



Modular Junction Box MJB  
with Gateway  
**Data sheet**

# MJB

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The MJB Modular Junction Box is designed for use together with OpenBus™ control boxes.

The MJB makes it possible to connect multiple handsets, attendant controls or it is also possible to use the MJB as a control unit for such as USB charger, Under Bed Light and 3<sup>rd</sup> party products.

## **MJB - GATEWAY version, 504-010 & 504-020:**

The MJB is a simple gateway interface, which can connect switch input notifications from the infrastructure of the hospital or nursing home, such as service/nurse call systems. Please note that notifications are only to be used as service information and not for emergency issues.

For more info about Standard functionality, please see on page 3



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### **Features:**

- Add-on value for hospital & care application
- Compact and functional design which allows easy mounting
- 2 connections: Port 1 OpenBus™ connection / Port 5 Gateway
- Colour: Light grey RAL 7035
- Protection class: IPX6
- Connection to OpenBus™ control box via modular plug cable, 6 wires
- Modular plug to open end (cable available)

### **Options:**

- Customised configuration (Configuration number  $\geq 100$ )
- It is possible to define the OpenBus signals to be used for activating the relays and / or change the notification indicator, so that it fits to the customers system. Please contact your Sales Engineer at LINAK A/S for further information.

### **Usage:**

- Compatible with all LINAK OpenBus™ control boxes, light & full
- Contact rating :
  - Max continuous current: = 1A
  - Max switching voltage: = 48 V (DC)
  - Max switching capacity: = 24 VA
  - Contact resistance: < 100 m $\Omega$
- Current consumption:
  - V bus 8V : < 9 mA
  - V permanent 40V : < 14 mA
- Approvals: IEC60601-1, ANSI/AAMI ES60601-1 and CAN/CSA-22.2 No 60601-1

## OpenBus configuration code:

MJB 5 0 4 1 0 1 0 - 1 0 2 3

5 0 4

5 0 4

### Gateway

0 1 0

DN (Device Number) 150

Relay 1, Key 1 = A31 (ID2 - Nurse Call)  
 Relay 1, Key 2 = E31 (ID5 - Nurse Call)  
 Relay 1, Key 3 = H31 (ID1 - Nurse Call)  
 Relay 2, Key 1 = A29 (ID2 - Service Call)  
 Relay 2, Key 2 = E29 (ID5 - Service Call)  
 Relay 2, Key 3 = H29 (ID1 - Service Call)  
 Relay 1, Status 1 = A0 (ID2 - Nurse Call)  
 Relay 1, Status 2 = E0 (ID5 - Nurse Call)  
 Relay 2, Status 2 = E1 (ID5 - Service Call)  
 Please note. Relay 1 Changes state when powering up

### Gateway

0 2 0

DN (Device Number) 150

Relay 1, Key 1 = A31 (ID2 - Nurse Call)  
 Relay 1, Key 2 = E31 (ID5 - Nurse Call)  
 Relay 1, Key 3 = H31 (ID1 - Nurse Call)  
 Relay 1, Key 4 = H29 (ID1 - Service Call)  
 Relay 1, Status 1 = A0 (ID2 - Nurse Call)  
 Relay 1, Status 2 = E0 (ID5 - Nurse Call)  
 Relay 2, Alarm 1 // Out of bed alarm (S2)  
 Relay 2, Alarm 2 // Switch alarm (S1)  
 Please note. Relay 1 Changes state when powering up

\*Service Data Tool 2, can read out the special / standard code nr. and configuration

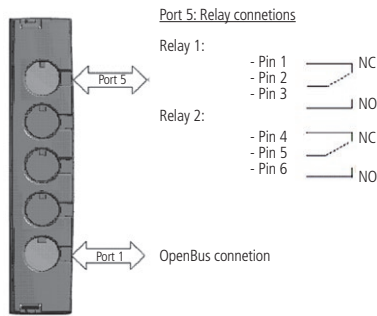
## Cable ordering nos.:

0964140-3000: Gateway cable, 3000 mm, modular plug–open end

0964140-1375: Gateway cable, 1375 mm, modular plug–open end



Please note, the alignment groove is placed on the opposite site of the modular plug. This is to ensure that the cable is only being used for the Gateway MJB.



### Standard functionality:

The MJB - Gateway consists of two relays, which are connected through Port 5 on the MJB. This can be done with the special cable 0964140 (Modular plug - Open end) There are as standard 2 configurations, 504-010 and 504-020, see description on the next pages.

Relay 1: NC (normally closed) = Pin 2 + Pin 1 / NO (normally open) = Pin 2 + Pin 3  
 Relay 2: NC (normally closed) = Pin 5 + Pin 4 / NO (normally open) = Pin 5 + Pin 6

Relay 1 is NO when connected to mains and NC when no Mains. This means the relay is "active" when connected to the mains (closed loop). The closed loop principal is to ensure that an notification is sent if power is missing on the bed. When the mains is disconnected (power is missing), the relay will go from NO to NC, which will automatically result in an notification (status indicator) on the OpenBus™.

Relay 1 can be activated via the patient control (Key1/Key4) or the attendant control (Key2 / Key3). When a key is activated, the relay will switch state from NO to NC for 2 seconds. After 2 seconds the relay will automatically change state from NC to NO. The status of the relay is indicated on the OpenBus™ and can be used for switching on an LED.

Relay 2 is as default NC, with or without mains, (Open Loop)

Relay 2 can be activated via the patient control (Key 1) or the attendant control (Key 2 / Key 3)

When the relay is activated, it will switch from NC to NO for 2 seconds. After 2 seconds the relay will automatically change state from NO to NC. The status of the relay is indicated on the OpenBus™ and can be used for switching on an LED.

By using the variant 504-020 relay 2 will be controlled by the MJB variant 505/506 with switch input.

Notification 1 = Switch input S2 / notification 2 = Switch input S1

When using this combination, it is important to have the MJB 505/506 connected to the system all the time. If it is not connected, the Gateway MJB will see it as an notification and the relay will be activated. The Gateway MJB "scanning" the OpenBus™ system every minute for an notification.

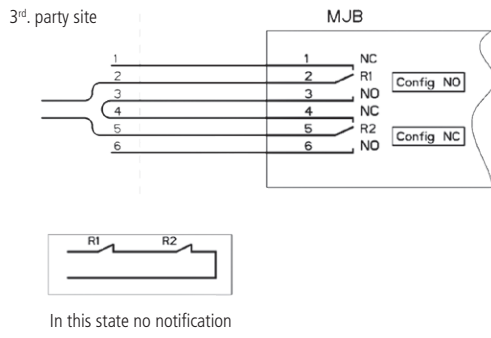
Relay 1		
CB power mode	Notification level	Relay state
Mains unplugged, CB is in power down or the OpenBus™ is not running (Clock/data is missing)	Notification	NC\*
On mains or battery at "wake up"	Bed Notification \**	NC
	No Notification	NO

Relay 2		
CB power mode	Notification level	Relay state
Mains unplugged or CB is in power down	No notification	NC
On mains or battery at "wake up"	Bed notification \**	NO
	No notification.	NC

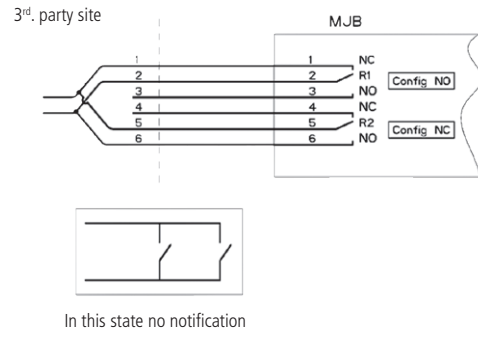
\\* When the mains is unplugged or CB is in power down the relay will shift to NC state and generate a notification.

\\*\* Notification generated by nurse call or bed notifications.

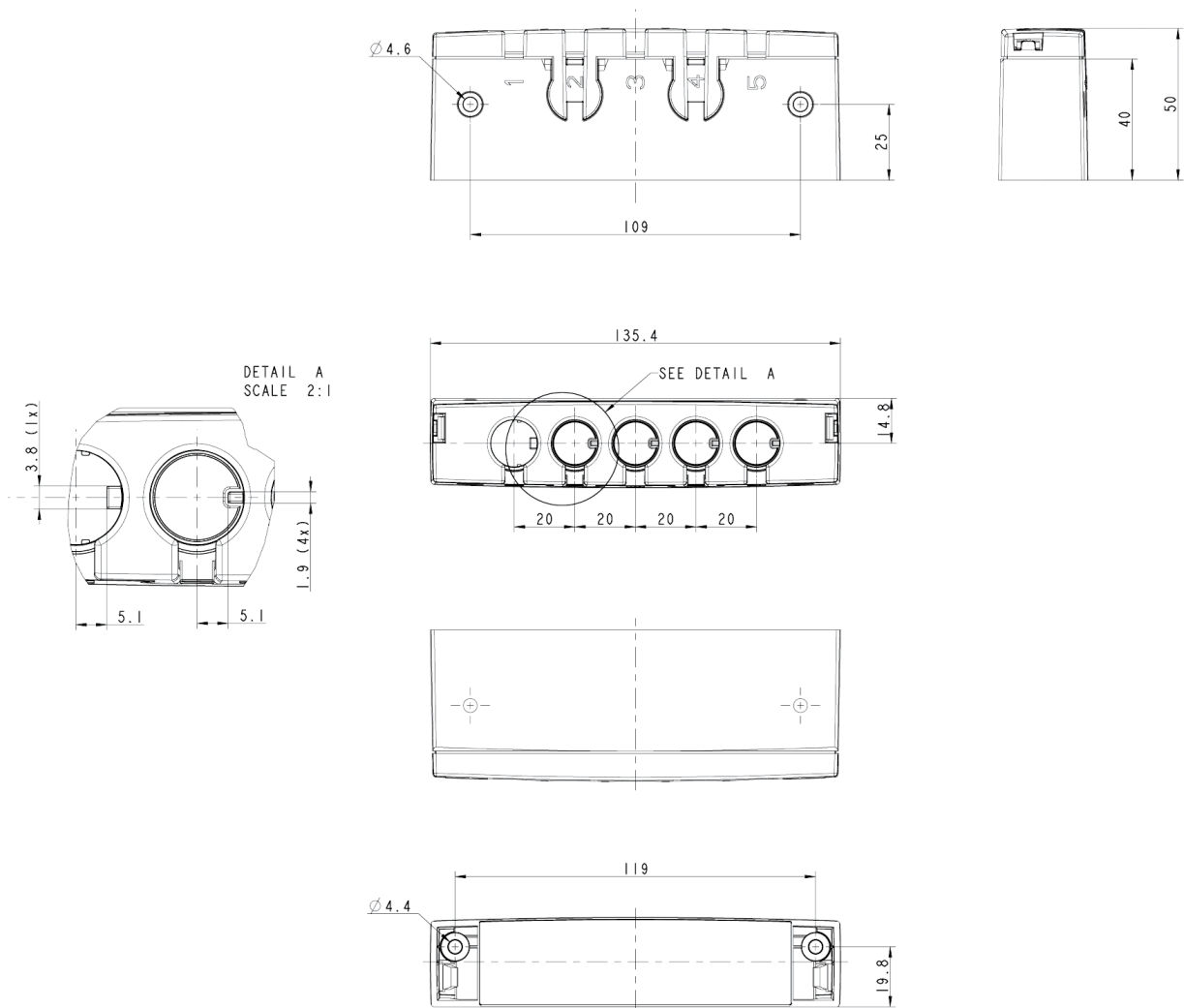
**Example of closed loop:**



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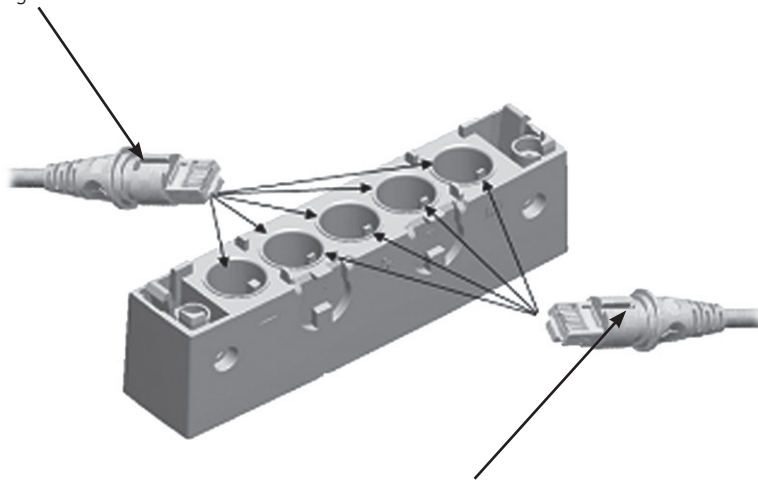
**Dimensions:**



**Modular plug cable, narrow/wide alignment grooves:**

**Modular plug with wide alignment groove**

To be used with **LINAK products**.  
Can be connected to all ports in the MJB, both ports with narrow and wide alignment grooves.



**Modular plug with narrow alignment groove**

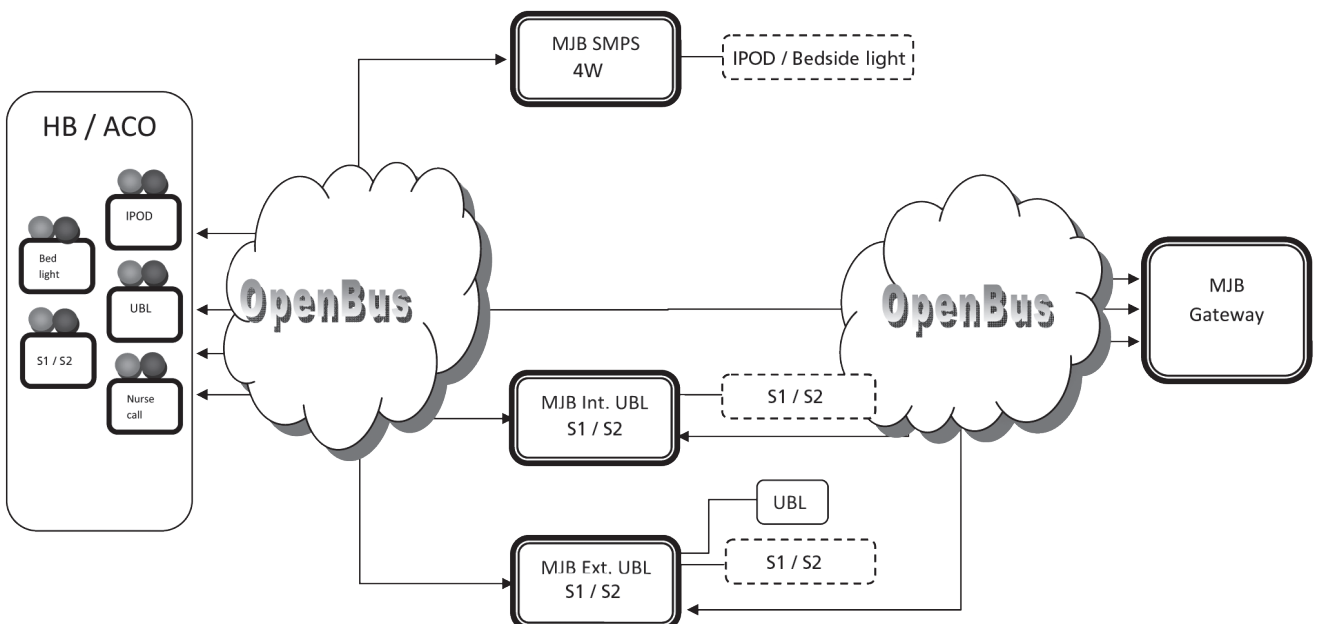
To be used with **3<sup>rd</sup> party products**.  
Can only be connected to ports in the MJB with narrow slit.  
This is to prevent 3<sup>rd</sup> party products to interfere with the OpenBus™ connections.

**Test device for MJB standard code no. >500:**

In case the system does not perform as expected due to a failure, a test device is available. The device is able to simulate the 3<sup>rd</sup> party product, which should be connected. Please contact LINAK for further details.

If you get the expected output from the MJBs it shows that it is working satisfactorily and the problem should instead be found in the 3<sup>rd</sup> party product.

**Connection overview:**



Bit matrix:

MJB	Device ID	Config nr.	ID 1 H-Codes		ID 2 A-Codes		ID 5 E-Codes		Bit
			Bit 0-11 = LED Bit 12-31 = Activation*	Indicator Relay 1 Indicator Relay 1	Bit 0-11 = LED Bit 12-31 = Activation*	Indicator Relay 1 Indicator Relay 1	Bit 0-11 = LED Bit 12-31 = Activation*	Indicator Relay 1 Indicator Relay 1 Indicator Relay 2	
Gateway	150	01							
Gateway	150	02		Indicator Relay 1				Status 2	0
Gateway	150	01		Indicator Relay 1				Status 2	1
								Status 1	2
									3
SMPS 4W	61	01					Indicator	Error	4
									5
SMPS 4W	61	01					Indicator	Status	6
UBL / Switch input (S1/S2)	140	01					Indicator S1	alarm 1	7
UBL / Switch input (S1/S2)	140	01					Indicator S1	Status 1	8
UBL / Switch input (S1/S2)	140	01					Indicator S2	alarm 1	9
UBL / Switch input (S1/S2)	140	01					Indicator S2	Status 1	10
									11
									12
									13
									14
									15
									16
									17
									18
									19
									20
									21
UBL / Switch input (S1/S2)	140	01						Key 1 (+E27)	22
UBL / Switch input (S1/S2)	140	01					Enable/Disable S1	Key 1 (+E27)	23
							Enable/Disable S2	Key 1 (+E27)	24
									25
									26
UBL / Switch input (S1/S2)	140	01					Enable/Disable S1	Key 1 (+E22)	27
UBL / Switch input (S1/S2)	140	01					Enable/Disable S2	Key 1 (+E23)	28
UBL / Switch input (S1/S2)	141	02		Toggle UBL			Toggle UBL	Key 2	29
Gateway	150	01		Activate Relay 2			Toggle UBL	Key 2	30
Gateway	150	02		Activate Relay 1			Activate Relay 2	Key 2	31
				On / Off			On / Off	Key 2	
SMPS 4W	61	01		Activate Relay 1			Activate Relay 1	Key 2	
Gateway	150	02		Activate Relay 1			Activate Relay 1	Key 2	
Gateway	150	02		Activate Relay 1			Activate Relay 1	Key 2	
Gateway	150	02		Activate Relay 2			Activate Relay 1	Key 2	
Gateway	150	02		Activate Relay 2			Activate Relay 2	Key 2	

\* Activation: bit 12 - 31 or via MJB505/506

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