LIGHT MANAGEMENT IS VIVARES

Application guide
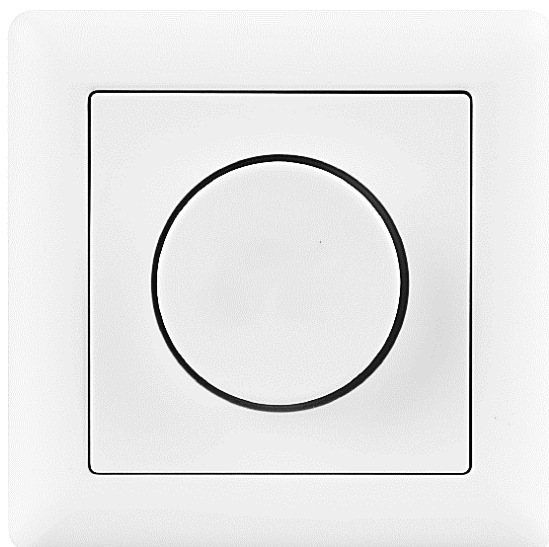
MCU SELECT DALI-2 controllers

Status: June 2024 | LEDVANCE
Subject to change without and notes. Errors and omission excepted.

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Application guide
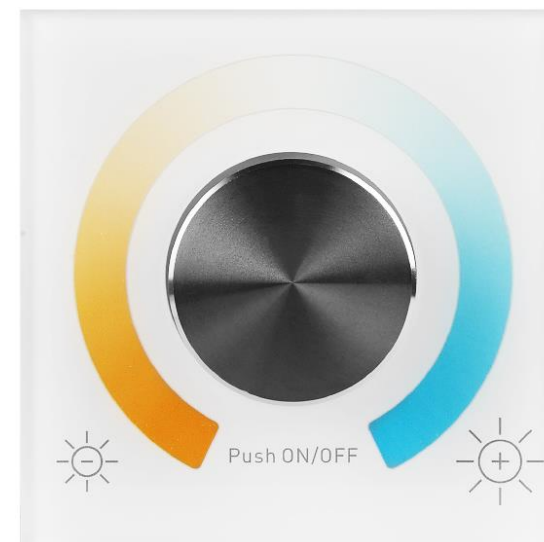# MCU SELECT / SELECT TW

MCU SELECT DALI-2 EXC TW

EAN: 4058075837522

MCU SELECT DALI-2

EAN: 4058075837485

MCU SELECT DALI-2 TW

EAN: 4058075837508

Application guide
MCU SELECT / SELECT TW

Table of contents

Application guide
# MCU SELECT / SELECT TW – Features & benefits

Product Features

- **Dimming and switching of DALI fixtures** via integrated rotary knob
- **Change of color temperature*** in combination with DALI DT8 drivers
- Control **up to 25 DALI LED drivers per** active **control unit****

Product Benefits

- **All in one solution with integrated DALI power supply**
- **Plug and control ready**
- **Compatible with 3rd party design covers** of leading European brands
- **Interconnection of up to 4 MCU's** with **automatic synchronization** via DALI
- **Suitable for rooms with separation walls**
- Possibility of **combination with standard motion detectors**
- **Fits into standard flush device boxes** with > 40mm depth
- **Works in active**** (= mains powered) **or passive mode** (= DALI powered)
- Automatic or manual **memory of switch on level**
- Individual **setting of lowest dimming level**
- **Configuration of power on state** after mains interruption by rotary switch

Application areas

- **Conference rooms**
- Residential / Shop/ Hospitality areas

[mm]
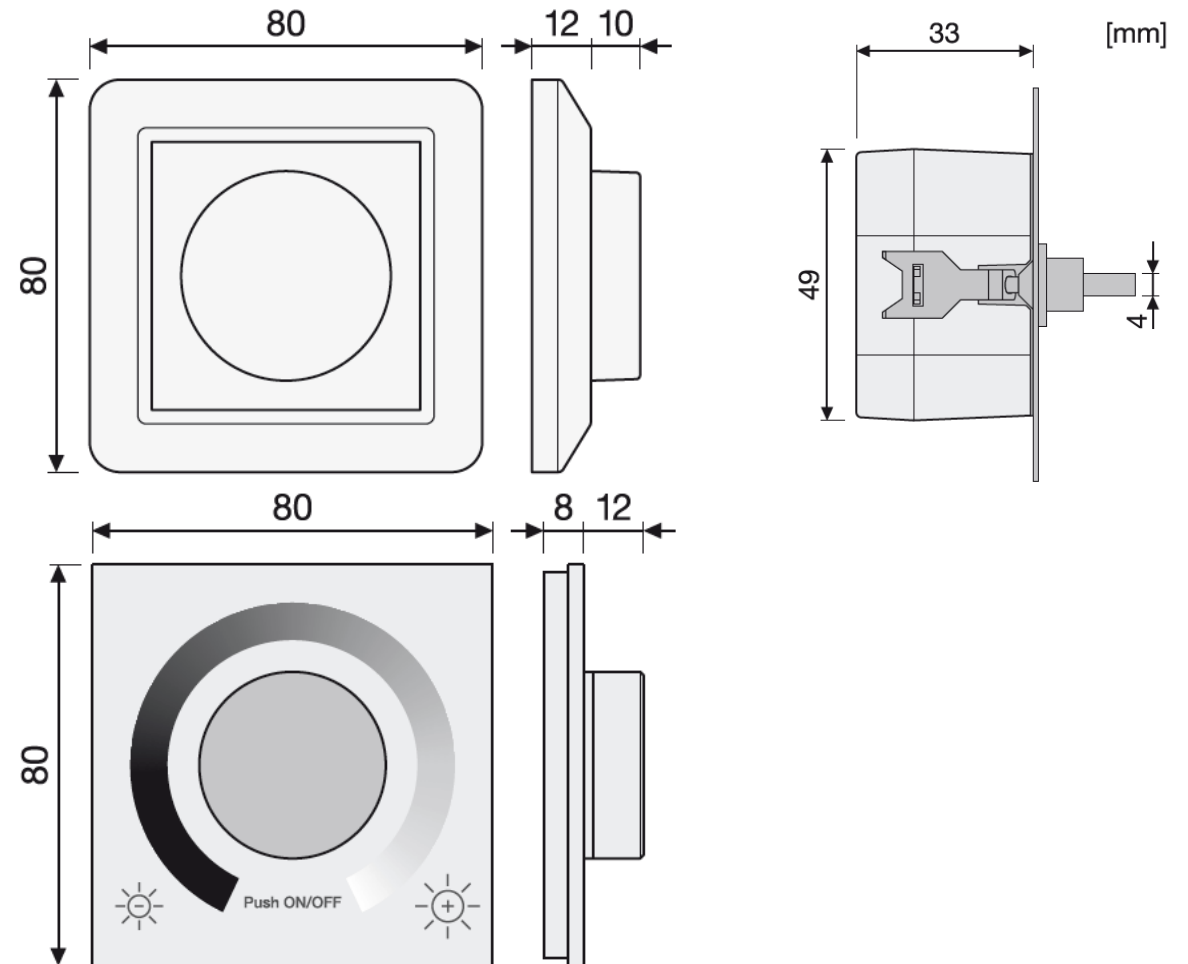
* Only MCU SELECT DALI-2 TW and MCU SELECT DALI-2 EXC TW

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Application guide
MCU SELECT / SELECT TW – Compatible design covers

6mm Adapter *
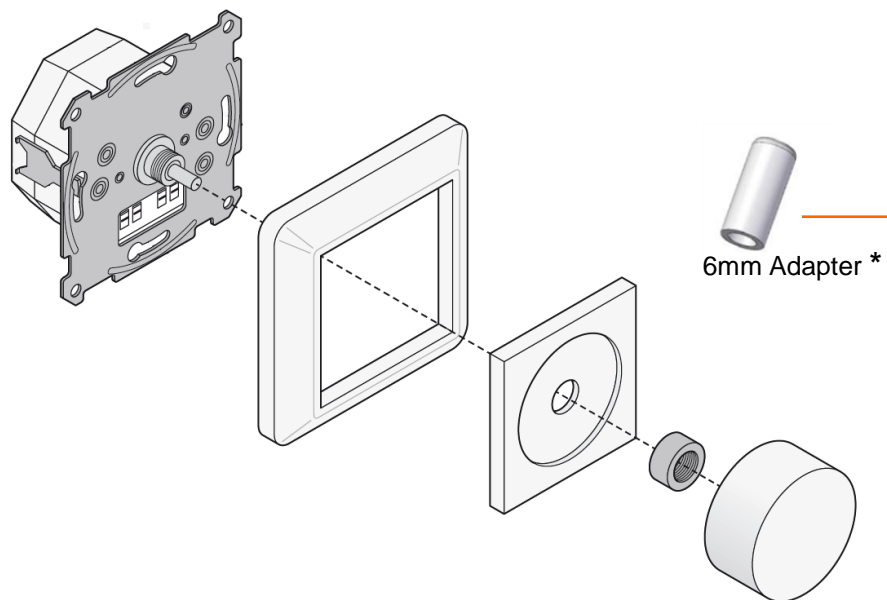
Compatible design covers

Supplier	Design Line
Busch-Jaeger (apply enclosed axle adapter)	Reflex SI, Reflex SI Linear, Reflex SI / SI Linear, Busch-Duro 2000® SI, Busch-Duro 2000® SI Linear
SIEMENS	Delta i-system, Delta vita, Delta profil, Delta Stil
SCHNEIDER	Exxact Design, Exxact Primo, Exxact Basis, Exxact Fest
BERKER	Q1, Arsys
GIRA	S Farbe, System55
JUNG	LS Plus, LS Design, Ein Plus, Ein 500, AS500

(subject to change without notice)

* Supplied with MCU SELECT DALI-2 EXC TW

Application guide
MCU SELECT / SELECT TW – Flush mounting
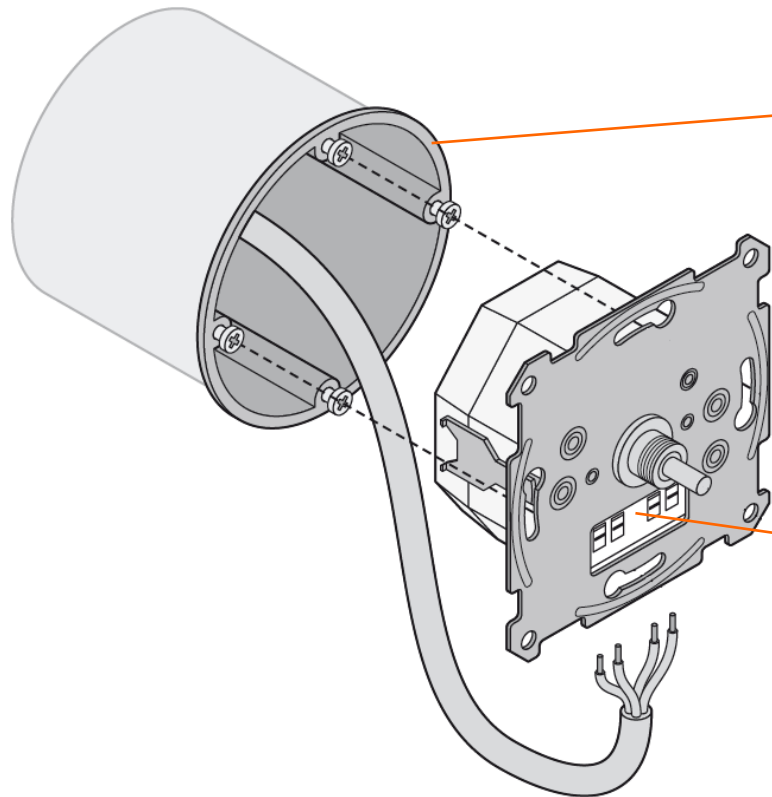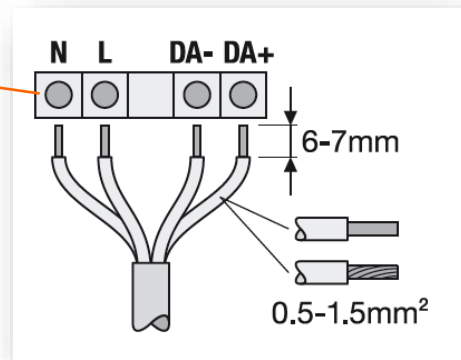
Suitable flush boxes
For concrete walls   /   for hollow walls

Wire preparation

N   L   DA- DA+

6-7mm

0.5-1.5mm²

⚠ **Switch off mains and DALI supply during installation !**

76   46   Ø 71   1   61   Ø 68

60   60   Ø 61   60   Ø 66

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Application guide
MCU SELECT / SELECT TW – Surface mounting

Mounting principle

Dimensions and fixation hole pattern
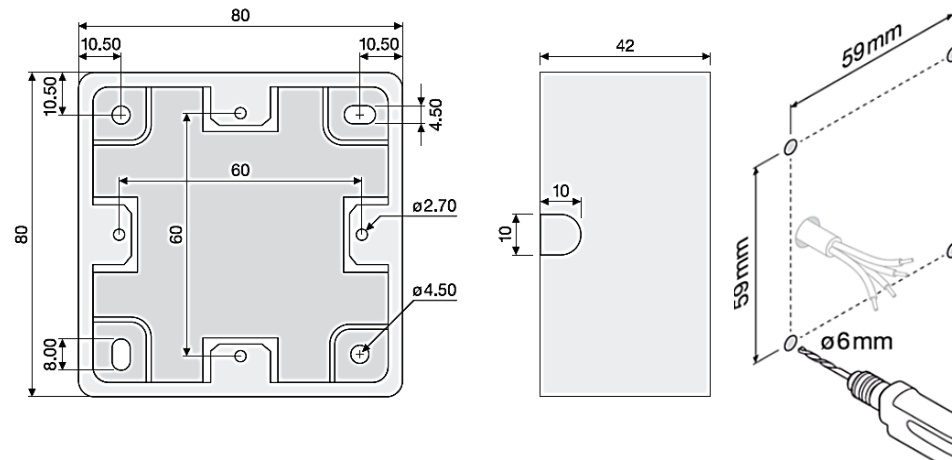
Side cable entry

Rear cable entry

SURFACE MOUNT FRAME
(4058075843561)
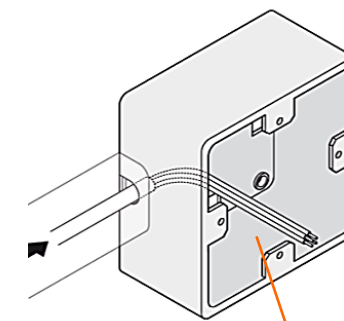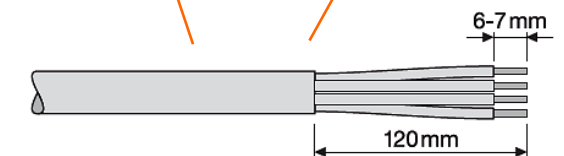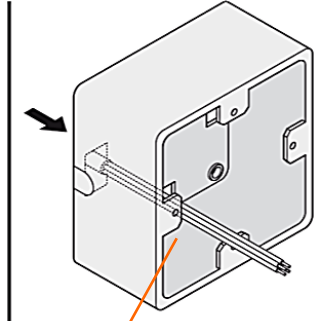
Cable / wire preparation

⚠️ **Switch off mains <u>and</u> DALI supply during installation !**

Application guide
MCU SELECT / SELECT TW – Configuration: Behaviour after mains interruption

State of the lighting after mains interruption can be set by the rotary switch on the backside of the MCU
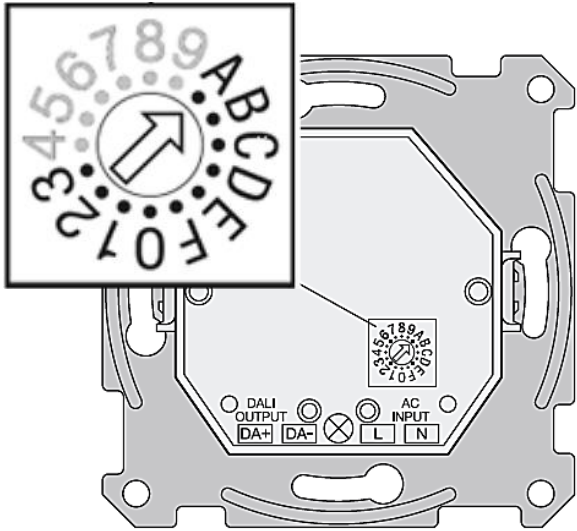
Setting	MCU SELECT DALI-2	MCU SELECT DALI-2 TW / MCU SELECT DALI-2 EXC TW
A	Last dimming level and switching state before mains interruption will be re-established	Last dimming level / last CCT and switching state before mains interruption will be re-established
B*	Dimming level stored by Double Click (= Memory value)	Dimming level and CCT stored by Double Click (= Memory value)
C	10% brightness	10% brightness, CCT = 4000K
D	20% brightness	20% brightness, CCT = 4000K
E	30% brightness	30% brightness, CCT = 4000K
F	50% brightness	50% brightness, CCT = 4000K
0	80% brightness	80% brightness, CCT = 4000K
1	100% brightness	100% brightness, CCT = 4000K
2	OFF (Light level 0%)	OFF (Light level 0%)
3	No light level command send (= individual "DALI POWER ON LEVEL" programmed in the DALI drivers applies)	
4-8	Reserved (do not use)	

⚠ **Switch off mains and DALI supply before accessing the rotary switch on the backside!**

* In Setting B the double click is disabled. Please store the memory value to be used after mains interruption by setting the rotary switch temporarily to position A.

Application guide
MCU SELECT / SELECT TW – Configuration: *RESET*
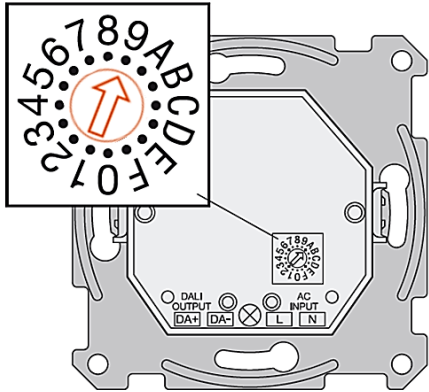
RESET MCU and the connected DALI drivers		Remark
Step 1:	**Switch off mains** of the MCU and of all connected devices, then **set rotary switch** on the backside of the MCU **to position 9**	Note previous position of the switch
Step 2:	**Switch on mains** of the MCU and of all connected devices	
Step 3:	If light is ON, **Switch Off lights via Short push to the rotary knob of the MCU**	
Step 4:	**Keep rotary knob of the MCU pressed for > 10s** until light goes to 100%	A DALI RESET command is sent to all connected drivers and the minimal dimming level is reset to 1%. RESET affects all interconnected powered up MCUs and drivers
Step 5:	**Switch off mains** of the MCU and of all connected devices, then **set rotary switch** back **to the original position**	
Step 6:	**Switch on mains** of the MCU and of all connected devices	

⚠ **Switch off mains <u>and</u> DALI supply before accessing the rotary switch on the backside!**

Application guide
MCU SELECT / SELECT TW – Configuration: *Set minimum dimming level*
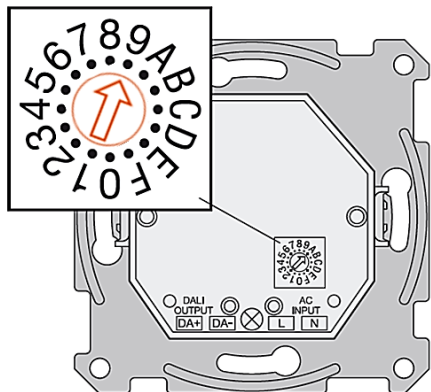
Setting the minimal dimming level		Remark
Step 1:	**Switch off mains** of the MCU and of all connected devices, then **set rotary switch** on the backside of the MCU **to position 9**	Note previous position of the switch
Step 2:	**Switch on mains** of the MCU and of all connected devices	
Step 3:	If light is OFF, **Switch On lights via Short push to the rotary knob of the MCU**	
Step 4:	**Adjust brightness level** by clockwise / counterclockwise rotation of the knob until desired minimal brightness level is achieved	If 1% or low dimming levels cannot be achieved by rotation of the knob, please RESET the MCU and the drivers
Step 4:	**Keep rotary knob of the MCU pressed for > 10s** until lights blink	Current brightness level is stored as new minimum dimming level. Minimum dimming level setting affects all interconnected and powered up MCUs.
Step 5:	**Switch off mains** of the MCU and of all connected devices, then **set rotary switch** back **to the original position**	
Step 6:	**Switch on mains** of the MCU and of all connected devices	

⚠ **Switch off mains <u>and</u> DALI supply before accessing the rotary switch on the backside!**

Application guide
MCU SELECT / SELECT TW – User operation

Switch ON / OFF
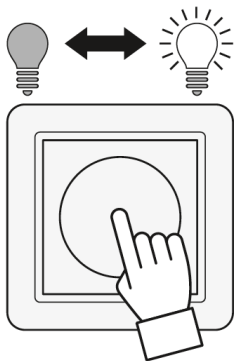
- To switch on / off briefly press the rotary knob.
- Switching direction toggles with each knob press.

Define manual Switch ON behaviour
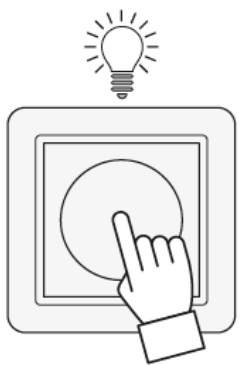
- To store a fixed brightness and CCT* for Switch ON, adjust brightness and CCT* value as desired and store by Double Click.
  (Note: Double Click is disabled in turnkey position B)
- Storage is indicated by two times blinking of the lights.
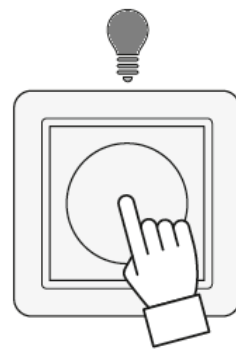
Double Click

- To delete a fixed brightness and CCT* for Switch ON, switch off the light and Double Click the knob. *(Note: Double Click is disabled in turnkey position B)*
- Deletion is indicated by lights switching to ON 100%/4000K. Without after deletion, the last values before manual OFF will be used for Switch ON.

Double Click

* Only MCU SELECT DALI-2 EXC TW and MCU SELECT DALI-2 TW

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Application guide
MCU SELECT / SELECT TW – User operation

Dimming
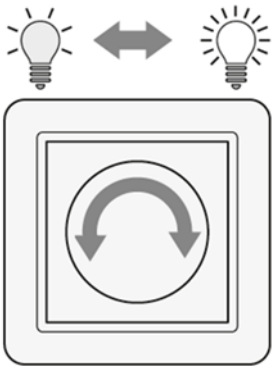
- <u>If light is switched on</u>, light level can be increased by a clockwise rotation of the knob and decreased by a counterclockwise rotation.

- The magnitude of change of the light level is derived from the rotation speed and rotation angle

- The minimum dimming level can be restricted as described in the chapter "Configuration" of this guide

Setting the colour temperature (CCT)*

2700K ⬌ 6500K
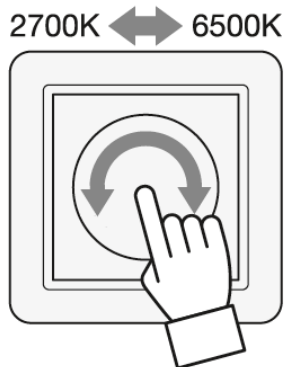
- <u>If light is switched on and DALI DT8 compatible luminaires are connected</u>, the colour temperature can be increased by a clockwise rotation when the knob is pressed and decreased by a counterclockwise rotation of the pressed knob.

- The magnitude of change of the CCT is derived from the rotation speed and rotation angle

* Only MCU SELECT DALI-2 EXC TW and MCU SELECT DALI-2 TW

Application guide
MCU SELECT / SELECT TW – Application example 1: Meeting room

Description

FUNCTIONALITY
• Up to 25 luminaires shall be controlled by a broadcast DALI signal
• Dimming and switching of all luminaires shall be possible at both entry doors of the room

PRINCIPLE SETUP
• A MCU SELECT is installed at both entry doors
• The MCU at one door is connected to mains and acts as central DALI bus power supply (= active MCU)
• The second MCU is connected to DALI only and is supplied from the DALI bus (= passive MCU)
• All luminaires are connected to mains and the DALI bus

OPTIONS
• If tunable white luminaires shall be controlled, please use MCU SELECT DALI-2 EXC TW or MCU SELECT DALI-2 TW
• If number of luminaires is > 25, please connect second MCU also to mains

Installation scheme
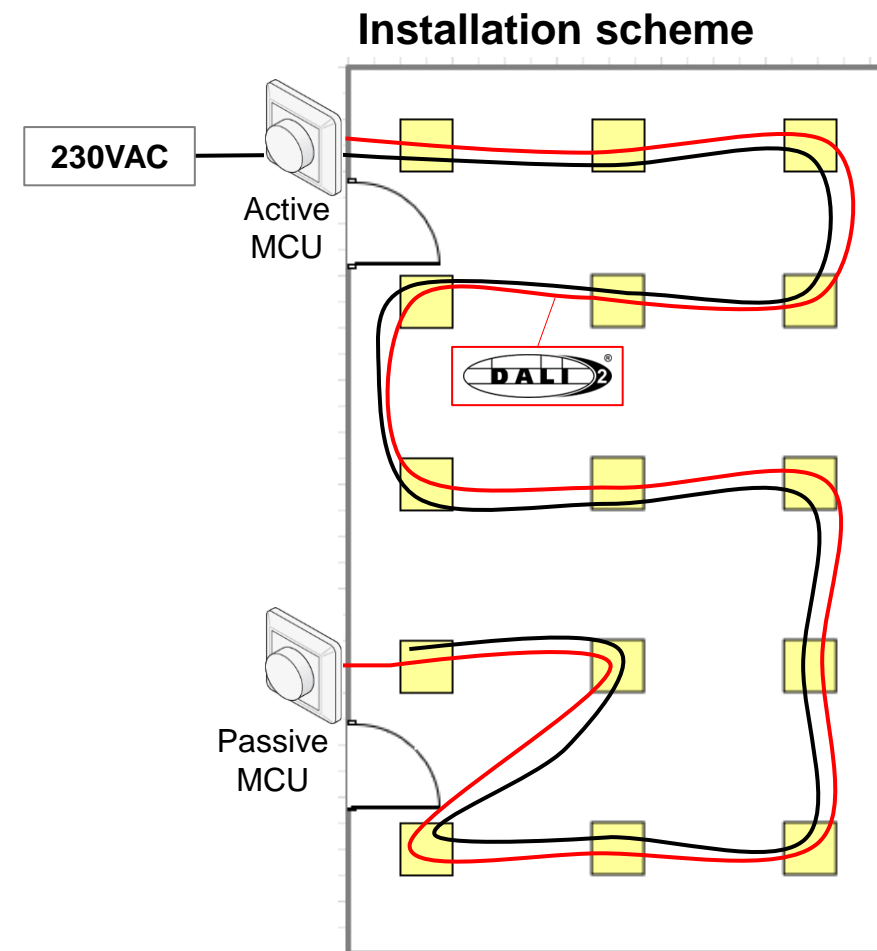
Application guide
MCU SELECT / SELECT TW – Application example 1: Meeting room

Installation

Safety
• Switch off mains and DALI supply during installation !
• DALI must be treated like mains voltage

Wiring
• Max. total DALI wire length: 300m
• Recommended DALI wire diameter 1,5mm²
• DALI and mains voltage may be routed in the same cable
  (e.g. NYM 5x1,5mm²)
Hints:
- *Ensure correct polarity DA+/DA- when connecting the second MCU*
- *Respect the max. number of luminaires per circuit breaker*

Commissioning
• To avoid that lights are switched on after a temporary mains interruption please set turnkeys of all MCU to identical position A (=last state) or position 2 (=OFF)

Possible system size
• Max. 25 DALI drivers per active DALI MCU
• Max. 4 DALI MCU per system
• Each Active MCU can power 1 passive MCU via DALI bus

Wiring diagram 1:

Application guide
MCU SELECT / SELECT TW – Application example 2: Room with motion detectors

Description

FUNCTIONALITY
- Up to 25 luminaires shall be switched by standard motion detectors
- Dimming and switching of all luminaires shall be possible at both entry doors of the room if persons are present

PRINCIPLE SETUP
- A MCU SELECT is installed at both entry doors
- The MCU at one door is connected to mains and acts as central DALI bus power supply (= active MCU)
- The second MCU is connected to DALI only and is supplied from the DALI bus (= passive MCU)
  All luminaires are connected to the DALI bus
- Mains of all luminaires and the active MCU is switched via the load contacts of the detectors

Installation scheme

Active MCU

230VAC

Passive MCU

Application guide
MCU SELECT / SELECT TW – Application example 2: Room with motion detectors

Installation

Safety
- Switch off mains and DALI supply during installation !
- DALI must be treated like mains voltage

Wiring
- Max. total DALI wire length: 300m
- Recommended DALI wire diameter 1,5mm²
- DALI and mains voltage may be routed in the same cable
  (e.g. NYM 5x1,5mm²)

Hints:
- *Ensure correct polarity DA+/DA- when connecting the second MCU*
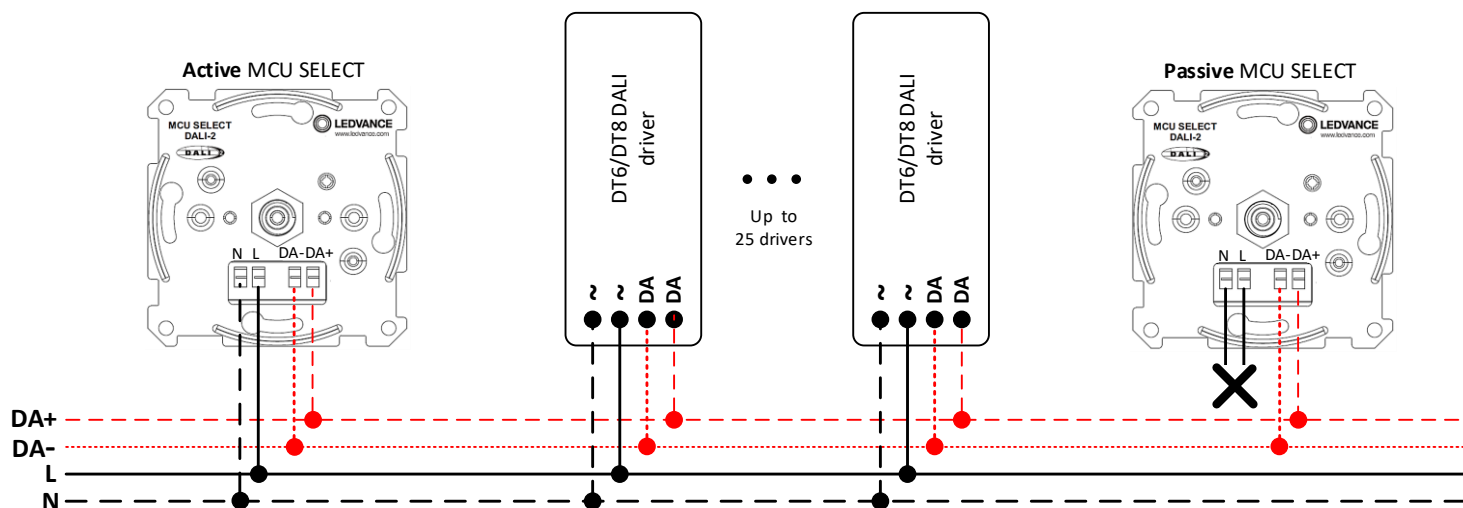- *Respect the max. number of luminaires per circuit   breaker and max. load at the switched sensor output*

Commissioning
- Fully automatic ON/OFF by motion detection:
  Set turnkeys of all MCU to identical position C-F, or 0,1
- Semi automatic (= Manual ON via MCU and automatic OFF via Motion detector): Set turnkeys of all MCU to position 2

Possible system size
- Max. 25 DALI drivers per active DALI MCU
- Max. 4 DALI MCU per system
- Each Active MCU can power 1 passive MCU via DALI bus

Wiring diagram 2:

Motion /Presence sensors **with mains voltage contact**

Active MCU SELECT

DT6/DT8 DALI driver

Up to 25 drivers

DT6/DT8 DALI driver

Passive MCU SELECT

DA+
DA-
L
N
L´

Application guide
MCU SELECT / SELECT TW – Application example 3: Room with room with partition walls

Description

FUNCTIONALITY
- Central dimming and switching of all luminaires shall be possible at both entry doors of the room when separation wall is open
- Independent control of each part room shall be possible as soon as soon as the room is split in two separate rooms by closing the wall

PRINCIPLE SETUP
- A MCU SELECT is installed at both entry doors
- Both MCU at are connected to mains and act as DALI bus power supply (= active MCUs)
- While the DALI wires of both part rooms are interconnected when the wall is open, the DALI connection between both parts is interrupted at one pole when the wall is closed
- All luminaires are connected to mains and the DALI bus of the DALI MCU of the corresponding part room.

OPTIONS
- If tunable white luminaires shall be controlled, please use MCU SELECT DALI-2 EXC TW or MCU SELECT DALI-2 TW

Installation scheme

230VAC

Active MCU

230VAC

Active MCU
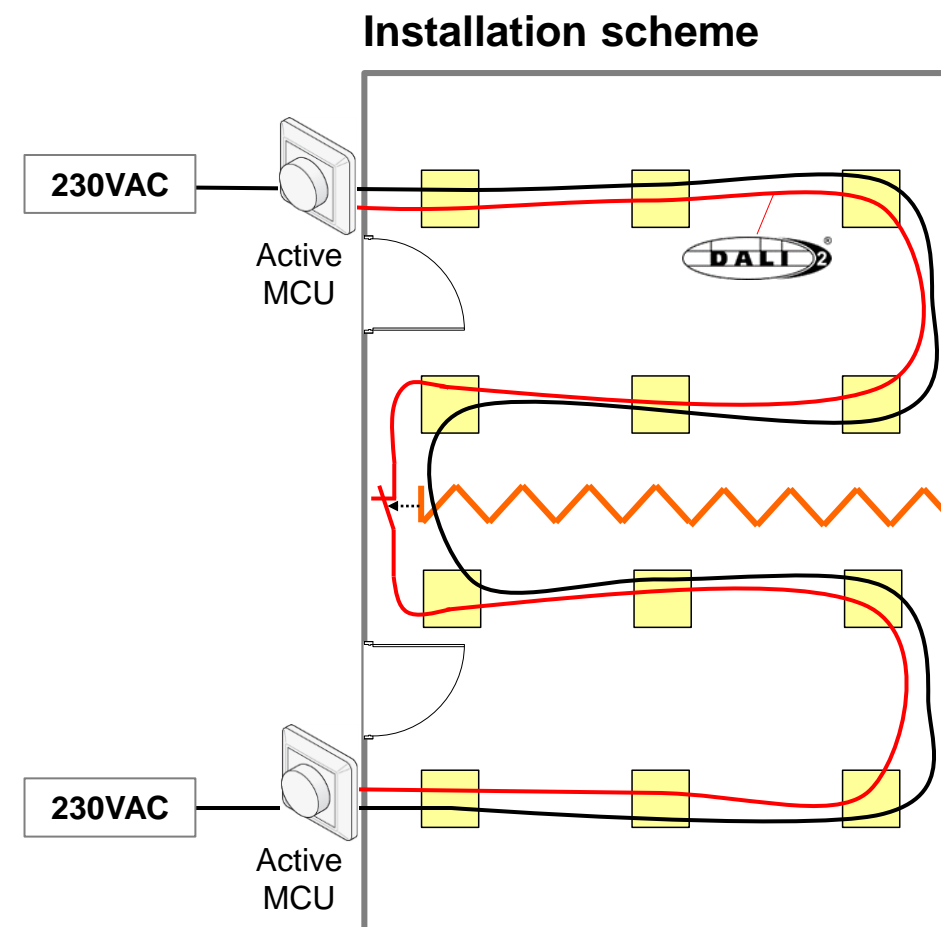
Application guide
MCU SELECT / SELECT TW – Application example 3: Room with room with partition walls

Installation hints

Safety
• Switch off mains and DALI supply during installation !
• DALI must be treated like mains voltage

Wiring
• Max. total DALI wire length: 300m
• Recommended DALI wire diameter 1,5mm²
• DALI and mains voltage may be routed in the same cable
  (e.g. NYM 5x1,5mm²)
  Hints:
  - *Ensure correct polarity DA+/DA- when connecting the*
    second MCU
  - *Respect the max. number of luminaires per circuit breaker*

Commissioning
• To avoid that lights are switched on after a temporary mains
  interruption please set turnkeys of all MCU to identical
  position A (=last state) or position 2 (=OFF)

Possible system size
• Max. 25 DALI drivers per active DALI MCU
• Max. 4 DALI MCU per system
• Each Active MCU can power 1 passive MCU via DALI bus

Wiring diagram 3:

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Application guide
MCU SELECT / SELECT TW – Application example 4: Room with room with partition walls and motion detectors
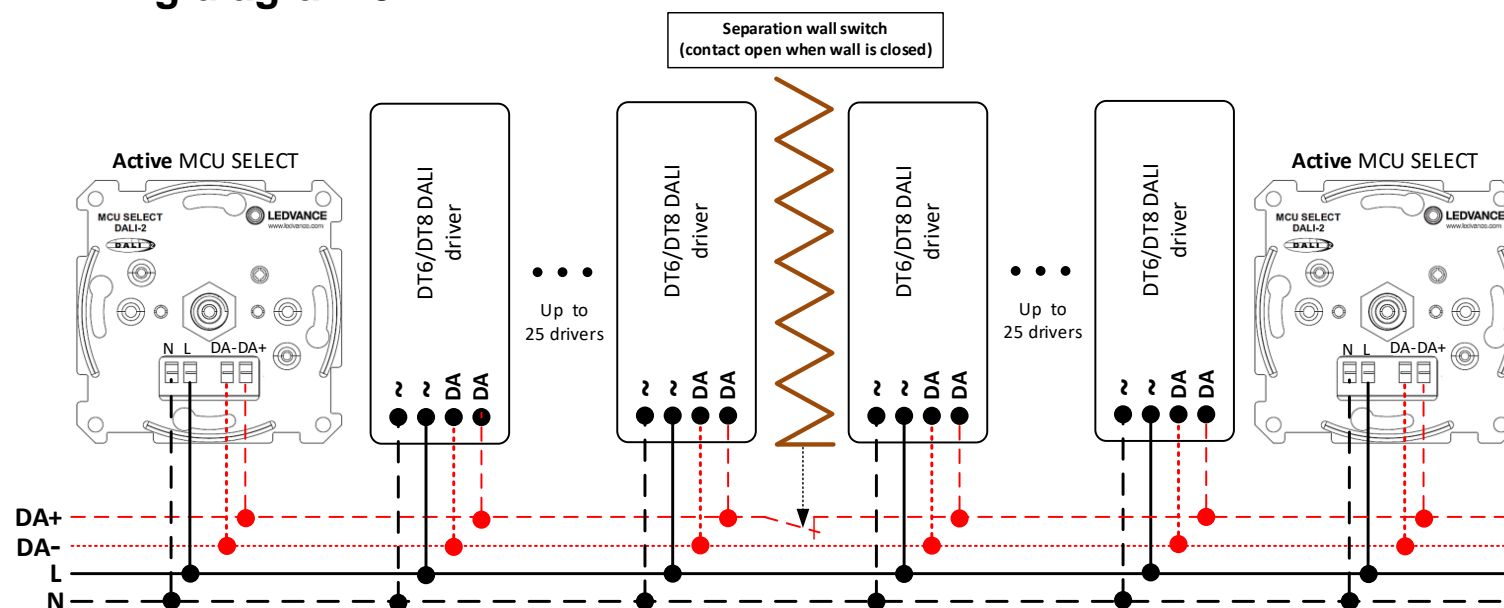
Description

FUNCTIONALITY
- If separation wall is closed light is switched on individually in each room part when motion is detected and can then be dimmed and switch via the MCU of this room part.
- If separation wall is open light is switched on centrally for the whole when motion is detected by one of the sensors. If the room is occupied and the wall is open, a central manual control of all luminaires is possible via both MCU.

PRINCIPLE SETUP
- A MCU SELECT is installed at both entry doors
- All MCU are connected to mains (= active MCUs)
  Luminaires of a room part are connected to the DALI bus of the MCU in this room part
- Mains supply of the luminaires and the MCU in a part room are switched via the motion detector in this part
- When separation wall is opened the DALI Bus of the part rooms are interconnected
- When separation wall is opened the mains output of the motion detectors are interconnected

OPTIONS
- If tunable white luminaires shall be controlled, please use MCU SELECT DALI-2 EXC TW or MCU SELECT DALI-2 TW

Installation scheme

Active MCU

DALI 2

230VAC

Active MCU

LEDVANCE

Application guide
MCU SELECT / SELECT TW – Application example 4: Room with room with partition walls and motion detectors
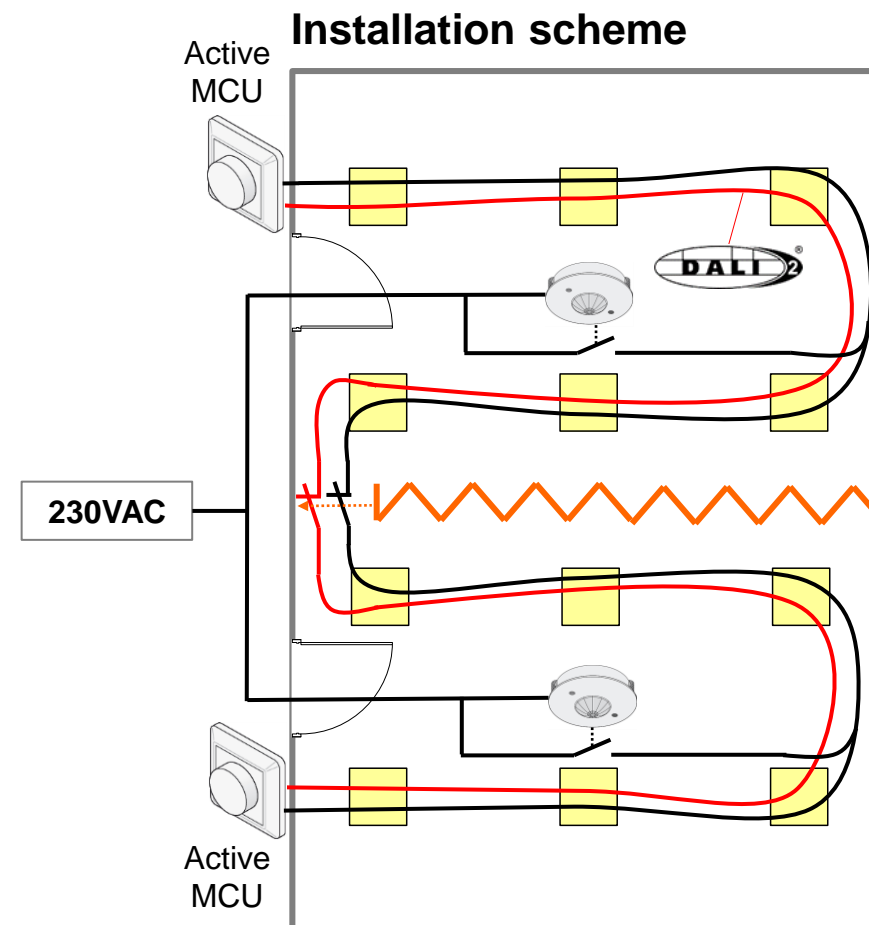
Installation hints

Safety
- Switch off mains and DALI supply during installation !
- DALI must be treated like mains voltage

Wiring
- Max. DALI wire length (total for all room parts): 300m
- Recommended DALI wire diameter 1,5mm²
- DALI and mains voltage may be routed in the same cable (e.g. NYM 5x1,5mm²)

  Hints:
  - *Ensure correct polarity DA+/DA- when connecting the second MCU*
  - *Respect the max. number of luminaires per circuit breaker and max. load at the switched sensor output*

Commissioning
- Fully automatic ON/OFF by motion detection: Set turnkeys of all MCU to identical position C-F, or 0,1
- Semi automatic (= Manual ON via MCU and automatic OFF via Motion detector): Set turnkeys of all MCU to position 2

Possible system size
- Max. 25 DALI drivers per room part
- Max. 4 room parts with one active DALI MCU each

Wiring diagram 4a :
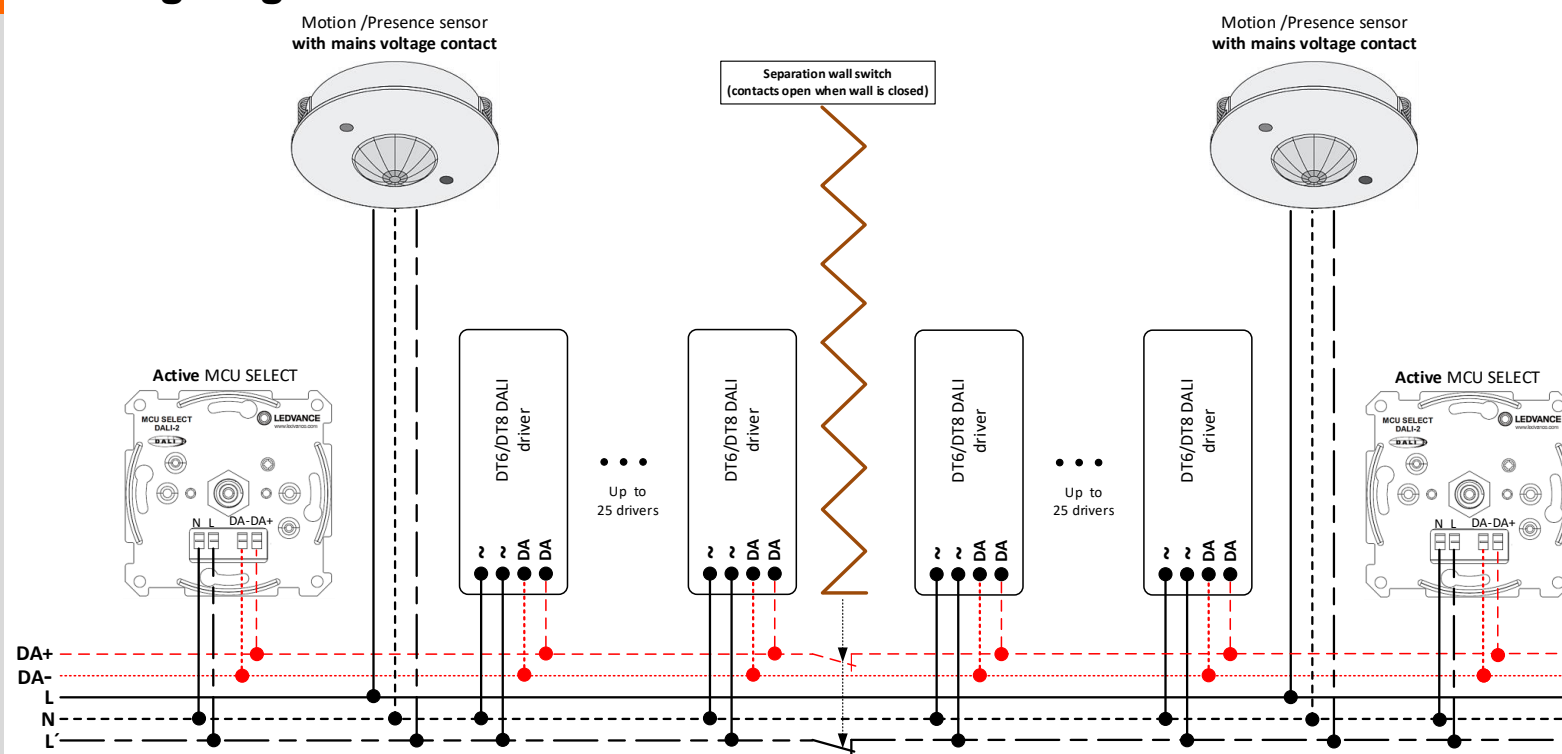
Motion /Presence sensor with mains voltage contact

Separation wall switch (contacts open when wall is closed)

Motion /Presence sensor with mains voltage contact

Active MCU SELECT

MCU SELECT DALI-2

DT6/DT8 DALI driver

Up to 25 drivers

DT6/DT8 DALI driver

DT6/DT8 DALI driver

Up to 25 drivers

DT6/DT8 DALI driver

Active MCU SELECT

MCU SELECT DALI-2

DA+
DA-
L
N
L'

Application guide
MCU SELECT / SELECT TW – Application example 4: Room with room with partition walls and motion detectors

Wiring diagram 4b: dividable room with motion detectors, separate mains circuits for the part rooms

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Application guide
MCU SELECT / SELECT TW

Questions and Answers

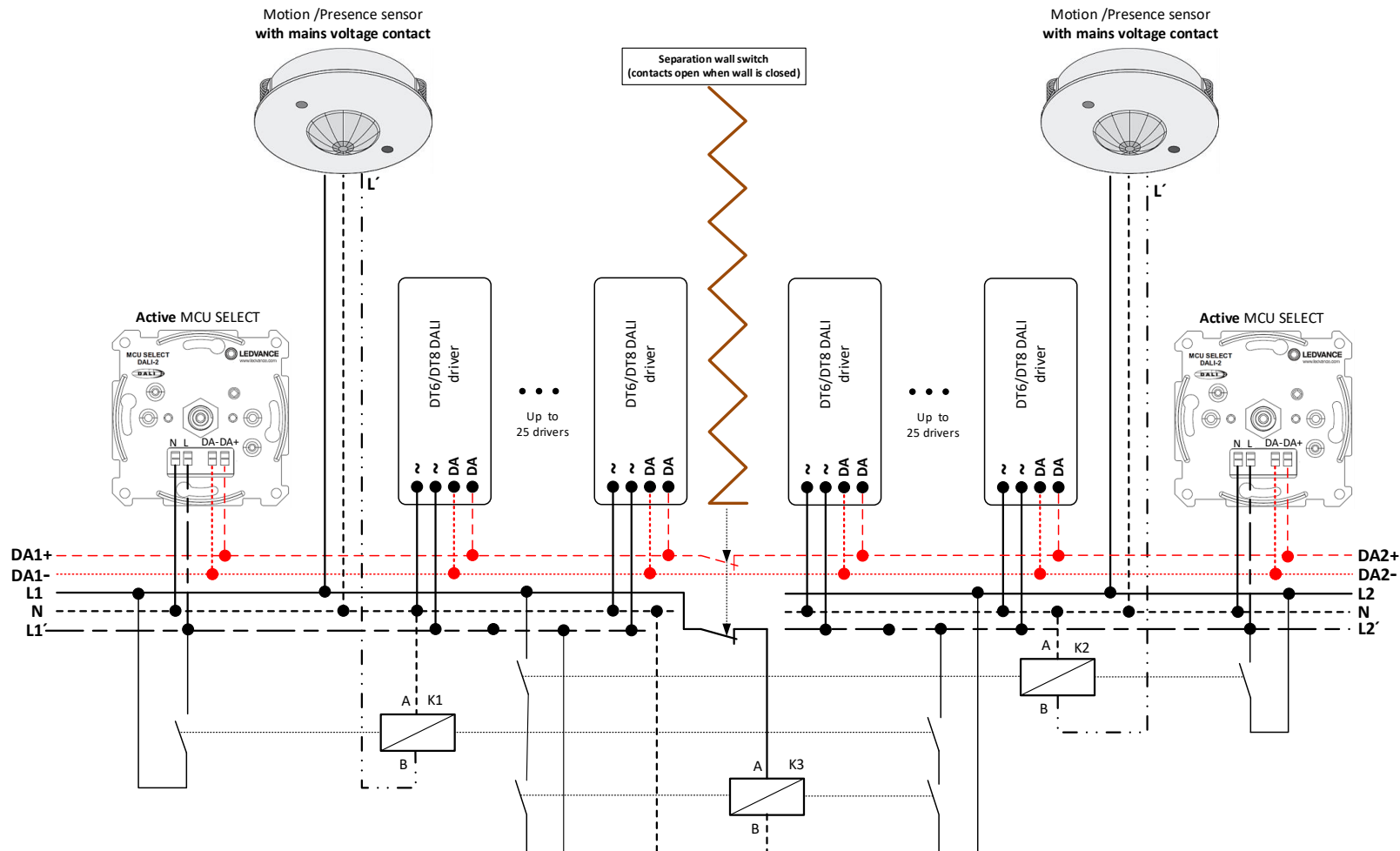**Q: How can I set an individual level / a individual CCT for automatic switch on when motion is detected?**
A: Temporarily set the turnkey of all MCU to position A, ensure that separation wall is open and the MCU are interconnected via DALI and are powered up.
The adjust the brightness and the CCT to the desired levels and store this level by a Double click to the rotary knob of the MCU. Finally set the turnkey of all MCU to position B

Q: As the of room parts are bigger, they can not be covered by the detection area of a single motion detector, how can I increase the number of detectors?
A: If you need multiple detectors in one part room just interconnect the Outputs with switched phase (L') of the detectors

Q: What if the high number of drivers per part room exceeds the load capacity of the switching contact of the motion detector?
A: If the max. capacitive load of the detector is not sufficient, please use a power conductor / power relay in-between luminaires and load contact of the motion detector

Q: What if the room parts are connected to different phases and circuit breakers and may therefore not be interconnected by the switch contact of the movable wall?
A: In this case you need additional power conductors, please see corresponding wiring diagram

Q: Can I use also daylight dependent control?
A: If the selected motion detectors have an integrated light sensor, it is possible to set a brightness threshold directly at the sensors. That avoids an unnecessary switch on if sufficient daylight is available. A closed loop / daylight harvesting control is not possible.

Q: Can I use DALI sensors instead of the standard motion detectors?
A: No, the DALI MCU does not support other DALI control devices such as DALI Sensors or DALI Push button couplers.

Q: Can I connect a DALI MCU to another DALI control system or a BMS solution?
A: No, the DALI MCU is a standalone control solution

Q: Is it possible to control more than 25 drivers with one MCU ?
A: Yes. If you need to control more luminaires, please use an external DALI power supply. The DALI MCU should not be connected to mains but supplied out of DALI (=passive DALI MCU). Consider 10mA as DALI current consumption of the DALI MCU and 2mA for each driver.

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Application guide
MCU SELECT / SELECT TW

Questions and Answers

Q: Can I mix/interconnect MCU SELECT and MCU TOUCH in the same installation?
A: In principle that is possible, as there may be some limitations concerning the synchronization of MCU of different type, this combination is not officially recommended

Application guide
MCU SELECT / SELECT TW

Troubleshooting

Q: What can I do if some luminaires have a different dimming behavior than the rest ?
A: Most probably not all DALI drivers have ex-factory settings. Please perform a RESET as described at the beginning of this application guide

Q: I have installed two MCU, why do the lights behave differently depending which MCU I use?
A: To ensure a complete synchronization, the MCU must be interconnected and powered when configuration settings such as storing a Switch On level or a Min level are done

Q: The MCU is not working, and lights stay always at 100%, what is the possible root cause?
A: Most probably the DALI bus voltage is missing, and the luminaires are at System failure level. Please check DALI voltage with a multimeter (typically: ~16V DC).
   Possible root cause: The MCU has no mains supply or the DA+/DA- wires of interconnected are mixed up at one MCU or the number of drivers / passive MCU is too high

Application guide
MCU SELECT / SELECT TW

Technical data			
	MCU SELECT DALI-2	**MCU SELECT DALI-2 EXC TW**	**MCU SELECT DALI-2 TW**
Input voltage range (AC)	100-240V (50/60Hz)	100-240V (50/60Hz)	100-240V (50/60Hz)
Power consumption	0.65-2.7W	0.65-2.7W	0.65-2.7W
Allowed wire diameter	0.5-1.5mm²	0.5-1.5mm²	0.5-1.5mm²
Protection class	II	II	II
Protection type	IP 20	IP 20	IP 20
Ambient temperature range	-20…+50°C	-20…+50°C	-20…+50°C
Humidity range	10-95%	10-95%	10-95%
Max. total DALI wire length	100m@0.5mm² / 200m@1.0mm² / 300m@1.5mm²	100m@0.5mm² / 200m@1.0mm² / 300m@1.5mm²	100m@0.5mm² / 200m@1.0mm² / 300m@1.5mm²
Max. DALI output current*	65mA	65mA	65mA
DALI input current**	10mA	10mA	10mA
Dimming range	1-100%	1-100%	1-100%
CCT setting range	---	2700-6500K	2700-6500K
Dimensions (l x w x h)	80x80x53mm	81x81x54mm	80x80x53mm
Net weight	162g	133g	162g
Lifetime	50.000h	50.000h	50.000h

*Mains supplied MCU (=active MCU) / **DALI supplied MCU (= passive MCU)

THANK YOU

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