Datasheet Dali Controller
INT-202-D-01

The DALI Controller module acts as a master device, in accordance with the DALI standard, it enables the operation of 64 ballasts - Control Gears, connected to the DALI bus. The module allows you to control single ballasts, as well as control by groups, each ballast can be assigned to 16 groups. Thanks to this, it is much easier to organize the lighting control and create advanced control scenarios.

1. Parameters - DALI_MASTER

Characteristics:	
State	0 - no ballast configuration, 1 - DALI Discovery, 3 - ballast configuration is on the device, 4 - saving information about groups
NumberOfGear	Number of ballasts in the device configuration
GearAddresses	Ballast addresses given during DALI_Discovery. The feature value is refreshed after restart system
Methods:	
Identify	Turns on the luminaire for 2 seconds
ResetGear	Resets the ballast
SetLocalAddress	Sets the local address of the ballast
DALI_Discovery	Searching for ballasts connected to the DALI bus and assigning them local addresses. At the time of addressing, the ballast is turned on for 300 ms. No device operations should be performed during DALI_Discovery
SetDAPCValue	Sets the value of the power with which the luminaire shines. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SetGroupDAPCValue	Sets the value of the power with which the luminaire shines for a given group. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
GroupSwitchOn	Turns on the luminaire for a given group. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
GroupSwitchOff	Turns off the luminaire for a given group. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
Events:	
OnDALI_DiscoveryCompleated	Event occuring after the ballasts have been found and given local addresses

2. Parameters - PowerSupplyVoltage

Characteristics:	
Value	Current output value taking into account the scalar
Value%	Current percenatge input value of the maximum value (MaxValue characteristic)
Sensitivity	Minimum change of input state when the OnValueChange, OnValueLower or OnValueRise event is generated
MinValue	Minimum value of the Value characteristic after exceeding which the OnOutOfRange event is generated
MaxValue	Maximum value of the Value characteristic after exceeding which the OnOutOfRange event is generated
Methods:	
SetSensitivity	Sets input sensitivity value
SetMinValue	Sets MinValue
SetMaxValue	Sets MaxValue
Events:	
OnValueChange	Event resulting from changing input state
OnValueLower	Event occurs when a value lower than the value from the last reading appears at input
OnValueRise	Event occurs when a value higher than the value from the last reading appears at input
OnOutOfRange	Event resulting from exceeding the permissible range (MinValue : MaxValue)
OnInRange	Event occurs when value returns to MinValue/MaxValue range

3. Parameters - DALI_GEAR

Characteristics:	
Address	Ballast address
Group	Ballast group numbers, subsequent groups from the 1-16 range are given after the decimal point. 0 - no belonging to any group
DAPCValue	The value of the power with which the luminaire shines
Methods:	
Identify	Turns on the luminaire for 2 seconds
SetDAPCValue	Sets the value of the power with which the luminaire shines. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
Switch	Changes the luminaire state to the opposite (0 / 254). RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SwitchOn	Turns on the luminaire. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SwitchOff	Turns off the luminaire. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
Hold	Executes the function of illuminating / dimming the luminaire
HoldUp	Executes the function of illuminating the luminaire
HoldDown	Executes the function of dimming the luminaire
Events:	
OnDAPCValueChange	Event occuring when changing the DAPCValue
OnSwitchOn	Event occuring when the DAPCValue value is changed from 0 to the greater value
OnSwitchOff	Event occuring when the DAPCValue value is changed to 0

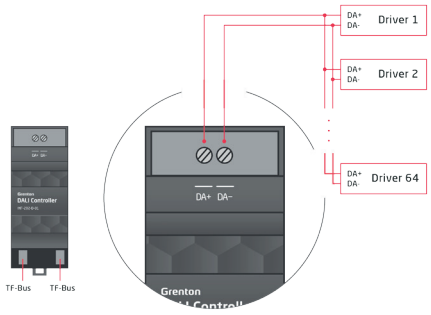
4. Parameters - DALI_GEAR_DT8

Characteristics:	
Address	Ballast address
Group	Ballast group numbers, subsequent groups from the 1-16 range are given after the decimal point. 0 - no belonging to any group
DAPCValue	The value of the power with which the luminaire shines
HSVValue	Brightness value as per the HSV model (range: 0.00-1.00)
HSVSaturation	Colour saturation value as per the HSV model (0.00-1.00)
HSVHue	Colour hue value as per the HSV model (0-360)
Methods:	
Identify	Turns on the luminaire for 2 seconds
SetDAPCValue	Sets the value of the power with which the luminaire shines. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
Switch	Changes the luminaire state to the opposite (0 / 254). RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SwitchOn	Turns on the luminaire. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SwitchOff	Turns off the luminaire. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
Hold	Executes the function of illuminating / dimming the luminaire
HoldUp	Executes the function of illuminating the luminaire
HoldDown	Executes the function of dimming the luminaire
SetHSVValue	Sets brightness value (0.00-1.00). RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SetHSVSaturation	Sets saturation value (0.00-1.00). RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SetHSVHue	Sets hue value (0-360). RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SetRGBValue	Sets the value of the R (Red), G (Green), B (Blue) channels. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SetWAFValue	Sets the value of the W (White) channel, and the A (Amber) and F (Freecolor) parameters. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
SetColourTemperature	Sets the color temperature value, where 0 - physical minimum, 100 - physical maximum. RampTime parameter set on a logarithmic scale 0.8 - 90 [s]
Events:	
OnDAPCValueChange	Event occuring when changing the DAPCValue
OnSwitchOn	Event occuring when the DAPCValue value is changed from 0 to the greater value
OnSwitchOff	Event occuring when the DAPCValue value is changed to 0

5. Technical data

Device power supply	24 V_{dc}
Maximum power consumption	2,2 W
Maximum device current	91 mA (for 24V_{dc})
Maximum number of addresses	64
Maximum number of group	16
Maximal DALI current	128 mA
Maximum wire cross section	2,5mm^2
Weight	55 g
Size [DIN]	2
Fixing	electrical box, rail DIN-3 / TH 35 / TS 35
Dimensions (H/W/D)	58/36/90 mm
Operating temperature range	0 to +45 °C
Standard	IEC 62386-102

6. Wiring diagram



DA+	DA+ Dali signal
DA-	DA- Dali signal

7. Module configuration

LED signaling
- The blue diode indicates the voltage on the DALI bus,
- The green diode indicates the current state of the module:
  - ON – no ballast configuration on module, DALI Discovery must be performed,
  - Flashes at 200 ms interval – DALI Discovery, the ballasts connected to the DALI bus are searched and local addresses assigned to them,
  - Flashes at 1 second interval – ballast configuration is on the module.

Adding a module to the project

After the CLU Discovery process has been executed, two objects appear in the project:
- DALI_MASTER - main object used to manage the module configuration,
- AnalogIN - object for monitoring the voltage on the system bus.

Ballast addressing

The module configuration should start with addressing the DALI ballasts connected to the bus. The DALI Controller enables two types of addressing: fully automatic or manual.

Automatic addressing allows you to address the entire installation with one click, using the DALI Discovery process.
- In the DALI_MASTER object in the Control tab, call the ResetGear (Broadcast) method and then the DALI_Discovery method,
- he method call initiates the automatic addressing of all ballasts on the bus, which will receive local addresses in the range 0 to 63. The assignment of an address will be confirmed by lighting the given luminaire for 300 ms. Please note that all existing addresses will be deleted when addressing is started. During DALI Discovery, addresses are assigned to the ballasts randomly,
- During DALI Discovery:
  - The green LED on the DALI Controller flashes at 200 ms interval,
  - The embedded feature State of the DALI_MASTER object takes the value 1.

The duration of the DALI Discovery depends on the number of ballasts (it can take up to several minutes for the maximum number of devices).

NOTE!

Do not perform any operations on the DALI Controller during DALI Discovery!

Manual addressing allows you to address individual ballasts using the SetLocalAddress method. It is helpful in the event that the ballast is not found after DALI Discovery, the address is doubled or we want a specific sequence of addresses in accordance with the assembly order.

In the DALI_MASTER object in the Control tab, call the SetLocalAddress method with the FindGear parameter set:
- WithoutLocalAddress - addressing process for a device without an address,
  - Address - new unoccupied address that will be given to the device,
- WithLocalAddress - addressing process for a device with a given address,
  - Address - new unoccupied address that will be given to the device,
- In both cases, the address assignment will be confirmed by lighting the given luminaire for 300 ms,
- During SetLocalAddress:
  - The green LED on the DALI Controller flashes at 200 ms interval,
  - The embedded feature State of the DALI_MASTER object takes the value 1.

NOTE!

Do not perform any operations on the DALI Controller during SetLocalAddress!

After the DALI Discovery
- The green LED on the DALI Controller flashes every 1 s (ballasts found) or is on continuously (no ballasts found),
- The embedded feature State of the DALI_MASTER object takes the value:
  - 3 - ballasts found,
  - 0 - no ballasts found,
- The embedded feature NumberOfGear of the DALI_MASTER returns the number of correctly found and addressed devices,
- The event OnDALI_DiscoveryCompleated is generated.

Operations possible on devices after DALI Discovery has ended

Using the methods of the DALI_MASTER object we can:
- Verify the device reporting to the given address - the Identify method,
- Restart the device at the given address - the ResetGear method,
- Set the value of the luminaire for the device at the given address - the SetDAPCValue method.

Adding ballasts to the project

After the ballast addressing process is completed with the DALI_Discovery and SetLocalAddress methods, CLU Discovery should be performed:
- New GEAR objects are added to the project to represent each DALI device (address) correctly found and added during the addressing process,
- The embedded GearAddresses feature of the DALI_MASTER object returns address numbers in the range 0 - 63, occupied by DALI devices,
- GEAR objects are in the DALI_GEAR and DALI_GEAR_DT8 - Device Type 8 versions:
  - DALI_GEAR - all ballasts with basic control methods,
  - DALI_GEAR_DT8 - ballasts for color control (RGBWA control mode) or color temperature (Tc control mode).

NOTE!

For correct operation of GEAR configuration and objects, CLU Discovery should be performed after each change in ballast addressing!

Ballast control

The control of a single ballast is carried out using a given DALI_GEAR DALI_GEAR_DT8 object using available methods or using the methods of the DALI_MASTER object (detailed functionalities can be found in the description of individual objects).

The ballast groups are controlled by the DALI_MASTER object using the SetGroupDAPCValue, GroupSwitchOn, GroupSwitchOff methods. In order to be able to control a given group of devices, it is necessary to:
- For the desired GEAR objects, set the value of the embedded feature Group. Each object can be assigned to 16 groups in the range 1 - 16, the next groups are given after a decimal point,
- After assigning objects to groups, send the configuration to CLUZ,
- After sending the configuration, the groups are sent by the DALI Controller. Embedded feature State of the DALI_MASTER object takes the value 4. The duration of the process depends on the number of devices for which the value of the Group feature has been changed, it can last up to 60 seconds,
- After correct grouping, the embedded feature of the DALI_MASTER object takes the value 3.

NOTE!

When assigning groups (after CLUZ restart / configuration sending) it is not possible to control the objects!

RampTime

The DALI Controller supports the smooth change of the DAPC-Value value using the RampTime parameter, in a logarithmic manner:

RampTime	Minimum fade time [s]	Nominal fade time [s]	Maximum fade time [s]
1	0,6	0,7	0,8
2	0,9	1,0	1,1
3	1,3	1,4	1,6
4	1,8	2,0	2,2
5	2,5	2,8	3,1
6	3,6	4,0	4,4
7	5,1	5,7	6,2
8	7,2	8,0	8,8
9	10,2	11,3	12,4
10	14,4	16,0	17,6
11	20,4	22,6	24,9
12	28,8	32,0	35,2
13	40,7	45,3	49,8
14	57,6	64,0	70,4
15	81,5	90,5	99,6

8. Warnings and cautionary statements

ATTENTION !

● Before proceeding with the assembly, read the installation schematics and full instructions available at www.grenton.com. Failure to follow the guidelines contained in the instructions and other requirements of due care valid as a result of the nature of the equipment (device) may be dangerous to life / health, damage the device or installation to which it is connected, damage other property or violate other applicable regulations. The manufacturer of the device, Grenton Sp. z o. o. does not bear any responsibility for the damage (property and non-property related) resulting from the assembly and / or use of the equipment not in accordance with the instructions and / or due diligence in handling the equipment (device).
● Device power supply, permissible load or other characteristic parameters have to be in accordance with the device specification, described in particular in the "Technical data" section.
● The product is not intended for children and animals.
● If you have technical questions or comments about the device operation, contact Grenton Technical Support.
● Answers to frequently asked questions can be found at: www.support.grenton.pl

DANGER !

● Danger to life caused by electric current!
● The components of the installation (individual devices) are designed to work in a home electrical installation or directly in its vicinity. Incorrect connection or use may cause a fire or electric shock.
● All work related to the installation of the device, in particular works involving interference in the electrical installation, may be performed only by a person with appropriate qualifications or licences.
● When installing the device, make sure that the power supply voltage is disconnected from the circuit in which the device is connected or near which the assembly takes place.

9. CE marking

The manufacturer declares that the device is in full compliance with the requirements of EU legislation that includes the directives of a new approach appropriate for this equipment. In particular, Grenton Sp. z o. o. declares that the device fulfills the requirements on safety, specified by law, and that it conforms to the national regulations that implement the appropriate directives: The Directive on the electromagnetic compatibility (EMC - 2014/30/UE), the Low Voltage Directive (LVD 2014/35/UE) and the Directive on the limitation of the use of specific substances in electrical and electronic equipment (RoHS II - 2011/65/UE).

10. Warranty

Warranty available at: www.grenton.com/warranty

11. Manufacturer contact details

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