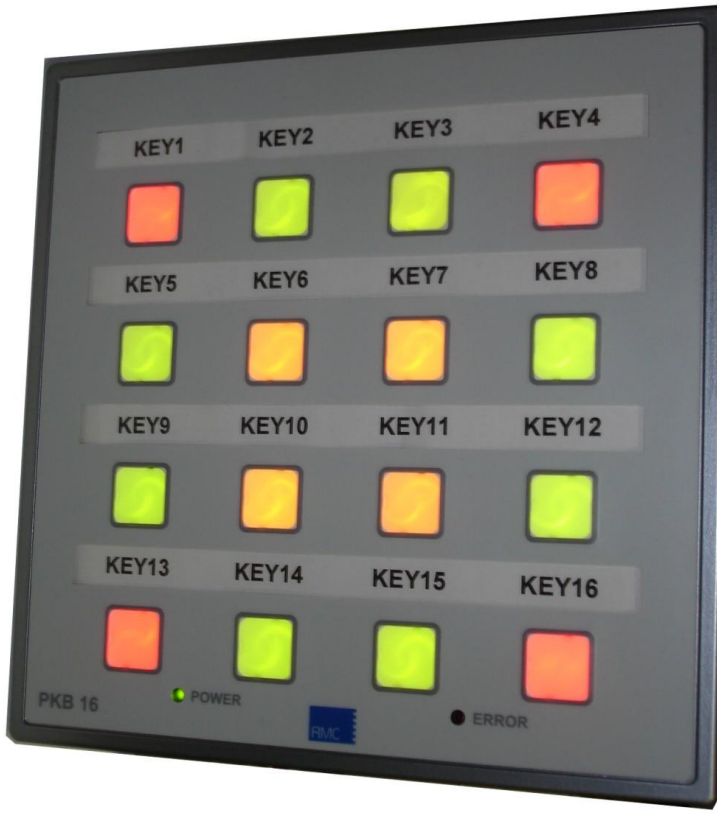
Universal industry keyboard PKB16DP

Operating manual



RMC s.r.o. Trenčianska 863/66, 018 51 Nová Dubnica
Tel.: 042/4455621, Fax: 042/4434175, E-mail: rmc@rmc.sk,
www.rmc.sk

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1. Technical description

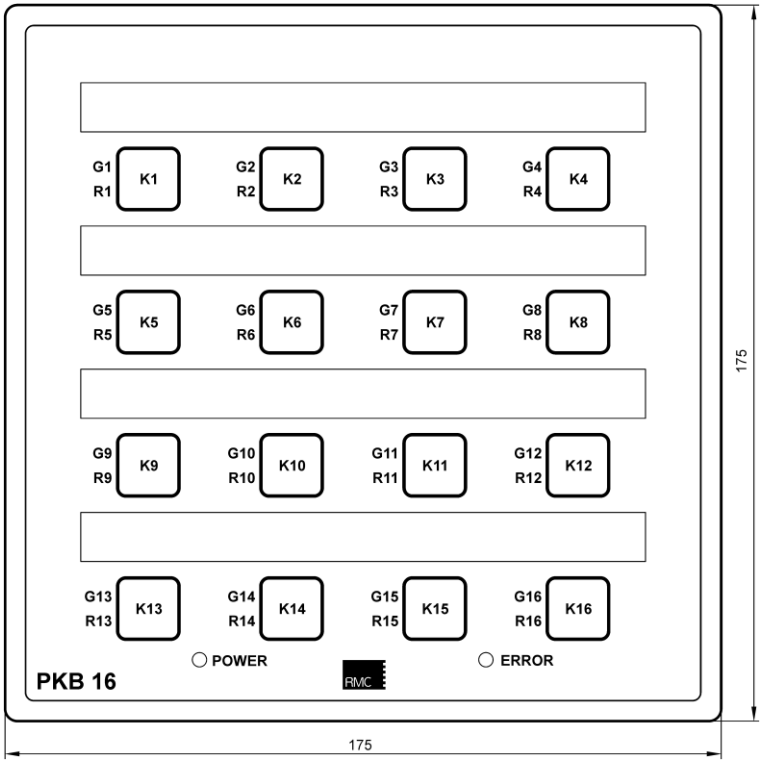
PKB16 is an universal keyboard designed for control of technical equipment from the switchboard control panel of machine tools, lines, technological plants. The keyboard contains 16 buttons, which are backlighted by two-colour LEDs. The colour of backlighting may be green, red or orange. Button description is exchangeable. Keyboard contains also 16 logic inputs or outputs 24 V, which are galvanically isolated. These can be in following I/O configurations: 0/0, 8/0, 16/0, 0/8, 0/16, 8/8. Reading of the button and logical input status and controlling the LEDs and logic outputs is performed through PROFIBUS DP serial interface. Keyboard is attached in the mounting cut-out in panel by grips at the back side of panel.

2.Technical data

Power supply voltage:	24VDC ± 10%
Current consumption:	max. 400mA
Input and output power supply:	24VDC ± 10%
Logical inputs:	24VDC/10mA
Logical outputs:	24VDC/200mA, PNP
Output current:	max 500mA/1output, max 1.5A/8outputs
Communication interface:	PROFIBUS DP, RS485 galvanically isolated
Baud rate:	9,6kBd – 12MBd
DP address:	adjustable 0 – 99
Identification ID number:	0x3218
GSD file:	PKB16DP.GSD
Number of buttons:	16, (16 inputs)
Number of two-colour LED:	16, (32 outputs)
Max. thickness of plug-in card:	0.3 mm
Dimension of plug-in card:	11 x 160 mm
Front panel cover:	IP54
Operating temperature:	0 to 50 ºC
Dimensions:	175 x 175 x 50 mm
Mounting cut-out in panel:	161 x 161 mm

3. Operating manual

Desired keyboard address in range of 01 – 99 can be adjusted by rotary switches at the back side of the panel. The address 00 is assigned only for keyboard testing without communication. After setting this address, it's possible to test the functionality of all keys, LEDs, inputs and outputs. Key and LED arrangement in the front panel is visible from the first picture. After setting up the desired address, connecting the PROFIBUS DP connector and power supply, the keayboard is ready for communication. The GSD file is supplied with the keyboard. This file contains all the parameters necessary for connecting to PROFIBUS DP. After the successful start of communication, the bus master executes the cyclic data exchange with the keyboard. Master loads the status (is identical to CONTROL BYTE), key and logical input status (max 5 byte, IB1-IB5) and writes the control byte, desired LED and logical output status (max 9 byte, OB1-OB9). The structure is showed in Tab.1 and Tab.2. LED brightness can be adjusted in 4 levels through bits IL0, IL1 in the CONTROL BYTE.



Pic.1: Key and LED layout in the front panel of PKB16DP

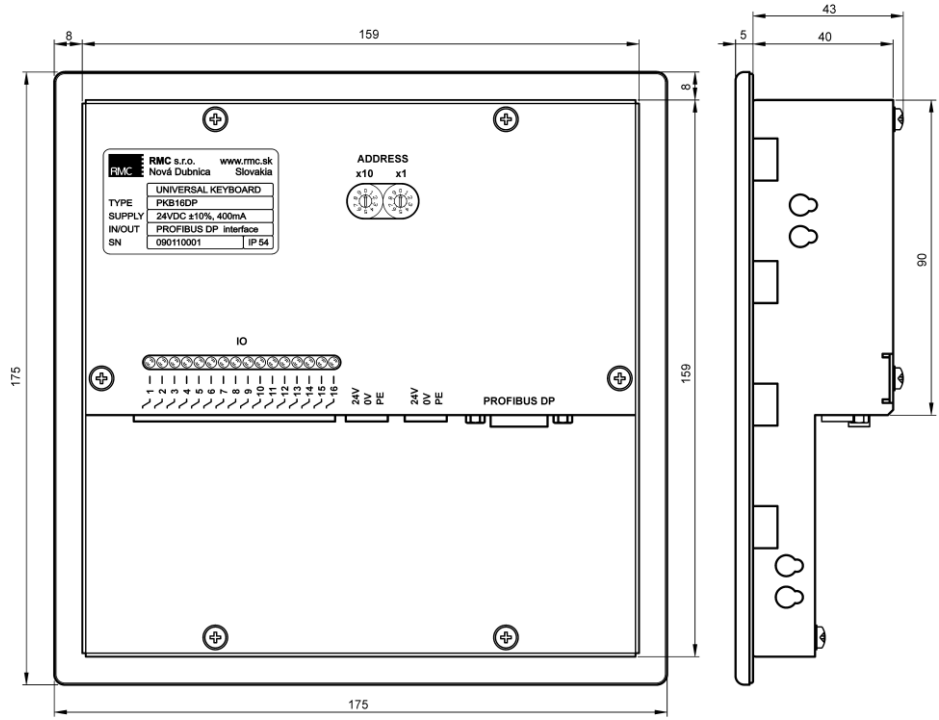
Inputs	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	
Byte n	S0	S1	S2	S3	S4	S5	S6	S7	Status byte
Byte n+1	K1	K2	K3	K4	K5	K6	K7	K8	1st and 2nd key row
Byte n+2	K9	K10	K11	K12	K13	K14	K15	K16	3rd and 4th key row
Byte n+3	I1	I2	I3	I4	I5	I6	I7	I8	Inputs 1st byte
Byte n+4	I9	I10	I11	I12	I13	I14	I15	I16	Inputs 2nd byte

Tab.1: Structure of inputs of PKB16DP keyboard in PLC memory

Outputs	Bit0	Bit1	Bit2	Bit3	Bit4	Bit5	Bit6	Bit7	
Byte n	IL0	IL1	X	X	X	X	X	X	Control byte
Byte n+1	G1	G2	G3	G4	G5	G6	G7	G8	Green LEDs 1st, 2nd row
Byte n+2	G9	G10	G11	G12	G13	G14	G15	G16	Green LEDs 3rd, 4th row
Byte n+3	R1	R2	R3	R4	R5	R6	R7	R8	Red LEDs 1st, 2nd row
Byte n+4	R9	R10	R11	R12	R13	R14	R15	R16	Red LEDs 3rd, 4th row
Byte n+5	B1	B2	B3	B4	B5	B4	B7	B8	Blinking 1st, 2nd row
Byte n+6	B9	B10	B11	B12	B13	B14	B15	B16	Blinking 3rd, 4th row
Byte n+7	O1	O2	O3	O4	O5	O6	O7	O8	Outputs 1st byte
Byte n+8	O9	O10	O11	O12	O13	O14	O15	O16	Outputs 2nd byte

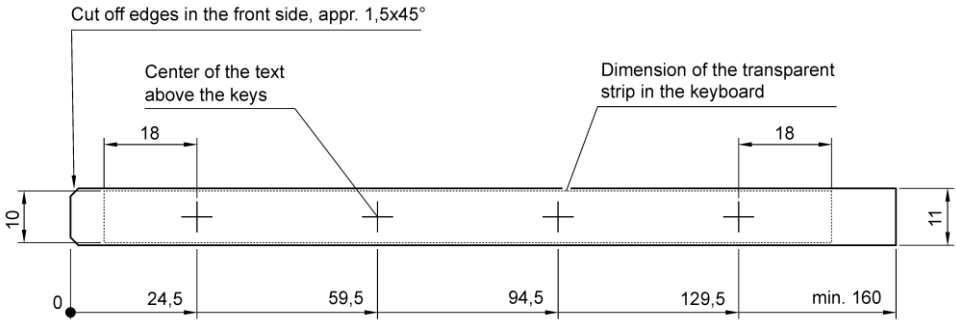
Tab.2: Structure of outputs of PKB16DP keyboard in PLC memory

The keyboard status is indicated by 2 LEDs in the lower part of the front panel. The green LED **„POWER“** indicates the power supply, the red LED **„ERROR“** indicates error in communication. After pressing the button, corresponding bit changes to logical 1, logical 0 means released button. Desired LED is turned on by setting corresponding bit to logical 1, turned off by logical 0. By simultaneous turning on of green and red LED of the button, the orange color can be achieved. LED blinking is possible by setting corresponding bit to logical 1. Power supply of inputs and outputs, keyboard power supply and inputs and outputs are connected through plug-in connector terminals at the back side of the keyboard. The power supply voltage of inputs and outputs is 24VDC and can be galvanically isolated from the keyboard power supply. Actual status of inputs and outputs is indicated by green LEDs at the terminal pin. Dimensions and layout of the back side is in the picture 2.



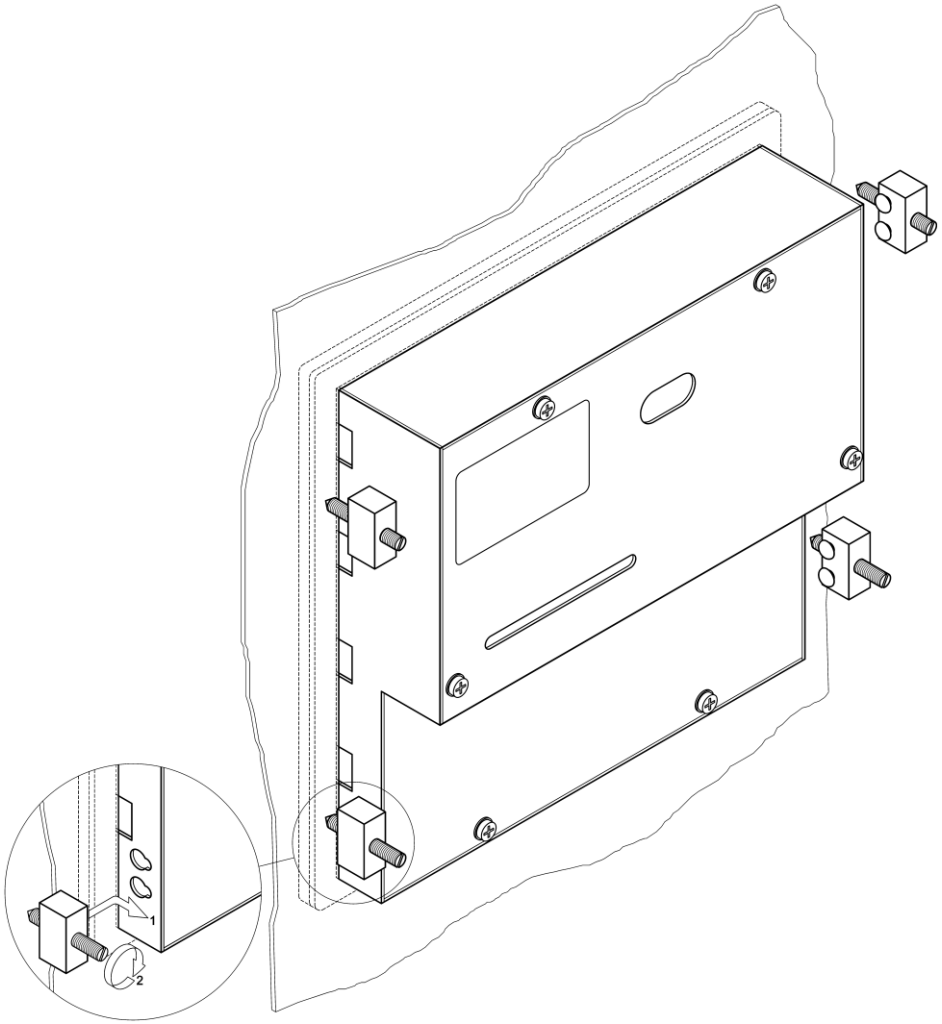
Pic.2: Dimensions and layout of the back side of PKB16DP

Over all key rows, there is a transparent strip, that allows to plug-in a card with description of button (LED) functions. Cards are plugged-in through holes at both sides of the keyboard. Dimension of the card is showed in the picture 3. Cards should be made of thicker material (laminated paper, plastic foil, ...) because of the simplier plugging under the foil keyboard sign. Thickness of the sign shouldn't exceed 0,3 mm.



Pic.3: Dimensions of plug-in card with description

After plugging of the cards, it's possible to install the keyboard into the mounting cut-out. The keyboard can be inserted to the mounting hole with dimensions of 161 x 161 mm and finalized with added clips at the back side of the panel. According to the keyboard dimensions, it's appropriate to use 4 clips, 2 clips at each side. Clips should be finalized gently to avoid deforming of the front panel, but all rubber strips should fit tightly to the mounting hole. The PROFIBUS DP connector should be fixed by screws, power supply connectors and input and output connectors should be pushed to the mates in the keyboard. Keyboard installation is showed in the picture 4.



Pic.4: Keyboard gripping from the back side of panel

4. Certificate of warranty

Product: Universal Industry Keyboard with PROFIBUS DP interface

Type: PKB16DP

Serial number: .....

Date of sale: .....

Warranty terms

The producer and distributor are responsible for the product characteristics defined in the technical specifications and provide warranty within 24 month from date of sale (taking over) of the product provided that the product is used and operated in accordance with specifications stated in this Warranty and in the Operating and Maintenance Manual. All product malfunctions caused by the defective material or by the incorrect production assembly will be corrected free of charge in warranty time if these conditions are met.

The warranty is prolonged by the time, when the product was in warranty repair, it means from the date when the product was delivered to repair till its taking over.

The buyer's warranty is void if the following facts have been found out, or faults have been caused by:

1. connecting the product to the power supply, which does not conform to the technical specifications.
2. using the product in unsuitable environment, mechanical damaging during transport, or by buyer's mistake.
3. any changes in the warranty made by unauthorized person, if the warranty is not filled in, loss of the warranty, damaged seal, when the product damage is caused by any vis majeure event, any product modification made by unauthorized person, replacement of product parts without permission.