

# Operating and mounting instructions

## PowerBlock io64

Order number: 77024-180-03

### General usage

Power Block series consists of 4 different devices types. It can be installed in a standard distribution board.

- only 4 DIN Rail modules for 4 outputs and 6 inputs
- only 4 DIN Rail modules for 8 outputs (Binary/Shutter/Blind)
- only 8 DIN Rail modules for 16 outputs (Binary/Shutter/Blind)



Overview of the functionalities:

Outputs	
BINARY (POWER LEDs SUPPORTED)	SHUTTER / BLIND
Bus failure Central ON/OFF Counters Scenes Timers Alarms Disable function Manual control	Bus failure Scenes Presets Alarms Disable function Manual control

ADVANCED FUNCTIONS	
Analog & digital alarms Scene controller Timers (with cyclic sending of time remaining Overwrite end user parameters	Logic functions Advanced scene controller Setpoints Behaviour at bus recovery

### Device type and accessories

At present the following device types are available in the PowerBlock control group:

Product	Description	Order number:
PowerBlock o8	8 capacitive outputs	77024-180-01
PowerBlock o8m	8 capacitive outputs	77024-180-04
PowerBlock o16	16 capacitive outputs	77024-180-02
PowerBlock o16m	16 capacitive outputs	77024-180-05
PowerBlock io64	4 capacitive outputs + 6 analog / digital inputs	77024-180-03
InBlock i8HV	8 x 230VAC inputs	77024-180-30

### Scope of delivery

The following individual components are included in the delivery of the PowerBlock device:

- Complete device with connected bus connector
- Operating and mounting instructions
- 1x heat shrinkable tubing 1.2 x 2cm for additional insulation of the bus cable
- Delivered in break-proof individual packaging

### Application programs

The following application program is currently available for the PowerBlock device:

- 77014-PowerBlock io64-11-0110

### Installation device



Risk of death by electric shock.

- The device is intended for interior installation in dry rooms.
- The device must only be installed and commissioned by an accredited electrical engineer.
- When planning and installing systems, the guidelines, rules and regulations, as well as the valid KNX guidelines of the respective country must be observed.
- For the installation the device must be switched to zero potential.
- The device must not be opened.
- Any faulty devices are to be sent together with a return delivery to the manufacturer.
- Make sure that the signal lines connected to the inputs (including extensions via other terminals) are safely isolated (SELV) from other lines and devices.
- **The inputs in the lower connection area must NOT be connected to 230V**

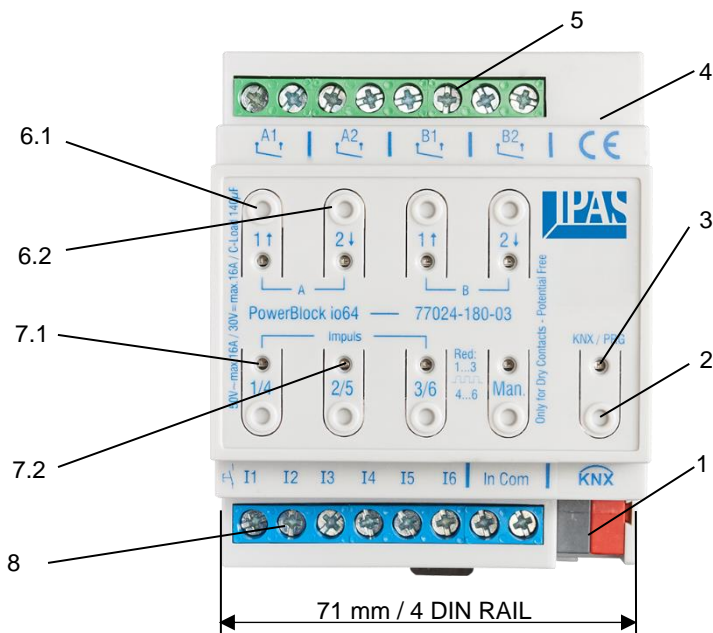
### Technical data

POWER AND OUTPUTS SPECIFICATIONS		
<b>Power supply</b>	Supply Voltage: Max. Consumption: Additional power supply:	21..30VDC 9,4mA No
<b>Number of outputs</b>	Contacts:	4 Dry contact (potential-free)
<b>Output configuration</b>		Up to 4 outputs Up to 2 channels
<b>Output nominal values</b>	AC rated current / voltage: DC rated current / voltage:	16A / 250VAC 50/60Hz C-Loads max. = 140 µF  16A / 30VAC
<b>Device nominal values</b>	Current / Voltage:	16A /250VAC per Output
<b>Phases switching distribution</b>		1 independent phase allowed per output.
<b>Output life expectancy</b>	Mechanical:  Electrical:	> 3x10 <sup>6</sup> operations (at 60 times/min) > 4x10 <sup>4</sup> cycles with resistive load at maximal current.
<b>Connections</b>	KNX bus connection terminal: Terminal screw block: Tightening torque for terminal screw:	0,8 mm Ø solid Max. 6 mm Ø solid  Maximum 0.6 Nm
<b>Number of inputs</b>	Total Inputs	6 binary/analog mixed inputs with 2 common terminals
<b>Type of inputs</b>	Binary / Analog	Ready for: - Dry contacts - Standard movement detector with dry contact output - Sensor temperature NTC - Monitored inputs with end line resistor
<b>Scanning voltage</b>	Common input:	3,3V

<b>Input current</b>	Per input:	0,3mA
<b>Protection</b>		Short-circuit proof
<b>Max. cable length</b>	For binary and analog inputs:	40m
<b>Connections</b>	KNX: (black/red), TP Terminal screw block: Tightening torque for terminal screw:	0,8 mm Ø solid max. 6 mm Ø solid Maximum 0.6 Nm
<b>GENERAL SPECIFICATIONS</b>		
<b>Control and display elements</b>	Programming button: LED, red: 8 x buttons: (for manual channels control) 8 x LEDs, red:	To assign the physical address. Displays addressing mode  To switch On/Off outputs / Move Up/Down channels / Select Fan Speed, switch valve output To display actual outputs/channels status
<b>Mechanical data</b>	REG casing 4TE: Width: Height: Length: Weight Mounting:	Plastic ABS – V0 71 mm 58 mm 90 mm 235 g 35 mm DIN rail
<b>Electrical safety</b>	Pollution class: Protection type: * Protection class: ** Overvoltage category: KNX Bus:	2 IP20 III III SELV DC 30V
<b>EMC requirements</b>	Complies with:	EMC directive 2014/30/EU
<b>Environmental conditions</b>	Weather resistance: Environmental conditions in operation: Storage temperature: Transportation temperature: Rel. humidity: (non condensing)	EN 50090-2-2 -5°C to +45°C -25°C to +55°C -25°C to +70°C 5 % to 93 %
<b>Certification CE-Signage</b>	KNX registered: According to EMC-Guidelines:	Yes (Residential and commercial buildings), Low Voltage guidelines

\* (according to EN 60529); \*\* (according to IEC 1140)

#### Location and function of the LEDs and control elements



- 1: KNX bus connector
- 2: Programming button
- 3: Programming LED
- 4: SD card slot (only for internal use)
- 5: Outputs connector: Channel A, B

#### 6.1: Manual control (See Annex 1)

Blind channel:  
- Long press: Move Up (LED blinks while moving)  
- Short press: Stop/Step  
Binary channel:  
- Short press: Output toggles to ON/OFF

#### 6.2: Manual control (See Annex 1)

Blind channel:  
- Long press: Move Down (LED blinks while moving)  
- Short press: Stop/Step  
Binary channel:  
- Short press: Output toggles to ON/OFF  
Binary input: "Manual action" / " Input 1..3 OR Input 4...6 range status selector"

#### 7.1: LED output/channel status

Binary channel LED ON = Output ON, LED OFF = Output OFF /  
Shutter: LED blinks while moving UP

#### 7.2: LED output/channel status

Binary channel LED ON = Output ON, LED OFF = Output OFF /  
Shutter: LED blinks while moving DOWN

8: Inputs terminal block connector

#### Mounting and wiring

As an REG device, the Power Block series are suitable for mounting in distribution boxes on 35 mm DIN rails and wall boxes.

To mount the device, it must be angled to slide onto the DIN rail from above and then locked into place with a downward movement.

Please make sure that the security latch at the bottom side of the device snaps into place and that the device is firmly attached to the rail. To dismount the device, the security latch can be pulled downwards with a suitable tool and then the device can be removed from the rail.

After the device has been inserted, the cables for the Outputs should be attached to the upper and lower connectors. However, please make sure that these are labelled clearly.

To connect the KNX cable, a standard bus connector is plugged into the respective entry on the device. Please make sure that there is double basic insulation between the KNX installation and the power supply. To do so, please insulate the wires of the KNX cable up to the bus connector with the enclosed shrinkable tubing.

Please make sure that the cables are laid in a way that ensures sufficient distance between the inputs and outputs cables.



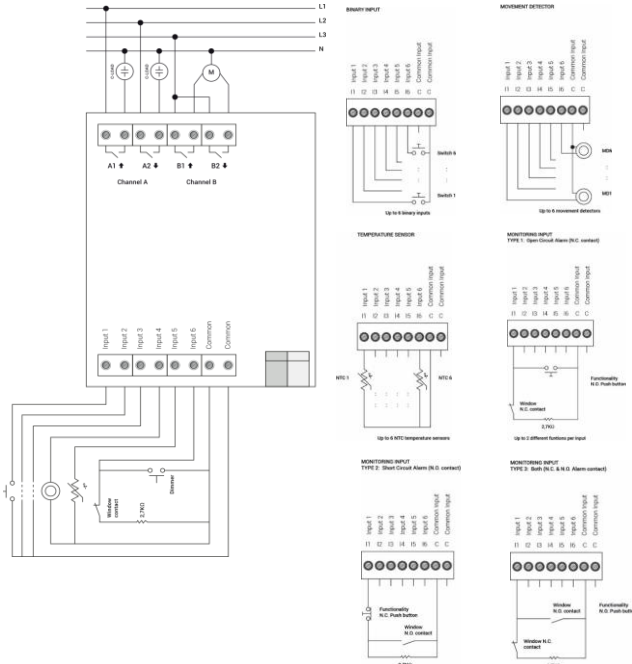
**The inputs in the lower connection area must NOT be connected to 230V.**



**Make sure that the signal lines connected to the inputs (including extensions via other terminals) are safely isolated (SELV) from other lines and devices.**

## OUTPUT / INPUTS SCHEMATIC

Each channel can be configured to be used as 2 binary outputs or as one blind channel. Each output can be powered by an independent phase. Inputs can be configured to receive binary and analog signals (movement detector, temperature sensor and monitored input).



### ANNEX 1: Manual Control

The **outputs** of the actuator have 2 push buttons and 2 status LEDs for each output channel on the front side. These buttons can be activated to control each and every channel/output individually if you select "yes" in the relevant parameter options in Binary outputs and/or Shutter/Blinds. The LEDs represent:

#### For Binary outputs

- The top row: channels A1,A2,B1,B2

#### For Shutter/blinds:



- The top row: channel's first relay A1->UP, A2->DOWN, B1-UP, etc.



The **inputs** of the actuator have 1 push button and 1 status LED for each input on the below LED row

- These buttons can be activated to control each and every input individually if you select "yes" in the relevant parameter options in Binary Input.
- The LEDs represent: The below row inputs 1&4, 2&5, 3&6 actual input status

### MANUAL CONTROL – PARAMETER


The Parameter Mode allows you to control all the channels of the actuator as configured in the ETS. The Action simulates a telegram received at the switching object of the selected channel.


BINÄRY	SHUTTER/BLIND
<p><b>Press action:</b> Sends Toggle ON/OFF command "0/1" to the "Switching" object.</p>	<p><b>Long press action (Channel output 1):</b> Sends a UP command "0" to the "Move" object.</p> <p><b>Long press action (Channel output 2):</b> Sends a DOWN command "1" to the "Move" object.</p> <p><b>Short press action (any output) (while shutter/blind is moving) of same button:</b></p>
 LED = ON (indicates channel status)	 LED = ON (indicates channel status)

 LED = OFF (indicates channel status)	<p>Sends a Stop command to the "Stop..." object.</p>  LED blinks while moving UP/DOWN during parameterized time.
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### Binary Inputs

**Press action on 1&4, 2&5, 3&6:** Sends Toggle ON/OFF command 0/1 to the "associated object" of the input (simulates the close/open action on the binary contact)

 LED = ON indicates input status -> Input contact closed)

 LED = OFF (indicates channel status -> Input contact open)

"Man" push button in the right side for selection inputs status range between input 1..3 (LED = ON) and inputs 4..6 (LED = Blinking)

### MANUAL CONTROL – TEST


The Test Mode allows you to test all the loads/wiring connected to the channels. It is independent from the ETS configuration of the actuator (since the "Manual Control / Param mode + Test mode" is a default option, you can use the Test mode even before programming the actuator).

**Important note:** Should a blind/shutter be connected to a channel, the 2 channels may never be closed at the same time. Therefore, even in Test mode, if the channel is configured as a blind, this safety measure is implemented. For this reason, it is better to first commission the OUTPUT: CHANNEL TYPE SELECTION before using the Test mode.





To change into the test mode, any button can be used depending of the channel configuration:

- If "Binary" or "Fan Coil" channel is configured: Press any button for at least 500ms
- If "Blind" channel is configured: Press the two buttons of any channel at the same time for at least 500ms

To change back to the normal "Parameter Mode" the same procedure should be repeated. Be aware by changing back to "Parameter Mode" the device will restart. Also after the device has restarted and if the channel is configured to be a blind channel, it will do a calibration movement on the first movement command.

 In order to indicate that the actuator is in Manual Control / Test Mode, the LED of the selected channel is continuously making a short blinking action every second; no matter whether the channel is ON (LED ON) or OFF (LED OFF).

The Action switches/moves the channel, as you can see in the table below:

BINÄRY	JALOUSIEN/BLENDE
<p><b>Press action:</b> Sends toggle ON/OFF command to the relay (ON = Contact closed / OFF = Contact open)</p>	<p><b>Rising edge press action (Channel X):</b> Contact closed</p> <p><b>Falling edge press action (Channel X):</b> Contact open</p>
 LED = ON (indicates channel status)	 LED = ON (indicates channel status)
 LED = OFF (indicates channel status)	 LED = OFF (indicates channel status)