

# migan MPB BCD

Large Display Numeric LED with BCD Inputs

## User Manual



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## 1 General

The large format numeric display can be used universally as a production display unit or as an information board.

The modular design allows for cost-effective models of various sizes, and with different character heights and numbers of digits.

Thus integration into existing equipment or systems is easy and simple.

## 2 System Overview

The display is controlled with BCD inputs.



BCD coded inputs

## 3 Technical Information

### 3.1 Notes for the start-up

- When putting on the power supply, the following sequence has to be observed:
  - Connect the power supply cable to the display.
  - Connect the power supply cable to the power supply.
- When disconnecting the power supply, the following sequence has to be observed:
  - Disconnect the power supply cable from the power supply.
  - Disconnect the power supply cable from the display.

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## 3.2 Device Configuration

Itemnumber : \_\_\_\_\_

**Type:**

for inside use                       for outside use

**Character height:**

60 mm     100 mm     150 mm     200 mm     250 mm     300 mm

**Number of lines:** \_\_\_\_\_                      **Number of digits per line:** \_\_\_\_\_

**Display colour:**

red             green             yellow             white             blue

**Dimensional Display:**

Line 1: \_\_\_\_\_                      Line 5: \_\_\_\_\_  
 Line 2: \_\_\_\_\_                      Line 6: \_\_\_\_\_  
 Line 3: \_\_\_\_\_                      Line 7: \_\_\_\_\_  
 Line 4: \_\_\_\_\_                      Line 8: \_\_\_\_\_

**View:**

single sided                       double sided                       \_\_\_\_ sided

**Operating Voltage:**

230 V / 50 Hz                       110 V / 60 Hz                       24 V DC

**Protection:**

IP54             IP65             IP \_\_\_\_\_

**Operating temperature:**

with type for inside use:	with type for outside use:	special version:
<input type="checkbox"/> 0...+50 °C (standard)	<input type="checkbox"/> -20...+50 °C (standard)	<input type="checkbox"/> _____ °C
	<input type="checkbox"/> -25...+50 °C (optional with heating)	

**Housing dimensions:** \_\_\_\_\_ x \_\_\_\_\_ x \_\_\_\_\_ mm

**Housing Material:**

Aluminum profile                       Stainless steel                       Sheet metal

**Controlling:**

BCD parallel             BCD multiplex

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## 3.3 Overall Specification

	migan for indoor use	migan for outdoor use
Display type	7 segment LED	7 segment single LED, pixel size: 5.2 x 3.8 mm (oval)
Angle of radiation	n/a	110°/50° (horizontal/vertical)
Character height	60 / 100 / 150 / 200 / 250 mm	100 / 200 / 300 mm
Digits	1 to 4 / 6, optional expendable	
Number of lines	standard 1 line, multiple lines on request	
Display colour	standard: red; optional: green	
Light intensity	n/a	red > 3100 cd/m <sup>2</sup> , green > 3720 cd/m <sup>2</sup> ,
Brightness control	n/a	automatically
Operating voltage	230 VAC / 50 Hz, 110 VAC / 60 Hz or 24 VDC ±20%	
View	single sided to four sided	
Interface	BCD, multiplex or parallel	
Input level	U <sub>low</sub> 0 to 4 VDC, U <sub>high</sub> 11 to 30 VDC	
Displayable characters	0 to 9, H, E, L, P, -, Blank, .	0 to 9, H, E, L, P, -, Blank, .(*) *decimal point only possible at numerals
Labelling	upon request	
Housing	industrial version, powder coated aluminum	
Housing colour	RAL 7016 (anthracite)	
Mounting	articulated arm, angle bracket, hanging with chain or mounting frame	
Protection	IP54 or IP65	IP65 for outdoor use
Operating temp.	0...+50 °C	standard: -20...+50 °C, optional with heating: -25 to +50 °C
Storage temperature	-25...+70 °C	

### Parallel BCD

Four data transmission lines are required for the control of each digit. The display of values requires static data entry in BCD code.

### Multiplex BCD

The multiplex BCD operating mode is recommended for the display of multiple digits. Data transmission lines are set up as a 4-bit bus.

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## 3.4 Control Signals

The following comments describe the default settings of the standard product. Special requests of the customer can usually be complied. This means, the following description could differ from the delivered product.

BCD parallel/BCD multiplex							Display
Input						Display	
LE	BI	LT	D	C	B	A	
0	1	1	0	0	0	0	0
0	1	1	0	0	0	1	1
0	1	1	0	0	1	0	2
0	1	1	0	0	1	1	3
0	1	1	0	1	0	0	4
0	1	1	0	1	0	1	5
0	1	1	0	1	1	0	6
0	1	1	0	1	1	1	7
0	1	1	1	0	0	0	8
0	1	1	1	0	0	1	9
0	1	1	1	0	1	0	H*
0	1	1	1	0	1	1	E*
0	1	1	1	1	0	0	L*
0	1	1	1	1	0	1	P*
0	1	1	1	1	1	0	„Space“*
0	1	1	1	1	1	1	_*
x	x	0	x	x	x	x	8.
x	0	1	x	x	x	x	no display
1	1	1	x	x	x	x	#

0=LOW signal, 1=HIGH signal

LE = 1 = Keep the last display.

0 = Adopt the current BCD data and display it.

# = The display depends on the data, which were applied before the rising edge of LE. The data must not be changed 2 ms before the rising edge!

x = any state

\* = These characters are only displayed, if the component BCD/IO is selected in the “MKS-Software”. And in the tab Fuction at Option, BCD Parallel or BCD Multiplex and special characters “On” are set. Otherwise, the corresponding point is blanked.

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## LT input (lamp test)

The lamp test is performed with a “LOW” signal at the “LT” input. Then, all available segments are controlled.

## Decimal Point Input

The decimal points of the digits can be controlled separately by connecting to a “HIGH” signal to the corresponding input.

## Blank Input

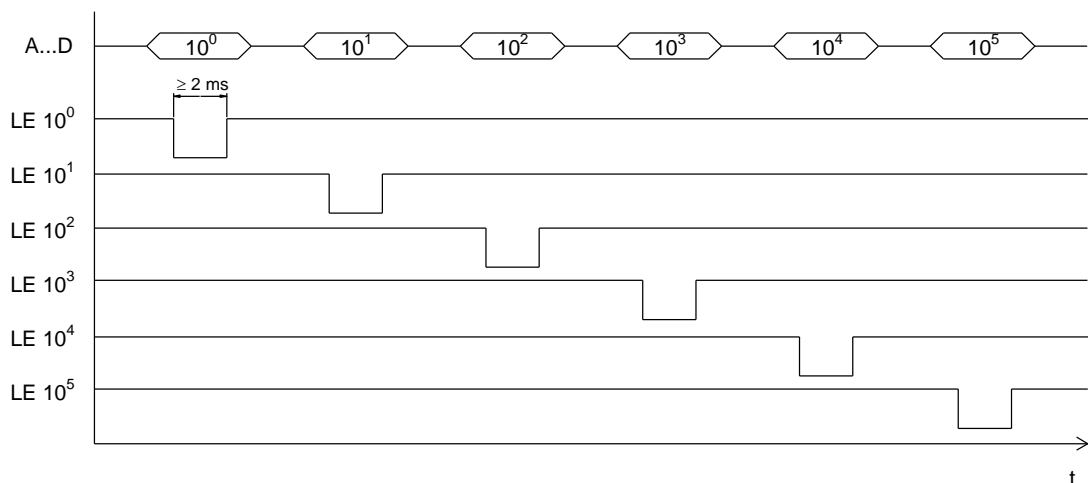
The display is dark-switched with a „HIGH“ signal at the blank input.

## Open Inputs

If inputs are not connected, a particular standard level is read in:

Input	Standard level
A ( $2^0$ )	LOW (0)
B ( $2^1$ )	LOW (0)
C ( $2^2$ )	LOW (0)
D ( $2^3$ )	LOW (0)
LE	LOW (adopt the data)
LT	HIGH (no lamp test)
Dec. point	LOW (no decimal point)
Blank	HIGH (no blanking)

## 3.5 Impulse Diagram (multiplex operation)



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## 3.6 Connector Pin Assignments

### Input (25-Pole Sub-D Plug Connector)

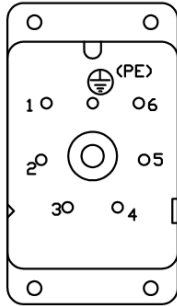
Parallel BCD				Multiplex BCD			
1	GND	14	Data 2 <sup>1</sup> /10 <sup>1</sup>	1	GND	14	Blank /10 <sup>2</sup>
2	n.c.	15	Data 2 <sup>2</sup> /10 <sup>1</sup>	2	n.c.	15	LE /10 <sup>1</sup>
3	Data 2 <sup>0</sup> /10 <sup>3</sup>	16	Data 2 <sup>3</sup> /10 <sup>1</sup>	3	LE /10 <sup>5</sup>	16	Dec.point /10 <sup>1</sup>
4	Data 2 <sup>1</sup> /10 <sup>3</sup>	17	Dec.point /10 <sup>1</sup>	4	Dec.point /10 <sup>5</sup>	17	Blank /10 <sup>1</sup>
5	Data 2 <sup>2</sup> /10 <sup>3</sup>	18	Data 2 <sup>0</sup> /10 <sup>0</sup>	5	Blank /10 <sup>5</sup>	18	LE /10 <sup>0</sup>
6	Data 2 <sup>3</sup> /10 <sup>3</sup>	19	Data 2 <sup>1</sup> /10 <sup>0</sup>	6	LE /10 <sup>4</sup>	19	Dec.point /10 <sup>0</sup>
7	Dec.point/10 <sup>3</sup>	20	Data 2 <sup>2</sup> /10 <sup>0</sup>	7	Dec.point /10 <sup>4</sup>	20	Blank /10 <sup>0</sup>
8	Data 2 <sup>0</sup> /10 <sup>2</sup>	21	Data 2 <sup>3</sup> /10 <sup>0</sup>	8	Blank /10 <sup>4</sup>	21	Data 2 <sup>0</sup>
9	Data 2 <sup>1</sup> /10 <sup>2</sup>	22	LE	9	LE /10 <sup>3</sup>	22	Data 2 <sup>1</sup>
10	Data 2 <sup>2</sup> /10 <sup>2</sup>	23	Blank	10	Dec.point /10 <sup>3</sup>	23	Data 2 <sup>2</sup>
11	Data 2 <sup>3</sup> /10 <sup>2</sup>	24	LT	11	Blank /10 <sup>3</sup>	24	Data 2 <sup>3</sup>
12	Dec.point /10 <sup>2</sup>	25	n.c.	12	LE /10 <sup>2</sup>	25	LT
13	Data 2 <sup>0</sup> /10 <sup>1</sup>			13	Dec.point /10 <sup>2</sup>		



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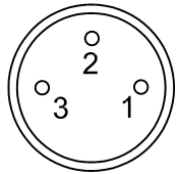
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## Power Connector 230 VAC



Pin	Assignment
1	L1
2	N
(PE)	PE

## Power Connector 24 VDC (optional)



Pin	Assignment
1	GND
2	+24 VDC
3	PE

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## 4 Appendix

### 4.1 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. Allow for adequate clearance at the back, front and top of the display unit in order to allow for sufficient ventilation (if vent slots are included).
- Display quality is impaired by direct illumination with bright light sources and/or direct sunlight.
- 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 the chapter entitled "Technical Information".
- The display may not be placed into service if the device and/or the power cable are damaged.
- Do not attempt to repair the device yourself. The guarantee is rendered null and void if unauthorized persons tamper with the device.

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## 4.2 Declaration of Conformity

# EU-Konformitätserklärung

## EU Declaration of Conformity

**Produktbezeichnung:** migan  
*Product name:*

**Typenreihe:** migan BCD  
*Type code:*

**Hersteller:** microSYST Systemelectronic GmbH  
*Manufacturer:* Am Gewerbepark 11  
 92670 Windischeschenbach

<b>Das bezeichnete Produkt stimmt mit der folgenden Europäischen Richtlinie überein:</b> <i>We herewith confirm that the above mentioned product meets the requirements of the following standard:</i>		<b>Die Übereinstimmung des bezeichneten Produktes mit den Vorschriften der angewandten Richtlinie(n) wird nachgewiesen durch die Einhaltung folgender Normen / Vorschriften:</b> <i>The conformity of the product described above with the provisions of the applied Directive(s) is demonstrated by compliance with the following standards / regulations:</i>
<b>Richtlinien / Directives</b>		<b>Europäische Norm / Standard</b>
<b>EMV Richtlinie</b> <i>EMC Directive</i>	<b>2014/30/EU</b>	EN61000-6-2:2005
		EN61000-6-4:2007 +A1:2011
<b>Niederspannungs-Richtlinie</b> <i>Low Voltage Directive</i>	<b>2014/35/EU</b>	EN60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013
<b>RoHS Richtlinie</b> <i>RoHS Directive</i>	<b>2011/65/EU</b>	EN50581:2012

Windischeschenbach, 16.11.2017



Manuel Raß

**Geschäftsführer / General Manager**

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## 4.3 Warranty / Liability

For the product, liability is assumed for defects, which existed at the delivery date according to our General Terms and Conditions.

Technically changes as well as errors are excepted. A claim for delivery of a new product does not exist. The buyer has to check the received product immediately and indicate evident defects at the latest 24 hours after detection. Non-observance of notification requirements is equated with acceptance of the defect. Not immediately visible defects have to be indicated immediately after their perception too.

Generally, 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 the relevant device and all required and/or useful information at no charge 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 of microSYST Systemelectronic GmbH in current version apply as well.

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## 4.4 Versions Overview

Version	Date	Remark, Description
1.00	2013-05-14	Document created, based on X-M32-BSXXBX-001: display type, character heights changed
1.10	2013-10-17	Logo
1.20	2014-01-22	migan 2 -> migan
1.30	2016-04-27	Declaration of conformity
2.00	2016-11-16	migan2 → migan MPB
2.10	2017-11-13	Change of address and title MPB

Certified per **DIN EN ISO 9001**.