

Operating Instructions

Mapping Table

MAPPING-12-INCH

Version 110314

Do Not Remove Any Safety Device Installed
This will void your warranty and create an unsafe operating
condition

WARNING: Dangerous Voltages Present
Instrument should be serviced by qualified service personal only.

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1 Safety Instructions

Instructions: All the safety and operating instructions should be read before the unit is operated. Before using the system for the first time check for transport damage.

Warning: All warnings on the unit and in the operating instructions should be adhered to.

Use this instrument in a clean laboratory environment.

Moisture

The unit is designed for operation in dry rooms only.

Heat

The unit should be situated away from radiators, hot bodies, ovens or other heat sources.

Power Sources

The unit should be connected to a power supply only of the type described in the operating instructions or as marked on the unit.

Object and Liquid Entry

Care should be taken that objects do not fall, or liquids spilled into the enclosure through openings.



Caution:

Keep your hands away from moving parts!

2 Unpacking Instructions

Unpacking Instructions:

Your package should contain:

- 1x Mapping table
- 1x Set Power cords (EU/US/UK)
- 1x Serial connection cable (EIA-232)
- 1x Software CD
- 1x This manual

Unpack your Mapping table carefully. Although the stage is rigidly mounted dropping this instrument can cause permanent damage.

Inspect the outside of the instrument and make sure that there is no damage to your unit. In case of damage contact the dealer immediately and **DO NOT USE THE INSTRUMENT!**

3 Description Mapping Table

The Mapping Table comes with an electric motor and encoder to drive each axis, along with a CNC controller.

The system requires 110-240 VAC to operate, and interfaces via EIA-232 to PCs. The XY-Table makes it possible to measure every sample within an X-Y range of 300mm x 300mm. The resolution for the linear axes is 2 μ m, with an accuracy of 10 μ m.

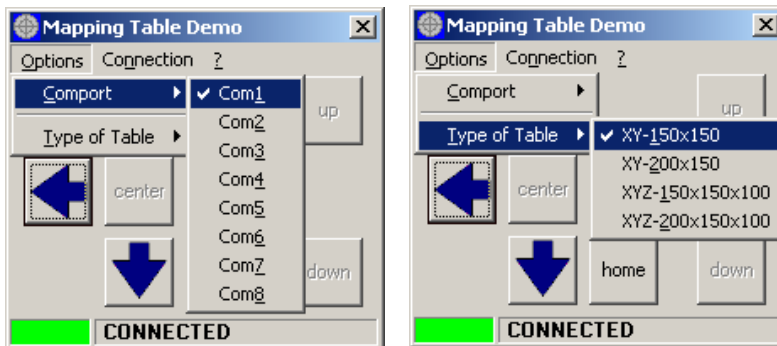
4 Operating the Mapping Table

4.1 How to interface with the device

All Mikropack Mapping Tables can be operated by several different kinds of software. These are for example:

1. The Mikropack Demo software (comes with the device)
2. By a terminal (like Hyperterminal)
3. Custom Software using the command set

4.2 Demo software



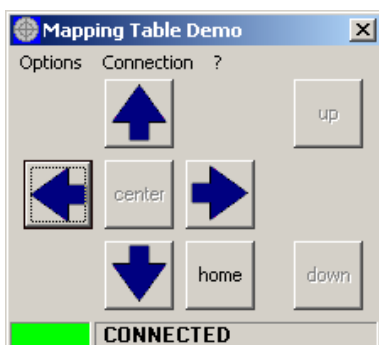
At the first start the application tries to find a XY-150x150 mapping stage on Com1. These are the default settings.

The status bar shows you the status of the connection. If your settings are correct the box will be green and "CONNECTED" will appear. Otherwise the box will light red and "NOT CONNECTED" will be shown.

The type of table is mainly defined by the number of axes. The length of the x-axis cannot be determined by the software. This setting will in this software only take effect on the center position.

To move the stage in a certain direction press a mouse button over the according button. The stage will move fast if you press the left mouse button and slow when the right mouse button is pressed.

Alternatively the stage can be moved by keyboard.



Movement of the stage	Action	
Left	Numerical pad 4	A
Right	Numerical pad 6	D
To the front	Numerical pad 2	X
To the back	Numerical pad 8	W
Up	Numerical pad 9	E
Down	Numerical pad 3	C
Home	Numerical pad 0	V
Center	Numerical pad 5	S

4.3 Terminal

With a terminal client such as Hyper Terminal or Tera Term you can set the stage position by directly sending the commands to the stage.

The ASCII command set used for serial communication can be found in chapter 6 ASCII Command Set

Connection settings:

Baud rate	9600
Data	8 bit
Parity	None
Stop	1 bit
Flow control	none

Example:

move in x-direction with 100rpm send the following command: 1v100
move in y-direction with 50rpm: 2v50
stop both axes: v0

all commands have to be completed with a carriage return.

5 Factory settings

The following settings can be reset in the controller by sending them to each controller via EIA-232. In the end they have to be stored in the EEPROM with the EEPSAV command.

x-axis	y-axis
CONTMOD	CONTMOD
SOR0	SOR0
ADR	ADR
MV0	MV0
MAV25	MAV25
STW1	STW1
STN1000	STN1000
LL1800000000	LL1800000000
LL-1800000000	LL-1800000000
APL0	APL0
SIN1	SIN1
SETPLC	SETPLC
REFIN	REFIN
DCE200	DCE200
LPN16	LPN16
CO	CO
HB3	HB3
HP7	HP7
HD1	HD1
SHA0	SHA0
SHN0	SHN0
SHL0	SHL0
POHOSEQ0	POHOSEQ0
HOSP100	HOSP100
ENCRES2048	ENCRES2048
KN227	KN227
RM3600	RM3600
SP500	SP500
AC5000	AC5000
DEC5000	DEC5000
SR1	SR1
POR8	POR8
I50	I50
PP20	PP20
PD3	PD3
CI40	CI40
LPC1800	LPC1800
LCC1500	LCC1500
DEV30000	DEV30000
CORRIDOR20	CORRIDOR20
EN	EN
V0	V0
DIPROG	DIPROG
ANSW2	ANSW2
NET1	NET1
NODEADR1	NODEADR2

Caution:

The node addresses (NODEADR) cannot be reprogrammed.

To restore the factory settings send the instructions listed above to the mapping table.

Changing these settings may lead to malfunction or damage.

6 ASCII Command Set

NOTE:

To send a command to a certain axis you need to add the node address to the command like shown below.

All commands must be completed by a carriage return (CR).

Axis	Address node	Example	Description
X	1	1V200[CR]	X-axis runs at constant speed of 200rpm
Y	2	2V300[CR]	Y-axis runs at constant speed of 300rpm
All	All nodes	V50[CR]	All attached axes run at constant speed of 50rpm

Commands for basic settings

Command	Description	Example
DI	Disable drive Deactivates the motor	DI
EN	Enable drive Activates the motor	EN
ANSW	Asynchronous answer on/off ANSW0 – no automatic answers ANSW1 – activate automatic answers	ANSW1
LL	Load position range limits Loads range limits. The motor will not pass these limits in positioning mode. Positive values give the upper limit, negative the lower limit.	LL10000 LL-30000
APL	Activate/deactivate position limits APL1 – activate limits even while in speed control APL0 – deactivate limits	APL1
GPL	Get positive limit Calls the upper limit	GPL -> 10000
GNL	Get negative limit Calls the lower limit	GNL -> -30000
EEPSAV	Save to EEPROM Saves the actual parameters and configurations to the EEPROM. The settings remain saved even when the power supply is turned off.	EEPSAV

Commands for motion control

Command	Description	Example
M	Initiate motion Activates positioning mode	M
LA	Load absolute position Parameter: 1000 is equivalent to one complete rotation	LA5000
LR	Load relative position Parameter: 1000 is equivalent to one complete rotation	LR11000
V	Select velocity mode Activates velocity control and rotates with the given values	V200
GV	Get velocity Calls up command velocity	GV -> 200
NP	Notify position Motor sends "p" to the host terminal when the given position has been passed. No parameter: "p" is sent when target position is reached.	NP5000 Asynch -> p
NV	Notify velocity When the motor reaches the given velocity it transmits "v" to the host	NV200 Asynch -> v

Commands for velocity control

Command	Description	Example
MV	Minimum Velocity Sets the minimum speed in rpm	MV30
GMV	Get minimum velocity Calls up the minimum velocity	GMV -> 30
SOR	Source for velocity Chooses the source for velocity. SOR0: velocity from RS232	SOR0

Commands for evaluating limit switches and homing points

Command	Description	Example
HO	Define home position Without parameter: sets the actual position to 0	HO
HP*	Hard polarity Sets the trigger edge and the polarity for the limit switches 1**: rising edge and high level 0**: falling edge and low level	HP3
HA	Home arming At an edge the position will be set to 0 1: activate 0**: deactivate	HA3
HL*	Hard limit At an edge the motor will stop 1**: activate 0**: deactivate	HL3
HN	Hard notify At an edge a "f" will be sent to the host 1**: activate 0**: deactivate	HN3
CAHOSEQ	Capture homing sequence Saves homing sequence to the intermediate memory. Actions defined with the HL, HN and HA commands will be saved	CAHOSEQ
POHOSEQ	Power on homing sequence Activate the homing sequence upon turning the motor on POHOSEQ1: activate POHOSEQ0: deactivate	POHOSEQ1
GOHOSEQ	Go homing sequence Executes the programmed homing sequence	GOHOSEQ
HOSP*	Load homing speed Range: -30000 to 30000 rpm	HOSP100
GHOSP	Get homing speed Calls up the actual homing speed	GHOSP -> 100
HB*	Hard blocking Activates hard blocking for given limit switch 1**: activate 0**: deactivate	HB3
HD*	Hard direction Sets the direction to be blocked 1**: right rotation blocked 0**: left rotation blocked	HD2
GOHIX	Go hall index Motor runs to hall zero and sets the position to 0	GOHIX
HS	Hard status A number 1-3 indicating which limit switches have activated	HS -> 3
GAHS	Get actual homing status 5 numbers with values between 0 and 3 are sent to the host. Indication the status of the limit switches 1. HA value 2. HL 3. HN 4. HB 5. HD	GAHS -> 33300
GHSC	Get homing sequence configuration	GHSC

	3 numbers between 0 and 3. Indicating the settings of the homing sequence 1. HA 2. HL 3. HN	-> 220
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Commands for parameters

Command	Description	Example
SP* ***	Load maximum speed Loads new maximum velocity (rpm) Range 0 to 30000	SP1000
GSP	Get maximum speed Calls up actual maximum velocity	GSP -> 1000
AC*	Load new acceleration Parameter in Revolutions/s ²	AC2000
GAC	Calls up acceleration	GAC -> 2000
POR*	Load proportional term (controller amplification, 0-255)	POR20
GPOR	Get proportional term	GPOR -> 20
I*	Load integral term (0-255)	I10
GI	Get integral term	GI -> 10
LPC*	Load peak current limit 0-12000 mA	LPC2000
GPC	Get peak current limit	GPC -> 2000
LCC*	Load continuous current limit 0-12000 mA	LCC1500
GCC	Get continuous current limit	GCC -> 1500

Commands for programming sequences

Command	Description	Example
PROGSEQ*	Program sequence Defines the beginning of a program. All commands given after PROGSEQ will be sent directly to the EEPROM. The command END defines the end of the program. All commands after END will be immediately carried out.	PROGSEQ
GPROGSEQ	Get program sequence	GPROGSEQ - > <Program>
ENPROG*	Enable program Starts the program. This command can be saved to the EEPROM with EEPSAV so that the program will start at power up.	ENPROG
DIPROG*	Disable program, deactivates the program	DIPROG

Request commands

Command	Description	Example
POS	Get actual position	POS -> 5000
GN	Get actual speed	GN -> 1000
GCL	Get actual current limit	GCL -> 1500
GRC	Get real current	GRC -> 800
TEM	Get temperature of motor housing	TEM -> 35
VER	Get version of controller software	VER -> Version...
NE	Notify error In case of an error the host will be signalled NE1: activate (sends "r" to the host) NE0: deactivate	NE1 Async -> r
GST	Get actual status (7 Bits) Bit 0: 1 position controller active 0 velocity controller active Bit 1: 1 velocity analog to PWM 0 velocity given at RS-232 Bit 2: 1 velocity is PWM (Bit 1=1) 0 velocity is analog (Bit 1=1) Bit 3: 1 drive enabled 0 drive disabled Bit 4: 1 command position has been reached 0 command position has not been reached yet Bit 5: 1 positive edge at limit switch is active 0 negative edge at limit switch is active Bit 6: 1 limit switch set to high level 0 limit switch set to low level	GST -> 0101011
GFS	Get fault status (4 Bits), 0-no error, 1-error Bit 0: Overtemperature Bit 1: Current limit Bit 2: Undervoltage Bit 3: Overvoltage	GFS -> 0000
GAST	Get actual status (4 Bits) Bit 0: 1 limit switch 2 at high level 0 limit switch 2 at low level Bit 1: 1 limit switch 3 at high level 0 limit switch 3 at low level Bit 2: 1 positive values -> right rotation 0 positive values -> left rotation Bit 3: 1 power on homing sequence is running 0 power on homing sequence has ended	GAST -> 1100

GSCS	Get special configuration set (8 Bits) Bit 0: 1 Power on homing sequence is active 0 Power on homing sequence is inactive Bit 1: 1 Fault pin is an input 0 Fault pin is an output Bit 2: 1 Pulse output at fault pin (Bit 1=0) 0 Error signal at fault pin (Bit 1=0) Bit 3: 1 Fault pin is direction of rotation input (Bit 1=1) Fault pin is digital output (Bit 1=0) 0 Fault pin is limit switch input 2 (Bit 1=1) Fault pin is not digital output (Bit 1=0) Bit 4: 1 Rising edge at limit switch 2 0 Falling edge at limit switch 2 Bit 5: 1 Rising edge at limit switch 3 0 Falling edge at limit switch 3 Bit 6: 1 Program sequence is active 0 Program sequence is inactive Bit 7: 1 Automatic answer8ing is active 0 Automatic answering is inactive	GSCS -> 00000001
GES	Get enhanced status Bit 0: 0 Bit 1: 0 Bit 2: 1 Analog command current active 0 No analog command current Bit 3: 1 Position limits in all modes active 0 Position limits only in positioning mode active Bit 4: 1 Deviation error is given 0 No deviation error is given	GES -> 00001

* Changing these settings/using these functions may lead to malfunction and or damage.

** 0 or 1 at the given binary position (3 -> 011)

*** Setting a maximum velocity greater 1000 will damage the axes

7 Specifications

Mechanical Data	MAPPING-12-INCH
Slides	2x ball bearings / slide recirculating ball bearings / table
Travel Range	300 mm x 300 mm
Maximum Speed	20 mm / sec
Resolution	2 μ m
Accuracy	10 μ m
Dimensions	765 x 740 x 360 mm
Weight	ca. 48 kg
Electrical Data	
Motortype	Sine wave commutated Servomotor
Motor Voltage	24 V
Total Power Consumption	70 W
Power Requirements	110...240V 50/60 Hz
Interface	EIA-232, 9600 Baud

8 Warranty

Ocean Optics Germany GmbH warrants to the Original User of this instrument that it shall be free of any defects resulting from faulty manufacture of this instrument for a period of 12 months from the original date of shipment.

This **instrument should not be used for any Clinical or Diagnostic Purposes.** Data generated is not warranted in any way by Ocean Optics Germany GmbH. Any defects covered by this Warranty shall be corrected either by repair or by replacement, as determined by Ocean Optics Germany GmbH.

There are no warranties which extend beyond the description herein.

This Warranty is in lieu of, and excludes any and all other warranties or representation, expressed, implied, or statutory, including merchantability and fitness, as well as any and all other obligations or liabilities of Ocean Optics Germany GmbH, including, but not limited to special or consequential damages. No person, firm, or corporation is authorized to assume for Ocean Optics Germany GmbH. Any additional obligation or liability not expressed provided for herein except in writing duly executed by an officer of Ocean Optics Germany GmbH.

8.1 Warranty Handling

1. Clear with your local distributor the problem or fault.
2. In case of warranty your local distributor will give you a RMA number.
3. Send your instrument free of charge and insured to your local distributor.
4. Your distributor will inform you on delivery time. If there is repair out of warranty you will be informed about repair cost. The system will be on hold till you have officially ordered the repair.

The system will be send back to you free of transport cost and insured (in case of warranty)