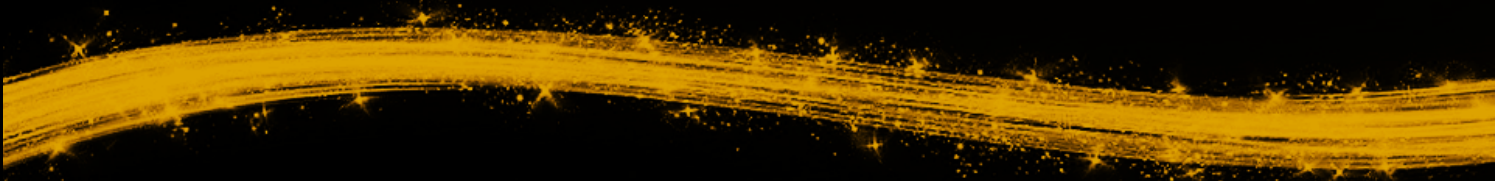


Connected Lighting

Innovative, Intelligent, Inventive electronics





DALI 4 x RELAY

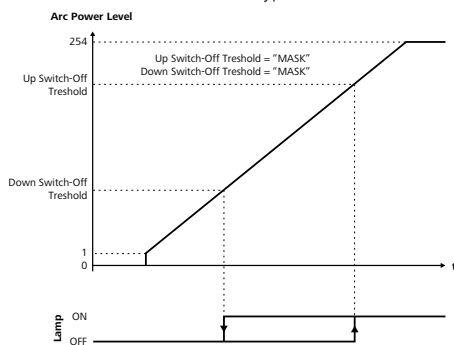
The InControl 03AB – DALI 4 x Relay is a DALI compatible relay device designed to allow for the independent switching of four devices (luminaires and others) through a DALI interface.

On the front panel of the device can be found an integrated push button for the manual control of the relays for testing purposes, additional to five device status indicator LEDs.

The device is housed in a standard DIN-rail mountable box for easy installation in electrical switchboards.

DALI Interface

The device fulfils EN 62386-208 type 7 standards



Example configuration

Connections

Mains cable	Wires AWG 24–12 (0.2–2.5 mm ²)
DALI cable	Wires AWG 28–16 (0.08–1.5 mm ²)
Relays cable	Wires AWG 24–12 (0.2–2.5 mm ²)

Power

Mains supply	220–240 V AC / 50–60 Hz
Max. system power	6 W
DALI consumption	< 2 mA
Relay loads	12 A (per contact)
Insulation	4 kV

Mechanical Data

Housing	4U DIN rail box 71 mm wide
Weight	300 g
IP rating	IP 20

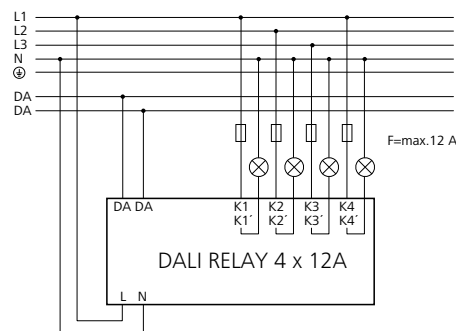
Operating Conditions

Operating temp. range	from 0 °C up to 40 °C
Relative Humidity	85 % max., non-condensing
Storage temp. range	from -40 °C up to 70 °C

Conformance with regulations

EN 55015	Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61547	Equipment for general lighting purposes EMC immunity requirements
EN 60950-1	Information technology equipment – Safety – Part 1: General requirements
EN 62386-208	Digital addressable lighting interface

Connection



Key features

- four independent relay contacts
- 12 A maximum switching current per contact
- push button for manual control (test function)
- one DALI address for each contact (DALI device type 7, EN 62386-208)

Function

After powering-up the device, an internal test sequence is initiated that lasts for no more than 2 seconds. The device then acts in Normal Mode and awaits DALI commands.

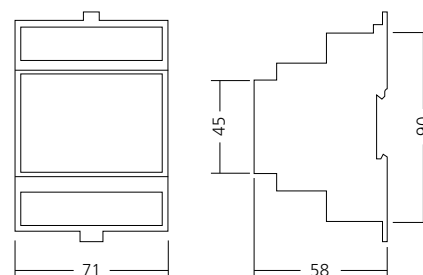
The 'STATUS' LED indicator is lit when the DALI bus is correctly supplied. LED indicators 1 to 4 show the current status of each relay: a lit LED means the corresponding relay is switched on, an unlit LED means the corresponding relay is switched off.

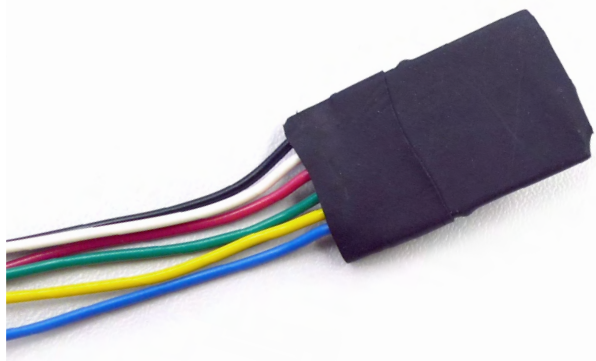
Test mode

Test Mode can be activated at any time by pressing the push button 'TEST'.

A short push of the button, for a period less than 3 seconds, changes which relay is selected, indicated by the corresponding LED indicator blinking. By pressing the push button for a period of more than 3 seconds the selected relay is switched on/off, indicated by the way in which the LED indicator blinks (predominantly on means the relay is switched on, predominantly off means the relay is switched off). The device will return to Normal Mode after 5 seconds of push button inactivity.

Dimensions





purple	Input 1
blue	Input 2
green	Input 3
yellow	Input 4
orange	COM
red	DALI bus
brown	DALI bus

Key features

- Powered from DALI bus, compatible with standard DALI rating
- Up to four user inputs
- Default functions – ready to use out-of-box
- Small dimensions (L x W x H): 27 x 20 x 4 mm
- DALI consumption < 9 mA

Connections

Mains cable	Wires AWG 24 (0.5 mm ²)
DALI cable	Wires AWG 24 (0.5 mm ²)

Power

DALI voltage	12–25 V DC
DALI consumption	< 9 mA

Control Inputs

Voltage range	open 5 V DC / closed max. 0.3 V DC
Current range	max. 1 mA

Mechanical Data

Housing	Encapsulated PCB
Weight	10 g
Dimensions	27 x 20 x 4 mm

Operating Conditions

Ambient temp. range	from 0 °C up to 40 °C
Relative Humidity	85 %, non-condensing
Storage temp. range	from -40 °C up to 70 °C

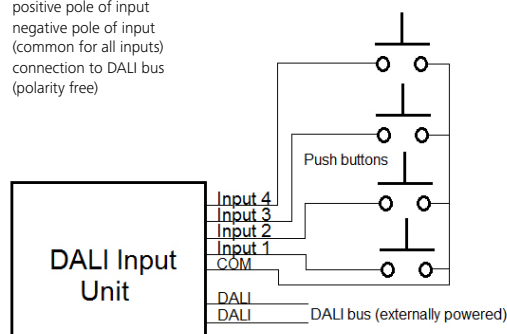
Input	Address	Short press	Long press
Input 1	Broadcast	Recall Max level	UP
Input 2	Broadcast	OFF	DOWN
Input 3	Group 1	Recall Max level	UP
Input 4	Group 1	OFF	DOWN

DALI Input Unit

The DALI Input Unit is a fully DALI-compatible interface, designed to allow customer specified switches, sensors, time clocks or other on/off control devices to be incorporated into a standard DALI installation. The DALI Input Unit is a small, pre-wired, encapsulated PCB module and it is suitable for inclusion into all standard size back boxes together with a suitable mains rated switch.

Connection

Input 1-4 positive pole of input
 COM negative pole of input (common for all inputs)
 DALI connection to DALI bus (polarity free)



Function

DALI Input Unit detects short-circuit connection between wires Input 1-4 and COM. Module is designed to be used with standard push buttons – short-circuit connection is the active state. The logic of the module differentiates between short and long press of the push buttons. Short press is detected when the short-circuit detection lasts shorter than 1 second. If the short-circuit connection lasts longer it is detected as long press. User can configure different reaction to short and long press.

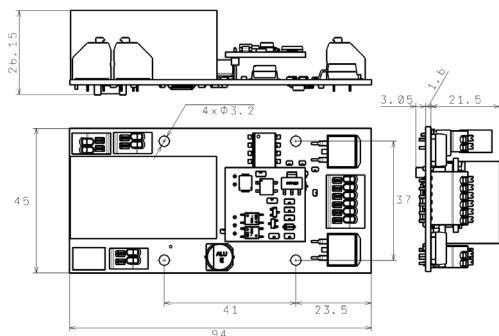
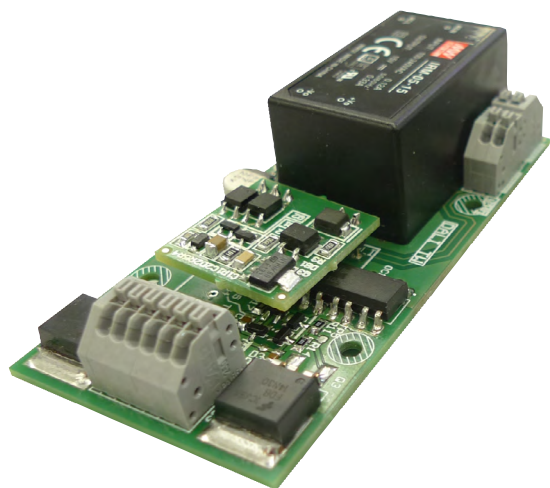
Each input of DALI Input Unit can be configured with different DALI address (device support broadcast, group addresses and short addresses). Three types of reactions can be configured for each input: Static commands, Direct level or Toggle. In Static commands mode device transmit defined command each time a press is detected. The most useful commands are: MIN_LEVEL, MAX_LEVEL, UP or DOWN. If desirable user can set up any command listed in DALI standard (IEC 62386-102). In Direct level mode device transmit defined brightness level each time a press is detected (for example 50%). In Toggle mode device toggles between two commands each time a press is detected. The user can choose from 3 toggle functions: MIN/MAX, ON/OFF and Scene X/ Scene Y. Scene X and Scene Y are settable number of DALI scenes which are toggled. The configuration can be changed using special programmer (on demand).

For the reaction on long press it is possible to set whether the command should be sent only once or it should be repeated (for example UP/DOWN commands). The period of repetition is also settable (1 second period). DALI Input Unit is delivered with default configuration.

DALI Input Unit is a DALI powered device therefore external DALI power supply has to be connected on the DALI line.

Note

The DALI Input Unit is intended to be used with push buttons that come back to non-active position after release. The compatibility with other devices should be discussed with the manufacturer. The push buttons used as input devices for DALI Input Unit must have mains rating (DALI bus provides basic insulation only).



Connections

Mains cable	Wires AWG 28-16 (0.08–1.5 mm ²)
DALI cable	Wires AWG 28-16 (0.08–1.5 mm ²)
LED cable	Wires AWG 28-16 (0.08–1.5 mm ²)

Power

Mains supply	90–260 V AC / 47-400 Hz 120–370 V DC
System power	< 200 mW
DALI consumption	< 2 mA
Insulation	Class II

Output

Output voltage range	30 V DC - 180 V DC
Output current range	0 - 2 A
Output power range	0 – 150 W

Mechanical Data

Housing	Open Frame
Weight	60 g
Dimensions	94 x 45 x 26 mm

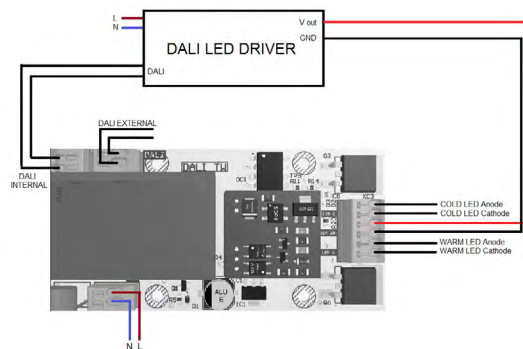
Operating Conditions

Ambient temp. range	from 0 °C up to 55 °C
Relative Humidity	< 85 %, non-condensing
Storage temp. range	from -40 °C up to 70 °C

DALI TW MODULE type 6

DALI TW MODULE is a DALI compatible device (device type 6) especially designed to allow for the TunableWhite control of LED modules through a DALI interface. For correct function an external LED driver is required (DALI LED driver if brightness control is desired). The device itself is powered independently from mains. The device is open-frame module that can be easily mounted into the luminaire.

Connection



Key features

- independent control of CCT
- up to 180 V voltage range
- DALI control (device type 6)

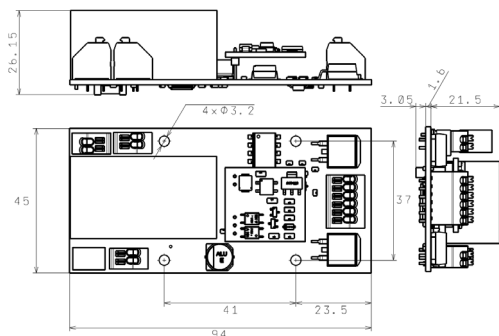
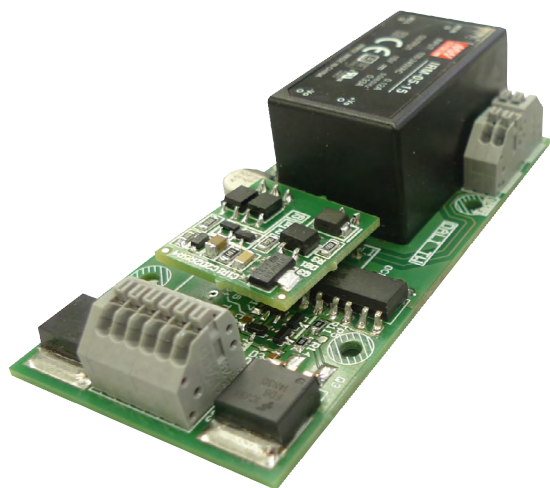
Function

DALI TW MODULE is a DALI device designed for TunableWhite control. It is not a power source for LEDs! For correct function an external LED driver must be used (constant current). Selection of the LED driver depends on the LED load used (forward voltage and current). DALI TW MODULE controls the CCT of light according to the DALI commands received. On DALI line, the device appears as standard DALI device type 6 (LED driver) allowing for direct CCT level control, group addressing, fading and scene settings.

DALI TW MODULE represents simple way of CCT control via DALI using standard components – LED driver and DALI controller.

Conformance with regulations

EN 55015	limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61547	Equipment for general lighting purposes EMC immunity requirements
EN 62386-102	Digital addressable lighting interface, general requirements for control gears
EN 62386-207	Digital addressable lighting interface, LED drivers



Connections

Mains cable	Wires AWG 28-16 (0.08–1.5 mm ²)
DALI cable	Wires AWG 28-16 (0.08–1.5 mm ²)
LED cable	Wires AWG 28-16 (0.08–1.5 mm ²)

Power

Mains supply	90–260 V AC / 47-400 Hz 120–370 V DC
System power	< 200 mW
DALI consumption	< 2 mA
Insulation	Class II

Output

Output voltage range	30 V DC - 180 V DC
Output current range	0 - 2 A
Output power range	0 – 150 W

Mechanical Data

Housing	Open Frame
Weight	60 g
Dimensions	94 x 45 x 26 mm

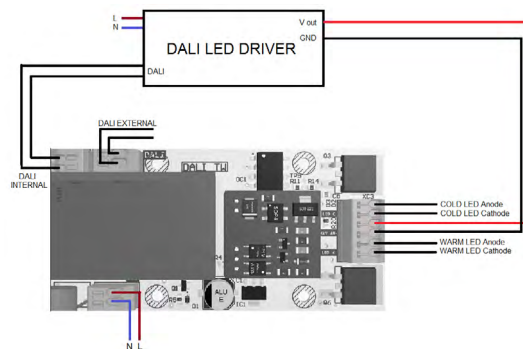
Operating Conditions

Ambient temp. range	from 0 °C up to 55 °C
Relative Humidity	< 85 %, non-condensing
Storage temp. range	from -40 °C up to 70 °C

DALI TW MODULE type 8

DALI TW MODULE is a DALI compatible device (device type 8) especially designed to allow for the TunableWhite control of LED modules through a DALI interface. **For correct function an external LED driver is required (DALI LED driver if brightness control is desired).** The device itself is powered independently from mains. The device is open-frame module that can be easily mounted into the luminaire.

Connection



Key features

- independent control of CCT
- up to 180 V voltage range
- DALI control (device type 8) – one address only

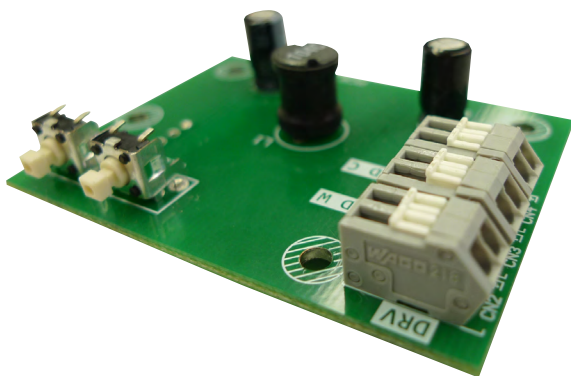
Function

DALI TW MODULE is a DALI device designed for Tunable White control. It is not a power source for LEDs! For correct function an external LED driver must be used (constant current). Selection of the LED driver depends on the LED load used (forward voltage and current). DALI TW MODULE controls the CCT of light according to the DALI commands received. On DALI line, the device appears with one address as standard DALI device type 8 (Colour control) allowing for direct brightness and CCT level control, group addressing, and fading and scene settings.

DALI TW MODULE represents simple way of CCT control via DALI using standard components – LED driver and DALI controller.

Conformance with regulations

EN 55015	limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
EN 61547	Equipment for general lighting purposes EMC immunity requirements
EN 62386-102	Digital addressable lighting interface, general requirements for control gears
EN 62386-207	Digital addressable lighting interface, LED drivers
EN 62386-209	Digital addressable lighting interface, Colour control

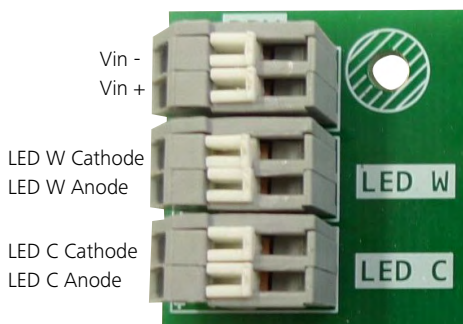
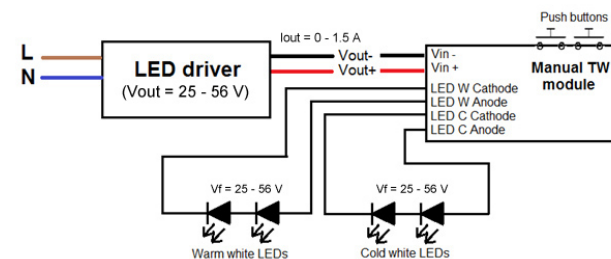


MANUAL TW MODULE 01

MANUAL TW is module with patented current splitter topology for Tunable white control. It is intended to be used in any Tunable white luminaire that fits its operating range (input voltage and output current). **The module requires external LED driver for its biasing and LED powering.**

MANUAL TW 01 has a fixed position of buttons so the module should be placed in a fixture on the place, where the button can be reachable.

Connection



Connections

Cable Wires AWG 24-12 (0.5–2.5 mm²)

Power

Input voltage 25 V DC - 56 V DC

Output

Output voltage 25 V DC - 56 V DC
Output current 0 - 1.5 A
Module consumption 50 mW

Mechanical Data

Housing Open case
Weight 18 g
Dimensions 60 x 45 x 15 mm

Operating Conditions

Ambient temp. range from 0 °C up to 55 °C

Key features

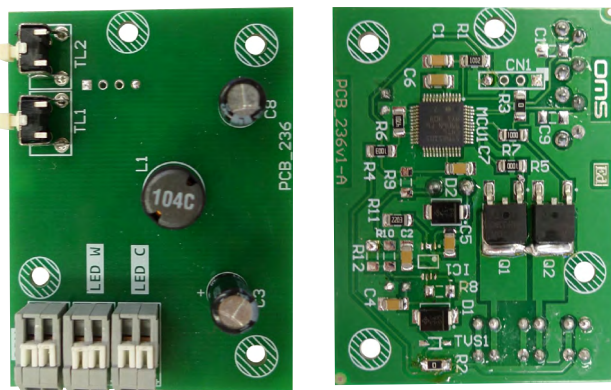
- Two push buttons for manual control
- Output current range: up to 2 A
- Output power: up to 110 W
- Module internal biasing: 5 V / 8 mA (40 mW)

Function

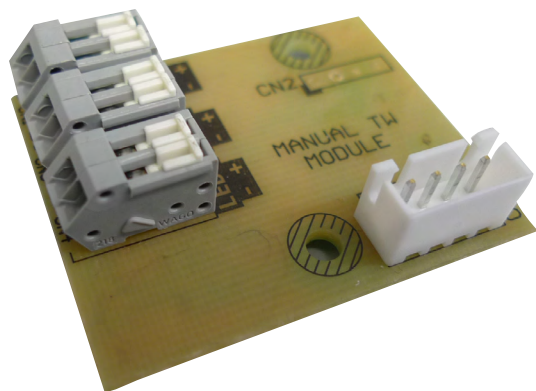
After powering up Manual TW electronic reloads last used setting of output current ratio. The new level is saved to memory after 10 seconds of push button inactivity. Push button 1 (PB 1) serves for increasing and Push button 2 (PB 2) for decreasing of output current ratio. There are two modes of current ratio transients – smooth mode and discrete mode.

Discrete mode / discrete mode is activated by default. When short pressing one of the push buttons (holding pressed shorter than 1 second) the current ratio level is changed in discrete steps according to the table below. One press activates change of one step.

Smooth mode – smooth mode is activated when one of the push buttons is hold pressed longer than 1 second. After this period current ratio starts to change (increase or decrease) smoothly with approximately 2 % per second.



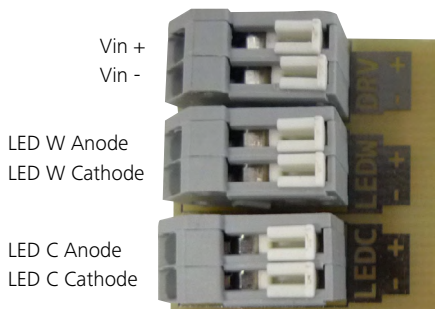
Step Index	1	2	3	4	5	6	7	8
Channel C Level (%)	0	9,8	20	31,7	45,1	63,5	85,5	100
Channel W Level (%)	100	90,2	80	68,3	54,9	36,5	14,5	0



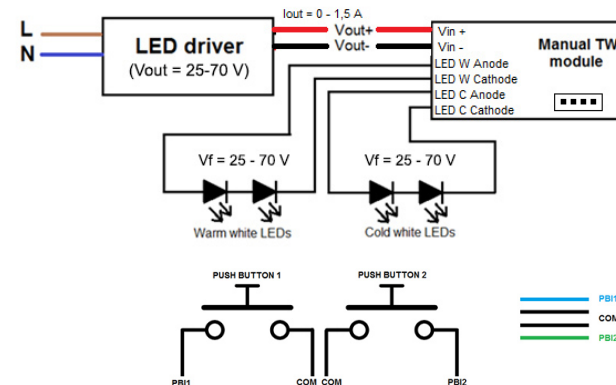
MANUAL TW MODULE 02

MANUAL TW is module with patented current splitter topology for Tunable white control. It is intended to be used in any Tunable white luminaire that fits its operating range (input voltage and output current). **The module requires external LED driver for its biasing and LED powering.**

Manual TW Module 02 is without the fixed position of the buttons, so can be placed anywhere in a luminaire.



Connection



Connections

Cable Wires AWG 24-12 (0.5–2.5 mm²)

Power

Input voltage 25 V DC - 70 V DC

Output

Output voltage 25 V DC - 70 V DC
Output current 0 - 1.5 A
Module consumption 15 mW

Mechanical Data

Housing Open case
Weight 10 g
Dimensions 42 x 34 x 15 mm

Operating Conditions

Ambient temp. range from 0 °C up to 55 °C

Key features

- Two push buttons for manual control
- Output current range: up to 2 A
- Output power: up to 100 W
- Module internal biasing: 5 V / 3 mA (15 mW)

Function

After powering up Manual TW electronic reloads last used setting of output current ratio. The new level is saved to memory after 10 seconds of push button inactivity. Push button 1 (PB 1) serves for increasing and Push button 2 (PB 2) for decreasing of output current ratio. There are two modes of current ratio transients – smooth mode and discrete mode.

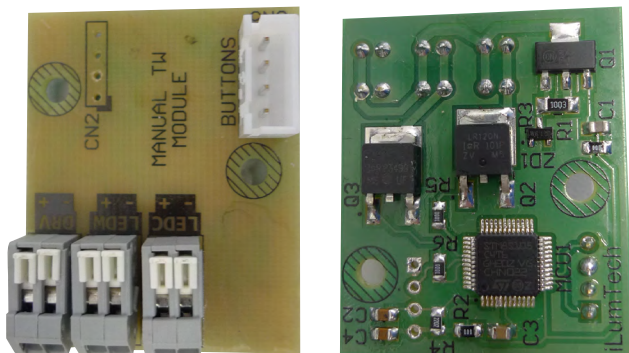
Discrete mode – discrete mode is activated by default. When short pressing one of the push buttons (holding pressed shorter than 1 second) the current ratio level is changed in discrete steps according to the table below. One press activates change of one step.

Smooth mode – smooth mode is activated when one of the push buttons is hold pressed longer than 1 second. After this period current ratio starts to change (increase or decrease) smoothly with approximately 2 % per second.

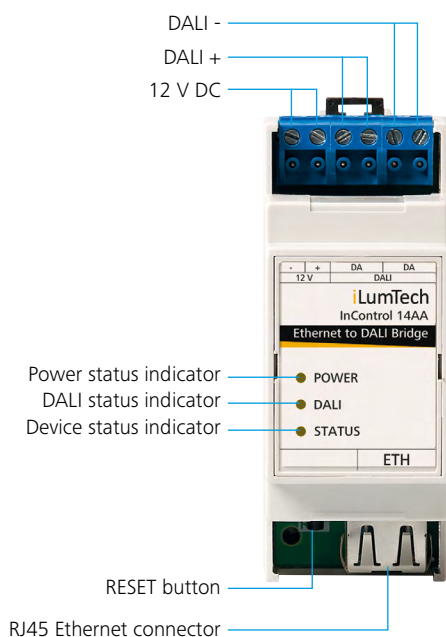
Purpose: electronic control device, manually controlled control device, built-in control device, for normally polluted environment. Mode of action: type 1.

Connection of push buttons

Manual TW module is delivered with cable harness for push button connection. The cable harness consists of 4 wires – Push button 1 input (PBI1), Push button input 2 (PBI2) and common ground (COM). Wires can be connected to any type of mechanical push buttons.



Step Index	1	2	3	4	5	6	7	8
Channel C Level (%)	0	9,8	20	31,7	45,1	63,5	85,5	100
Channel W Level (%)	100	90,2	80	68,3	54,9	36,5	14,5	0



Connections

Power cable	Wires AWG 28-16 (0.08–1.5 mm ²)
DALI cable	Wires AWG 28-16 (0.08–1.5 mm ²)
Ethernet cable	UTP CAT5E

Power

Input voltage	12 VDC
System power	< 0,5 W
DALI consumption	< 2 mA
Insulation	Class II

Mechanical Data

Housing	2U sized DIN box
Weight	70 g
Dimensions	94 x 36 x 60 mm

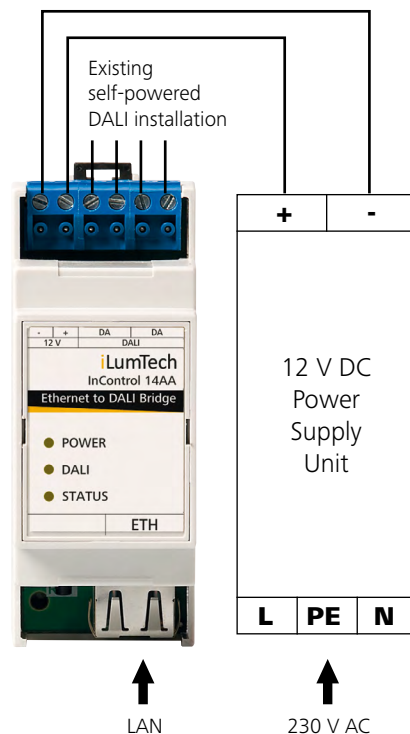
Operating Conditions

Ambient temp. range	from 0 °C up to 40 °C
Relative Humidity	< 85 %, non-condensing
Storage temp.range	from -40 °C up to 70 °C

DEE BRIDGE

DEE Bridge belongs to i-Products family. It is a solution comprising an Ethernet to DALI bridge device and easily operated user interface application. This solution enables intuitive control of luminaires within a DALI installation via an Ethernet network using a PC, tablet or smartphone.

Connection



Conformance with regulations

EN 61347-1	Lamp control gear. Part 1: General and safety requirements
EN 61347-2-1	Lamp control gear. Part 2-11: Particular requirements for miscellaneous electronic circuits used with luminaires
EN 62386-102	Digital addressable lighting interface, general requirements for control gears

Initial Dee Bridge device TCP/IP and port configuration settings:

TCP/IP address	192.168.1.252
Port	8421

Default web configuration settings:

Username	admin
Password	admin



Key features

- Biasing from the DALI bus with an input voltage range compatible with the DALI standard
- Illuminance and CCT measurement
- Passive / Active Mode – offers direct regulation of TunableWhite luminaires
- Configuration via DALI bus
- Installation into ceiling

Function

The DALI Ambient Sensor measures illuminance and Correlated Colour Temperature (CCT) properties within its scanning area – illuminance in lux and CCT in Kelvins. Measurement occurs automatically using automatic range switching within an illuminance range of 100–30,000 lx and CCT range of 2500–8000 K. The sensor communicates using the industry standard DALI protocol once addressed and set using any standard DALI configuration tool. Additional sensor parameters can be set using a USB/DALI bridge and related software tool.

By default, the sensor functions in Passive Mode with regulation disabled and where measured values can only be read. The basic parameters required for regulation are desired illuminance and CCT values and connection to type-defined and controllable TunableWhite luminaires. The sensor can be used to regulate warm/cold two-channel luminaires, brightness/ CCT two-channel luminaires and DALI type 8 luminaires. It is possible to assign each channel its own address, for example, a cold channel, warm channel, brightness channel, CCT channel or DALI type 8 channel. All connected TunableWhite luminaires can be controlled in parallel using illuminance only regulation, CCT only regulation or dual regulation.

The parameters and properties of the DALI Ambient Sensor are outlined in the table below.

Connections

Cable Wires AWG 24 (0.5 mm²)

Power

Voltage at DALI input 12–25 V DC
Input current < 9 mA

Mechanical Data

IP rating IP40
Weight 200 g
Dimensions Ø 115 x 40 mm
Opening; Ø 105 mm

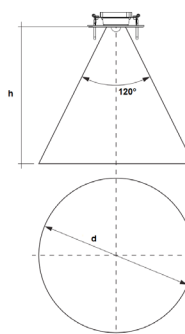
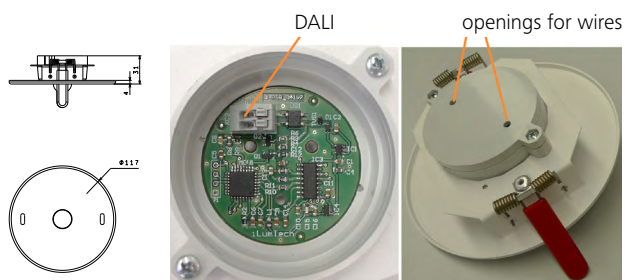
Operating Conditions

Temperature range from 0 °C to 40 °C
Relative humidity 85 %, no condensation
Storage temperature range from -40 °C to 70 °C

DALI Ambient Sensor

The DALI Ambient Sensor measures illuminance and Correlated Colour Temperature properties and uses a DALI bus for biasing and communication. It can be used as a simple sensor with its data being processed by another device on the same DALI bus, or as a combined sensor and control device to regulate the luminous output and colour temperature parameters of DALI addressed TunableWhite luminaires.

Connection



Height (m)	Diameter (m)
1,7	5,89
2	6,93
2,3	7,97
2,5	8,66
2,7	9,35
3	10,39
3,5	12,12
4	13,86

Parameter	Ranges of values	Settable by	Description
Address	1–64	Any DALI configurator	Address of the sensor
Illuminance level	100–30,000 lx	-	Measured illuminance value (read only)
CCT level	2500–8 000 K	-	Measured CCT value (read only)
Status	-	-	Status of the sensor (see below)
Timing	5–300 ms	USB/DALI Bridge	The defined period between two subsequent control commands (a lower value results in faster regulation)
Final illuminance level	100–30,000 lx	USB/DALI Bridge	Desired illuminance value
Final CCT level	2500–8000 K	USB/DALI Bridge	Desired CCT value
Illuminance regulation	Active / Inactive	USB/DALI Bridge	Activates or deactivates the illuminance regulation
CCT regulation	Active / Inactive	USB/DALI Bridge	Activates or deactivates the CCT regulation
Regulation mode	Cold/warm, Brightness/CCT, DALI type 8	USB/DALI Bridge	Defines the addressing of TW luminaires – it is possible to use more address types at the same time
Warm channel group address	1–16	USB/DALI Bridge	Defines group address for warm channel control
Cold channel group address	1–16	USB/DALI Bridge	Defines group address for cold channel control
Brightness channel group address	1–16	USB/DALI Bridge	Defines group address for brightness channel control
CCT channel group address	1–16	USB/DALI Bridge	Defines group address for CCT channel control
DALI type 8 group address	1–16	USB/DALI Bridge	Defines group address for DALI type 8 control



MAIN MENU



CONTROL MODE

TIME LINE



USER SETTING



General

Power consumption	max. 9W
Power input	12 VDC
Cooling system	fanless
Temp.-Range	0°C to 40°C

System Hardware

CPU	Texas Instruments AM3354, 720MHz
Memory	256 MB SDRAM
Flash	128 MB NAND FLASH
Networking	LAN 100BaseTX, Bluetooth, Wi-Fi
I/O	3xDALI (1xDALI internally powered - 250mA)

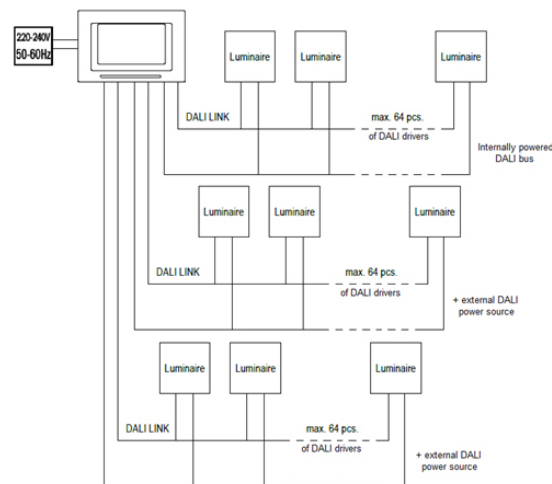
Display

Size	7"
LCD Type	TFT, Transmissive, Anti-Glare
Resolution	800x480, 262K colors
Viewing angle (H/V)	140 / 120 deg
Luminance	350 Cd/m ²
Contrast ratio	350:1
Touchscreen	Capacitive
Temp. Range	0°C to 40°C

DLS Touch Panel II

DLS TOUCH PANEL II is 7" touchscreen display which is suitable mainly for use in offices. It can be used also in classrooms, smaller manufacturing facilities and similar areas of application. DLS TOUCH PANEL II offers wide possibilities for Tunable White and RGB control. User can use pre-defined sequences or customize his own. Automatic control can be overridden by manual control at any time. Possibility of sensor connection makes the lighting installation even more intelligent by reacting to ambient light level changes and presence of people. DLS TOUCH PANEL II offers control of 3 DALI lines thus allowing for large lighting installation. Additionally DLS TOUCH PANEL II is DALI type 8 compatible.

Connection



Key features

- 2 modes: RGB and Dynamic white
- Manual or fully automatic control of light
- DALI type 8 support – up to 192 DALI type 8 devices
- Possibility of connecting up to 81 TW luminaires or 64 RGB luminaires
- 3 independent DALI lines – 1 internally powered, 2 externally powered
- User configurable time scheduler
- Possibility of connection light-level and movement sensor
- Energy saving solution
- Daylight simulation - bringing natural conditions into interior
- Security option – password protection of settings
- Simple and fast setting of colour with TW or RGB
- User friendly graphic interface
- User pre-settable screen savers
- Static scene pre-sets
- Dynamic scene pre-sets

Dimensions

