.
3:NStop	No variable.
4:Brake	No variable.
5:P+N Stop	No variable.
6: Homing Sensor	No variable.
7:Start_JOG	Speed reference [in RPM] during a Start Jog profile.
8:Start_Task_n°	Number of profile to execute (from 1 to 32)
9:Start Task I/O	No variable.
10:Start Sequence	No variable.
11:Start Next	No variable.
12:Emergency	No variable.
13:Start Homing	No variable.
14:Reset Fault	No variable.
15:Speed Inv.	No variable.
xx:Reserved	No variable.

(24) Insert the auxiliary variable reference to the function set on outputs **DGT-OUT1** and **DGT-OUT2 (Attention: Not all setting function need an auxiliary variable)**:

Function	Auxiliary variable
0: Off	No variable.
1:|Speed|>x	Speed in RPM
2:|Speed|<x	Speed in RPM
3:Homing OK	No variable.
4:I2t	No variable.
5:|Irms%|>x	Current in %.
6:|Irms%|<x	Current in %.
7:Target OK	No variable.
8:Error	No variable.
9:Ready	No variable.
10:P.A Max	No variable.
11:Reserved	No variable.
12:|Error Pos|>x	Position error in pulses (from 0 to 32767).
13:|Error Pos|<x	Position error in pulses (from 0 to 32767).
14:Next Target	No variable.
xx:Reserved	No variable.

(25) Insert the value of the desired function on output **Analog Out1**:

Analog Out1	
Function	**Value**
Speed_Rpm	0
I_Phase_U	1
I2t_Drive	2
I2t_Regen	3
FF_vel	4
Posit_Err	5
Id	6
V_Bus	7
Angle	8
Iq	9
+10 Volt	10

(26) Insert the value of the desired function on output **Analog Out2**:

Analog Out2	
Function	**Value**
Iq	0
I_Phase_U	1
I2t_Drive	2
I2t_Regen	3
FF_vel	4
Posit_Err	5
Id	6
V_Bus	7
Angle	8
Iq	9
-10 Volt	10

(27) *Tar. V_Bus 1* and *Tar. V_Bus 2*: they are not modifyable parameters; they are set during drive testing.

(28) *Main Voltage*: it corresponds to the ***Main Voltage*** parameter visible in the main window of the *Speeder One* interface.

(29) *Bus Voltage*: it corresponds to the ***Bus Voltage*** parameter visible in the main window of the *Speeder One* interface.

(30) *Vis_Position_hi* (parameter 134) contains the whole number of completed motor shaft turns at the most recent power up, while *Vis_Position_lo* (parameter 135) contains the fractional numbers of the motor shart turns, opportunely calculated between -2^{15} e $(2^{15}-1)$ as shown below.
Example 1: Suppose we visualize the following values:

Vis_Position_hi	7
Vis_Position_lo	4208

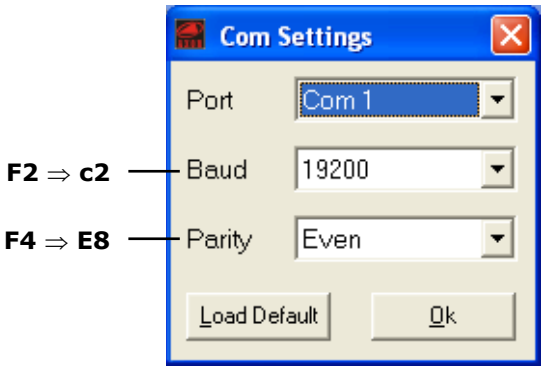
The values above suggest the motor made, at last start up, the following number of turns: 7 + 4208/65536 = 7 + 0,064208 = 7,064208. The motor made 7 complete turns and 23 mechanical degrees of a turn (in fact 0,064208 x 360°= 23°).

Example 2: Suppose we visualize the following values:

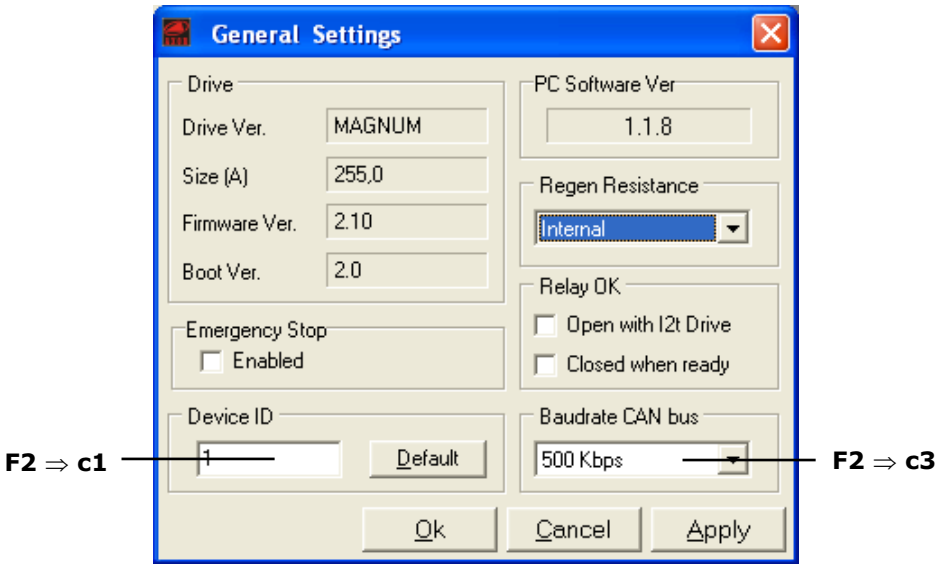
Vis_Position_hi	9
Vis_Position_lo	-27504

The values above suggest the motor made, at last start up, the following number of turns: 9 + ((-27504+65536)/65536) = 9,580322. The motor made 9 complete turns and 208 mechanical degrees of a turn (in fact 0,580322 x 360° = 208°).

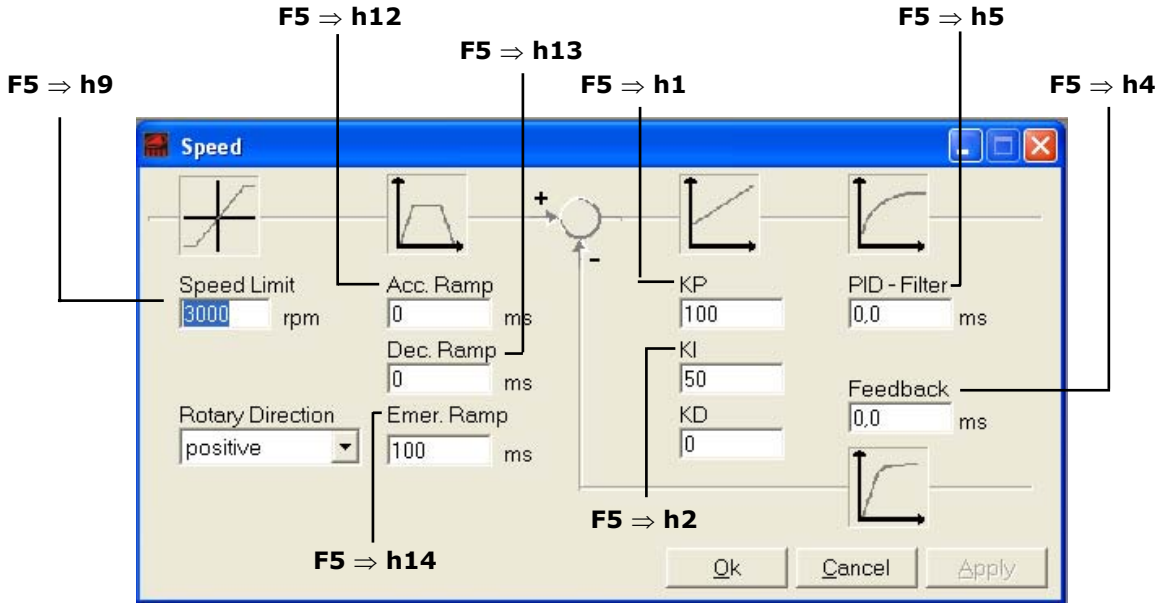
(A) see the "**Com Settings**" window in the *Speeder One* interface:



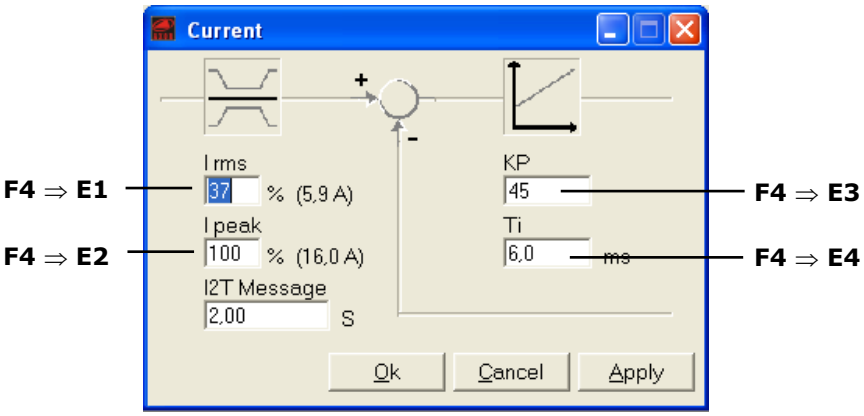
(B) see the "**General Settings**" window in the *Speeder One* interface:



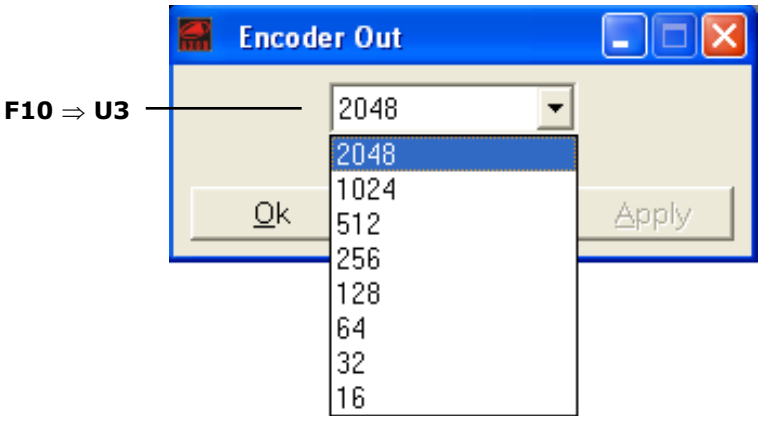
(C) see the "**Speed**" window in the *Speeder One* interface:



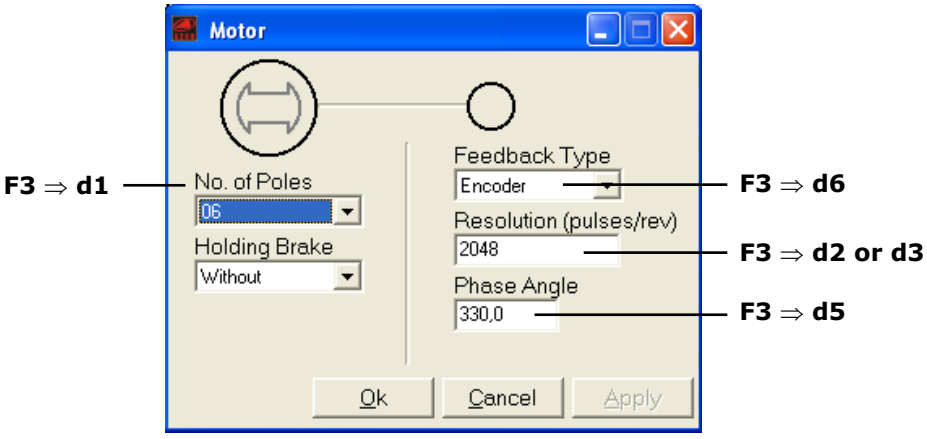
(D) see the "**Current**" window in the *Speeder One* interface:



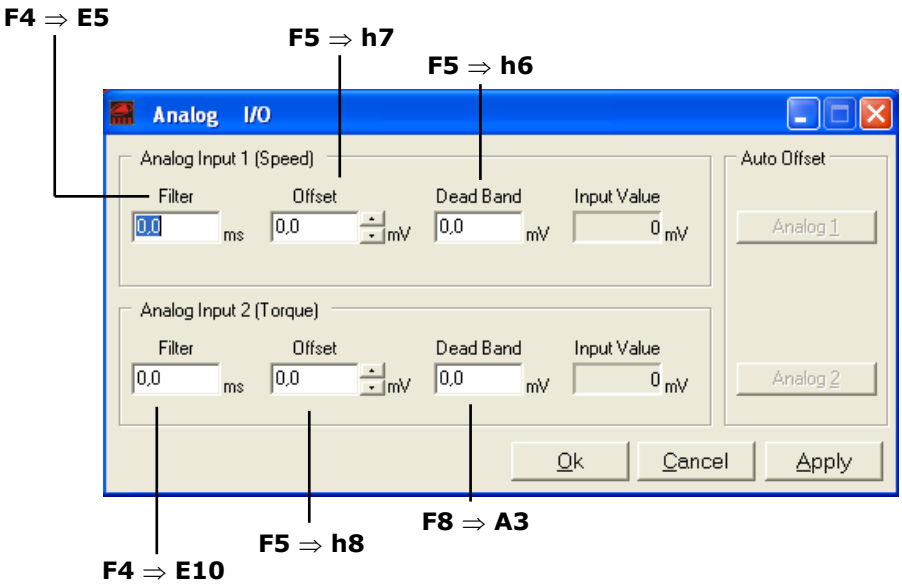
(E) see the "**Encoder Out**" window in the *Speeder One* interface:



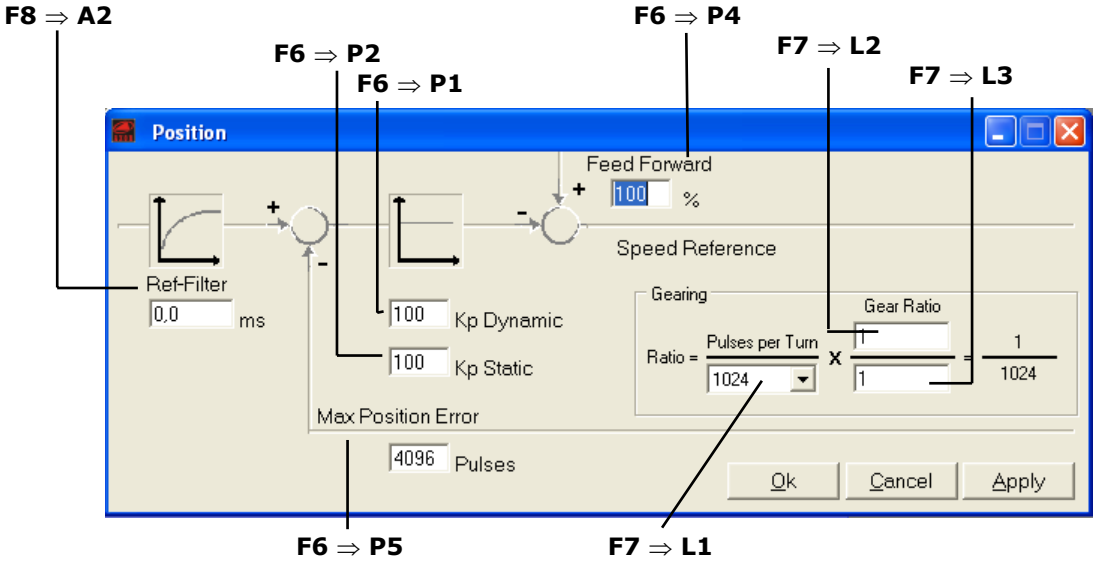
(F) see the "**Motor**" window in the *Speeder One* interface:



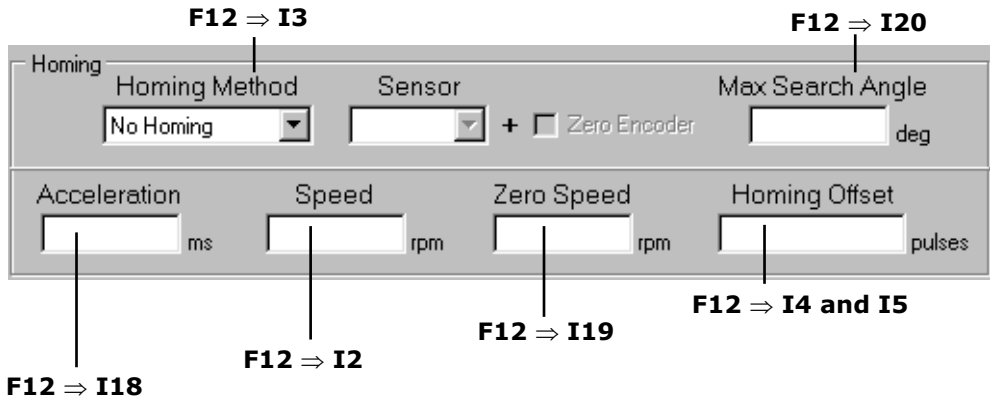
(G) see the "**Analog I/O**" window in the *Speeder One* interface:



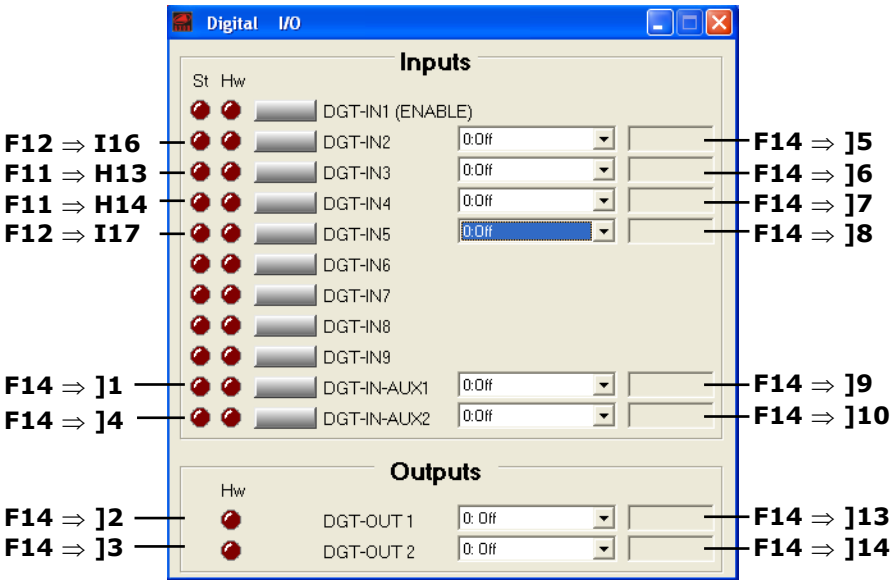
(H) see the "**Position**" window in the *Speeder One* interface:



(L) see the "**Homing**" window in the *Speeder One* interface:



(M) see the "**Digital I/O**" window in the *Speeder One* interface:



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