

mipick LPOS Ethernet TCP/IP

Laser Position System with Ethernet TCP/IP Interface

User Manual

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1 General

"mipick LPOS" facilitates the manual order picking process. The devices are installed above the goods to be picked. The goods to be withdrawn are detected by means of a laser beam.

The number of utilized lasers and their positioning are determined in accordance with customer requirements.

2 Technical Data

Overall Specification

Laser:	customer requirements
Laser class:	laser class 2 < 1 mW or laser class 2m < 5 mW (with ancillary lens) or laser class 3a laser class 3R (without ancillary lens)
Wavelength:	635 nm
Focus:	adjustable
Arrangement:	according to the offer
Operating voltage:	230 VAC
Interface:	Ethernet TCP/IP
Housing:	industrial version, powder coated aluminum
Housing colour:	RAL 7016 (anthracite)
Protection:	IP 00
Operating temp.:	0...+50 °C
Storage temp.:	-25...+75 °C

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3 Safety Instructions

Please read the following information carefully and keep it safe.

- Please observe the technical specifications.
- We do not assume any liability and exclude warranty in the event of any changes to the module, such as changes to the electronics components, manipulating controllers, housing or optics (in particular increasing the output). Manipulations of the laser module may cause the power output and the wavelength to considerably deviate from the specified values. In this process, the specified laser output may be exceeded several times and invisible infrared laser radiation may escape.
- The statutory warranty is rendered void in the event of non-compliance with the above information.

Observe the precautions stated in the accident prevention regulations (BGV B2). These include the following:

- Do not look into the beam or direct reflections, also do not look with optical instruments.
- Clear marking of the laser area with warning signs at all access points.
- Route the laser beam clearly below or above eye level, but not at eye level.

The owner / operator of the laser equipment is responsible for compliance with protection measures. The owner/operator must, among other things, ensure that the laser device is assigned to a laser class and marked accordingly. Operations using laser equipment classes 3R, 3B and 4 must be registered with the trade supervisory office and the mutual indemnity association. When operating lasers of these classes, the laser area must be cordoned off and marked.

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Additionally, owners/operators of laser equipment classes 3R, 3B and 4 must appoint an expert as the laser protection officer.

Staff operating laser equipment classes 1M, 2, 2M, 3R, 3B or 4, or who have access to the laser area of laser classes 3R, 3B and 4, must be instructed in the effects of laser radiation and required protective measures. The owner/operator must provide suitable laser goggles, protective clothing and protective gloves for operations with laser equipment classes 3R, 3B and 4. The operator is also responsible for adherence to special safety requirements for the operation of various laser types.

Laser class definition

Laser Class	Definition
Class 1	The accessible laser radiation is safe under wisely predictable conditions.
Class 1M	The accessible laser radiation is in the wavelength area of 302.5 nm to 4000 nm. The accessible laser radiation is safe for the eye, as long as the cross section is not reduced by optical instruments (magnifying glasses, lenses, telescopes)!
Class 2	The accessible laser radiation is in the visible spectral area (400 nm to 700 nm). It is safely also for the eye with brief effect duration (up to 0.25 s) Additional radiation shares beyond the wavelength area of 400 – 700 nm fulfil the conditions of class 1.
Class 2M	The accessible laser radiation is in the visible spectral area of 400 nm to 700 nm. It is safe with brief effect duration (0.25 s) for the eye, as long as the cross section is not reduced by optical instruments (magnifying glasses, lenses, telescopes)! Additional radiation shares beyond the wavelength area of 400 – 700 nm fulfil the conditions of class 1M
Class 3R	The accessible laser radiation is in the wavelength area of 302.5 nm to 106 nm and is dangerous for the eye. The power or the energy amounts at most to the fivefold of the limit value of the allowed radiation of class 2 in the wavelength area of 400 to 700 nm.
Class 3B	The accessible laser radiation is dangerous for the eye, and in special cases also for the skin.
Class 4	The accessible laser radiation is very dangerous for the eye and dangerously for the skin. Vaguely scattered radiation can be dangerous too. The laser radiation can cause fire risk and explosion danger.

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4 Ethernet Configuration

The Ethernet interface must be configured before use (IP address, net mask and port number settings):

- Switch the display unit on and connect it to the network hub with an RJ45 cable (1:1 cable) or directly to a PC (crosslink cable).
- Start the “MS DOS entry prompt” at your Windows PC.
- Enter the desired IP address for the display unit to the ARP table:

ARP -S XXX.XXX.XXX.XXX 00-20-4A-xx-xx-xx <CR>

XXX.XXX.XXX.XXX : desired IP address
 00-20-4A-xx-xx-xx : display unit's Ethernet address
 (see label next to the RJ45 socket)

- Establish a Telnet connection to port 1:

TELNET XXX.XXX.XXX.XXX 1 <CR>

This connection will fail (disconnect within 3 seconds). However, the display unit's IP address is temporarily changed. Close the Telnet window after acknowledging the error message.

- Establish a Telnet connection to port 9999:

TELNET XXX.XXX.XXX.XXX 9999 <CR>

After the connection has been established, immediately press the enter key (within 5 seconds) in order to enter the setup mode.

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- Enter "0" (server configuration).
- Enter the desired IP address and press the enter key.
- Repeatedly press the enter key until „Netmask: Number of Bits for Host Part (...)“ appears. Enter here the number of free bits for the IP address, f.e. „8“ for the netmask 255.255.255.0 (=11111111.11111111.11111111.00000000) or „11“ for the netmask 255.255.248.0 (=11111111.11111111.11111000.00000000) and press the enter key.
- Repeatedly press the enter key until “Your choice?” appears.
- Press “9” to save all settings (-> the Telnet connection is interrupted).

Configuration of the Ethernet interface is now complete.

From now on, the control frame can be transmitted to the display via the selected IP address (to the port 10001).

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5 Controlling

5.1 Laser Arrangement

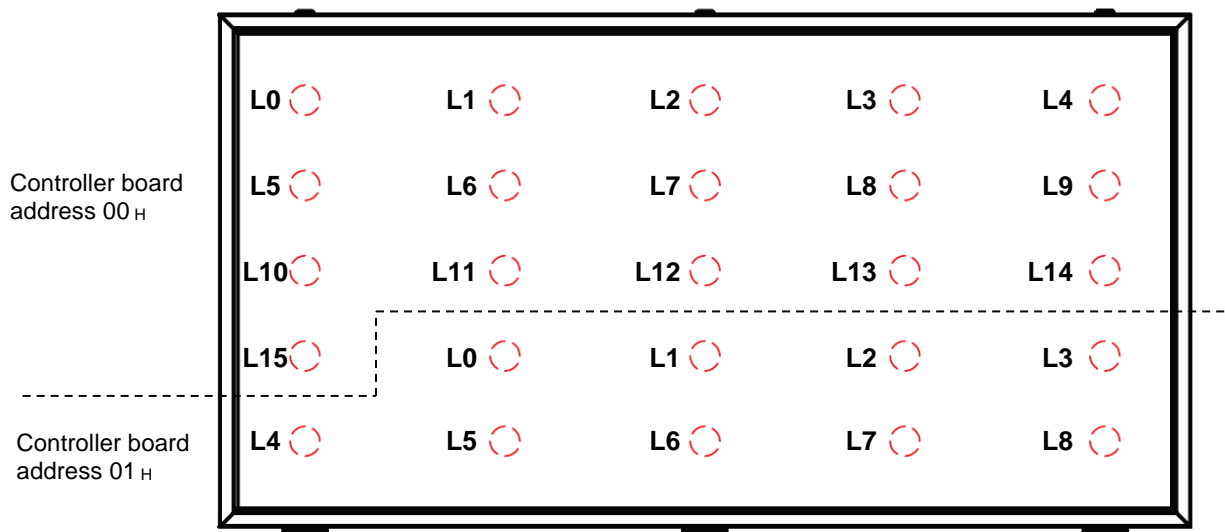
Every laser position system has internally at least one controller board.
 One controller board can operate up to 16 lasers.
 Depending on the number of lasers, there can be several controller boards inside.

Every controller board has an own address.
 For the controlling you need the laser number (for example L0) and its related controller board (for example address 00_H).

Irrespective of the number of lasers, L0 always shines in the left upper box.
 Then the lasers are numbered serially line-by-line and after 16 lasers follows again L0 of the next controller board.

View: from the top “through” the housing (lasers point downwards)

Example: Display with 25 lasers



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5.2 Controlling the Lasers

5.2.1 Command

The lasers are controlled with this frame. Displays with several controllers need several commands to their different addresses. Please see former previous chapter for the arrangement. Depending on the number of lasers, some bits are maybe not used.

Address	Length	Data				
		Command	Status L0 to L7	Status L8 to L15	Blinking L0 to L7	Blinking L8...L15
Address of the controller board, see chapter „Laser Arrangement“	05 _H	37 _H	Bit 0: L0	Bit 0: L8	Bit 0: L0	Bit 0: L8
			Bit 1: L1	Bit 1: L9	Bit 1: L1	Bit 1: L9
			:	:	:	:
			Bit 7: L7	Bit 7: L15	Bit 7: L7	Bit 7: L15
			0 = Laser on 1 = Laser off		0 = no blinking 1 = blinking	

Function „blinking“ takes priority over „Laser on/off“.

The laser is activated if „blinking“ is set; even if status bit = 0 (laser off).

5.2.2 Response

After a command, the display sends the following response frame:

Address	Length	Data		
		Command	Status byte 1	Status byte 2
Address of the controller board	03 _H	37 _H	00 _H	00 _H

5.2.3 Example

Laser L0 of first controller board shall light statically and laser L9 shall blink.

Command (hexadecimal values): 00 05 37 01 00 00 02

Response: 00 03 37 00 00

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5.3 Testing the Lasers

All lasers of a controller board are switched on one by one. Optionally, the lasers can be tested with setting a DIP switch (see chapter “Laser Test”).

5.3.1 Command

<i>Address</i>	<i>Length</i>	<i>Data</i>	
		Command	Laser test
Address of controller board	02 _H	04 _H	00 _H : deactivated 01 _H : activated

5.3.2 Response

<i>Address</i>	<i>Length</i>	<i>Data</i>
		Command
Address of controller board	01 _H	04 _H

5.3.3 Example

The lasers of the first controller board shall be tested.

Command (hexadecimal values): 01 02 04 01

Response: 01 01 04

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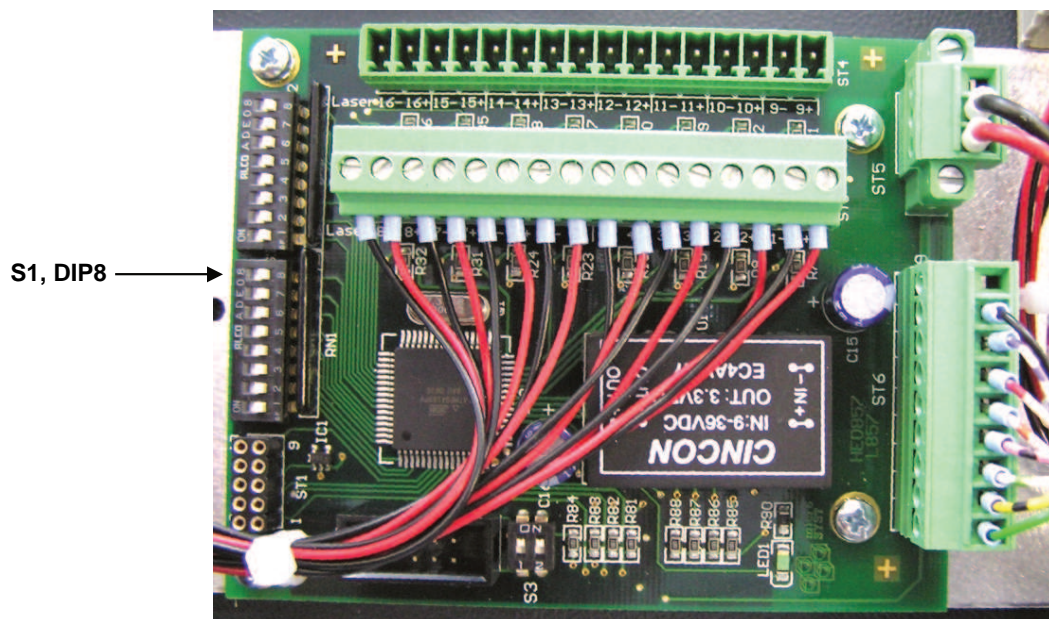
6 Laser Configuration

6.1 Laser Test

For the laser test, switch on DIP8 of the DIP switch S1 (of all controller boards). As an option, the test can be operated with a command (see chapter „Test Lasers“).

Function:

All lasers of a controller board are switched on one by one.



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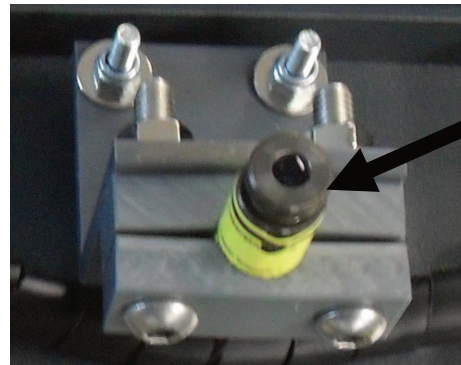
6.2 Laser Adjustment

Switch on all lasers.

Adjusting the direction:



Focusing by turning the lens:

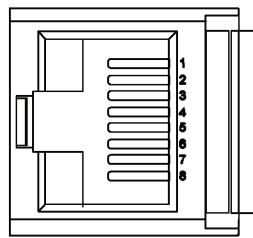


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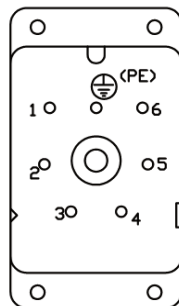
7 Connector Pin Assignments

Ethernet TCP/IP



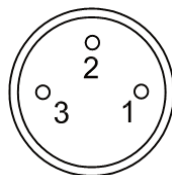
Pin	Assignment
1	Tx +
2	Tx -
3	Rx +
4	n.c.
5	n.c.
6	Rx -
7	n.c.
8	n.c.

Power 230 VAC



Pin	Assignment
1	L1
2	N
⊕ (PE)	PE

Power 24 VDC (optional)



Pin	Assignment
1	GND
2	+24 VDC
3	PE

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8 Appendix

8.1 Maintenance and Care

Please observe the following instructions:

- Make sure that the housing can be opened for adjustment and maintenance even after the display has been installed.
- The display must be switched off before cleaning.
- Protect the display from excessive humidity, extreme vibration, direct sunlight and extreme temperatures. Non-observance may lead to malfunctioning or destruction of the device. Under certain circumstances electrical shock, fire and explosion may occur as well. Information concerning allowable ambient conditions, including recommended temperature ranges, can be found in chapter „Technical Data“.
- The display may not be placed into service if the device and/or the power cable are known to be damaged.
- Do not attempt to repair the device yourself. The guarantee is rendered null and void if the device is tampered with by unauthorised persons.

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8.2 Declaration of Conformity

EU-Konformitätserklärung

EU Declaration of Conformity

Déclaration de conformité UE

Produktbezeichnung / Product name / mipick LPOS
Désignation du produit:

Typenreihe / Type Code / Type: KPLK1F

Hersteller / Manufacturer / Fabricant: microSYST Systemelectronic GmbH
 Albert-Einstein-Straße 7
 92637 Weiden

Das bezeichnete Produkt stimmt mit der folgenden Europäischen Richtlinie überein: <i>We herewith confirm that the above mentioned product meets the requirements of the following standard:</i> <i>Le produit désigné ci-dessus est conforme à la directive européenne suivante:</i>		Die Übereinstimmung des bezeichneten Produktes mit den Vorschriften der Richtlinie wird nachgewiesen durch die Einhaltung folgender Normen: <i>Full compliance of the mentioned product with the directives is guaranteed by the adherence to the following standards:</i> <i>La conformité du produit désigné aux dispositions de la directive est garantie par le respect des normes suivantes:</i>
Richtlinien / Directives / Directives		Europäische Norm / Standard / Norme
EMV Richtlinie <i>EMC Directive</i> <i>Directive CEM</i>	2014/30/EU	EN61000-6-2:2005
		EN61000-6-4:2007 +A1:2011
Niederspannungs-Richtlinie <i>Low Voltage Directive</i> <i>Directive Basse Tension</i>	2014/35/EU	EN60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013
		EN60825-1:2007
RoHS Richtlinie <i>RoHS Directive</i> <i>Directive RoHS</i>	2011/65/EU	EN50581:2012

Ort und Datum: Weiden, 12.07.2016
Place and date:
Lieu et date:

Unterschrift:
Signature:
Signature:



Manuel Raß
Geschäftsführer / General Manager / Gérant

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8.3 Guarantee

The display is guaranteed for the duration specified in the “General Terms and Conditions” regarding manufactured products and services rendered for the electrical industry period against defects which existed at the time the device was delivered to the buyer.

The device is subject to technical change without notice. Errors and omissions are accepted. No claims can be honoured for the shipment of a new product. The buyer is required to make notification of defects within 2 weeks after identification of such. Non-observance of notification requirements is equated with acceptance of the defect.

Defects and their symptoms must be described as accurately as possible in order to allow for reproducibility and elimination. The buyer must provide for access to all required and/or useful information regarding defects at no charge, as well as to the affected devices, and must make all of the required data and machine time available free of charge.

The guarantee does not cover defects which result from non-observance of the prescribed conditions of use, or from improper handling.

If the device has been placed at the disposal of the buyer for test purposes and has been purchased subsequent to such testing, both parties agree that the product is to be considered “used” and that it has been purchased “as is”. No guarantee claims may be made in such cases.

The “General Terms and Conditions” regarding manufactured products and services rendered for the electrical industry apply as well.

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8.4 Versions Overview

Version	Date	Remark, description
1.00	09.08.11	Document created
1.10	04.07.12	Laser classes, reliability
1.20	16.08.12	Laser class 3a
1.30	28.01.16	Safety instructions and laser arrangement changed
1.40	21.07.16	Declaration of conformity
1.41	01.03.18	Change of adress

Certified per **DIN EN ISO 9001**.