

migan/migra MPB IZ

Large Format LED Display with Pulse Counter

User's Manual

migan/migra MPB IZ

Large Format LED Display with Pulse Counter

Table of Contents

1	GENERAL	3
2	SYSTEM OVERVIEW	4
3	TECHNICAL DATA	5
3.1	Tips for the Start-up	6
3.2	Description of the Signals	7
3.3	Pulse Diagrams	8
3.3.1	Pulse Input	8
3.3.2	Incremental Input	9
3.3.3	Control Inputs	10
3.4	Device Configuration migan	11
3.5	Device Configuration migra	12
4	CONNECTOR PIN ASSIGNMENTS	13
5	APPENDIX	18
5.1	Declaration of Conformity	18
5.2	Maintenance and Care	19
5.3	Warranty / Liability	20
5.4	Versions Overview	21

migan/migra MPB IZ

Large Format LED Display with Pulse Counter

1 General

This manual describes the „migan“ and „migra“ LED large format display with pulse counter. The following inputs are integrated:

- 2 counting inputs or counting input and counting direction (pulse counter) or input for incremental position encoder (2 phase-delayed signals)
- Reset- and preset input

The configuration of the counter happens with the help of a PC software (communication with the PC via USB interface).

With the help of BCD coded inputs, settings like the preset value of the counter or overflow and underflow values can be changed within running operation.

It is possible to control external peripherals like LEDs, horns etc. with the two available relay outputs (optional).

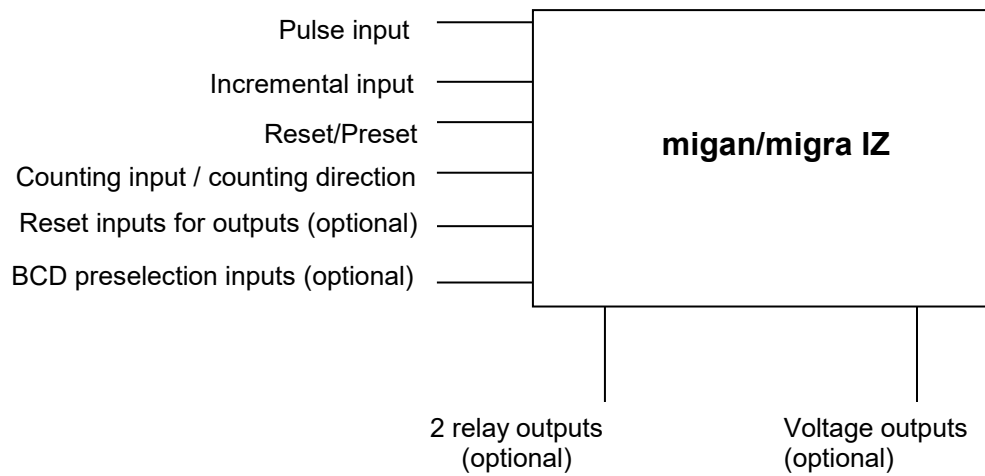
Display options:

- Counting value
- Frequency
- Number of revolutions
- Cycle duration
- Time

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Large Format LED Display with Pulse Counter

2 System Overview



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Large Format LED Display with Pulse Counter

3 Technical Data

Display type:	7 segment LED (migan), LED dot matrix (migra)
Digits:	1 to 100
Decimal point:	configurable position
View:	single or double sided
Inputs:	2 pulse inputs, Second pulse input can be configured as input with counting direction, inputs for phase-delayed signals pulses (input for incremental encoder (TTL)) Reset/preset input, 4 inputs (migan controller), Optional preset inputs BCD
Outputs:	4 outputs (migan controller)
Cut-off frequencies:	can be configured with MKS software 10 Hz, 100 Hz, 1 kHz, 10 kHz, 100 kHz, >1 MHz – max. 2 MHz
Input level: (pulse input)	adjustable with MKS software 5 V, 10 V, 12 V, 15 V, 24 V, 36 V, Pull-up to 5 V
Input level: (Reset/preset)	adjustable with MKS software 5 V, 10 V, 12 V, 15 V, 24 V, 36 V, Pull-up to 5 V
Input level: (incremental input)	U_{low} 0 VDC U_{high} 5 VDC
Display options:	counting value, frequency (counting pulses per time unit), number of revolutions, cycle duration, speed (incremental input), customer-specific
Dimensional display:	upon request
Operation voltage:	230 V / 50 Hz, 110 V / 60 Hz or 24 VDC +/-20 %
Housing:	industrial version, powder coated aluminium
Mounting:	articulated arm, hanging with chain, angle brackets
Protection:	IP54 or IP65
Operating temperature:	0 to +50 °C (optional -20 to +50 °C)
Storage temperature:	-25 to +70 °C

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Large Format LED Display with Pulse Counter

3.1 Tips 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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Large Format LED Display with Pulse Counter

3.2 Description of the Signals

Pulse input, UP / DOWN Switching

Status of the second pulse input specifies the counting direction of the first pulse input. Status HIGH -> upwards, status LOW -> downwards

Incremental Input

Differential inputs (5 V level) for two phase-delayed signals. The upwards or downwards counting happens according to the phase shift of the both signals. IDx, phase A and phase B can be inverted with MKS software.

Reset / Preset

The reset/preset input can be configured with MKS software for edge detection or status of input. The counter is always set to the preset value. The input acts as reset input, if preset value = 0. The preset value can be set vial BCD preset values, MKS software, frame or script.

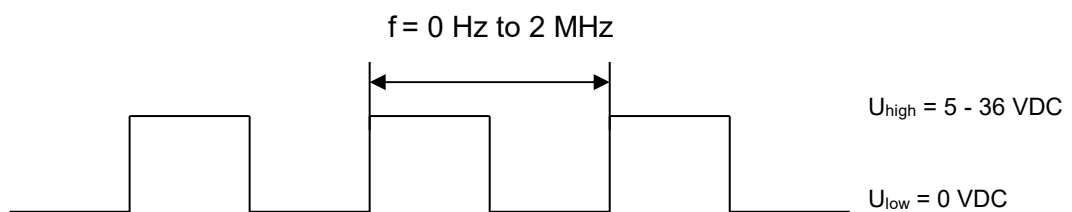
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Large Format LED Display with Pulse Counter

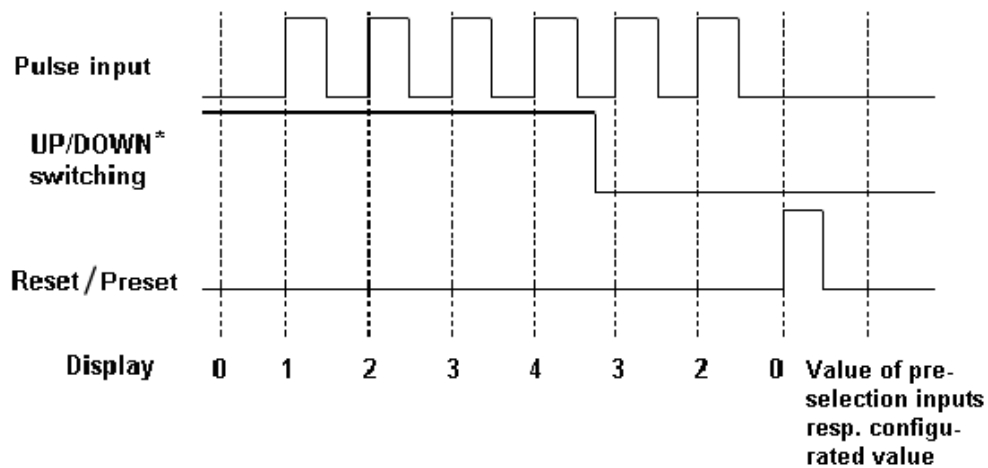
3.3 Pulse Diagrams

3.3.1 Pulse Input

Signal level and signal frequency:



Counting behaviour:



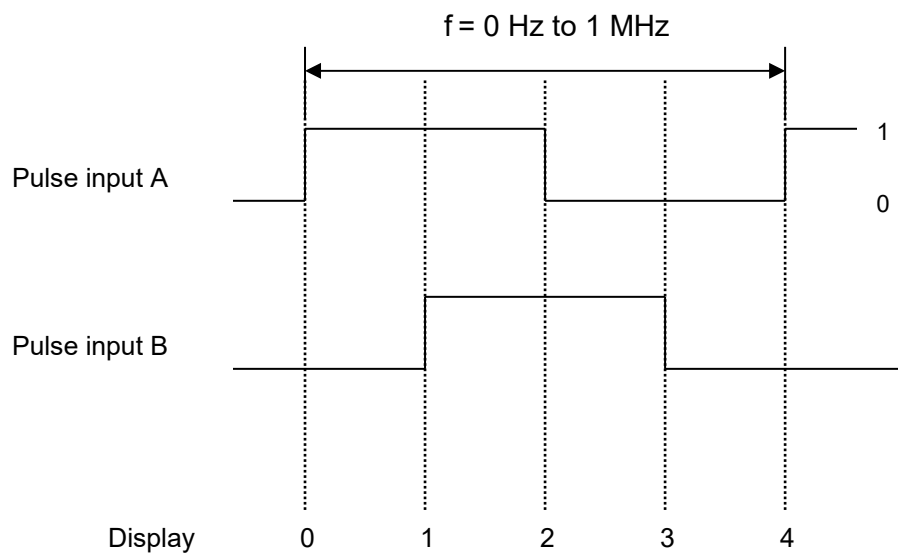
*: The direction switching could possibly be executed a few milliseconds after changing the level.

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Large Format LED Display with Pulse Counter

3.3.2 Incremental Input

At the incremental input, the counting direction depends on the phase shift of the two signals. The maximum frequency of a single input is 1 MHz.



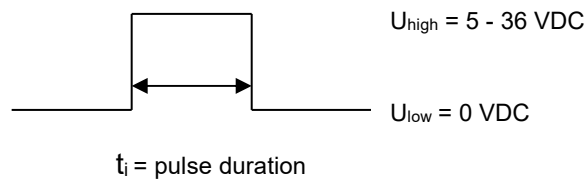
If pulse channel A hurries ahead the channel B by 90 degrees (like in the picture above), an UP-counting happens. If channel B hurries ahead the channel A by 90 degrees, a DOWN-counting happens. This can be inverted with MKS software.

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3.3.3 Control Inputs

Reset / Preset Input



The pulse duration t_i is adjustable from 0 to 255 ms. Pulse duration > 10 if value is 0.

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3.4 Device Configuration migan

Itemnumber : _____

Character height:

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

Display colour:

red green yellow white blue

Number of lines: _____ **Number of digits per line:** _____

Dimensional display:

View:

single sided double sided ____ sided

Operating voltage:

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

Protection:

IP54 IP65

Operating temperature:

with type for inside use:

0...+50 °C (standard)

with type for outside use:

-20...+50 °C (standard)

-25...+50 °C (optional with heating)

special version:

_____ °C

Housing dimension:

_____ x _____ x _____ mm

Housing Material:

Aluminum profile

Stainless steel

Sheet metal

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Large Format LED Display with Pulse Counter

3.5 Device Configuration migra

Itemnumber : _____

Pixel resolution (horizontal x vertical): _____ x _____

Display colour:

red green yellow white blue

View:

single sided double sided _____ sided

Operating voltage:

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

Protection:

IP54 IP65

Operating temperature:

with type for inside use:
 0...+50 °C (standard)

with type for outside use:
 -20...+50 °C (standard)
 -25...+50 °C (optional with heating)

special version:
 _____ °C

Housing dimension:

_____ x _____ x _____ mm

Housing Material:

Aluminum profile Stainless steel Sheet metal

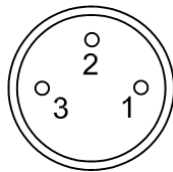
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Large Format LED Display with Pulse Counter

4 Connector Pin Assignments

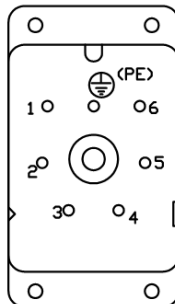
The power supply happens with the 3-pin circular connector (+24 VDC).
Optionally it's possible to supply with the 7-Pole mains plug (230 VAC).

Power Connector 24 VDC



Pin	Assignment
1	GND
2	+24 VDC
3	PE

Power Connector 230 VAC (optional)

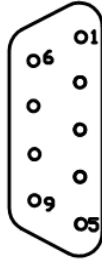


Pin	Assignment
1	L1
2	N
(PE)	PE

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Pulse and Control Inputs (9-Pin Sub-D Plug Connector)



Pin	Assignment
1*	A+ (incremental input, 5 V)
2*	B+ (incremental input, 5 V)
3***	Output +15 VDC
4*	A- (incremental input, 5 V)
5**	Pulse input 1 (5 - 36 V) resp. B- (incremental input, 5 V)
6	Pulse input 2 (5 - 36 V) Resp. B- (incremental input, 5 V)
7	GND
8	n.c.
9	Reset input (+5 - 36 V = 1, 0 V = 0)

- * = optional
- ** = at version with incremental inputs, this pin is used for the signal B- !
- *** = This pin is only optionally connected!
Depending on the display's version, the voltage at this output can also be +24 VDC!

Input Impedances

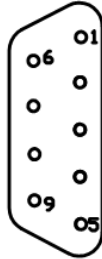
Standard inputs: > 38 kΩ

Incremental inputs: > 5 kΩ

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Large Format LED Display with Pulse Counter

Relay Outputs (9-Pin Sub-D Plug Connector, optionally mounted)



Pin	Assignment
1**	Output +15 VDC
2	GND
3*	Relay 1, make resp. break contact
4*	Relay 1, common contact
5*	Relay 2, make resp. break contact
6*	Relay 2, common contact
7	Relay 1 reset input (+24 V = 1, 0 V = 0)
8	Relay 2 reset input (+24 V = 1, 0 V = 0)
9	n. c.

n. c. = not connected

* = potential-free outputs, depending on mounting variation: make or break contact: **maximum switching voltage/current 24 VDC / 1 A**

** = This pin is only optionally connected!

Depending on the display's version, the voltage at this output can also be +24 VDC!

together with Pin 3, pulse inputs (previous page), max. current 0,5 A

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Large Format LED Display with Pulse Counter

Preselection Inputs (25-Pin Sub-D Plug Connector, optionally mounted)

Depending on device type, the preselection inputs are operated in mode BCD parallel or BCD multiplex:

BCD parallel	
Pin	Assignment
1	GND
2	Output for preselection inputs (+15 or +24 VDC)
3	Data $2^0/10^3$
4	Data $2^1/10^3$
5	Data $2^2/10^3$
6	Data $2^3/10^3$
7	
8	Data $2^0/10^2$
9	Data $2^1/10^2$
10	Data $2^2/10^2$
11	Data $2^3/10^2$
12	
13	Data $2^0/10^1$
14	Data $2^1/10^1$
15	Data $2^2/10^1$
16	Data $2^3/10^1$
17	
18	Data $2^0/10^0$
19	Data $2^1/10^0$
20	Data $2^2/10^0$
21	Data $2^3/10^0$
22	LE (latch enable)
23	
24	
25	

BCD multiplex	
Pin	Assignment
1	GND
2	Output for preselection inputs (+15 or +24 VDC)
3	LE 10^5
4	
5	
6	LE 10^4
7	
8	
9	LE 10^3
10	
11	
12	LE 10^2
13	
14	
15	LE 10^1
16	
17	
18	LE 10^0
19	
20	
21	Data 2^0
22	Data 2^1
23	Data 2^2
24	Data 2^3
25	

The LE connections (latch enable) are LOW-active.

The output voltage of Pin 2 can be used for wiring the preselection inputs. If the wiring shall happen with an external voltage, its GND must be connected to Pin 1.

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Large Format LED Display with Pulse Counter

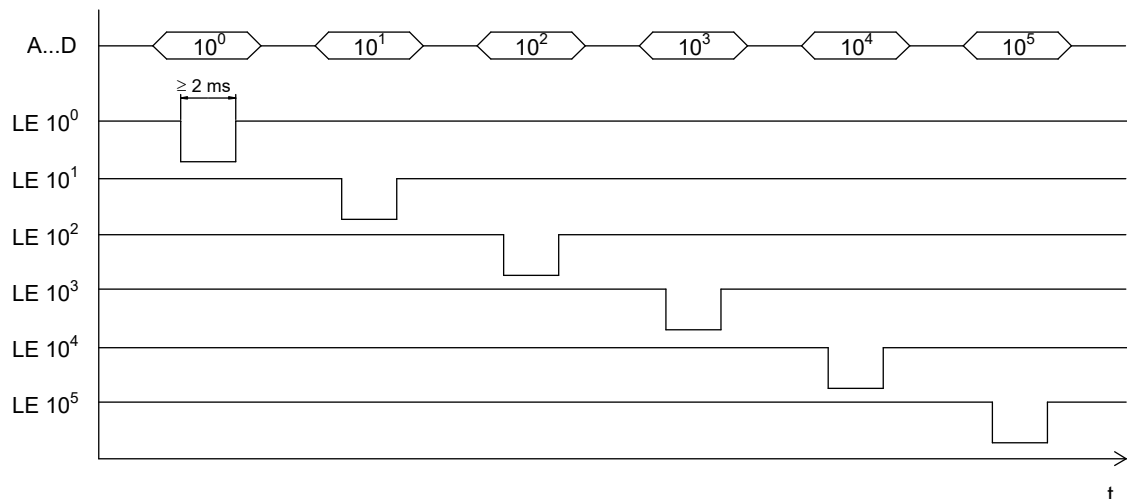
Procedure with BCD parallel:

- Switch data signals to the display digits (HIGH-active).
- Set preset input (HIGH-active).

The LE input must not be operated because it is automatically supplied with a LOW signal if it's not connected. In this case it is active.

Procedure with BCD multiplex:

- Set an HIGH-signal to the display digits you want to use.
- Set data signals for digit 10^0 .
- Activate LE 10^0 (= interrupt HIGH-signal or connect LOW-signal).
- Repeat the last two steps for all display digits:



- Set preset input (HIGH-active).

migan/migra MPB IZ

Large Format LED Display with Pulse Counter

5 Appendix

5.1 Declaration of Conformity

EU-Konformitätserklärung EU Declaration of Conformity

Produktbezeichnung: migan/migra
Product name:

Typenreihe: migan/migra IZ
Type code:

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

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>		Die Übereinstimmung des bezeichneten Produk- tes mit den Vorschriften der angewandten Richt- linie(n) wird nachgewiesen durch die Einhaltung folgender Normen / Vorschriften: <i>The conformity of the product described above with the provisions of the applied Directive(s) is demon- strated by compliance with the following standards / regulations:</i>
Richtlinien / Directives		Europäische Norm / Standard
EMV Richtlinie <i>EMC Directive</i>	2014/30/EU	EN61000-6-2:2005
		EN61000-6-4:2007 +A1:2011
Niederspannungs- Richtlinie <i>Low Voltage Directive</i>	2014/35/EU	EN IEC 62368-1:2021-05
RoHS Richtlinie <i>RoHS Directive</i>	2011/65/EU	EN50581:2012

Windischeschenbach, 06.05.2021


Manuel Raß

Geschäftsführer / General Manager

migan/migra MPB IZ

Large Format LED Display with Pulse Counter

5.2 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 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.
- Observe all notes and instructions included in this user's manual.

migan/migra MPB IZ

Large Format LED Display with Pulse Counter

5.3 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.

migan/migra MPB IZ

Large Format LED Display with Pulse Counter

5.4 Versions Overview

Version	Date	Remark, Description
1.00	03.11.03	Gold S.: Document created
1.01	08.12.03	Gold S.: Default voltage for voltage outputs changed
1.10	28.10.04	Kreuzer: Housing dimensions changed
1.20	22.11.04	Kreuzer: Complete revised
1.30	13.03.06	Kreuzer: Second counting input instead of counting direction is possible
1.40	15.12.00	Kreuzer: Optionally 5 Hz impulse input
1.50	02.09.08	Kreuzer: Max. output current limited to 0.5 A
1.60	24.09.09	Kreuzer: Impedances of the inputs
1.70	16.08.10	Technical Data updated
1.80	31.01.11	migan AW added
1.90	15.01.13	Description for preselection inputs changed
2.00	21.03.13	Company address, declaration of conformity, warranty changed
2.10	17.10.13	Logo
2.20	27.04.16	Declaration of conformity
3.00	16.11.16	migan2 → migan MPB; migra → migra MPB
3.10	13.11.17	Change of address and title MPB
3.20	06.05.21	Declaration of conformity

Certified per **DIN EN ISO 9001**.