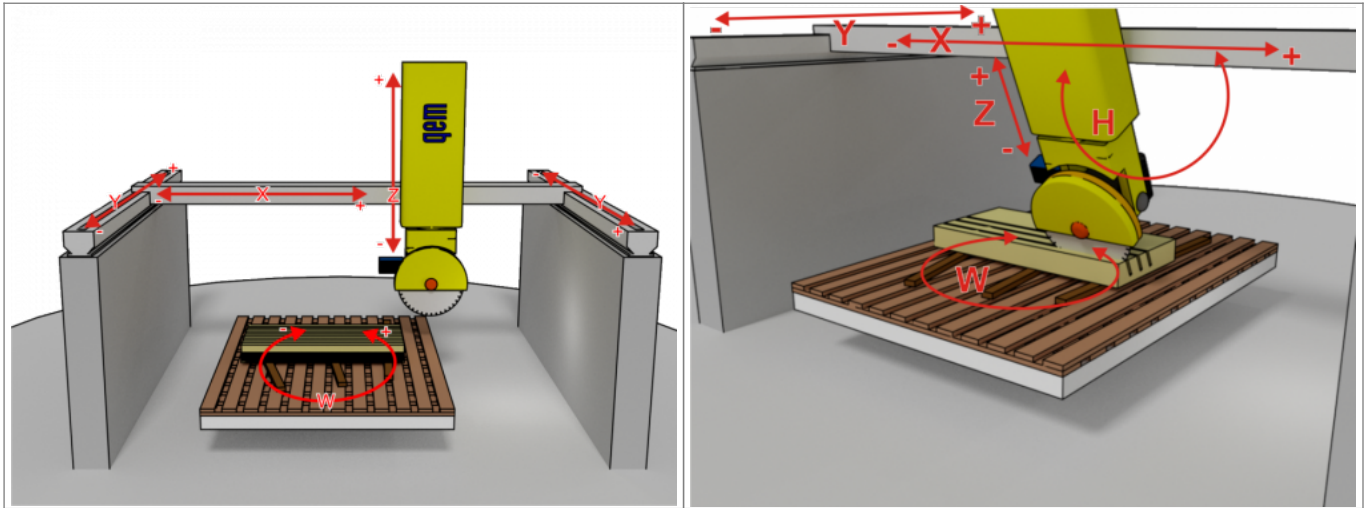


Sommario

MDI_P1P44F-010: Installation manual	3
1. Informations	3
1.1 Release	3
1.1.1 Specifications/Copyright	3
2. Hardware	4
2.1 Function and LED keys	7
2.2 Symbols and keys	7
2.3 Startup	8
2.3.1 Delta Homing error	9
2.3.2 Ethernet IP default	9
3. SETUP	9
3.1 Load default parameters	11
4. SETUP parameters	12
4.1 General Setup	13
4.2 X axis setup	15
4.3 Y axis setup	17
4.4 Z axis setup	19
4.5 W axis setup	21
4.6 H axis setup	23
5. Diagnostic	25
5.1 CPU DATA	26
5.2 Digital inputs	27
5.3 Digital outputs	27
5.4 Encoder counters	27
5.5 Analog outputs	28
5.6 Analog inputs	28
5.7 Canbus	28
6. Axes calibration	29
6.1 Resolution	30
6.2 How inverters are controlled	31
6.2.1 Forward command example	31
6.3 W and H axis linearization	33
6.4 Backlash recovery	37
6.5 Conclusion of start-up	38
6.5.1 Datas Backup	38
6.5.2 PC Backup	38
7. Disk RPM Table	39
8. Assistance	40
Repair	40
Shipping	40

MDI_P1P44F-010: Installation manual



1. Informations

1.1 Release



Quality in Electronic
Manufacturing

Document:	mdi_p1p44f-010		
Description:	Installation manual p1p44f-010		
Editor:	Michele Sandri		
Approver	Gabriele Bazzi		
Link:	http://www.qem.eu/doku/doku.php/en/strumenti/qmoveplus/j1p44/p1p44f-010/mdi_p1p44f-010		
Language:	English		
Document release	Description	Note	Data
01	New manual		27/08/2019
02	Added hydraulic brake management for W and H. Added PARAMETERS PG34, PG35, PG36		24/03/2021

1.1.1 Specifications/Copyright

The copyright of this manual is reserved. No part of this document can be copied or reproduced in any form without the prior written permission of the QEM.

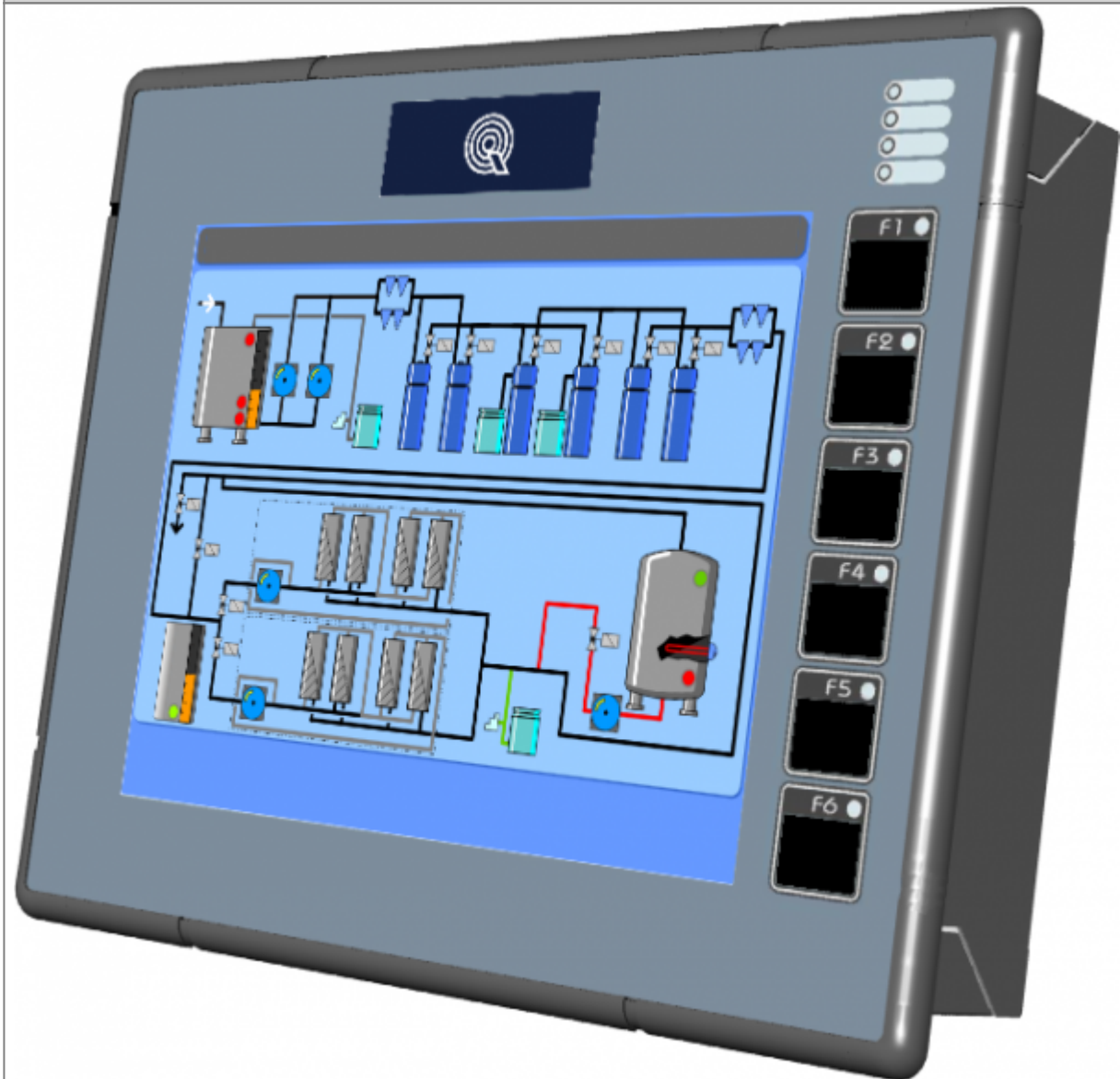
QEM has no assurances or guarantees on the content and specifically disclaims any liability inherent in the guarantees of eligibility for any particular purpose. The information in this document is subject to change without notice. QEM does not take any responsibility for any errors that may appear in this document.

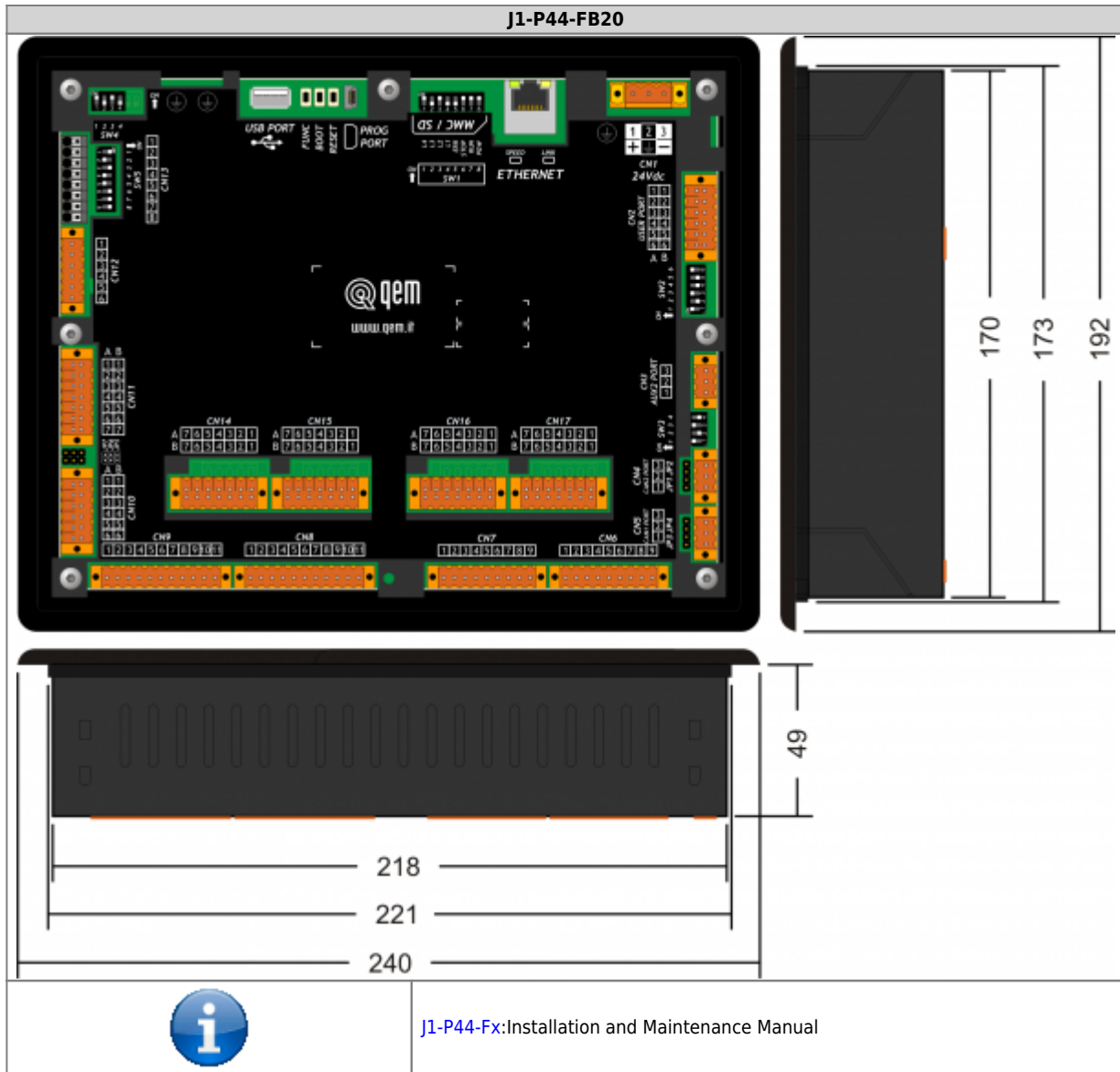
Trademarks:

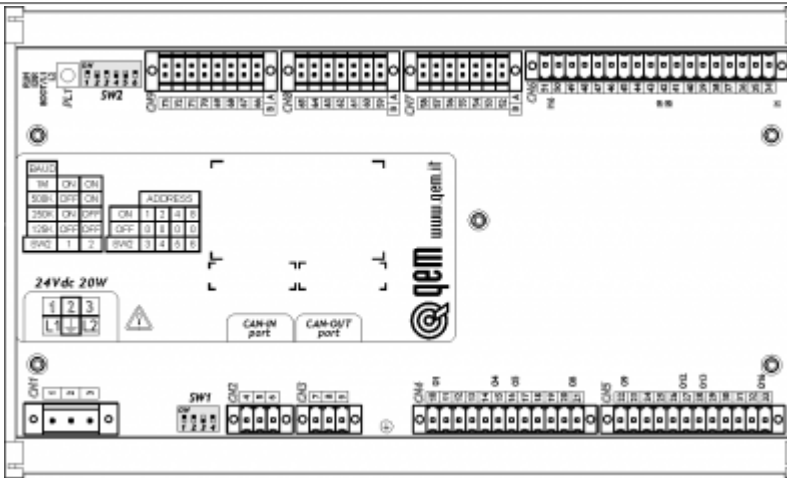
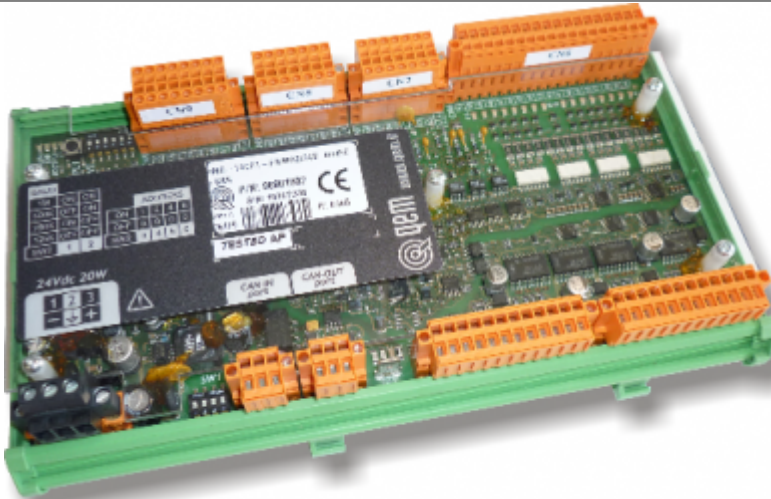
- QEM® is a registered trademark.

2. Hardware

J1-P44-FB20





RMC-1SC01E1/MG2/24Vdc

[RMC-1SC01](#):Installation and Maintenance Manual

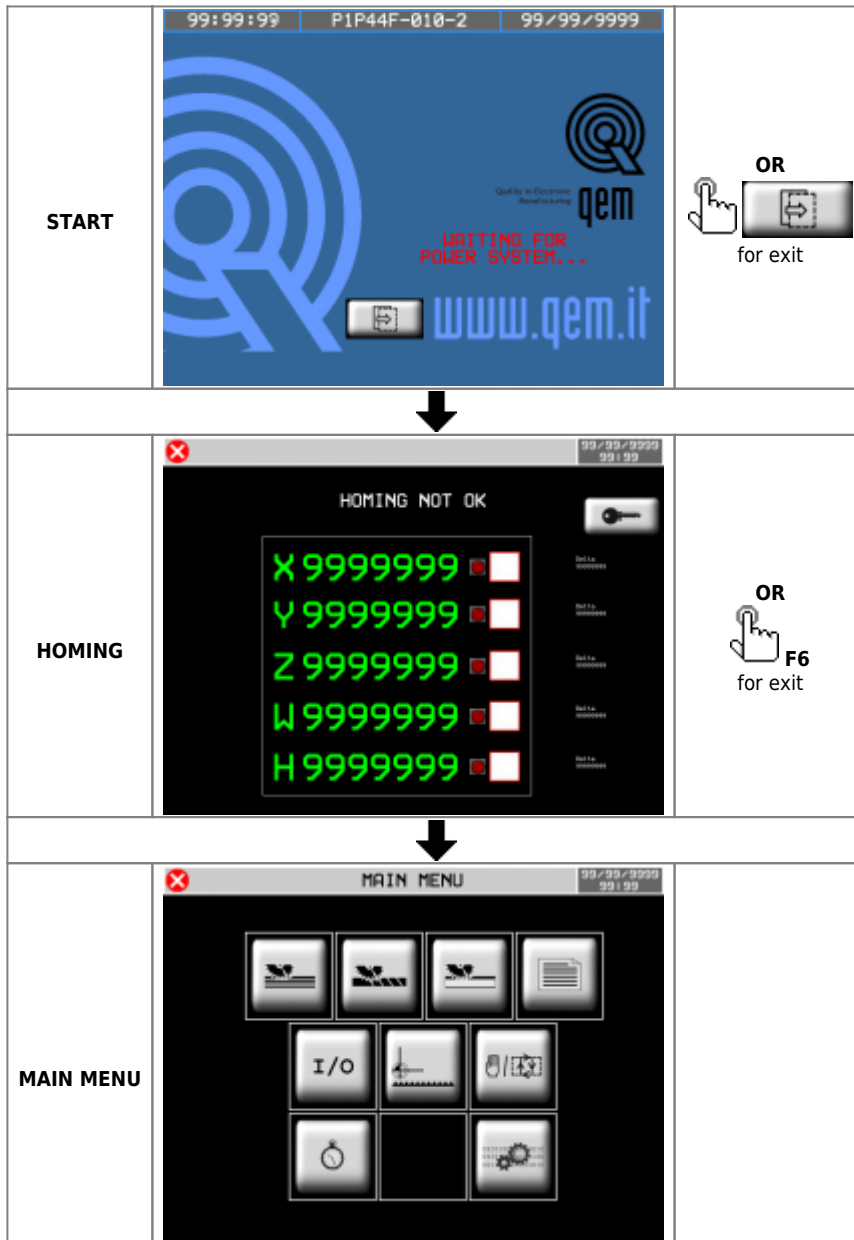
2.1 Function and LED keys

Key	Icon	Function	Led	Key	Icon	Function	Led
F1		Start cycle	-	F4		Semi-automatic = ON	Active Semi-automatic
F2		Stop cycle	-	F5		Alarm = ON	Alarm presence
F3		Restart	-	F6		Exit	-
----	----	----	----	----	----	----	----

2.2 Symbols and keys

Key	Description	-----	Top bar symbols	Description
	Press to confirm			In initialization
	Selection			Emergency
	Previous page			Manual
	Next Page			Active homing
	Reserved area			Semi-automatic
	Open files from USB			Automatic - OFF cycle
	Save			Automatic - ON cycle
	Work preview			Calibration mode
				Protected / Unprotected Setup
	The yellow datas is editable			

2.3 Startup



2.3.1 Delta Homing error

This data indicates the **Delta Error compared to previous homing**, with this value you can easily check if the encoder is good or is broken.

Procedure:

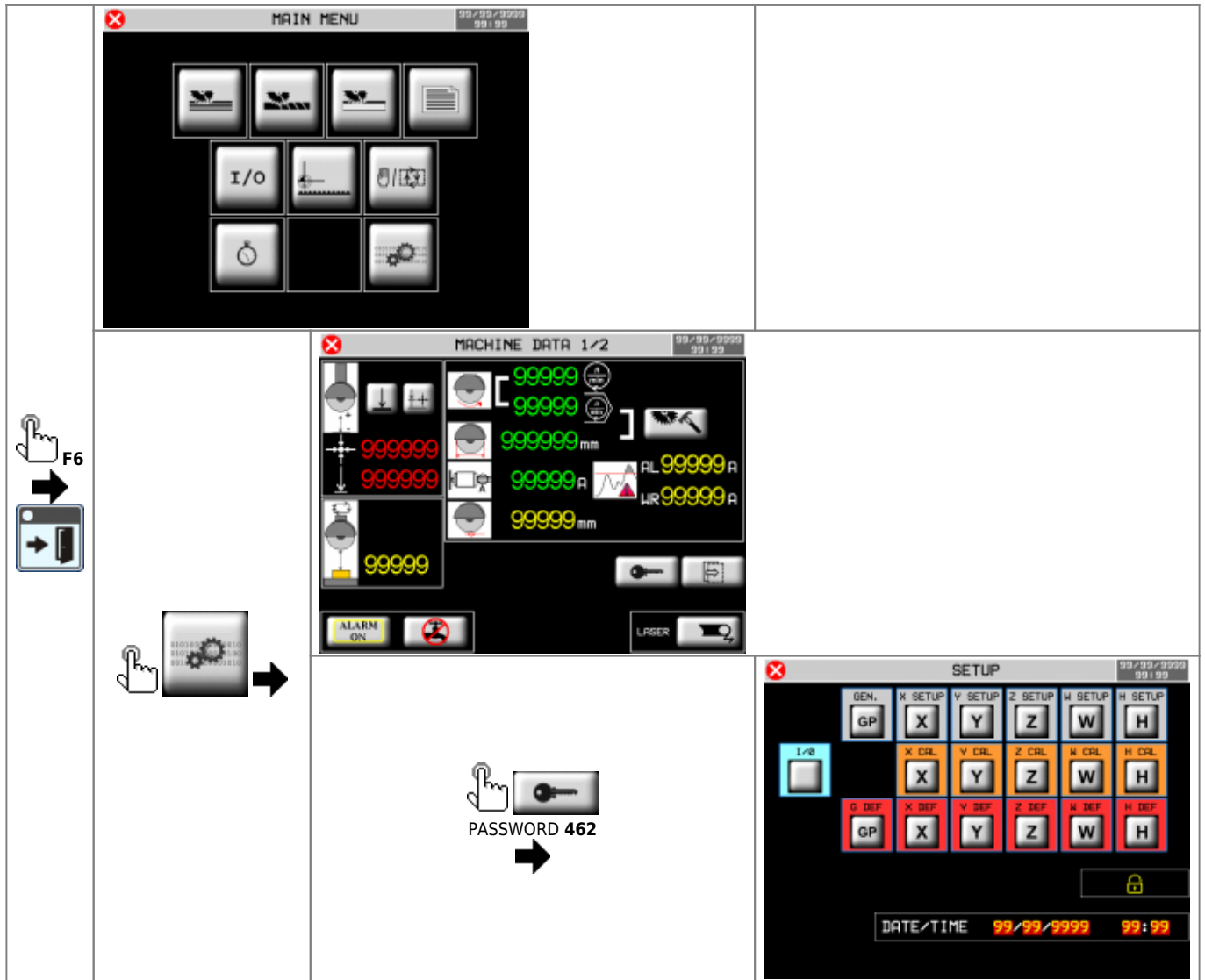
1. execute an homing ¹⁾
2. move the axis in manual mode many times back and forward
3. then, without turning off the machine, execute the homing
4. the second homing will give an “**important**” meaning to this number: it will inform us how much is the offset of the count compared to the actual physical position of the machine
5. if the encoder is OK, this offset must be = 0
6. then, in reality, this number probably won't always be just 0 due to the tolerance of the limit switch used to execute the homing
7. if you repeating the homing for several times, you will be able to realize if the number highlights a faulty encoder, or an error given by the tolerance of the limit switch
8. a small repetitive error, evidence the tolerance of the limit switch
9. a big error, show the problem to the encoder

¹⁾ The first time you execute an homing (after the instrument is turned on), this number doesn't have a utility

2.3.2 Ethernet IP default

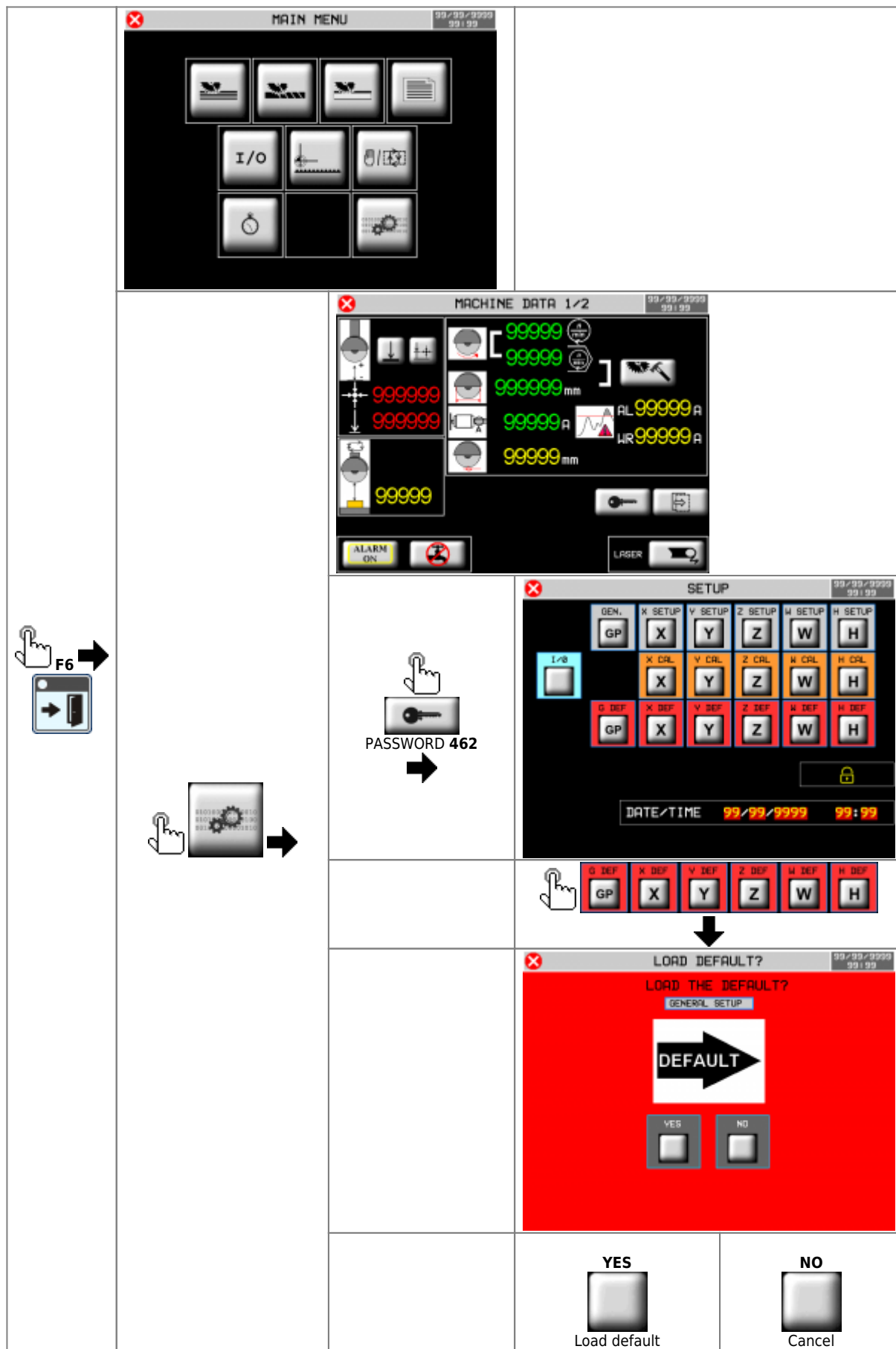
192.168.0.253

3. SETUP

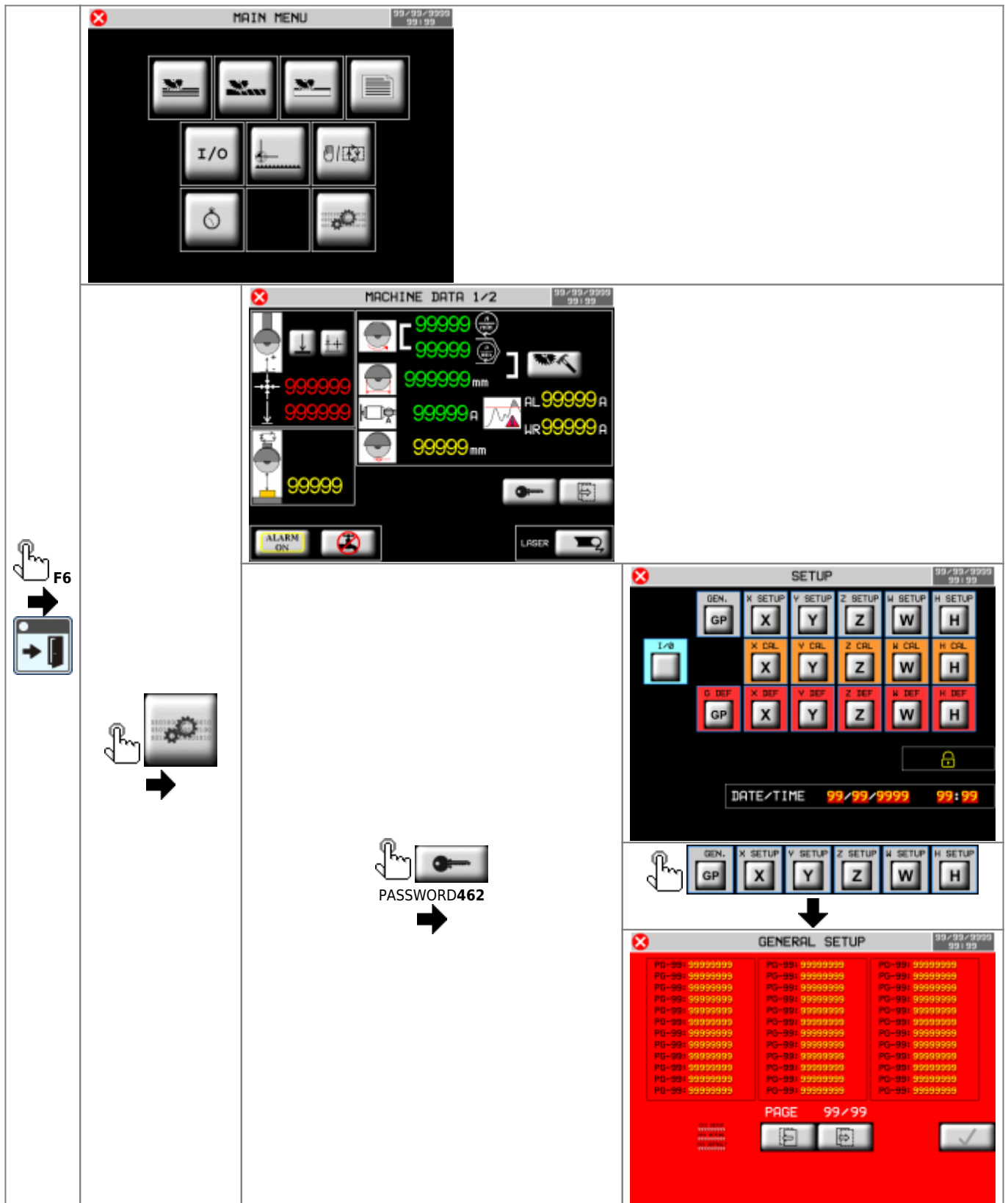


	SETUP parameters
	Axis calibration
	Load default parameters
	Diagnostic
	Unlock setup area Disable password until restart
	Lock setup area Password-only access
	Set system date and time
----	----

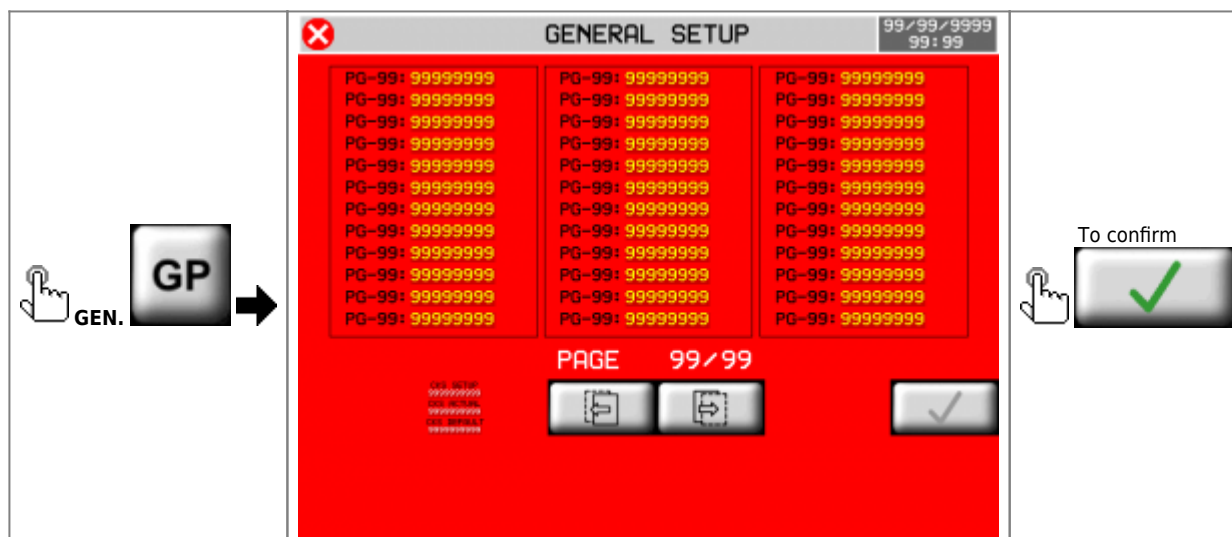
3.1 Load default parameters



4. SETUP parameters



4.1 General Setup



Parameter	U.M.	Default	Range	Description
PG-01 : X/Y/Z DECIMAL POINTS	-	1	0 - 2	Number of decimal points for X, Y and Z axis positions <i>For inches, the positions are showed with "DECIMAL POINTS + 1".</i>
PG-02 : W DECIMAL POINTS	-	2	0 - 2	Number of decimal points for W axes positions
PG-03 :	-	-	-	Parameter not used
PG-04 : LANGUAGE	-	1	1 - 2	1 : English 2 : Italian
PG-05 : UNITS OF MEASURE	-	0	0 - 1	0 : mm 1 : inches <i>All setup parameters are in mm.</i>
PG-06 : MAX RPM DISK	rpm	2480	0 - 3000	Disk RPM with dell'inverter command = 10 Volt.
PG-07 : TIMER LASER	s	30	0 - 9999	Laser switch time.
PG-08 : FLOW SWITCH TIMER 1	s	5	0 - 9999	If the water is missing for longer than planned: - in the automatic cycle , the Stand-By status is activated - in the manual mode , the alarm is activated
PG-09 : FLOW SWITCH TIMER 2	s	60	0 - 9999	With the machine in the Stand-By status, after the scheduled time, the alarm is activated.
PG-10 : PRESSURE SWITCH TIMER	s	5	0 - 9999	When the scheduled time of air is missing, the alarm is activated.
PG-11 : OIL SWITCH TIMER	s	5	0 - 9999	When the scheduled time of oil shortage is over, the alarm is activated.
PG-12 : CURRENT ABSORPTION TIMER	s	1	0 - 9999	If the current of the disk exceeds the MAXIMUM CURRENT value PG-19 the alarm is activated.
PG-13 : HMI BUZZER	-	0	0 - 1	0 : enable 1 : disable
PG-14 : SIREN ALARM TIMER	s	10	0 - 999	Alarm signaling duration.
PG-15 : HOMING MODE	-	1	0 - 3	0 : Homing required to enable all other operations; 1 : Homing not necessary, all functions are enabled; 2 : Homing required to enable automatic cycle, otherwise only manual movements are enabled, 3 : Homing disable.
PG-16 : HOMING SEQUENCE	-	0	0 - 1	0 : homing will be execute one axis at a time; 1 : the homing of the Z, X, Y and W axes start at the same time.
PG-17 : HDR	-	0	0 - 2	0 : Standard view 1 : More precise display, which approximates the space not visible to the unit 2 : More precise display, which approximates the space not visible to the unit
PG-18 : MINIMUM VALUE OF ANALOG INPUTS	bit	5	0 - 1000	Under this value, analog inputs are valued = 0.
PG-19 : MAXIMUM CURRENT	A	100.0	0 - 999.9	Current value, with analog input = 10 volts.
PG-20 : RPM VIEW	-	0	0 - 1	0 : RPM showed with Feedback analog input (virtual RPM); 1 : RPM showed with the analog input of Feedback 10 Volt provided by the inverter (Near-real RPM)
PG-21 : DISK ACTIVATION MODE ¹⁾	-	0	0 - 1	0 : Consent. The O59 output remains active if the machine is not in an emergency; 1 : ON/OFF. The O59 output is commanded by the start and stop disk (I12 and I13)
PG-22 : TO SPEED DISK TIMER	s	0	0 - 9999	Timer to wait to start auto cycle for disk to reach the scheduled speed. Used if PG-21 = 1

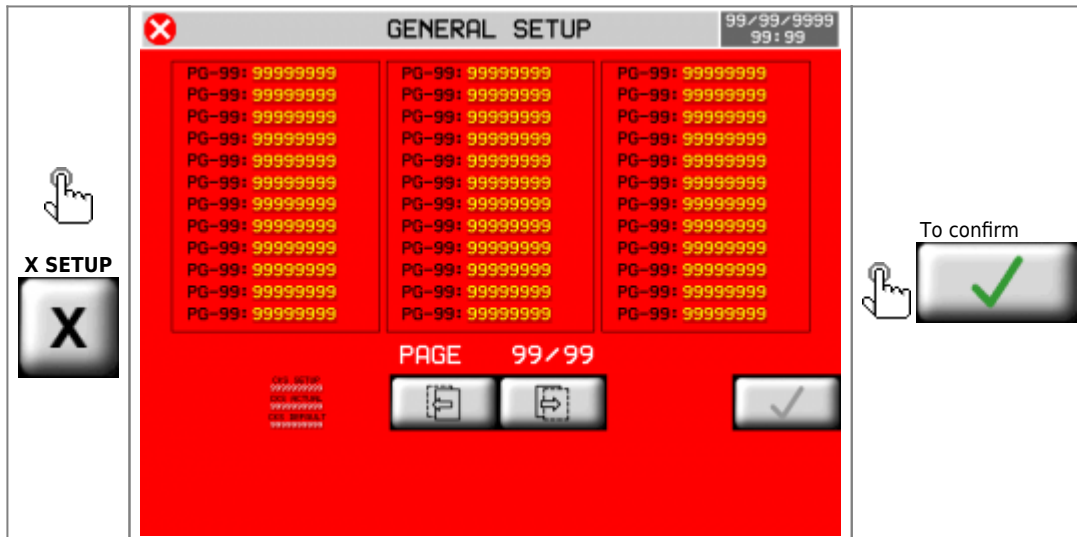
Parameter	U.M.	Default	Range	Description
PG-23 : DISK SPEED CHANGE TIMER	s	3	0 - 9999	Waiting timer when the disk rotation direction is changed.
PG-24 : TABLE DOWEL PINS	-	0	0 - 1	Enabling the insertion of conical dowel pins at the end of the table movement.
PG-25 : DOWEL PINS TIMER	s	2	0 - 9999	Waiting timer for dowel pins disengagement. After this, the W-axis can move.
PG-26 : X AXIS JOG	-	0	0 - 1	X-axis jog activate mode. 0 : The jog activates on the front of the input and turns off on the drop-down front; 1 : The jog activates when the input is activated and it deactivates with the next uphill front
PG-27 : STOP 0 JOG Z AXIS	-	0	0 - 1	Enabling the stop at relative measure, during the jog of the Z axis.
PG-28 : END PROGRAM TIMER	min	20	0 - 9999	Delay in shutting down the end-of-program output (O47). Used for nightly shutdown of the machine.
PG-29 : AUXILIARY ACTIVATION TIMER	s	2	0 - 9999	Used when the instrument is turned on. It's a waiting time, after which all inputs are tested.
PG-30 : FAST MODE AXES	-	0	0 - 1	0: jog command, after 3 sec. the Y, Z and W axes are moved in fast mode ; 1 : when the I14 input is activated , after 3 sec. the Y, Z and W axes are moved in fast mode
PG-31 : ON LUBRICATION TIMER	s	0	0 - 9999	Lubrication Output Activation Timer O58 .
PG-32 : OFF LUBRICATION TIMER	min	0	0 - 9999	Timer waiting between activations of lubrication output O58 .
PG-33 : USING X-AXIS POTENZIOMETERS	-	0	0 - 1	0 : the potentiometers are always active; 1 : the potentiometers are used only when the X-axis is cutting
PG-34 : HYDRAULIC BRAKE ENABLE W AND H AXES	-	0	0 - 1	0 : disable 1 : enable <i>Note: in case of stop or emergency the control unit turns off and the brake (wedges) goes to block the axis.</i> ²⁾
PG-35 : DISK/WATER SHUTDOWN AT THE END OF CUTTING	-	0	0 - 1	0 : disable (to maintain backward compatibility with old versions) 1 : disable <i>When this function is enable, works both at the end of a single cut and at the end of a work schedule</i>
PG-36 : HARDWARE BIT	-	1	0 - 1	0 : 16 bit (01 and 02 hardware release) 1 : 12 bit (03 hardware release onwards)



¹⁾ Starting the disk can be a danger to the operator, it is advisable to put in series at the **O59** output, a spring-return selector switch, with key

²⁾ If the **I70 Pressure switch input** is active, the axes can move

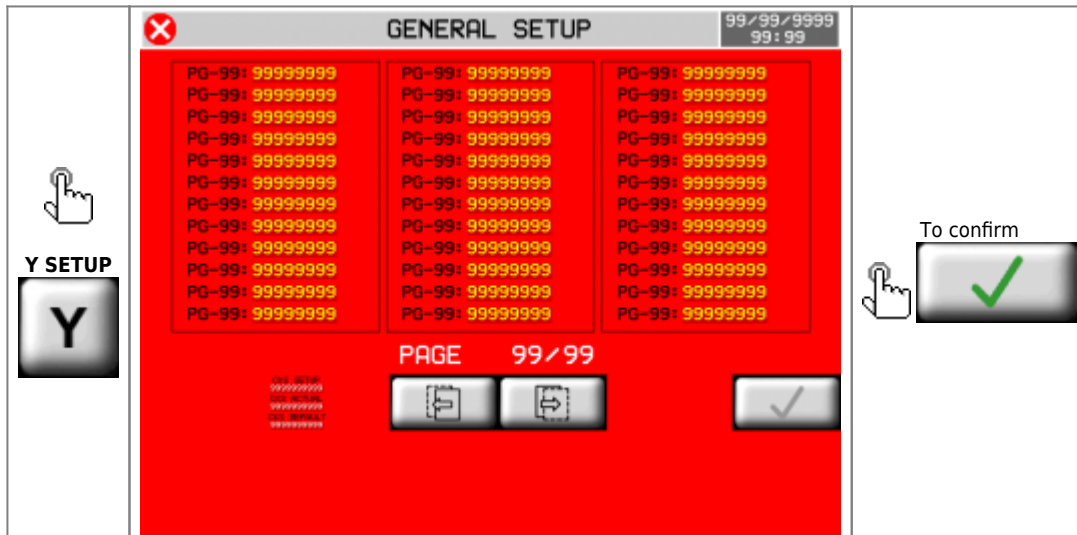
4.2 X axis setup



Parameter	U.M.	Default	Range	Description	
PX-01 : MEASURE	mm	0.1	0 - 99999.9	Distance, in units of measurement, covered the axis to get the pulses set in PX-02.	
PX-02 : PULSE	-	1	0 - 999999	Encoder pulses to move the distance axis set in PX-01. PX-01/PX-02 is the resolution of the axis. Must be between 1 ~ 0.000935.	
PX-03 : TOLERANCE	mm	0.50	0 - 999.99	Space within which placement is considered correct.	
PX-04 : ENABLE TIMER	s	0.200	0 - 9.999	Time of delay between the clockwise/anti-clockwise direction command and the analog outpu command, necessary only when you command the inverter with signal 0-10 Volt (PX-44 = 1).	
PX-05 : DISABLE TIMER	s	0.200	0 - 9.999	Time that is activated at the time of activation of the limit switch (I52 or I53). After the timer the analog output is increased to 0 Volt. It is necessary for the axis to pass the end of limit switch and so that it's activation is stable.	
PX-06 : SLOWDOWN	mm	50.0	0 - 99999.9	Space needed for the axis to slow down the speed.	
PX-07 : FORWARD INERTIA	mm	0	0 - 999.99	Space where the “Forward” command is removed , before the end of the positioning.	
PX-08 : BACKWARD INERTIA	mm	0	0 - 999.99	Space where the “Backward” command is removed , before the end of the positioning.	
PX-09 : INERTIA MODE	-	0	0 - 2	At the end of the positioning: 0: inertia not recalculated 1: recalculation if axis ends out of tolerance 2: recalculation always performed	
PX-10 : TOLERANCE WAIT TIMER	s	1.000	0 - 9.999	Time to wait for the axis is in stop, to enable tolerance space control.	
PX-11 : BACKLASH MODE	-	0	0 - 4	0: disable 1: forward backlash 2: backward backlash 3: forward backlash without speed slow down 4: backward backlash without speed slow down	
PX-12 : OVER POSITION	mm	0	0 - 9999.9	Over position for backlash.	Space considered with PX-11 = 1-2-3-4. With PX-11 = 0 this space is not considered.
PX-13 : MAXIMUM SPEED	m/min	15.0	5.0 - 20.0	Maximum axis speed with 10 Volt analog command .	
PX-14 : MINIMUM SPEED	m/min	0.1	1.0 - 10.0	Minimum axis speed when potentiometers are below the minimum threshold (see the PG-18 parameter).	
PX-15 : AUTOMATIC FAST SPEED	m/min	10.0	0 - 20.0	Maximum speed during automatic cycle in % on 10 Volt analog output.	
PX-16 : SLOW SPEED AUTOMATICALLY	m/min	5.0	0 - 20.0	Minimum speed during automatic cycle in % on 10 Volt analog output.	
PX-17 : MANUAL FAST SPEED	m/min	10.0	0 - 20.0	Fast Jog.	% of the maximum speed PX-13
PX-18 : MANUAL SLOW SPEED	m/min	5.0	0 - 20.0	Slow Jog.	
PX-19 : HOMING FAST SPEED	m/min	10.0	0 - 20.0	First Homing speed.	
PX-20 : HOMING SLOW SPEED	m/min	1.0	0 - 20.0	Homing speed when the counter loads.	
PX-21 : HOMING SEQUENCE	-	1	0 - 1	0: Axis not included in automatic homing sequence 1: Axis included in automatic homing sequence	

Parameter	U.M.	Default	Range	Description
PX-22 : HOMING OFFSET	mm	0	-99999.9 - 99999.9	Set position at the end of homing procedure.
PX-23 : HOMING TYPE	-	0	0 - 3	0 : Loads the written position on the PX-22 parameter when the sensor is released. 1 : The axis engages the homing sensor, reverses movement and loads position PX-22 on zero encoder signal. 2 : (Homing with the Jog) With the I59 input = ON (X-Axis Zero Cam), the PX-22 value is loaded on the counter. 3 : Homing disable.
PX-24 : HOMING DIRECTION	-	1	0 - 1	0 : direction axis + 1 : direction axis -
PX-25 : MAXIMUM MEASURE	mm	99999.9	-99999.9 - 99999.9	Software limit switch, maximum measure .
PX-26 : MINIMUM MEASURE	mm	-99999.9	-99999.9 - 99999.9	Software limit switch, minimum measure .
PX-27 : MINIMUM SHIFT	mm	1	0 - 999.9	Encoder feedback control space after PX-28 time.
PX-28 : MINIMUM TIME	s	2.000	0 - 9.999	Time within which the axis must make PX-27 space.
PX-29 : BRAKE LOGIC	-	1	0 - 1	0 : Brake output N.O. 1 : Brake output N.C.
PX-30 : BRAKE TIME	s	1.000	0 - 9.999	Time to wait to turn on the brake, after the axis motion command is OFF.
PX-31 : ACCELERATION	V/s	20.00	0 - 99.99	Acceleration value.
PX-32 : DECELERATION	V/s	20.00	0 - 99.99	Deceleration value.
Pulse position mode				
PX-33 : PULSES ENABLE	-	0	0 - 1	0 : Pulse positioning disable 1 : Pulse positioning enable
PX-34 : APPROACH MEASURE	mm	0.30	0 - 9999.9	Measure before target where pulse positioning begins.
PX-35 : PULSE LENGTH	s	0.100	0 - 9.999	Length of a single voltage pulse.
PX-36 : PULSES SPAN	s	0.100	0 - 9.999	Time between two pulses.
PX-37 : PULSES NUMBER	-	40	0 - 9999	Maximum number of pulses.
PX-38 : PULSE AMPLITUDE	V	0.1	0 - 10.0	Pulse amplitude in volt.
Various				
PX-39 : END-OF-CYCLE PARKING	-	0	0 - 1	Enable automatic end-of-cycle parking location: 0 : disable 1 : enable
PX-40 : SLOWDOWN TYPE	-	0	0 - 2	Calculating the slowdown: 0 : fixed with PX-06 parameter 1 : proportional to the detected speed 2 : proportional to square of the detected speed
PX-41 : MAXIMUM SLOWDOWN	mm	0	0 - 9999.9	Maximum slowdown at top speed PX-13 .
PX-42 : MINIMUM SLOWDOWN	mm	0	0 - 9999.9	Minimum slowdown that can be used.
PX-43 : TIME INVERSION	s	0.50	0 - 99.99	Delay between disabling a motion output in one direction and activating a motion output in the opposite direction.
PX-44 : ANALOG OUTPUT TYPE	-	0	0 - 1	0 : +/-10Vdc analog output 1 : 0-10Vdc analog output
PX-45 : ENABLE TOLERANCE ALARM	-	0	0 - 1	0 : out of tolerance only showed 1 : enable alarm

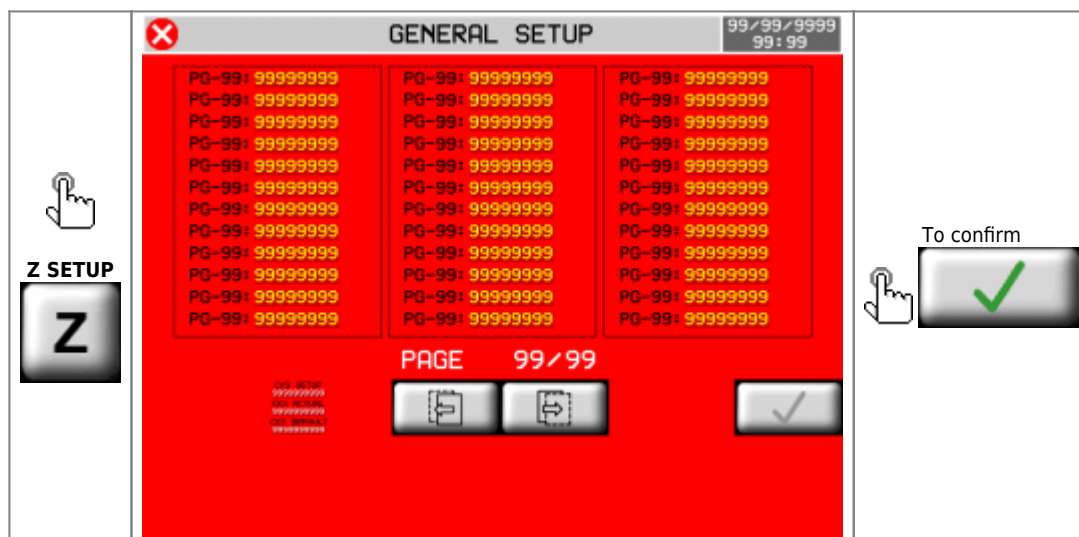
4.3 Y axis setup



Parameter	U.M.	Default	Range	Description	
PY-01 : MEASURE	mm	0.1	0 - 99999.9	Distance, in units of measurement, covered the axis to get the pulses set in PY-02.	
PY-02 : PULSE	-	1	0 - 999999	Encoder pulses to move the distance axis set in PY-01. PY-01/PY-02 is the resolution of the axis. Must be between 1 ~ 0.000935.	
PY-03 : TOLERANCE	mm	0.50	0 - 999.99	Space within which placement is considered correct.	
PY-04 : ENABLE TIMER	s	0.200	0 - 9.999	Time of delay between the clockwise/anti-clockwise direction command and the analog output command, necessary only when you command the inverter with signal 0-10 Volt (PY-44 = 1).	
PY-05 : DISABLE TIMER	s	0.200	0 - 9.999	Time that is activated at the time of activation of the limit switch (I54 o I55). After the timer the analog output is increased to 0 Volt. It is necessary for the axis to pass the end of limit switch and so that it's activation is stable.	
PY-06 : SLOWDOWN	mm	50.0	0 - 99999.9	Space needed for the axis to slow down the speed.	
PY-07 : FORWARD INERTIA	mm	0	0 - 999.99	Space where the “Forward” command is removed , before the end of the positioning.	
PY-08 : BACKWARD INERTIA	mm	0	0 - 999.99	Space where the “Backward” command is removed , before the end of the positioning.	
PY-09 : INERTIA MODE	-	0	0 - 2	At the end of the positioning: 0 : inertia not recalculated 1 : recalculation if axis ends out of tolerance 2 : recalculation always performed	
PY-10 : TOLERANCE WAIT TIMER	s	1.000	0 - 9.999	Time to wait for the axis is in stop, to enable tolerance space control.	
PY-11 : BACKLASH MODE	-	0	0 - 4	0 : disable 1 : forward backlash 2 : backward backlash 3 : forward backlash without speed slow down 4 : backward backlash without speed slow down	
PY-12 : OVER POSITION	mm	0	0 - 9999.9	Over position for backlash.	Space considered with PY-11 = 1-2-3-4. With PY-11 = 0 this space is not considered.
PY-13 : MAXIMUM SPEED	-	0	0 - 99999	Maximum axis speed with 10 Volt analog command .	
PY-14 : MINIMUM SPEED	-	0	0 - 99999	Minimum axis speed when potentiometers are below the minimum threshold (vedi parametro PG-18).	
PY-15 : AUTOMATIC FAST SPEED	%	10.0	0 - 100.0	Maximum speed during automatic cycle in % on 10 Volt analog output.	
PY-16 : SLOW SPEED AUTOMATICALLY	%	5.0	0 - 100.0	Minima velocità in automatico % sui 10 Volt di comando.	
PY-17 : MANUAL FAST SPEED	%	10.0	0 - 100.0	Fast Jog.	% of the maximum speed PY-13
PY-18 : MANUAL SLOW SPEED	%	5.0	0 - 100.0	Slow Jog.	
PY-19 : HOMING FAST SPEED	%	10.0	0 - 100.0	First Homing speed.	
PY-20 : HOMING SLOW SPEED	%	1.0	0 - 100.0	Homing speed when the counter loads.	
PY-21 : HOMING SEQUENCE	-	1	0 - 1	0 : Axis not included in automatic homing sequence 1 : Axis included in automatic homing sequence	

Parameter	U.M.	Default	Range	Description
PY-22 : HOMING OFFSET	mm	0	-99999.9 - 99999.9	Set position at the end of homing procedure.
PY-23 : HOMING TYPE	-	0	0 - 3	0 : Load the written position on the PY-22 parameter whe the sensor is released. 1 : The axis engages the homing sensor, reverses movement and loads position PY-22 on zero encoder signal. 2 : (Homing with the Jog) With the I60 input = ON (Y-Axis Zero Cam), the PY-22 value is loaded on the counter. 3 : Homing disable.
PY-24 : HOMING DIRECTION	-	1	0 - 1	0 : direction axis + 1 : direction axis -
PY-25 : MAXIMUM MEASURE	mm	99999.9	-99999.9 - 99999.9	Software limit switch, maximum measure .
PY-26 : MINIMUM MEASURE	mm	-99999.9	-99999.9 - 99999.9	Software limit switch, minimum measure .
PY-27 : MINIMUM SHIFT	mm	1	0 - 999.9	Encoder feedback control space after PY-28 time.
PY-28 : MINIMUM TIME	s	2.000	0 - 9.999	Time within which the axis must make PY-27 space.
PY-29 : BRAKE LOGIC	-	1	0 - 1	0 : Brake output N.O. 1 : Brake output N.C.
PY-30 : BRAKE TIME	s	1.000	0 - 9.999	Time to wait to turn on the brake, after the axis motion command is OFF.
PY-31 : ACCELERATION	V/s	20.00	0 - 99.99	Acceleration value.
PY-32 : DECELERATION	V/s	20.00	0 - 99.99	Deceleration value.
Pulse position mode				
PY-33 : PULSESEENABLE	-	0	0 - 1	0 : Pulse positioning disable 1 : Pulse positioning enable
PY-34 : APPROACH MEASURE	mm	0.30	0 - 9999.9	Measure before target where pulse positioning begins.
PY-35 : PULSE LENGTH	s	0.100	0 - 9.999	Length of a single voltage pulse.
PY-36 : PULSES SPAN	s	0.100	0 - 9.999	Time between two pulses.
PY-37 : PULSES NUMBER	-	40	0 - 9999	Maximum number of pulses.
PY-38 : PULSE AMPLITUDE	V	0.1	0 - 10.0	Pulse amplitude in volt.
Various				
PY-39 : END-OF-CYCLE PARKING	-	0	0 - 1	Enable automatic end-of-cycle parking location: 0 : disable 1 : enable
PY-40 : SLOWDOWN TYPE	-	0	0 - 2	Calculating the slowdown: 0 : fixed with PY-06 parameter 1 : proportional to the detected speed 2 : proportional to square of the detected speed
PY-41 : MAXIMUM SLOWDOWN	mm	0	0 - 9999.9	Maximum slowdown at top speed PY-13.
PY-42 : MINIMUM SLOWDOWN	mm	0	0 - 9999.9	Minimum slowdown that can be used.
PY-43 : TIME INVERSION	s	0.50	0 - 99.99	Delay between disabling a motion output in one direction and activating a motion output in the opposite direction.
PY-44 : ANALOG OUTPUT TYPE	-	0	0 - 1	0 : +/-10Vdc analog output 1 : 0-10Vdc analog output
PY-45 : ENABLE TOLERANCE ALARM	-	0	0 - 1	0 : out of tolerance only showed 1 : enable alarm

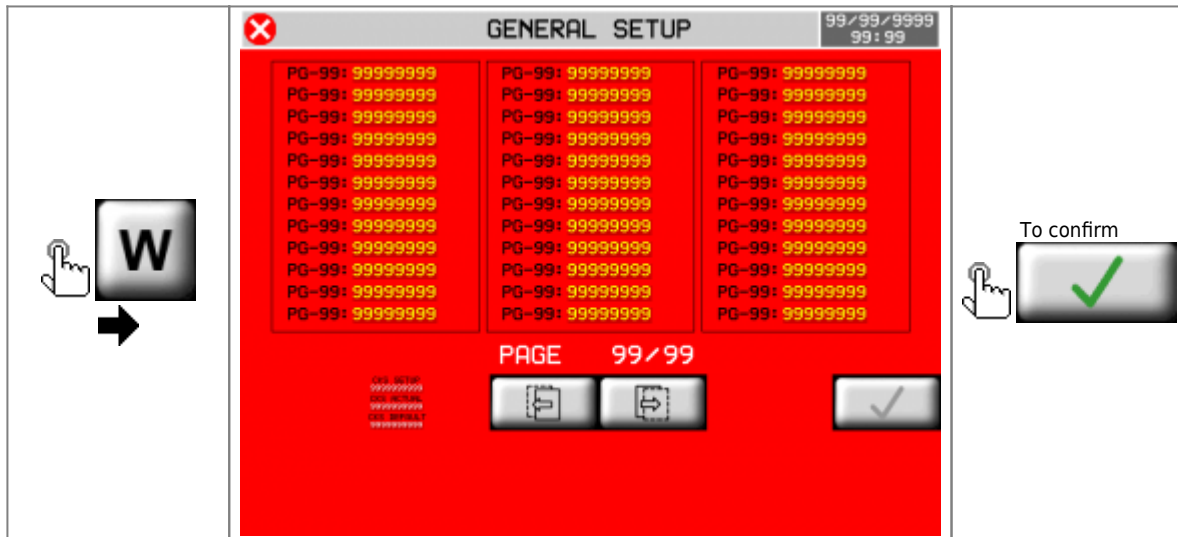
4.4 Z axis setup



Parameter	U.M.	Default	Range	Description	
PZ-01 : MEASURE	mm	0.1	0 - 99999.9	Distance, in units of measurement, covered the axis to get the pulses set in PZ-02.	
PZ-02 : PULSE	-	1	0 - 999999	Encoder pulses to move the distance axis set in PZ-01. PZ-01/PZ-02 is the resolution of the axis. Must be between 1 ~ 0.000935.	
PZ-03 : TOLERANCE	mm	0.50	0 - 999.99	Space within which placement is considered correct.	
PZ-04 : ENABLE TIMER	s	0.200	0 - 9.999	Time of delay between the clockwise/anti-clockwise direction command and the analog outpu command, necessary only when you command the inverter with signal 0-10 Volt (PZ-44 = 1).	
PZ-05 : DISABLE TIMER	s	0.200	0 - 9.999	Time that is activated at the time of activation of the limit switch (I56 o I57). After the timer the analog output is increased to 0 Volt. It is necessary for the axis to pass the end of limit switch and so that it's activation is stable.	
PZ-06 : SLOWDOWN	mm	50.0	0 - 99999.9	Space needed for the axis to slow down the speed.	
PZ-07 : FORWARD INERTIA	mm	0	0 - 999.99	Space where the “Forward” command is removed , before the end of the positioning.	
PZ-08 : BACKWARD INERTIA	mm	0	0 - 999.99	Space where the “Backward” command is removed , before the end of the positioning.	
PZ-09 : INERTIA MODE	-	0	0 - 2	At the end of the positioning: 0 : inertia not recalculated 1 : recalculation if axis ends out of tolerance 2 : recalculation always performed	
PZ-10 : TOLERANCE WAIT TIMER	s	1.000	0 - 9.999	Time to wait for the axis is in stop, to enable tolerance space control.	
PZ-11 : BACKLASH MODE	-	0	0 - 4	0 : disable 1 : forward backlash 2 : backward backlash 3 : forward backlash without speed slow down 4 : backward backlash without speed slow down	
PZ-12 : OVER POSITION	mm	0	0 - 9999.9	Over position for backlash.	Space considered with PZ-11 = 1-2-3-4. With PZ-11 = 0 this space is not considered.
PZ-13 : MAXIMUM SPEED	-	0	0 - 99999	Maximum axis speed with 10 Volt analog command .	
PZ-14 : MINIMUM SPEED	-	0	0 - 99999	Minimum axis speed when potentiometers are below the minimum threshold (see the PG-18 parameter).	
PZ-15 : AUTOMATIC FAST SPEED	%	10.0	0 - 100.0	Maximum speed during automatic cycle in % on 10 Volt analog output.	
PZ-16 : SLOW SPEED AUTOMATICALLY	%	5.0	0 - 100.0	Minimum speed during automatic cycle in % on 10 Volt analog output.	
PZ-17 : MANUAL FAST SPEED	%	10.0	0 - 100.0	Fast Jog.	% della Velocità massima PZ-13
PZ-18 : MANUAL SLOW SPEED	%	5.0	0 - 100.0	Slow Jog.	
PZ-19 : HOMING FAST SPEED	%	10.0	0 - 100.0	First Homing speed.	
PZ-20 : HOMING SLOW SPEED	%	1.0	0 - 100.0	Homing speed when the counter loads.	
PZ-21 : HOMING SEQUENCE	-	1	0 - 1	0 : Axis not included in automatic homing sequence 1 : Axis included in automatic homing sequence	

Parameter	U.M.	Default	Range	Description
PZ-22 : HOMING OFFSET	mm	0	-99999.9 - 99999.9	Set position at the end of homing procedure.
PZ-23 : HOMING TYPE	-	0	0 - 3	0 : Loads the written position on the PZ-22 parameter when the sensor is released. 1 : The axis engages the homing sensor, reverses movement and loads position PZ-22 on zero encoder signal. 2 : Homing with the Jog) With the I61 input = ON (Z-Axis Zero Cam), the PZ-22 value is loaded on the counter. 3 : Homing disable.
PZ-24 : HOMING DIRECTION	-	1	0 - 1	0 : direction axis + 1 : direction axis -
PZ-25 : MAXIMUM MEASURE	mm	99999.9	-99999.9 - 99999.9	Software limit switch, maximum measure .
PZ-26 : MINIMUM MEASURE	mm	-99999.9	-99999.9 - 99999.9	Software limit switch, minimum measure .
PZ-27 : MINIMUM SHIFT	mm	1	0 - 999.9	Encoder feedback control space after PZ-28 time.
PZ-28 : MINIMUM TIME	s	2.000	0 - 9.999	Time within which the axis must make PZ-27 space.
PZ-29 : BRAKE LOGIC	-	1	0 - 1	0 : Brake output N.O. 1 : Brake output N.C.
PZ-30 : BRAKE TIME	s	1.000	0 - 9.999	Time to wait to turn on the brake, after the axis motion command is OFF.
PZ-31 : ACCELERATION	V/s	20.00	0 - 99.99	Acceleration value.
PZ-32 : DECELERATION	V/s	20.00	0 - 99.99	Deceleration value.
Pulse position mode				
PZ-33 : PULSES ENABLE	-	0	0 - 1	0 : Pulse positioning disable 1 : Pulse positioning enable
PZ-34 : APPROACH MEASURE	mm	0.30	0 - 9999.9	Measure before target where pulse positioning begins.
PZ-35 : PULSE LENGTH	s	0.100	0 - 9.999	Length of a single voltage pulse.
PZ-36 : PULSES SPAN	s	0.100	0 - 9.999	Time between two pulses.
PZ-37 : PULSES NUMBER	-	40	0 - 9999	Maximum number of pulses.
PZ-38 : PULSE AMPLITUDE	V	0.1	0 - 10.0	Pulse amplitude in volt.
Various				
PZ-39 : END-OF-CYCLE PARKING	-	0	0 - 1	Enable automatic end-of-cycle parking location: 0 : disable 1 : enable
PZ-40 : SLOWDOWN TYPE	-	0	0 - 2	Calculating the slowdown: 0 : fixed with PZ-06 parameter 1 : proportional to the detected speed 2 : proportional to square of the detected speed
PZ-41 : MAXIMUM SLOWDOWN	mm	0	0 - 9999.9	Maximum slowdown at top speed PZ-13.
PZ-42 : MINIMUM SLOWDOWN	mm	0	0 - 9999.9	Minimum slowdown that can be used.
PZ-43 : TIME INVERSION	s	0.50	0 - 99.99	Delay between disabling a motion output in one direction and activating a motion output in the opposite direction.
PZ-44 : ANALOG OUTPUT TYPE	-	0	0 - 1	0 : +/-10Vdc analog output 1 : 0-10Vdc analog output
PZ-45 : ENABLE TOLERANCE ALARM	-	0	0 - 1	0 : out of tolerance only showed 1 : enable alarm

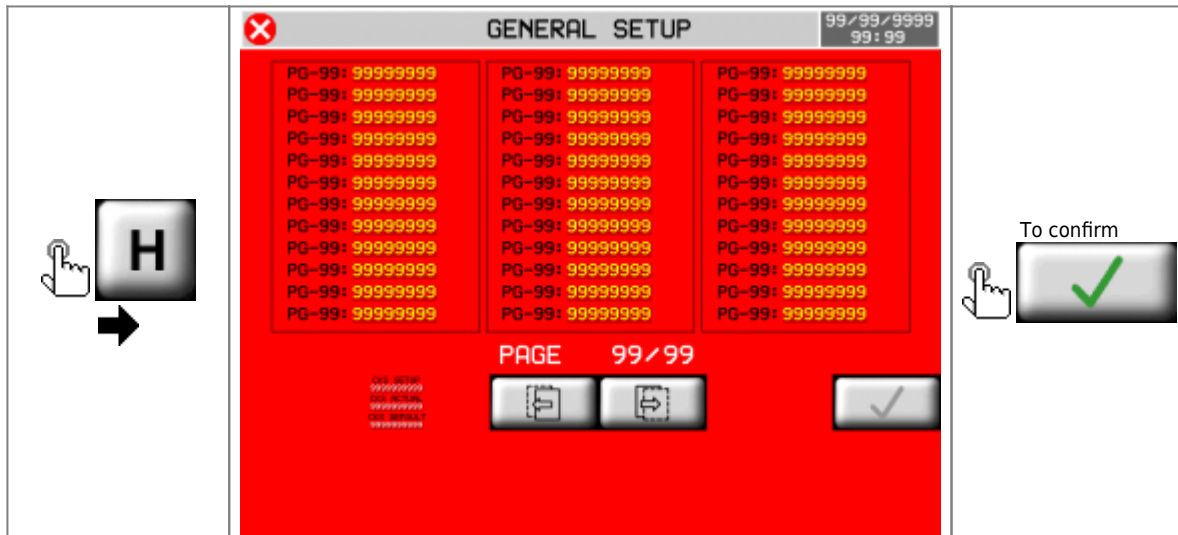
4.5 W axis setup



Parameters	U.M.	Default	Range	Description	
PW-01 : ENABLE AXIS	-	0	0 - 1	0 : disable 1 : enable	
PW-02 : MEASURE	°	0.01	0 - 99999.9	Distance, in units of measurement, covered the axis to get the pulses set in <i>PW-03</i> .	
PW-03 : PULSE	-	1	0 - 9999999	Encoder pulses to move the distance axis set in <i>PW-02</i> . <i>PW-02/PW-03</i> is the resolution of the axis. Must be between 1 ~ 0.000935.	
PW-04 : TOLERANCE	°	0.050	0 - 99.999	Space within which placement is considered correct.	
PW-05 : ENABLE TIMER	s	0.200	0 - 9.999	Time of delay between the clockwise/anti-clockwise direction command and the analog output command, necessary only when you command the inverter with signal 0-10 Volt (<i>PW-53</i> = 1).	
PW-06 : DISABLE TIMER	s	0.200	0 - 9.999	Time that is activated when the STOP (I11) is activated. At the end the analog output is increased to 0 Volt.	
PW-07 : SLOWDOWN	°	5.00	0 - 9999.99	Space needed for the axis to slow down the speed.	
PW-08 : FORWARD INERTIA	°	0	0 - 99.999	Space where the “Forward” command is removed , before the end of the positioning.	
PW-09 : BACKWARD INERTIA	°	0	0 - 99.999	Space where the “Backward” command is removed , before the end of the positioning.	
PW-10 : INERTIA MODE	-	0	0 - 2	At the end of the positioning: 0 : inertia not recalculated 1 : recalculation if axis ends out of tolerance 2 : recalculation always performed	
PW-11 : TOLERANCE WAIT TIMER	s	1.000	0 - 9.999	Time to wait for the axis is in stop, to enable tolerance space control.	
PW-12 : BACKLASH MODE	-	0	0 - 4	0 : disable 1 : forward backlash 2 : backward backlash 3 : forward backlash without speed slow down 4 : backward backlash without speed slow down	
PW-13 : OVER POSITION	°	0	0 - 999.99	Over quota for backlash.	Space considered with <i>PW-12</i> = 1-2-3-4. With <i>PW-12</i> = 0 this space is not considered.
PW-14 : AUTOMATIC FAST SPEED	%	10.0	0 - 100.0	Maximum speed during automatic cycle in % on 10 Volt analog output.	
PW-15 : SLOW SPEED AUTOMATICALLY	%	5.0	0 - 100.0	Minimum speed during automatic cycle in % on 10 Volt analog output.	
PW-16 : MANUAL FAST SPEED	%	10.0	0 - 100.0	Fast Jog.	% of the maximum speed <i>PW-14</i>
PW-17 : MANUAL SLOW SPEED	%	5.0	0 - 100.0	Slow Jog.	
PW-18 : HOMING FAST SPEED	%	10.0	0 - 100.0	First Homing speed.	
PW-19 : HOMING SLOW SPEED	%	1.0	0 - 100.0	Homing speed when the counter loads.	
PW-20 : HOMING SEQUENCE	-	1	0 - 1	0 : Axis not included in automatic homing sequence 1 : Axis included in automatic homing sequence	
PW-21 : HOMING OFFSET	°	0	-9999.99 - 9999.99	Set position at the end of homing procedure.	

PW-22 : HOMING TYPE	-	0	0 - 3	0 : Loads the written position on the <i>PW-21</i> parameter when the sensor is released. 1 : The axis engages the homing sensor, reverses movement and loads position <i>PW-21</i> on zero encoder signal. 2 : (Homing with the Jog) With the I62 input = ON (W-Axis Zero Cam), the <i>PW-21</i> value is loaded on the counter. 3 : Homing disable.				
PW-23 : HOMING DIRECTION	-	1	0 - 1	0 : direction axis + 1 : direction axis -				
PW-24 : MAXIMUM MEASURE	°	9999.99	-9999.99 - 9999.99	Software limit switch, maximum measure .				
PW-25 : MINIMUM MEASURE	°	-9999.99	-9999.99 - 9999.99	Software limit switch, minimum measure .				
PW-26 : MINIMUM SHIFT	°	0.10	0 - 99.99	Encoder feedback control space after <i>PW-27</i> time.	These parameters are used to determine whether the encoder is working well and whether the connecting cable is healthy			
PW-27 : MINIMUM TIME	s	2.000	0 - 9.999	Time within which the axis must make <i>PW-26</i> space.				
PW-28 : BRAKE LOGIC	-	1	0 - 1	0 : Brake output N.O. 1 : Brake output N.C.				
PW-29 : BRAKE TIME	s	1.000	0 - 9.999	Time to wait to turn on the brake, after the axis motion command is OFF.				
PW-30 : ACCELERATION	V/s	20.00	0 - 99.99	Acceleration value.				
PW-31 : DECELERATION	V/s	20.00	0 - 99.99	Deceleration value.				
Pulse position mode								
PW-32 : PULSES ENABLE	-	0	0 - 1	0 : Pulse positioning disable 1 : Pulse positioning enable				
PW-33 : APPROACH MEASURE	°	0.30	0 - 999.99	Measure before target where pulse positioning begins.				
PW-34 : PULSE LENGTH	s	0.100	0 - 9.999	Length of a single voltage pulse.				
PW-35 : PULSES SPAN	s	0.100	0 - 9.999	Time between two pulses.				
PW-36 : PULSES NUMBER	-	40	0 - 9999	Maximum number of pulses.				
PW-37 : PULSE AMPLITUDE	V	0.1	0 - 10.0	Pulse amplitude in volt.				
Linearization								
PW-38 : ENABLE CONVERSION	-	0	0 - 1	0 : Linear position conversion disabled 1 : Linear position conversion enabled				
PW-39 : REAL POSITION 2	°	45.00	0 - 9999.99	Axis Position	Sector	2	Encoder counter	
PW-40 : CONVERTED POSITION 2	°	45.00	0 - 9999.99					Correct counter
PW-41 : REAL POSITION 3	°	90.00	0 - 9999.99			3	✓	
PW-42 : CONVERTED POSITION 3	°	90.00	0 - 9999.99					✓
PW-43 : REAL POSITION 4	°	135.00	0 - 9999.99			4	✓	
PW-44 : CONVERTED POSITION 4	°	135.00	0 - 9999.99					✓
PW-45 : REAL POSITION 5	°	180.00	0 - 9999.99			5	✓	
PW-46 : CONVERTED POSITION 5	°	180.00	0 - 9999.99					✓
PW-47 : REAL POSITION 6	°	225.00	0 - 9999.99			6	✓	
PW-48 : CONVERTED POSITION 6	°	225.00	0 - 9999.99					✓
PW-49 : REAL POSITION 7	°	270.00	0 - 9999.99			7	✓	
PW-50 : CONVERTED POSITION 7	°	270.00	0 - 9999.99					✓
PW-51 : REAL POSITION 8	°	315.00	0 - 9999.99			8	✓	
PW-52 : CONVERTED POSITION 8	°	315.00	0 - 9999.99					✓
PW-53 : ANALOG OUTPUT TYPE	-	0	0 - 1	0 : +/-10Vdc analog output 1 : 0-10Vdc analog output				
PW-54 : END-OF-CYCLE PARKING	-	0	0 - 1	Enable automatic end-of-cycle parking location: 0 : disable 1 : enable				
PW-55 : ENABLE TOLERANCE ALARM	-	0	0 - 1	0 : out of tolerance only showed 1 : alarm enable				

4.6 H axis setup

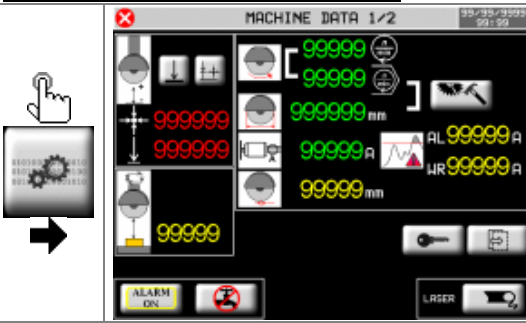
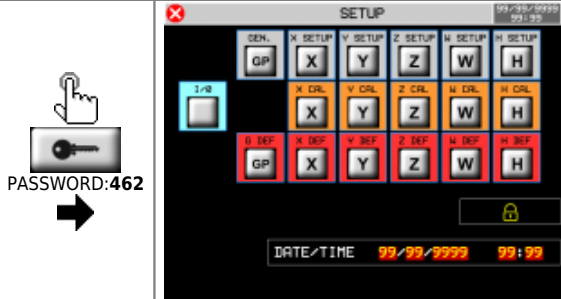


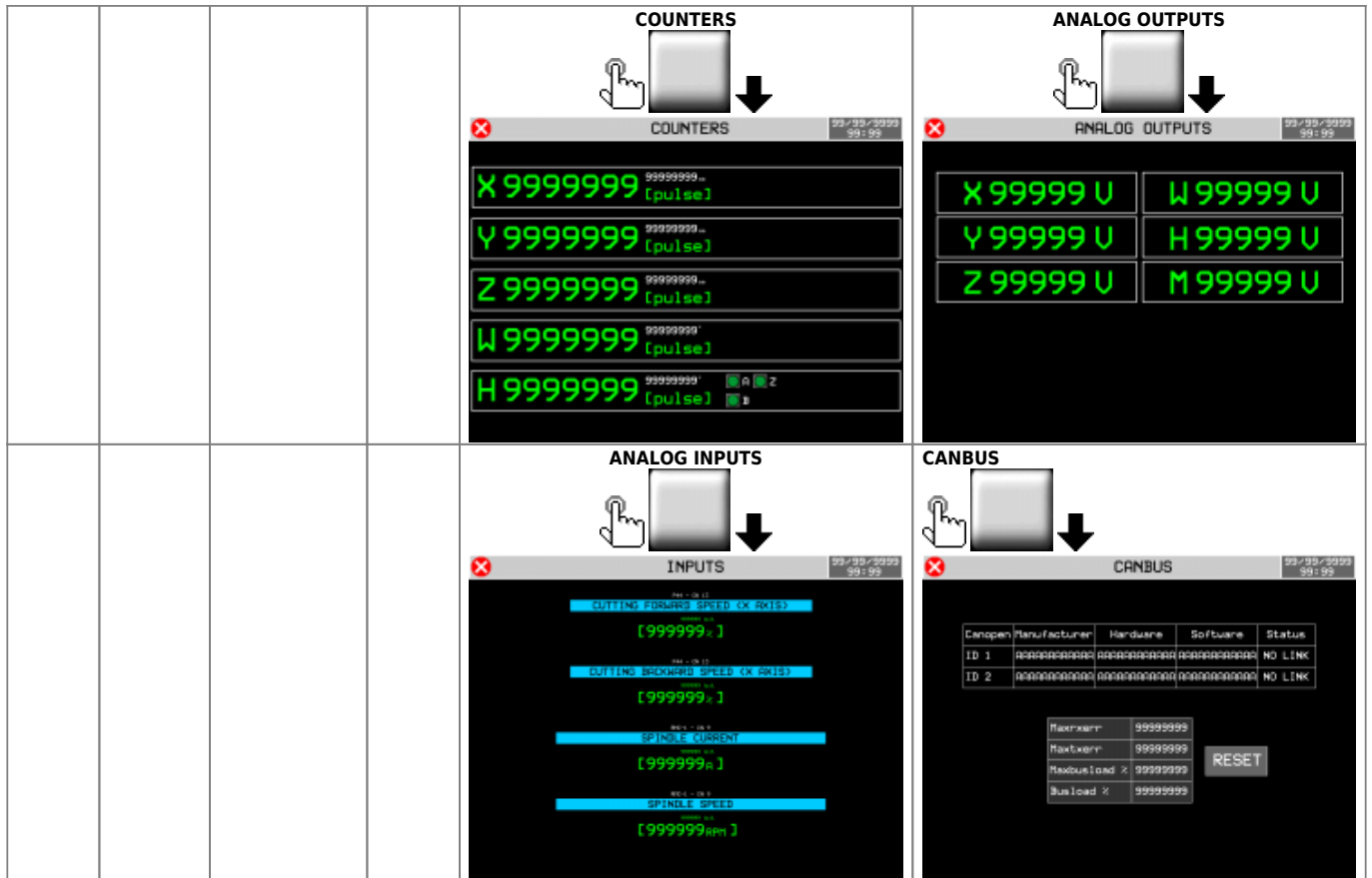
Parameters	U.M.	Default	Range	Description
PH-01 : TILT MODE	-	0	0 - 1	0 : tilts the whole beam saw 1 : tilts only the head saw
PH-02 : ENABLE AXIS	-	0	0 - 2	0 : disable ¹⁾ 1 : axis with only encoder 2 : axis with encoder and motor
PH-03 : MEASURE	°	0.01	0 - 99999.9	Distance, in units of measurement, covered the axis to get the pulses set in PH-04 .
PH-04 : PULSE	-	1	0 - 9999999	Encoder pulses to move the distance axis set in PH-03 . <i>PH-03/PH-04 is the resolution of the axis. Must be between 1 ~ 0.000935.</i>
PH-05 : TOLERANCE	°	0.050	0 - 99.999	Space within which placement is considered correct.
PH-06 : ENABLE TIMER	s	0.200	0 - 9.999	Time of delay between the clockwise/anti-clockwise direction command and the analog output command, necessary only when you command the inverter with signal 0-10 Volt (PH-54 = 1).
PH-07 : DISABLE TIMER	s	0.200	0 - 9.999	Time that is activated at the time of activation of the limit switch (I68 or I69). After the timer the analog output is increased to 0 Volt. It is necessary for the axis to pass the end of limit switch and so that it's activation is stable.
PH-08 : SLOWDOWN	°	5.00	0 - 9999.99	Space needed for the axis to slow down the speed.
PH-09 : FORWARD INERTIA	°	0	0 - 99.999	Space where the "Forward" command is removed , before the end of the positioning.
PH-10 : BACKWARD INERTIA	°	0	0 - 99.999	Space where the "Backward" command is removed , before the end of the positioning.
PH-11 : INERTIA MODE	-	0	0 - 2	At the end of the positioning: 0 : inertia not recalculated 1 : recalculation if axis ends out of tolerance 2 : recalculation always performed
PH-12 : TOLERANCE WAIT TIMER	s	1.000	0 - 9.999	Time to wait for the axis is in stop, to enable tolerance space control.
PH-13 : BACKLASH MODE	-	0	0 - 4	0 : disable 1 : forward backlash 2 : backward backlash 3 : forward backlash without speed slow down 4 : backward backlash without speed slow down
PH-14 : OVER POSITION	°	0	0 - 999.99	Over quota for backlash. Space considered with PH-13 = 1-2-3-4. With PH-13 = 0 this space is not considered.
PH-15 : AUTOMATIC FAST SPEED	%	10.0	0 - 100.0	Maximum speed during automatic cycle in % on 10 Volt analog output.
PH-16 : SLOW SPEED AUTOMATICALLY	%	5.0	0 - 100.0	Minimum speed during automatic cycle in % on 10 Volt analog output.
PH-17 : MANUAL FAST SPEED	%	10.0	0 - 100.0	Fast Jog.
PH-18 : MANUAL SLOW SPEED	%	5.0	0 - 100.0	Slow Jog.
PH-19 : HOMING FAST SPEED	%	10.0	0 - 100.0	First Homing speed.
PH-20 : HOMING SLOW SPEED	%	1.0	0 - 100.0	Homing speed when the counter loads.
PH-21 : HOMING SEQUENCE	-	1	0 - 1	0 : Axis not included in automatic homing sequence 1 : Axis included in automatic homing sequence

PH-22 : HOMING OFFSET	°	0	-9999.99 - 9999.99	Set position at the end of homing procedure.				
PH-23 : HOMING TYPE	-	0	0 - 3	0: Loads the written position on the <i>PH-22</i> parameter when the sensor is released. 1: The axis engages the homing sensor, reverses movement and loads position <i>PH-22</i> on zero encoder signal. 2: (Homing with the Jog) With the I67 input = ON (H-Axis Zero Cam), the <i>PH-22</i> value is loaded on the counter. 3: Homing disable.				
PH-24 : HOMING DIRECTION	-	1	0 - 1	0: direction axis + 1: direction axis -				
PH-25 : MAXIMUM MEASURE	°	9999.99	-9999.99 - 9999.99	Software limit switch, maximum measure .				
PH-26 : MINIMUM MEASURE	°	-9999.99	-9999.99 - 9999.99	Software limit switch, minimum measure .				
PH-27 : MINIMUM SHIFT	°	0.10	0 - 99.99	Encoder feedback control space after <i>PH-28</i> time.	Questi parametri, servono per determinare se l'encoder lavora bene e se il cavo di collegamento è integro			
PH-28 : MINIMUM TIME	s	2.000	0 - 9.999	Time within which the axis must make <i>PH-27</i> space.				
PH-29 : BRAKE LOGIC	-	1	0 - 1	0: Brake output N.O. 1: Brake output N.C.				
PH-30 : BRAKE TIME	s	1.000	0 - 9.999	Time to wait to turn on the brake, after the axis motion command is OFF.				
PH-31 : ACCELERATION	V/s	20.00	0 - 99.99	Acceleration value.				
PH-32 : DECELERATION	V/s	20.00	0 - 99.99	Deceleration value.				
Pulse position mode								
PH-33 : PULSES ENABLE	-	0	0 - 1	0: Pulse positioning disable 1: Pulse positioning enable				
PH-34 : APPROACH MEASURE	°	0.30	0 - 999.99	Measure before target where pulse positioning begins.				
PH-35 : PULSE LENGTH	s	0.100	0 - 9.999	Length of a single voltage pulse.				
PH-36 : PULSES SPAN	s	0.100	0 - 9.999	Time between two pulses.				
PH-37 : PULSES NUMBER	-	40	0 - 9999	Maximum number of pulses.				
PH-38 : PULSE AMPLITUDE	V	0.1	0 - 10.0	Pulse amplitude in volt.				
Linearization								
PH-39 : ENABLE CONVERSION	-	0	0 - 1	0: Linear position conversion disabled 1: Linear position conversion enabled				
PH-40 : REAL POSITION 2	°	22.50	0 - 9999.99	Posizione asse	Sector	2	Encoder counter	
PH-41 : CONVERTED POSITION 2	°	22.50	0 - 9999.99					Correct counter
PH-42 : REAL POSITION 3	°	45.00	0 - 9999.99			3	✓	✓
PH-43 : CONVERTED POSITION 3	°	45.00	0 - 9999.99					
PH-44 : REAL POSITION 4	°	67.50	0 - 9999.99			4	✓	✓
PH-45 : CONVERTED POSITION 4	°	67.50	0 - 9999.99					✓
PH-46 : REAL POSITION 5	°	90.00	0 - 9999.99			5	✓	✓
PH-47 : CONVERTED POSITION 5	°	90.00	0 - 9999.99					✓
PH-48 : REAL POSITION 6	°	0.00	0 - 9999.99			6	✓	✓
PH-49 : CONVERTED POSITION 6	°	0.00	0 - 9999.99					✓
PH-50 : REAL POSITION 7	°	0.00	0 - 9999.99			7	✓	✓
PH-51 : CONVERTED POSITION 7	°	0.00	0 - 9999.99					✓
PH-52 : REAL POSITION 8	°	0.00	0 - 9999.99			8	✓	✓
PH-53 : CONVERTED POSITION 8	°	0.00	0 - 9999.99					✓
PH-54 : ANALOG OUTPUT TYPE	-	0	0 - 1			0: +/-10Vdc analog output 1: 0-10Vdc analog output		
PH-55 : END-OF-CYCLE PARKING	-	0	0 - 1	Enable automatic end-of-cycle parking location: 0: disable 1: enable				
PH-56 : ENABLE TOLERANCE ALARM	-	0	0 - 1	0: out of tolerance only showed 1: alarm enable				

¹¹ If the H axis is not present, keep the **I69** input active

5. Diagnostic

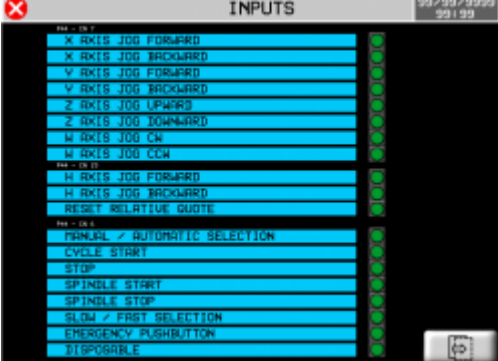
 F6			
			
	 PASSWORD:462		
			
			 INPUTS  OUTPUTS



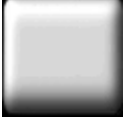
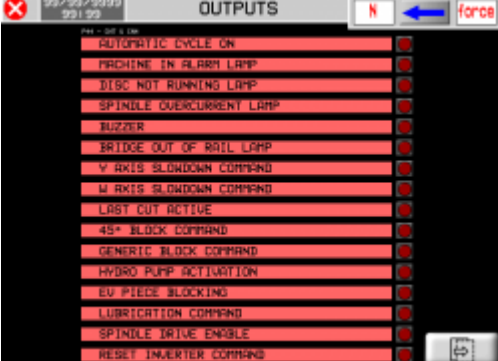
5.1 CPU DATA

CPU DATA	
Fw name: AAAAA-99.9.99	Fw name : firmware and checksum code Task time : average CPU cycle time Maximum Time and Minimum Time registered limits CPU time : total CPU time in RUN state (hh:mm)
(Fw check.:9999999999999999 dec)	
Task time: 99999 ms	
Max task time: 99999 ms	
Min task time: 99999 ms	
CPU time: 99999:99	

5.2 Digital inputs

 INPUTS 		Status of digital inputs  = OFF  = ON
		Previous page
		Next page

5.3 Digital outputs

 OUTPUTS 		Status of digital outputs  = OFF  = ON
		Previous page
		Next page
		Press to switch to output force mode Press the output that you want to activate.

5.4 Encoder counters

 COUNTERS 		Axes position  = OFF  = ON

5.5 Analog outputs


ANALOG OUTS


✖
ANALOG OUTPUTS
99/99/9999
99:99

X 999999 U

Y 999999 U

Z 999999 U

W 999999 U

H 999999 U

M 999999 U

Analog outputs voltage

5.6 Analog inputs


ANALOG INP.


✖
INPUTS
99/99/9999
99:99

P00 - G0: G1

CUTTING FORWARD SPEED (X AXIS)

[999999%]

P00 - G0: G2

CUTTING BACKWARD SPEED (X AXIS)

[999999%]

P00 - G0: G3

SPINDLE CURRENT

[999999A]

P00 - G0: G4

SPINDLE SPEED

[999999RPM]

Analog inputs show

5.7 Canbus


CANBUS


✖
CANBUS
99/99/9999
99:99

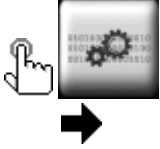
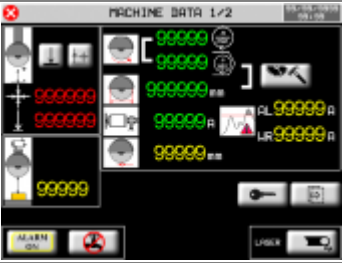
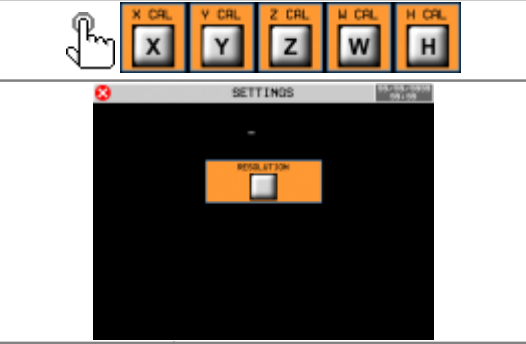
Canopen	Manufacturer	Hardware	Software	Status
ID 1	AAAAAAAAAA	AAAAAAAAAA	AAAAAAAAAA	NO LINK
ID 2	AAAAAAAAAA	AAAAAAAAAA	AAAAAAAAAA	NO LINK

Maxxerr	99999999
Maxtxerr	99999999
Maxbusload %	99999999
Busload %	99999999

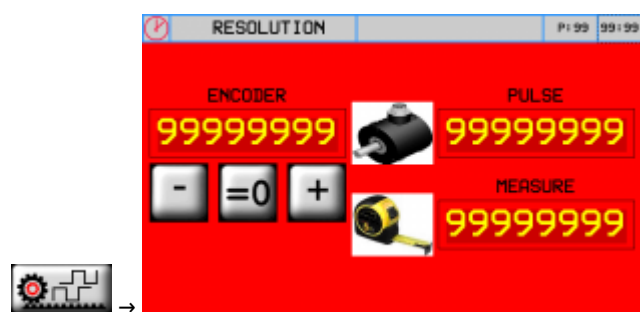
RESET

Communication status with the remote module.

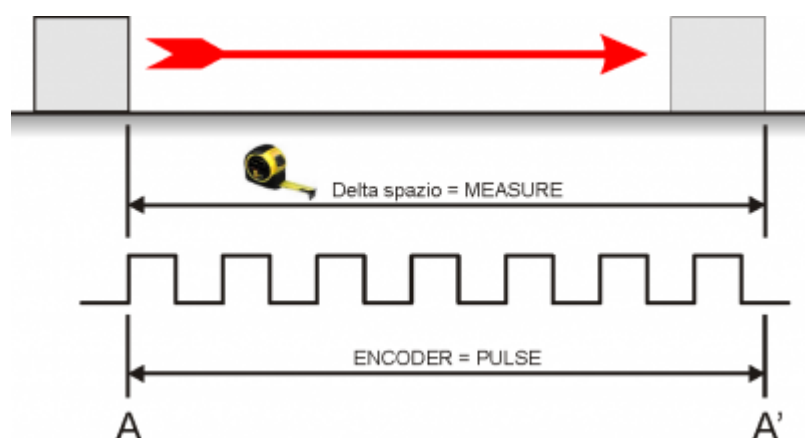
6. Axes calibration

			
			
	 PASSWORD:462		
		 X CAL	
	 RESOLUTION		
	 LINEARIZATION		

6.1 Resolution



Procedure



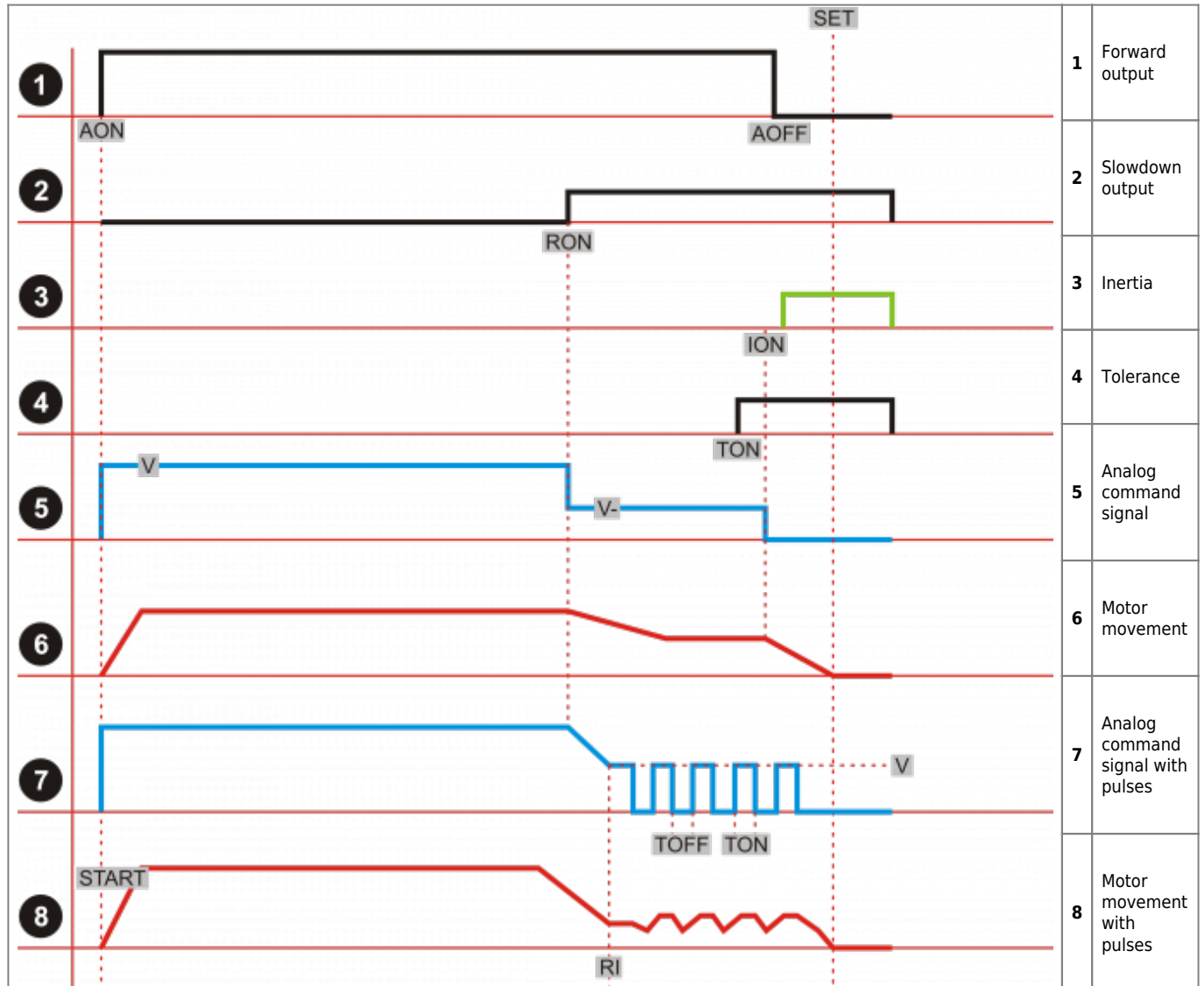
- Press  and check the ENCODER box increases (Analog out +1 Volt)
- Press  and check the ENCODER box decreases (Analog out -1 Volt)
- A - A' = The maximum space
- Take note of the start position (A)
- Zero-set the **ENCODER**: 
- Move the axis from A to A'
- Take note of the reading in **ENCODER** box and write it in the **PULSE** box
- Measure the distance from A to A' = **space delta**
- Enter the A - A' **space delta** in the **MEASURE** box

Important:

- **PULSE** must always be greater than **MEASURE** (the best is "MEASURE x 10 = PULSE")
- Enter **MEASURE** in the selected **unit measure**. E.G. if a unit measure of 1/10mm is selected and the **space delta** is 133.5mm, enter 1335 in the **MEASURE** box

6.2 How inverters are controlled

6.2.1 Forward command example



6.2.1.1 Chart description

A positioning axis, with motor controlled by inverter, is managed with the following digital commands of ON/OFF type:

Example:

- **AON** to the Start ⇒ **Forward** output = ON
- **RON** = **SET** - **Slowdown** measure ⇒ **Slowdown** output = ON
- **AOFF** = **SET** - **Inertia** measure ⇒ **Forward** output = OFF

When the **Forward** output of movement = OFF, because of its weight, the axis will continue the movement, cover through the **Inertia** space, from the **ION** point to **SET** point ¹⁾.

¹⁾ In the instrument provided with analog output, at the time of Start command, they also command the analog command output of the inverter, with a voltage proportional to the desired speed "V"

In the **RON** moment, analog output is less than **V-**.

To get a correct positioning, it is necessary that the axis can decelerate and discharge all its kinetic energy, before getting to the **ION** point.....

- if this happens
- if the weight of the axis does not change and does not swing the axis
- if the scroll guides do not vary their friction

....the axis will position correctly to the **SET**.

X-Y-Z-H axes have a constant weight, consequently their space of **Inertia** is then normally "constant".

For the W axis is different, because of the different weight of the stone blocks that are put on top of it, the **Inertia** space may be variable, especially if the reduction ratio between engine and mechanics is not very high.

To remedy an ineligible reduction ratio, it will no longer be enough to control the axis with normal **Slowdown** and **Inertia** commands, instead you will need to use the **Pulses Technique**.

6.2.1.2 How works the Pulses Technique?

After commanding the axis to slowdown the speed, from the **RI** point, the axis command is execute using small voltage pulses, setting the following parameters:

- **PULSES ENABLE** *PW-32* = 1
- **APPROACH MEASURE** *PW-33* = xxxxx
- **PULSE LENGTH** *PW-34* = xxxxx
- **PULSES SPAN** *PW-35* = xxxxx
- **PULSES NUMBER** *PW-36* = xxxxx
- **PULSE AMPLITUDE** *PW-37* = xxxxx

The instrument, after every pulse, check that the count has arrived at the scheduled **SET**.

When the count arrived at the **SET** value, the pulses end.

In this mode, the adjustment will transform....

- from "open-loop"
- to a kind of "closed-loop"

....as is normally done to command:

- closed-loop vector inverters with feedback from encoders
- or Brusless Drivers

6.2.1.3 Calibration

The calibration is simple. It only takes a little time to repeat the tests several times to see if the system is stable:

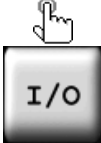
- adjust the sensitivity of the analog control of the inverter input, as low as possible, cheking that it does not become sensitive to electromagnetic interferences
- initially program the voltage value of the pulse or **PULSE AMPLITUDE** *PW-37* = 0
- program the **SLOWDOWN** space *PW-07* with high value
- start a positioning, the axis will stop space before you get to the **SET**
- at this point:
 - program the **PULSES SPAN** value *PW-35* to an high value, for example 2 seconds
 - program the voltage value **PULSE AMPLITUDE** *PW-37* and of **PULSE LENGTH** *PW-34*, minimum possible but sufficient to move the axis ¹⁾
 - program the **PULSES NUMBER** *PW-36* to an high value, for example 999
- 6. repeat positioning, will happen then that axis after slowing down, every two seconds will make a "small" advance
- 7. at this point:
 - gradually decrease the **PULSES SPAN** value *PW-35* until the axis moves continuously
 - than, gradually decrease the **SLOWDOWN** space *PW-07* ²⁾
- 8. Gradually you will see, in the final positioning phase, slow down in a short space and then finish the placement harmoniously, perfectly on programmed **SET**, with a block of stone, or without ³⁾.

¹⁾ Found the minimum values with which the axis moves, set them with an extra 10%.

²⁾ Repeat the positioning whenever the values of these parameters are changed. At this point, place a weight on top of the table. So, if the placement doesn't happen correctly, retouch the scheduled values.

³⁾ The placement will be considered correct only after the axis count has arrived at the **SET** within the space of **Tolerance**.

2. **6.3 W and H axis linearization**



oppure
I/O



→



→

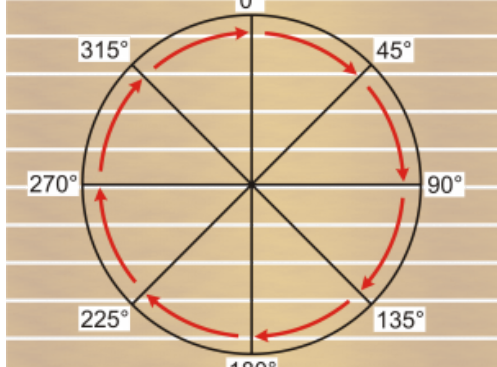


↓



Move the table to the indicated positions in the image (value to be inserted into the **MACHINE POSITION** column).

↓



↓

Detect the angular measurements showed at their respective positions (value to be inserted into the **ENCODER** column).

↓

	45°	90°	135°	180°	225°	270°	315°	360°
W Axis								
H Axis								

↓

Go to the **Linearization** page.

↓



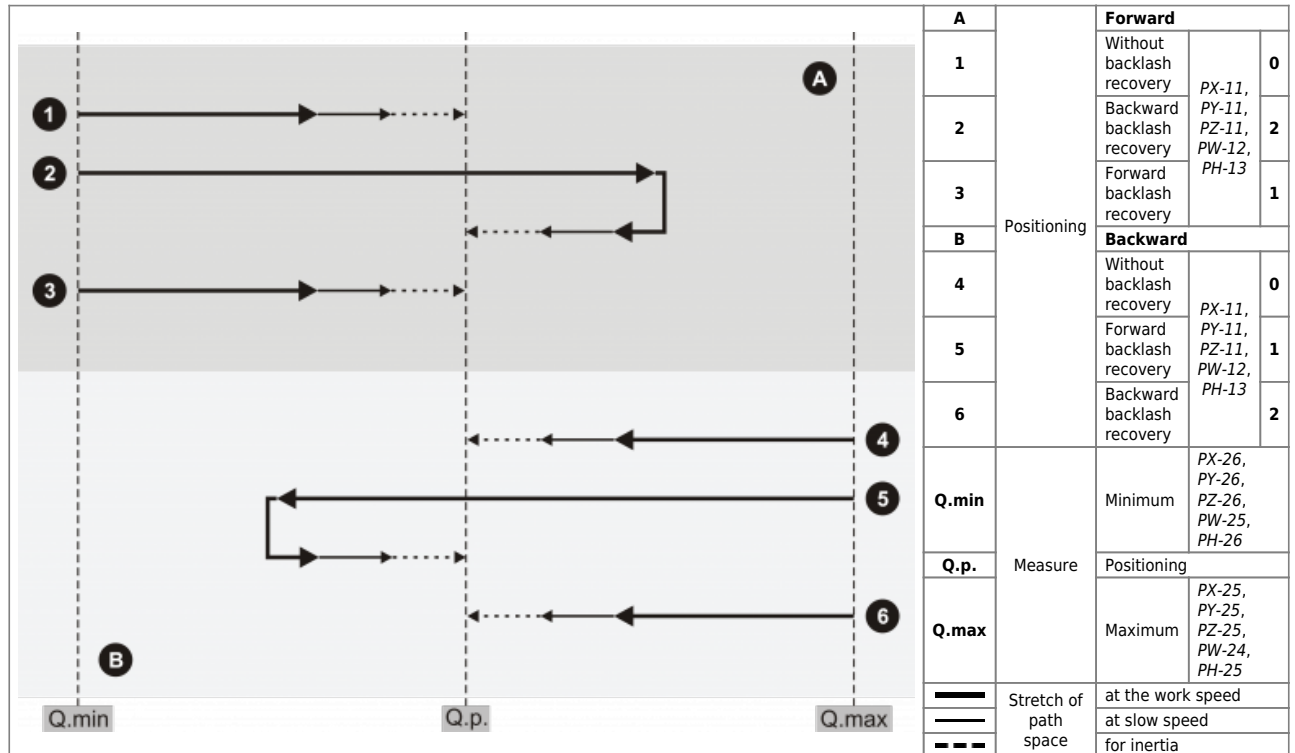
Enable the linearization with **ENABLE = 1**.

↓

Write to the **ENCODER** column the angular values detected and in the corresponding **MACHINE POSITION** column the locations shown in the image.

2. 6.4 Backlash recovery

By enabling the **Backlash Recovery** you can achieve placements with higher accuracy.



2. **6.5 Conclusion of start-up**

See following instructions:

6.5.1 Datas Backup

[NAND Backup](#)

6.5.2 PC Backup

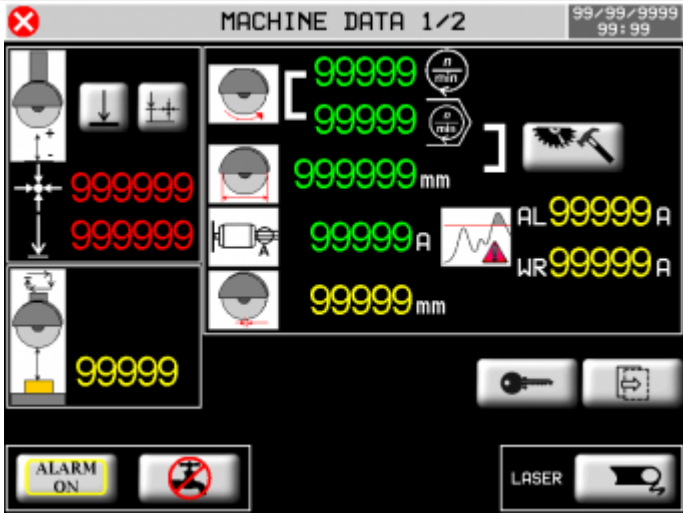
[Save](#) data on PC and store in a secure place.

2. 7. Disk RPM Table

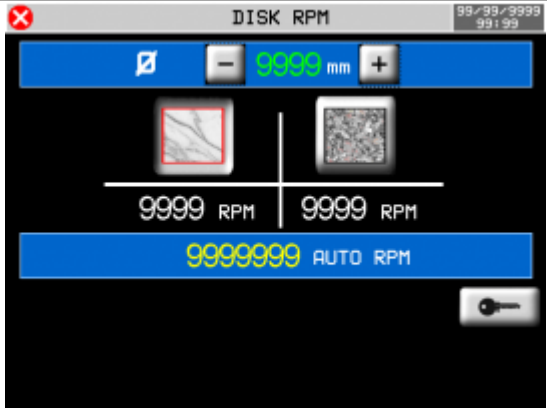
MAIN MENU



→



→

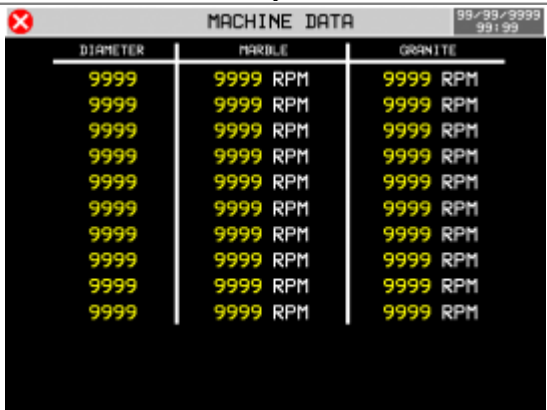


→



password 462

→



DIAMETER	MARBLE	GRANITE
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM
9999	9999 RPM	9999 RPM

2. 8. Assistance

For supplying you fast service, at the lowest cost, we need your support.

	
Follow all instructions provided in the MIMAT manual	If the problem remains, fill out the “Request Form for assistance” on the page Contacts at www.qem.it site. Our technicians will get elements essential for the understanding of your problem.

Repair

To provide you with an efficient service, please read and adhere to the instructions given [here](#)

Shipping

It is recommended to pack the instrument with materials that are able to cushion any falls.

		
Use the original package: it must protect the instrument during transport.	Attach: 1. A description of the anomaly; 2. A part of the electric scheme where the equipment is inserted 3. The planning of the equipment (set up, quotas of job, parameters...). 4. Request a quote for repair; if not required, the cost will be calculated in the final balance.	A full description of the problem, will help identify and resolve your problems fast. A careful packaging will avoid further inconveniences.

Documento generato automaticamente da **Qem Wiki** - <https://wiki.qem.it/>

Il contenuto wiki è costantemente aggiornato dal team di sviluppo, è quindi possibile che la versione online contenga informazioni più recenti di questo documento.