

Intesis DALI-2 Protocol Translator with Serial and IP Support - 1 DALI Channel

IN703DAL0640000 GATEWAY

USER MANUAL

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1. Description and Order Codes

IN703DAL0640000 Gateway.

DALI-2 to Modbus TCP & RTU or BACnet/IP & MS/TP Server Application with 1 DALI Channel.

ORDER CODE	INTESIS MAPS TEMPLATE	APPLICATION
IN703DAL0640000	IN-MBS-DALI-64	Intesis DALI to Modbus Server Gateway
	IN-BAC-DALI-64	Intesis DALI to BACnet Server Gateway

LEGACY ORDER CODES
INBACDAL0640200 / INMBSDAL0640200

2. General Information

2.1. Intended Use of the User Manual

This manual contains the main features of this Intesis gateway and the instructions for its appropriate installation, configuration, and operation.

The contents of this manual should be brought to the attention of any person who installs, configures, or operates this gateway or any associated equipment.

Keep this manual for future reference during the installation, configuration, and operation.

2.2. General Safety Information



IMPORTANT

Follow these instructions carefully. Improper work may seriously harm your health and damage the gateway and/or any other equipment connected to it.

Only technical personnel, following these instructions and the country legislation for installing electrical equipment, can install and manipulate this gateway.

Install this gateway indoors, in a restricted access location, avoiding exposure to direct solar radiation, water, high relative humidity, or dust.

All wires (for communication and power supply, if needed) must only be connected to networks with indoor wiring. All communication ports are considered for indoor use and must only be connected to SELV circuits.

Disconnect all systems from power before manipulating and connecting them to the gateway.

Use a circuit breaker before the power supply. Rating: 250 V, 6 A.

Respect the expected polarity of power and communication cables when connecting them to the gateway.

2.3. Admonition Messages and Symbols



DANGER

Instructions that must be followed to avoid an imminently hazardous situation that, if not avoided, will result in death or severe injury.



WARNING

Instructions that must be followed to avoid a potentially hazardous situation that, if not avoided, could result in death or severe injury.



CAUTION

Instruction that must be followed to avoid a potentially hazardous situation that, if not avoided, could result in minor or moderate injury.

**IMPORTANT**

Instruction that must be followed to avoid a risk of reduced functionality and/or damage to the equipment or to avoid a network security risk.

**NOTE**

Additional information which may facilitate installation and/or operation.

**TIP**

Helpful advice and suggestions.

**NOTICE**

Remarkable Information.

3. Overview

This IN703DAL0640000 gateway supports two applications.

Gateway's client interface	↔	Gateway's server interface
DALI	to	BACnet/IP and MS/TP
		Modbus TCP and RTU

 **IMPORTANT**
This document assumes that the user is familiar with these technologies.

Figure 1. Integration of DALI devices into BACnet/IP or BACnet MS/TP installations

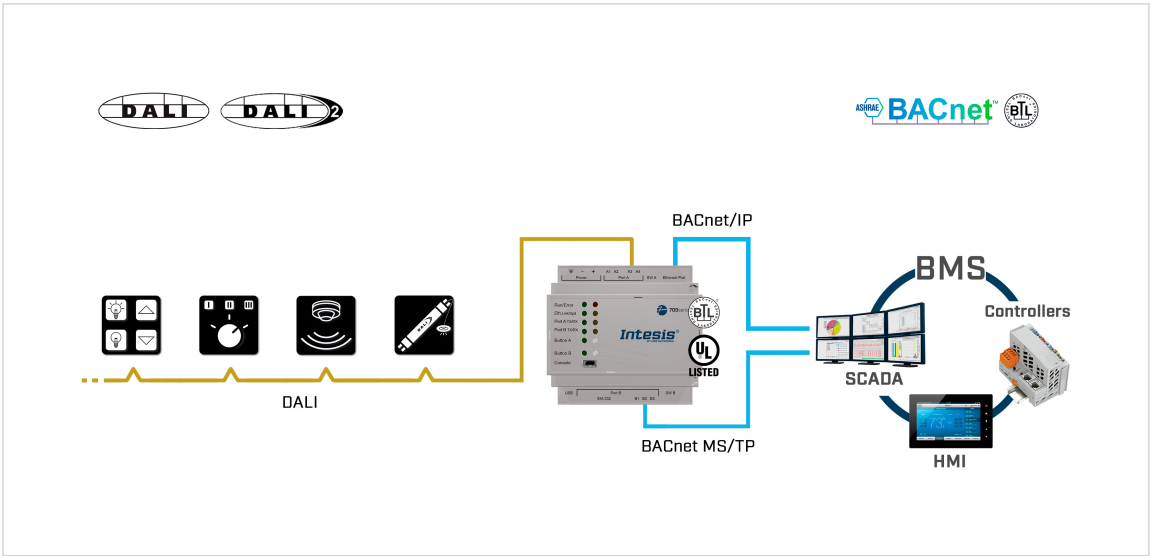
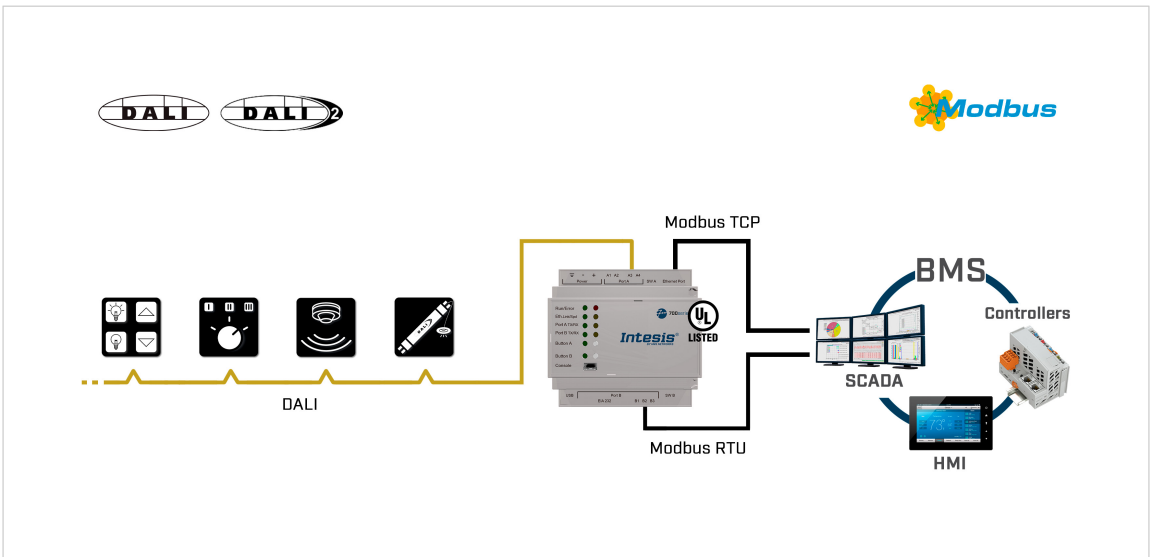


Figure 2. Integration of DALI devices into Modbus TCP or Modbus RTU installations



3.1. Inside the Package

Items included:

- Intesis IN703DAL0640000 gateway
- USB Mini-B type to USB Type-A cable
- Installation Sheet

3.2. Main Features

- DALI-2 certified
- UL certified
- BTL certified
- Two applications available: DALI to BACnet/IP or MS/TP and DALI to Modbus TCP or RTU
- New color control allows the BMS to control RGB channels and the tunable white function for human centric lighting (HCL)
- New DALI data feature allows the obtaining of energy and diagnostic data directly from the luminaire
- New DALI local control allows push buttons, absolute inputs, and occupancy and light sensor control from the gateway itself
- BACnet advanced features available (calendars, schedules, trend logs, etc.)
- BACnet explorer function: Scan the network to find all BACnet devices and objects
- Multiple ports:
 - Pluggable terminal block for DALI (2 poles)
 - Ethernet
 - Pluggable terminal block for EIA-485 (3 poles)
 - DB9M for EIA-232
 - USB Type-A 2.0 port for flash drive
 - USB Mini-B type 2.0 port for connection to the PC
- DIN rail mounting housing
- 10000 signals of capacity
- DIP switches for termination and polarization configuration
- Configurable with Intesis user-friendly software tool (Intesis MAPS)
- 10 LED indicator matrix

3.3. General Functionality

This Intesis IN703DAL0640000 gateway enables data exchange between installations and devices based on the DALI protocol and control systems based on BACnet or Modbus.

To do so, the gateway is continuously aware of both sides: the control system (supervisor, BMS, client device, etc.) and the DALI installations or devices to be integrated. The gateway obtains updated readings for the points configured in it. With every read, the new values are updated in the gateway's memory and become available for the control system side. When a change in any point configured as output in the gateway is detected (that is, written from the control system side), the corresponding action in the DALI device is performed.

3.4. Gateway Capacity

Table 1. For DALI-2 to BACnet server

Supported elements	BACnet
Maximum number of independent DALI channels	1
Maximum number of DALI ECG addresses per line	64
Maximum number of DALI input devices per line	64 ¹
Maximum number of instances per input device	10
Maximum number of signals per gateway	10000 ²
DALI guaranteed current	230 mA

Table 2. For DALI-2 to Modbus server

Supported elements	Modbus
Maximum number of independent DALI channels	1
Maximum number of DALI ECG addresses per line	64
Maximum number of DALI input devices per line	64 ¹
Maximum number of instances per input device	10
Maximum number of simultaneous incoming sockets at Modbus TCP side	6
Maximum number of signals per gateway	10000 ²
DALI guaranteed current	230 mA



NOTE

¹ We recommend limiting this number to 16 when integrating push buttons. Realize that push buttons with several instances consume several signals.

The maximum number of DALI devices (ECGs and/or input devices) depends on the sum of the specific devices' current consumption. The gateway supplies 230 mA to the bus to power the DALI devices, so if each input device (sensor) in the bus consumes 5 mA, then we can connect 63 ECGs (the standard defines the maximum consumption allowed for these devices is 2 mA) and 16 sensors.

$$63 \text{ ECGs} * 2 \text{ mA} + 16 \text{ sensors} * 5 \text{ mA} = 206 \text{ mA} < 230 \text{ mA} * 90\%$$

As the standard recommends, don't use the guaranteed current to calculate the maximum number of DALI devices, but leave 10% of the current for future expansion or tolerances.

² This is the gateway's total number of signals regardless of whether they are ECGs, sensors, groups, etc.

3.5. DALI Supported Device Types

Name	Part	Device type
Fluorescent lamp	201	0
Self-contained emergency lighting	202	1
LED module	207	6
Color control	209	8
Energy data	252	51
Diagnostics and maintenance data	253	52

Consult all signals and their characteristics in [Available Applications \(page 19\)](#).

4. Hardware

4.1. Mounting



IMPORTANT

Before mounting, please ensure that the chosen installation place preserves the gateway from direct solar radiation, water, high relative humidity, or dust.



IMPORTANT

Ensure the gateway has sufficient clearances for all connections when mounted. See [Dimensions](#).



NOTE

Mount the gateway over a DIN rail, preferably inside a grounded metallic industrial cabinet.

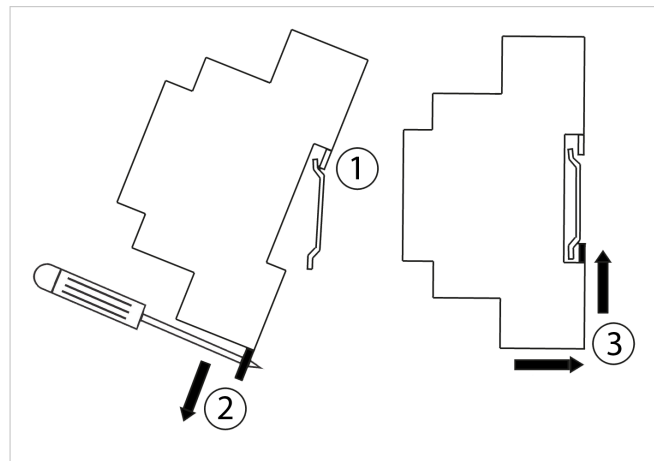
DIN rail mounting

1. Fit the gateway's top-side clips in the upper edge of the DIN rail.
2. Press the low side of the gateway gently to lock it in the DIN rail.
3. Make sure the gateway is firmly fixed.



NOTE

For some DIN rails, to complete step 2, you may need a small screwdriver or similar to pull the bottom clip down.



4.2. Connection



CAUTION

Disconnect all systems from power before manipulating and connecting them to the gateway.

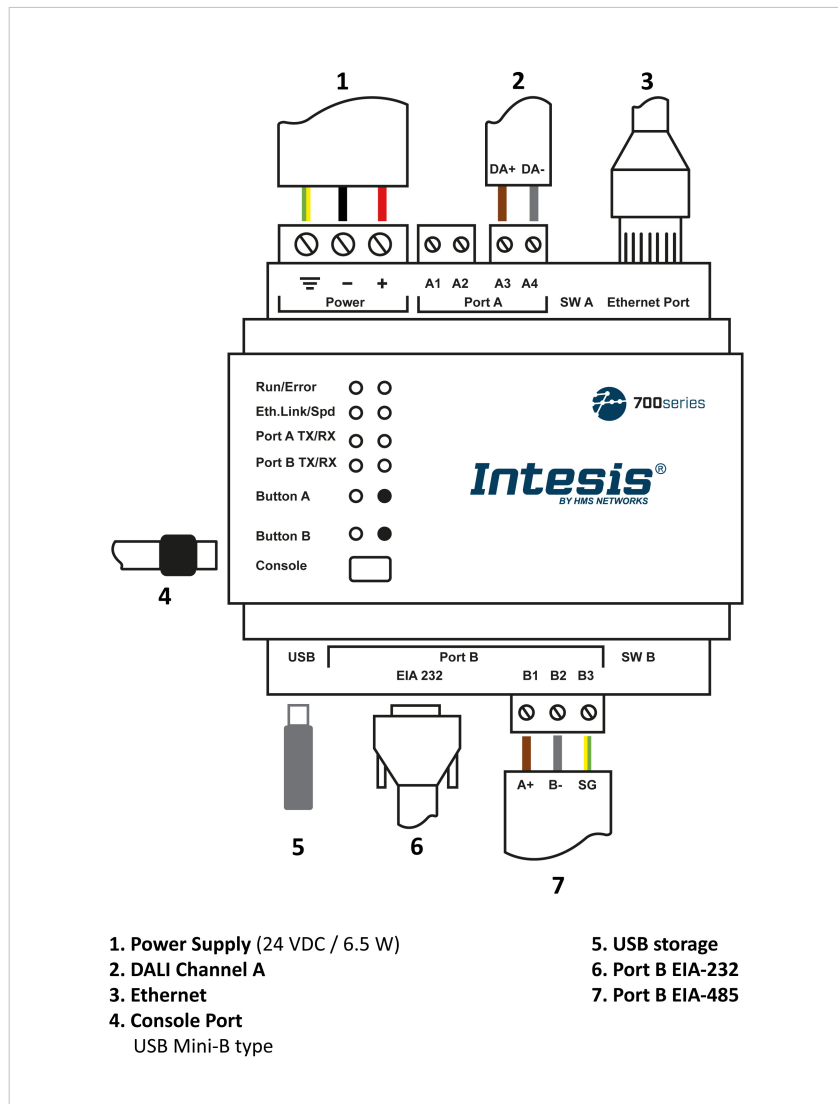


IMPORTANT

Keep communication cables away from power and ground wires.

4.2.1. Gateway Connectors

Figure 3. Wiring diagram



Connectors' wiring:**IMPORTANT**

For all connectors, use solid or stranded wires (twisted or with ferrule).

Cross-section/gauge per terminal:

- One core: 0.2 .. 2.5 mm² / 24 .. 11 AWG
- Two cores: 0.2 .. 1.5 mm² / 24 .. 15 AWG
- Three cores: Not permitted

Communication ports:

PORT	USAGE	WIRING			
Port A	DALI bus	A1: N/A	A2: N/A	A3: DA+	A4: DA-
Ethernet	As a TCP/IP port: BACnet/IP and Modbus TCP As a console port: Connection to a PC for configuration purposes	Ethernet cable (CAT5 or higher)			
Port B EIA-485	BACnet MS/TP and Modbus RTU	B1: A+	B2: B-	B3: SG	
Port B EIA-232	Modbus RTU	DB9 connector Only lines RX, TX, and Ground (corresponding to pins 2, 3, and 5) are used			
Console	Connection to a PC for configuration purposes	USB Mini-B type			

USB port:

USB Type-A 2.0 connector for saving logs into a USB flash drive.

**IMPORTANT**

This USB connector does not support HDD devices.

Power supply:**IMPORTANT**

The gateway's power supply is disabled by default to prevent the risk of having two power supplies at the same time in the DALI bus.

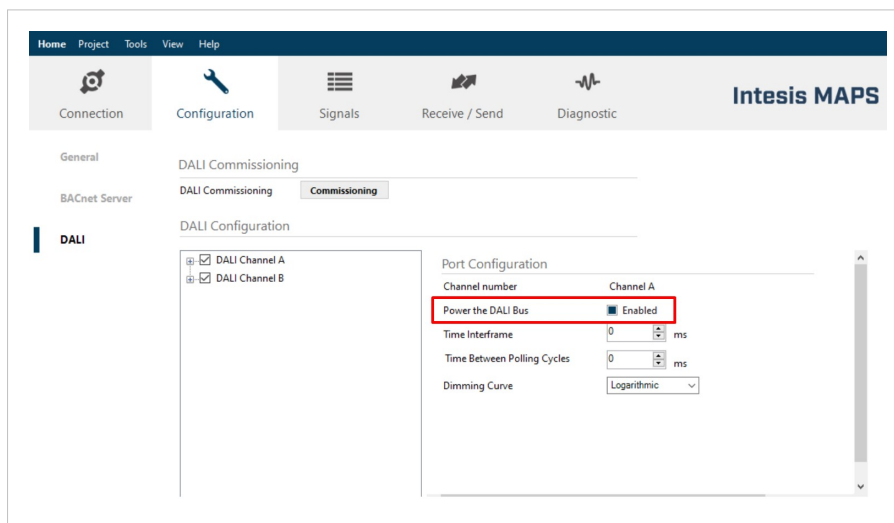
You can enable/disable the power supply with Intesis MAPS (see the figure below). Take into account that this parameter is enabled by default.

If you are powering the bus with an external power supply, ensure to comply with the following:

- It is a DALI-2 standard power supply certified under the DiiA guidelines.
- Polarity in the DALI bus is the same for both the gateway and the external power supply.
- Be sure you are following the standard DALI guidelines for bus powering.

If the DALI bus is not powered, there will be no communication and an error will appear when testing the hardware.

Figure 4. Gateway's power supply enabling parameter



The gateway's power supply is enabled/disabled from the DALI Channel root in the tree view

**NOTE**

If you change the status of the **Power the DALI Bus** parameter, send the project to the gateway through the **Receive/Send** tab to apply the new status.

The power supply connector is a green pluggable terminal block (three poles) labeled as **Power**.

Power rating: 24 VDC ($\pm 10\%$), 6.5 W.

**IMPORTANT**

- Use SELV-rated NEC class 2 or limited power source (LPS) power supply.
- Respect the polarity.
- Connect the gateway's ground terminal  to the installation grounding.
- A wrong connection may cause earth loops and damage the Intesis gateway and/or other system equipment.

4.2.2. Connection Procedure for DALI

Connect the DALI channel to the gateway's **Port A** using its **A3** and **A4** terminal connectors.

4.2.3. Connection Procedure for Modbus

For Modbus TCP:

Connect the Modbus TCP Ethernet cable to the gateway's **Ethernet Port**. The correct cable to use depends on where the gateway is connected:

- **Connecting directly to a Modbus TCP device:** use a crossover Ethernet UTP/FTP CAT5 or higher cable.
- **Connecting to a hub or switch of the LAN of the building:** use a straight Ethernet UTP/FTP CAT5 or higher cable.

**NOTE**

Some devices detect the difference automatically and adjust themselves.

**NOTE**

When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. During that time, if there is a DHCP server, an IP address will be automatically assigned to the gateway. If there is no DHCP, you can type an IP address of your choice. After that time, the default IP address 192.168.100.246 will be automatically set.

**IMPORTANT**

If communicating through the LAN of the building, contact the network administrator and make sure traffic on the used port is allowed through all LAN paths.

For Modbus RTU:**NOTE**

You can use either **EIA-485** or **EIA-232 Port B** connectors for this kind of connection. See [Gateway Connectors](#).

Using the EIA-485 connector:

Connect the Modbus RTU communication cable to the gateway's EIA-485 connector of **Port B**.

The connector for the EIA-485 bus is a green pluggable terminal block labeled **B1**, **B2**, and **B3**.

- **B1**: A+
- **B2**: B-
- **SG**: Signal ground

**IMPORTANT**

Observe polarity.

**IMPORTANT**

Remember the characteristics of the standard EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A 120 ohms (Ω) termination resistor is needed at each end of the bus. The gateway has an internal bus biasing circuit already incorporating the termination resistor. It can be enabled using the DIP switch block (**SW A**) dedicated to the **EIA-485** port:

Position 1

- ON: 120 Ω termination active.
- OFF: 120 Ω termination inactive.

Positions 2 and 3

- ON: Polarization active.
- OFF: Polarization inactive.

For further details, see [DIP Switches \(page 15\)](#).

**IMPORTANT**

When installing the gateway at the end of the bus with the termination resistor enabled, do not install an additional termination resistor at that end.

Using the EIA-232 connector:

Connect the Modbus RTU communication cable to the gateway's EIA-232 connector of **Port B**.

The connector for the EIA-232 bus is a DB9 male (DTE) connector.

**NOTE**

Only lines RX, TX, and Ground (corresponding to pins 2, 3, and 5) are used.

**IMPORTANT**

Respect the maximum distance of 15 meters.

4.2.4. Connection Procedure for BACnet

For BACnet/IP:

Connect the BACnet/IP Ethernet cable to the gateway's **Ethernet Port**. The correct cable to use depends on where the gateway is connected:

- **Connecting directly to a BACnet/IP device:** use a crossover Ethernet UTP/FTP CAT5 or higher cable.
- **Connecting to a hub or switch of the LAN of the building:** use a straight Ethernet UTP/FTP CAT5 or higher cable.

**NOTE**

Some devices detect the difference automatically and adjust themselves.

**NOTE**

When commissioning the gateway for the first time, DHCP will be enabled for 30 seconds. During that time, if there is a DHCP server, an IP address will be automatically assigned to the gateway. If there is no DHCP, you can type an IP address of your choice. After that time, the default IP address 192.168.100.246 will be automatically set.

**IMPORTANT**

If communicating through the LAN of the building, contact the network administrator and make sure traffic on the used port is allowed through all LAN paths.

For BACnet MS/TP:

Connect the BACnet MS/TP communication cable to the gateway's EIA-485 connector of **Port B**.

The connector for the EIA-485 bus is a green pluggable terminal block labeled **B1**, **B2**, and **B3**.

- **B1:** A+
- **B2:** B-
- **SG:** Signal ground



IMPORTANT

Observe polarity.



IMPORTANT

Remember the characteristics of the standard EIA-485 bus:

- Maximum distance of 1200 meters (0.75 miles).
- Maximum of 32 devices connected to the bus.
- A termination resistor of 120 ohms (Ω) is needed at each end of the bus. The gateway has an internal bus biasing circuit already incorporating the termination resistor. It can be enabled using the DIP switch block dedicated to the EIA-485 port:

Position 1

- ON: 120 Ω termination active.
- OFF: 120 Ω termination inactive.

Position 2 and 3

- ON: Polarization active.
- OFF: Polarization inactive.

For further details, see [DIP Switches \(page 15\)](#).



IMPORTANT

When installing the gateway at the end of the bus with the termination resistor enabled, do not install an additional termination resistor at that end.

4.2.5. Connection to a PC for Configuration

Use the supplied USB Mini-B type to USB Type-A cable to connect the gateway through its **Console** port to a PC to configure it with Intesis MAPS.



NOTE

You can use the **Ethernet Port** to connect the gateway and the PC instead.



NOTE

Find all you need to know about the gateway configuration and Intesis MAPS in the [Intesis MAPS Configuration Guide for IN703DAL0640000](#).

4.3. LED Indicators

On the front side, ten LEDs indicate the different status of the gateway:

LED	Color	Description
Run	Off	No power
	Green	The gateway is connected and running
Error	Off	No error
	Red	Error
Eth. Link	Off	No connection
	Green	Connection established
Eth. Spd	Off	No transmission
	Yellow	Transmitting data
Port A TX/RX	Off	No activity
	TX blinking green	Data packet transmitted to the DALI network
	RX blinking yellow	Data packet received from the DALI network
Port B TX/RX	Off	No activity
	TX blinking green	Data packet transmitted to the BACnet or Modbus network
	RX blinking yellow	Data packet received from the BACnet or Modbus network
LED for Button A	Red	This LED turns to steady red for 30 seconds when you press Button A
LED for Button B <i>For the DALI-2 to BACnet application only</i>	Green	Link with BACnet/IP established
	Off	Button B has been pressed

4.4. DIP Switches

The gateway has two DIP switches:

- DIP switch A (SW A)
- DIP switch B (SW B)

Each DIP switch is dedicated to a 485 port, and its function is to activate or deactivate the termination resistor and the polarization of each port:

Position			Description
1	2	3	
↑	X	X	120 Ω termination active
↓	X	X	120 Ω termination inactive (default position)
X	↑	↑	Polarization active (default position)
X	↓	↓	Polarization inactive

4.5. Buttons

Button A

Press the button once to broadcast a RECALL_MAX_LEVEL for 30 seconds. Press the button again to broadcast an OFF.



NOTE

When having a pen drive connected to the gateway's USB connector, press button A to save the project or/and the logs to the pen drive.

This behavior can be configured through Intesis MAPS. To know more, see the [Intesis MAPS User manual for IN703DAL0640000](#).

Button B

Press the button once to send an I-Am message to the network.



NOTICE

This function for button B only applies to the DALI to BACnet application.



NOTE

When having a pen drive connected to the gateway's USB connector, press button B to download a project or/and a firmware version from the pen drive to the gateway.

The gateway will download the last saved project. The project/firmware must be located in the pen drive root memory, not inside a folder. This function of button B applies to BACnet and Modbus.

This behavior can be configured through Intesis MAPS. To know more, see the [Intesis MAPS User manual for IN703DAL0640000](#).

Button A + button B

Follow this procedure to reset the gateway to the factory settings:

1. Reboot the gateway.



NOTE

To reboot the gateway, disconnect it from the power supply and connect it again.

2. Keep both buttons pressed simultaneously while rebooting the gateway.
3. After 5-10 seconds, all LEDs will light up and out in a cycle from top to bottom.
4. Release the buttons.
5. The LEDs cycle can take up to 90 seconds until the process finishes.

4.6. Technical Specifications

Housing	Material: Plastic, type PC (UL 94 V-0) Color: Light grey (RAL 7035) Net dimensions: 99 x 88 x 56 mm / 3.89 x 3.46 x 2.20"	
Mounting	DIN rail EN 60715 TH35	
Wiring	Cross-section/gauge per terminal: One core: 0.2 .. 2.5 mm ² (24 .. 11 AWG) Two cores: 0.2 .. 1.5 mm ² (24 .. 15 AWG) Three cores: Not permitted Use solid wires or stranded wires (twisted or with ferrule).	
Power supply	1 x Green pluggable terminal block (three poles) 24 VDC ±10%, 6.5 W Connect the ground terminal (⏏) to the installation grounding	
Port A	1 x Green pluggable terminal block (two poles: A1, A2): Not used 1 x Orange pluggable terminal block (two poles) for DALI: A3: DA+ A4: DA- DALI guaranteed current: 230 mA DALI maximum current: 250 mA Voltage rating: 16 VDC 1500 VDC isolation from other ports	
Ethernet	1 x Ethernet RJ45 10/100BASE-T	
Port B EIA-485	1 x Green pluggable terminal block (three poles): B1: A+ B2: B- B3: SG 1500 VDC isolation from other ports (except Port B EIA-232)	
Port B EIA-232	1 x DB9 male connector 1500 VDC isolation from other ports (except Port B EIA-485)	
USB port	USB A type 2.0 connector Flash drives only (HDD not supported) Power consumption limited to 150 mA	
Console port	USB Mini-B type 2.0 connector	
Battery	Type: Manganese Dioxide Lithium button battery Size: 20 mm x 3.2 mm (0.79" x 0.13") Capacity: 3 V, 255 mA	
Buttons	2 x Push buttons Button A Button B	
LED indicators	10 x LEDs for gateway and communication status 2 x Run (Power/Error) 2 x Ethernet Link/Speed 2 x Port A TX/RX	2 x Port B TX/RX 1 x Button A indicator 1 x Button B indicator
DIP switches SW A / SW B	2 x DIP switch blocks for EIA-485 serial port configuration: DIP switch A (SW A): Not used DIP switch B (SW B): Position 1: On: 120 Ω termination active Off: 120 Ω termination inactive Position 2 and 3: On: Polarization active Off: Polarization inactive	

Operational conditions

Temperature: 0 .. 50°C / 32 .. 140°F
Humidity: 5 .. 95% (No condensation)

4.7. Dimensions

- **Net dimensions (DxWxH)**

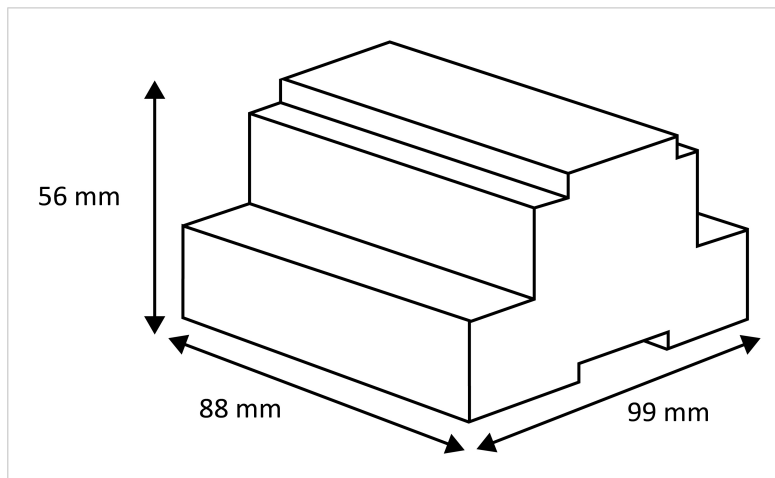
Millimeters: 99 x 88 x 56 mm

Inches: 3.89 x 3.46 x 2.20"



IMPORTANT

Leave enough clear space to wire the gateway easily and for the subsequent manipulation of elements such as connectors, DIP switches, etc.



5. Available Applications



NOTE

Signals marked as *Optional signals* are supported by the gateway but may not be supported by the server devices of the installation. Please refer to the technical documentation of each server device to know which signals they support.

5.1. DALI to BACnet/IP and MS/TP



NOTICE

Consult the Protocol Implementation Conformance Statement (PICS) document at <https://www.intesis.com/docs/bacnet-server-pic-statement>.

5.1.1. BACnet Objects



NOTE

For a complete gateway configuration guide, please refer to the [Intesis MAPS User manual for IN703DAL0640000](#).

Table 3. All ballasts

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Ballast / Lamp Failure	0: OK 1: Ballast / Lamp Failure	3-Binary Input	$7000*y+(100*xx)+0$	R
Uyxx_Update All ECG Status	0: Update Finished 1: Trigger Update	3-Binary Input	$7000*y+(100*xx)+0$	RW
Uyxx_Ballast Status	b7: PwrCycle b6: MissShAdd b5: ResetSt b4: FadeRun b3: BallLimErr b2: LampPwrOn b1: LampFail b0: BalFail	0-Analog Input	$7000*y+(100*xx)+0$	R
Uyxx_Actual Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+1$	R
Uyxx_Device Type	0: Fluorescent 1: Emergency 6: LED 8: Color control	0-Analog Input	$7000*y+(100*xx)+2$	R
Uyxx_Physical Minimum Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+3$	R
Uyxx_Min Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+4$	R
Uyxx_Max Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+5$	R
Uyxx_Power On Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+6$	R
Uyxx_System Failure Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+7$	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Fade Time	0 .. 15	0-Analog Input	$7000*y+(100*xx)+8$	R
Uyxx_Fade Rate	1 .. 15	0-Analog Input	$7000*y+(100*xx)+9$	R
Uyxx_Arc Power Level	0 .. 100%	1-Analog Output	$7000*y+(100*xx)+0$	RW
Uyxx_Arc Power Off / On	0: Off 1: 100%	4-Binary Output	$7000*y+(100*xx)+0$	RW
Uyxx_Step Down / Up	0: Step Down 1: Step Up	4-Binary Output	$7000*y+(100*xx)+1$	RW
Uyxx_Recall Min Level	1: Recall Min Level	4-Binary Output	$7000*y+(100*xx)+2$	W (T)
Uyxx_Recall Max Level	1: Recall Max Level	4-Binary Output	$7000*y+(100*xx)+3$	W (T)
Uyxx_Go To Scene	0 .. 15	1-Analog Output	$7000*y+(100*xx)+1$	RW
Uyxx_Store Current Level as Scene	0 .. 15	1-Analog Output	$7000*y+(100*xx)+2$	RW
Uyxx_Clear/Remove Scene	0 .. 15	1-Analog Output	$7000*y+(100*xx)+3$	RW
Uyxx_Add to DALI Group	0 .. 15	1-Analog Output	$7000*y+(100*xx)+10$	RW
Uyxx_Remove from DALI Group	0 .. 15	1-Analog Output	$7000*y+(100*xx)+11$	RW
Uyxx_Set Fade Time	0 .. 15	1-Analog Output	$7000*y+(100*xx)+4$	RW
Uyxx_Set Fade Rate	1 .. 15	1-Analog Output	$7000*y+(100*xx)+5$	RW
Uyxx_Set Min Level	0 .. 100%	1-Analog Output	$7000*y+(100*xx)+6$	RW
Uyxx_Set Max Level	0 .. 100%	1-Analog Output	$7000*y+(100*xx)+7$	RW
Uyxx_Set Power-on Level	0 .. 100%	1-Analog Output	$7000*y+(100*xx)+8$	RW
Uyxx_Set System-failure Level	0 .. 100%	1-Analog Output	$7000*y+(100*xx)+9$	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Table 4. DALI groups - All ballasts

Object name	Possible values	Object type	Object instance	R/W
Gyxx_Arc Power Level	0 .. 100%	1-Analog Output	$7000*y+(20*xx)+6400$	RW
Gyxx_Arc Power Off / On	0: Off 1: 100%	4-Binary Output	$7000*y+(20*xx)+6400$	RW
Gyxx_Step Down / Up	0: Step Down 1: Step Up	4-Binary Output	$7000*y+(20*xx)+6401$	RW
Gyxx_Recall Min Level	1: Recall Min Level	4-Binary Output	$7000*y+(20*xx)+6402$	W
Gyxx_Recall Max Level	1: Recall Max Level	4-Binary Output	$7000*y+(20*xx)+6403$	W
Gyxx_Go to Scene	0 .. 15	1-Analog Output	$7000*y+(20*xx)+6401$	RW
Gyxx_Store Current Level as Scene	0 .. 15	1-Analog Output	$7000*y+(20*xx)+6402$	RW
Gyxx_Clear/Remove Scene	0 .. 15	1-Analog Output	$7000*y+(20*xx)+6403$	RW
Gyxx_Set Fade Time	0 .. 15	1-Analog Output	$7000*y+(20*xx)+6404$	RW
Gyxx_Set Fade Rate	1 .. 15	1-Analog Output	$7000*y+(20*xx)+6405$	RW
Gyxx_Set Min Level	0 .. 100%	1-Analog Output	$7000*y+(20*xx)+6406$	RW
Gyxx_Set Max Level	0 .. 100%	1-Analog Output	$7000*y+(20*xx)+6407$	RW
Gyxx_Set Power-on Level	0 .. 100%	1-Analog Output	$7000*y+(20*xx)+6408$	RW
Gyxx_Set System-failure Level	0 .. 100%	1-Analog Output	$7000*y+(20*xx)+6409$	RW
Gyxx_Group Daylight active	0: Inactive 1: Active	0-Analog Input	$7000*y+(20*xx)+6400$	RW
Address formula: y: Line channel (0) xx: Group number (0 .. 15)				

Table 5. Broadcast - All ballasts

Object name	Possible values	Object type	Object instance	R/W
By_Arc Power Level	0 .. 100%	1-Analog Output	7000*y+6800	RW
By_Arc Power Off / On	0: Off 1: 100%	4-Binary Output	7000*y+6800	RW
By_Step Down / Up	0: Step Down 1: Step Up	4-Binary Output	7000*y+6801	RW
By_Recall Min Level	1: Recall Min Level	4-Binary Output	7000*y+6802	W (T)
By_Recall Max Level	1: Recall Max Level	4-Binary Output	7000*y+6803	W (T)
By_Go to Scene	0 .. 15	1-Analog Output	7000*y+6801	RW
By_Store Current Level as Scene	0 .. 15	1-Analog Output	7000*y+6802	RW
By_Clear/Remove Scene	0 .. 15	1-Analog Output	7000*y+6803	RW
By_Set Fade Time	0 .. 15	1-Analog Output	7000*y+6804	RW
By_Set Fade Rate	1 .. 15	1-Analog Output	7000*y+6805	RW
By_Set Min Level	0 .. 100%	1-Analog Output	7000*y+6806	RW
By_Set Max Level	0 .. 100%	1-Analog Output	7000*y+6807	RW
By_Set Power_on Level	0 .. 100%	1-Analog Output	7000*y+6808	RW
By_Set System-failure Level	0 .. 100%	1-Analog Output	7000*y+6809	RW
Address formula: y: Line channel (0)				

Table 6. Emergency ballasts (Type 1)

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Failure Status	b7: FunctFail b6: DurFail b5: DurTestDelay b4: FunctTestDelay b3: EmLampFail b2: BattFail b1: BattDurFail b0: CircFail	0-Analog Input	7000*y+(100*xx)+15	R
Uyxx_Emergency Mode	b7: HardSwOn b6: HardInhibit b5: DurTestProg b4: FunctTestProg b3: ExtdEmMode b2: EmMode b1: NormMode b0: RestMode	0-Analog Input	7000*y+(100*xx)+16	R
Uyxx_Emergency Status	b7: PhysicSel b6: Ident b5: DurTestPend b4: FunctTestPend b3: BattFull b2: DurTestDone b1: FunctTestDone b0: InhibitMode	0-Analog Input	7000*y+(100*xx)+17	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Emergency Battery Charge	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+18$	R
Uyxx_Next Function Test	0 .. 16384 hours	0-Analog Input	$7000*y+(100*xx)+19$	R
Uyxx_Next Duration Test	0 .. 16384 hours	0-Analog Input	$7000*y+(100*xx)+20$	R
Uyxx_Function Test Interval	0: Disabled 1 .. 255 days	0-Analog Input	$7000*y+(100*xx)+21$	R
Uyxx_Duration Test Interval	0: Disabled 1 .. 97 weeks	0-Analog Input	$7000*y+(100*xx)+22$	R
Uyxx_Test Execution Timeout	0 .. 255 days	0-Analog Input	$7000*y+(100*xx)+23$	R
Uyxx_Prolong Time	0 .. 127.5 minutes	0-Analog Input	$7000*y+(100*xx)+24$	R
Uyxx_Duration Test Result	0 .. 510 minutes	0-Analog Input	$7000*y+(100*xx)+25$	R
Uyxx_Lamp Total Operation Time	0 .. 1016 hours	0-Analog Input	$7000*y+(100*xx)+26$	R
Uyxx_Emergency Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+27$	R
Uyxx_Emergency Min Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+28$	R
Uyxx_Emergency Max Level	0 .. 100%	0-Analog Input	$7000*y+(100*xx)+29$	R
Uyxx_Rated Duration	0 .. 510 minutes	0-Analog Input	$7000*y+(100*xx)+30$	R
Uyxx_Features	b7: RelightRestSup b6: PhysicSelSup b5: HardInSup b4: AdjsEmLvl b3: AutoTestCap b2: SwitchMainCG b1: MainCG b0: IntegralEmCG	0-Analog Input	$7000*y+(100*xx)+31$	R
Uyxx_Lamp Emergency Time	0 .. 254 hours	0-Analog Input	$7000*y+(100*xx)+32$	R
Uyxx_Rest	1: Extinguish Lamp	4-Binary Output	$7000*y+(100*xx)+9$	W (T)
Uyxx_Inhibit	1: Start Inhibit Mode	4-Binary Output	$7000*y+(100*xx)+10$	W (T)
Uyxx_Re-Light/Reset Inhibit	1: Cancel Inhibit Mode	4-Binary Output	$7000*y+(100*xx)+11$	W (T)
Uyxx_Start Function Test	1: Start Function Test	4-Binary Output	$7000*y+(100*xx)+12$	W (T)
Uyxx_Start Duration Test	1: Start Duration Test	4-Binary Output	$7000*y+(100*xx)+13$	W (T)
Uyxx_Stop Test	1: Stop Function/Duration Test	4-Binary Output	$7000*y+(100*xx)+14$	W (T)
Uyxx_Reset Function Test Done Flag	1: Reset Function Flag	4-Binary Output	$7000*y+(100*xx)+15$	W (T)
Uyxx_Reset Duration Test Done Flag	1: Reset Duration Flag	4-Binary Output	$7000*y+(100*xx)+16$	W (T)
Uyxx_Reset Lamp	1: Lamp Emergency Time Reset	4-Binary Output	$7000*y+(100*xx)+17$	W (T)
Uyxx_Store Test Execution Timeout	0 .. 255 days	1-Analog Output	$7000*y+(100*xx)+21$	RW
Uyxx_Store Prolong Time	0 .. 127.5 minutes	1-Analog Output	$7000*y+(100*xx)+22$	RW
Uyxx_Store Function Test Interval	1 .. 255 days 0: Disabled	1-Analog Output	$7000*y+(100*xx)+23$	RW
Uyxx_Store Duration Test Interval	1 .. 97 weeks 0: Disabled	1-Analog Output	$7000*y+(100*xx)+24$	RW
Uyxx_Store Emergency Level	0 .. 100%	1-Analog Output	$7000*y+(100*xx)+25$	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Table 7. LED ballasts (Type 6)

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Failure Status	b7: RefMeasurFail b6: ThermLightLvl b5: ThermShut b4: CurrProtAct b3: LoadInc b2: LoadDec b1: OpenC b0: ShortC	0-Analog Input	$7000*y+(100*xx)+38$	R
Uyxx_Gear Type	b3: dcSuppPoss b2: acSuppPoss b1: LEDModInt b0: LEDPowerSInt	0-Analog Input	$7000*y+(100*xx)+39$	R
Uyxx_Dimming Curve	0: Standard Logarithmic Dim Curve 1: Linear Dim Curve]	3-Binary Input	$7000*y+(100*xx)+1$	R
Uyxx_Possible Operating Modes	b3: HighCurrPulMod b2: OutCurrContr b1: AMModePoss b0: PWMModePoss	0-Analog Input	$7000*y+(100*xx)+40$	R
Uyxx_Features	b7: PhysicSelSupp b6: LightLvlRedReq b5: ThermShutReq b4: CurrProtActReq b3: LoadIncReq b2: LoadDecReq b1: OpenCQ b0: ShortCQ	0-Analog Input	$7000*y+(100*xx)+41$	R
Uyxx_Reference Running	0: No 1: Yes	3-Binary Input	$7000*y+(100*xx)+2$	R
Uyxx_Current Protector	0: Disabled 1: Enabled	3-Binary Input	$7000*y+(100*xx)+3$	R
Uyxx_Operating Mode	b4: NonLogDimCurveAct b3: HighCurrPulModeAct b2: OutCurrContr b1: AMModeAct b0: PWMModeAct	0-Analog Input	$7000*y+(100*xx)+42$	R
Uyxx_Fast Fade Time	0 .. 27	0-Analog Input	$7000*y+(100*xx)+43$	R
Uyxx_Min Fast Fade Time	0 .. 27	0-Analog Input	$7000*y+(100*xx)+44$	R
Uyxx_Reference System Power	1: Trigger DALI Power Referencing	4-Binary Output	$7000*y+(100*xx)+23$	W (T)
Uyxx_Enable/Disable Current Protector	0: Disable 1: Enable	4-Binary Output	$7000*y+(100*xx)+24$	RW
Uyxx_Select Dimming Curve	0: Standard Logarithmic Dim Curve 1: Linear Dim Curve	4-Binary Output	$7000*y+(100*xx)+25$	RW
Uyxx_Store Fast Fade Time	0 .. 27	1-Analog Output	$7000*y+(100*xx)+31$	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Table 8. Color control (Type 8)

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Store Current Level & Colour as Scene	0 .. 15	1-Analog Output	$25000+(3200*y)+(50*xx)+0$	W
Uyxx_Clear/Remove Colour from Scene	0 .. 15	1-Analog Output	$25000+(3200*y)+(50*xx)+1$	W
Uyxx_Arc Colour Level	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	$25000+(3200*y)+(50*xx)+2$	W
Uyxx_Arc Colour White Level- RGBW <i>For RGBW only</i>	W: 0 .. 100	1-Analog Output	$25000+(3200*y)+(50*xx)+3$	W
Uyxx_Colour Tc Step W/C	0: Step Cooler 1: Step Warmer	4-Binary Output	$25000+(3200*y)+(50*xx)+0$	W
Uyxx_Actual Colour Level	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	0-Analog Input	$25000+(3200*y)+(50*xx)+0$	R
Uyxx_Actual Colour White Level- RGBW <i>For RGBW only</i>	W: 0 .. 100	0-Analog Input	$25000+(3200*y)+(50*xx)+1$	R
Uyxx_Power ON Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	0-Analog Input	$25000+(3200*y)+(50*xx)+2$	R
Uyxx_Power ON Colour White Level-RGBW	W: 0 .. 100	0-Analog Input	$25000+(3200*y)+(50*xx)+3$	R
Uyxx_System Fail Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	0-Analog Input	$25000+(3200*y)+(50*xx)+4$	R
Uyxx_Syst Fail Colour White Level- RGBW	W: 0 .. 100	0-Analog Input	$25000+(3200*y)+(50*xx)+5$	R
Uyxx_Min Colour Range (°K)	Tc: 1000 ... 10000°K	0-Analog Input	$25000+(3200*y)+(50*xx)+6$	R
Uyxx_Max Colour Range (°K)	Tc: 1000 .. 10000°K	0-Analog Input	$25000+(3200*y)+(50*xx)+7$	R
Uyxx_Set Power ON Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	$25000+(3200*y)+(50*xx)+4$	W
Uyxx_Set Power ON Colour White Level-RGBW	W: 0 .. 100	1-Analog Output	$25000+(3200*y)+(50*xx)+5$	W
Uyxx_Set System Fail Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	$25000+(3200*y)+(50*xx)+6$	W
Uyxx_Set Syst Fail Colour White Level-RGBW	W: 0 .. 100	1-Analog Output	$25000+(3200*y)+(50*xx)+7$	W
Uyxx_Set Min Colour Range (°K)	Tc: 1000 .. 10000°K	1-Analog Output	$25000+(3200*y)+(50*xx)+8$	W
Uyxx_Set Max Colour Range (°K)	Tc: 1000 .. 10000°K	1-Analog Output	$25000+(3200*y)+(50*xx)+9$	W
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Table 9. DALI groups - Color ballasts (Type 8)

Object name	Possible values	Object type	Object instance	R/W
Gyxx_Arc Colour level	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	$7000*y+(20*xx)+6410$	RW
Gyxx_Arc Colour White level for RGBW <i>For RGBW only</i>	W: 0 .. 100	1-Analog Output	$7000*y+(20*xx)+6411$	RW
Gyxx_Colour Tc Step Warmer/Cooler	0: Step Cooler 1: Step Warmer	4-Binary Output	$7000*y+(20*xx)+6404$	RW
Address formula: y: Line channel (0) xx: Group number (0 .. 15)				

Table 10. Broadcast - Color ballasts (Type 8)

Object name	Possible values	Object type	Object instance	R/W
By_Arc Colour level	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	7000*y+6810	RW
By_Arc Colour White level for RGBW <i>For RGBW only</i>	W: 0 .. 100	1-Analog Output	7000*y+6811	RW
By_Colour Tc Step Warmer/Cooler	0: Step Cooler 1: Step Warmer	4-Binary Output	7000*y+6804	RW
Address formula: y: Line channel (0)				

Table 11. Energy reporting (Type 51)

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Active Energy	0 .. 281474976710653 Wh	0-Analog Input	25000+(3200*y)+(50*xx)+8	R
Uyxx_Active Power	0 .. 4294967293 W	0-Analog Input	25000+(3200*y)+(50*xx)+9	R
Uyxx_Apparent Energy <i>Optional signal</i>	0 .. 281474976710653 VAh	0-Analog Input	25000+(3200*y)+(50*xx)+10	R
Uyxx_Apparent Power <i>Optional signal</i>	0 .. 4294967293 VA	0-Analog Input	25000+(3200*y)+(50*xx)+11	R
Uyxx_Active Energy Loadside <i>Optional signal</i>	0 .. 281474976710653 Wh	0-Analog Input	25000+(3200*y)+(50*xx)+12	R
Uyxx_Active Power Loadside <i>Optional signal</i>	0 .. 4294967293 W	0-Analog Input	25000+(3200*y)+(50*xx)+13	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Table 12. Diagnostics and maintenance (Type 52)

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Control Gear Operating Time	0 .. 4294967293 seconds	0-Analog Input	25000+(3200*y)+(50*xx)+14	R
Uyxx_Control Gear Start Counter	0 .. 16777213	0-Analog Input	25000+(3200*y)+(50*xx)+15	R
Uyxx_Control Gear Temperature	-60 .. 193°C	0-Analog Input	25000+(3200*y)+(50*xx)+16	R
Uyxx_Control Gear Failure	bitfields 0: Overall failure 1: Ext. Supply Undervoltage 2: Ext. Supply Overvoltage 3: ECG Output Power Limit 4: Thermal derating 5: Thermal shutdown	0-Analog Input	25000+(3200*y)+(50*xx)+17	R
Uyxx_Light Source Start Counter Resettable	0 .. 16777213	1-Analog Input	25000+(3200*y)+(50*xx)+10	RW
Uyxx_Light Source Set Start Counter Resettable	0 .. 16777213	1-Analog Output	25000+(3200*y)+(50*xx)+11	RW
Uyxx_Light Source Start Counter	0 .. 16777213	1-Analog Input	25000+(3200*y)+(50*xx)+12	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Light Source On Time Resettable	0 .. 4294967293 seconds	1-Analog Input	$25000+(3200*y)+(50*xx)+13$	RW
Uyxx_Light Source Set On Time Resettable	0 .. 4294967293 seconds	1-Analog Output	$25000+(3200*y)+(50*xx)+14$	RW
Uyxx_Light Source On Time	0 .. 4294967293 seconds	1-Analog Input	$25000+(3200*y)+(50*xx)+15$	RW
Uyxx_Light Source Temperature <i>Optional signal</i>	-60 .. 193°C	1-Analog Input	$25000+(3200*y)+(50*xx)+16$	RW
Uyxx_Lamp Failure	bitfields 0: Overall failure 1: Open Circuit 2: Short Circuit 3: Thermal Derating 4: Thermal Shutdown	0-Analog Input	$25000+(3200*y)+(50*xx)+18$	R
Uyxx_Rated Median Useful Life Of Luminaire <i>Optional signal</i>	0 .. 253 (x1000 hours)	0-Analog Input	$25000+(3200*y)+(50*xx)+19$	R
Uyxx_Internal Control Gear Reference Temperature <i>Optional signal</i>	-60 .. 193°C	0-Analog Input	$25000+(3200*y)+(50*xx)+20$	R
Uyxx_Rated Median Useful Light Source Starts <i>Optional signal</i>	0 .. 65534 (x100)	0-Analog Input	$25000+(3200*y)+(50*xx)+21$	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Table 13. Area

Object name	Possible values	Object type	Object instance	R/W
Ay-x_Occupancy State	0: Vacant 1: Occupied 2: Transition 3: Unknown	13-Multistate Input	$(7000*y)+6840+(9*x)+0$	R
Ay-x_Light Average	Lux readings average of the sensors in the area	0-Analog Input	$(7000*y)+6840+(9*x)+0$	R
Ay-x_Daylighting Area Active	0: Inactive 1: Active	0-Analog Input	$(7000*y)+6840+(9*x)+1$	R
Address formula: y: Port index (0 .. 1) x: Area index (0 .. 16)				

Table 14. Input devices

Object name	Possible values	Object type	Object instance	R/W
lyxx_Occupancy Input Value	0: Vacant + No Mov 1: Vacant + Mov 2: Occupied + No Mov 3: Occupied + Mov	13-Multistate Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Light Input Value	Lux	0-Analog Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Release	0: Inactive 1: Button released event	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Pressed	0: Inactive 1: Button pressed event	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Short Press	0: Inactive 1: Short press event	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Double Press	0: Inactive 1: Double press event	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Long press Start	0: Inactive 1: Long press start event	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Long press Repeat	0: Inactive 1: Long press repeat event	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Long Press Stop	0: Inactive 1: Long press stop event	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Button Input Value-Button Stuck	0: Button free 1: Button stuck	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Absolute input	Percentage: 0 .. 100% Absolute value: 0 .. $(2^{\text{resolution}} - 1)$	0-Analog Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
Input Device Comm Error	0: OK 1: Comm error	3-Binary Input	$14000+(640*y)+(10*x)+z+SI*1280$	R
Address formula: y: Line number (0) x: Input device index (0 .. 63) z: Instance index (0 .. 9) SI: Signal index (0 .. 7)				

5.2. DALI to Modbus TCP and RTU

5.2.1. Modbus Registers



NOTICE

This part is common for Modbus RTU and TCP.

Function to read Modbus registers:

- 03 Read holding registers
- 04 Read input registers

Function to write Modbus registers:

- 06 Write single holding registers
- 16 Write multiple holding registers

Modbus register contents are expressed in most significant bit (MSB) .. less significant bit (LSB).

The following tables list all available Modbus registers for the gateway.



NOTE

For a complete gateway configuration guide, please refer to the [Intesis MAPS User manual for IN703DAL0640000](#).



NOTICE

Read/write parameter terminology:

- **R**: Read-only register
- **W**: Write-only register
- **RW**: Read and write register
- **T**: Trigger (The register activates an action and then returns to its default value).

Table 15. All ballasts

Register name	Possible values	Address formula	R/W
Ballast / Lamp Failure Bit Fields ECG 15 .. 0	0: OK 1: Ballast / Lamp Failure bi* *i=xx-(16*(y-1))	7000*y+0	R
Ballast / Lamp Failure Bit Fields ECG 31 .. 16	0: OK 1: Ballast / Lamp Failure bi* *i=xx-(16*(y-1))	7000*y+1	R
Ballast / Lamp Failure Bit Fields ECG 47 .. 32	0: OK 1: Ballast / Lamp Failure bi* *i=xx-(16*(y-1))	7000*y+2	R
Ballast / Lamp Failure Bit Fields ECG 63 .. 48	0: OK 1: Ballast / Lamp Failure bi* *i=xx-(16*(y-1))	7000*y+3	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Register name	Possible values	Address formula	R/W
Update All ECG Status	0: Update Finished 1: Trigger Update	$7000 * y + (100 * xx) + 4$	RW
Ballast Status	b7: PwrCycle b6: MissShAdd b5: ResetSt b4: FadeRun b3: BallLimErr b2: LampPwrOn b1: LampFail b0: BallFail	$7000 * y + (100 * xx) + 5$	R
Actual Level	0 .. 100%	$7000 * y + (100 * xx) + 6$	R
Main Device Type	0: Fluorescent 1: Emergency 6: LED 8: Color control 255: Other	$7000 * y + (100 * xx) + 7$	R
Physical Minimum Level	0 .. 100%	$7000 * y + (100 * xx) + 8$	R
Min Level	0 .. 100%	$7000 * y + (100 * xx) + 9$	R
Max Level	0 .. 100%	$7000 * y + (100 * xx) + 10$	R
Power On Level	0 .. 100%	$7000 * y + (100 * xx) + 11$	R
System Failure Level	0 .. 100%	$7000 * y + (100 * xx) + 12$	R
Fade Time	0 .. 15	$7000 * y + (100 * xx) + 13$	R
Fade Rate	1 .. 15	$7000 * y + (100 * xx) + 14$	R
Arc Power Level	0 .. 100%	$7000 * y + (100 * xx) + 15$	RW
Arc Power Off / On	0: Off 1: 100%	$7000 * y + (100 * xx) + 16$	RW
Dim Down / Up	0: Step Down 1: Step Up 2: Down 3: Up 4: Step Down and Off 5: On and Step Up	$7000 * y + (100 * xx) + 17$	RW
Recall Min Level	1: Recall Min Level	$7000 * y + (100 * xx) + 18$	W (T)
Recall Max Level	1: Recall Max Level	$7000 * y + (100 * xx) + 19$	W (T)
Go To Scene	0 .. 15	$7000 * y + (100 * xx) + 20$	RW
Store Current Level as Scene	0 .. 15	$7000 * y + (100 * xx) + 21$	RW
Clear/Remove Scene	0 .. 15	$7000 * y + (100 * xx) + 22$	RW
Add to DALI Group	0 .. 15	$7000 * y + (100 * xx) + 29$	RW
Remove from DALI Group	0 .. 15	$7000 * y + (100 * xx) + 30$	RW
Set Fade Time	0 .. 15	$7000 * y + (100 * xx) + 23$	RW
Set Fade Rate	1 .. 15	$7000 * y + (100 * xx) + 24$	RW
Set Min Level	0 .. 100%	$7000 * y + (100 * xx) + 25$	RW
Set Max Level	0 .. 100%	$7000 * y + (100 * xx) + 26$	RW
Set Power-on Level	0 .. 100%	$7000 * y + (100 * xx) + 27$	RW
Set System-failure Level	0 .. 100%	$7000 * y + (100 * xx) + 28$	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Register name	Possible values	Address formula	R/W
Multicontrol	0: Off 1: 100% 2: StpUp 3: StpDwn 1XX: GoScn 2XX: StoreScn 3XX: RmvScn 1XXX: FdRate 2XXX: FdTime 3XXX: MinLvl 4XXX: MaxLvl 5XXX: PwrOnLvl 6XXX: SysFailLvl	$7000*y+(100*xx)+31$	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Table 16. DALI groups - All ballasts

Register name	Possible values	Address formula	R/W
Arc Power Level	0 .. 100%	$7000*y+(20*xx)+6400$	RW
Arc Power Off / On	0: Off 1: 100%	$7000*y+(20*xx)+6401$	RW
Step Down / Up	0: Step Down 1: Step Up	$7000*y+(20*xx)+6402$	RW
Recall Min Level	1: Recall Min Level	$7000*y+(20*xx)+6403$	W (T)
Recall Max Level	1: Recall Max Level	$7000*y+(20*xx)+6404$	W (T)
Go to Scene	0 .. 15	$7000*y+(20*xx)+6405$	RW
Store Current Level as Scene	0 .. 15	$7000*y+(20*xx)+6406$	RW
Clear/Remove Scene	0 .. 15	$7000*y+(20*xx)+6407$	RW
Set Fade Time	0 .. 15	$7000*y+(20*xx)+6408$	RW
Set Fade Rate	1 .. 15	$7000*y+(20*xx)+6409$	RW
Set Min Level	0 .. 100%	$7000*y+(20*xx)+6410$	RW
Set Max Level	0 .. 100%	$7000*y+(20*xx)+6411$	RW
Set Power-on Level	0 .. 100%	$7000*y+(20*xx)+6412$	RW
Set System-failure Level	0 .. 100%	$7000*y+(20*xx)+6413$	RW
Address formula: y: Line number (0) xx: Group number (0 .. 15)			

Register name	Possible values	Address formula	R/W
Multicontrol	0: Off 1: 100% 2: StpUp 3: StpDwn 1XX: GoScn 2XX: StoreScn 3XX: RmvScn 1XXX: FdRate 2XXX: FdTime 3XXX: MinLvl 4XXX: MaxLvl 5XXX: PwrOnLvl 6XXX: SysFailLvl	$7000*y+(20*xx)+6414$	RW
Daylight Active-single Group	0: Inactive 1: Active	$7000*y+(20*xx)+6415$	R
Address formula: y: Line number (0) xx: Group number (0 .. 15)			

Table 17. Broadcast - All ballasts

Register name	Possible values	Address formula	R/W
Arc Power Level	0 .. 100%	$7000*y+6800$	RW
Arc Power Off / On	0: Off 1: 100%	$7000*y+6801$	RW
Step Down / Up	0: Step Down 1: Step Up	$7000*y+6802$	RW
Recall Min Level	1: Recall Min Level	$7000*y+6803$	W (T)
Recall Max Level	1: Recall Max Level	$7000*y+6804$	W (T)
Go to Scene	0 .. 15	$7000*y+6805$	RW
Store Current Level as Scene	0 .. 15	$7000*y+6806$	RW
Clear/Remove Scene	0 .. 15	$7000*y+6807$	RW
Set Fade Time	0 .. 15	$7000*y+6808$	RW
Set Fade Rate	1 .. 15	$7000*y+6809$	RW
Set Min Level	0 .. 100%	$7000*y+6810$	RW
Set Max Level	0 .. 100%	$7000*y+6811$	RW
Set Power_on Level	0 .. 100%	$7000*y+6812$	RW
Set System-failure Level	0 .. 100%	$7000*y+6813$	RW
Address formula: y: Line number (0)			

Register name	Possible values	Address formula	R/W
Broadcast Multicontrol	0: Off 1: 100% 2: StpUp 3: StpDwn 1XX: GoScn 2XX: StoreScn 3XX: RmvScn 1XXX: FdRate 2XXX: FdTime 3XXX: MinLvl 4XXX: MaxLvl 5XXX: PwrOnLvl 6XXX: SysFailLvl	$7000*y+6814$	RW
Address formula: y: Line number (0)			

Table 18. Emergency ballasts (Type 1)

Register name	Possible values	Address formula	R/W
Failure Status	b7: FunctFail b6: DurFail b5: DurTestDelay b4: FunctTestDelay b3: EmLampFail b2: BattFail b1: BattDurFail b0: CircFail	$7000*y+(100*xx)+42$	R
Emergency Mode	b7: HardSwOn b6: HardInhibit b5: DurTestProg b4: FunctTestProg b3: ExtdEmMode b2: EmMode b1: NormMode b0: RestMode	$7000*y+(100*xx)+43$	R
Emergency Status	b7: PhysicSel b6: Ident b5: DurTestPend b4: FunctTestPend b3: BattFull b2: DurTestDone b1: FunctTestDone b0: InhibitMode	$7000*y+(100*xx)+44$	R
Emergency Battery Charge	0 .. 100%	$7000*y+(100*xx)+45$	R
Next Function Test	0 .. 16384 hours	$7000*y+(100*xx)+46$	R
Next Duration Test	0 .. 16384 hours	$7000*y+(100*xx)+47$	R
Function Test Interval	0: Disabled 1 .. 255 days	$7000*y+(100*xx)+48$	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Register name	Possible values	Address formula	R/W
Duration Test Interval	0: Disabled 1 .. 97 weeks	$7000 * y + (100 * xx) + 49$	R
Test Execution Timeout	0 .. 255 days	$7000 * y + (100 * xx) + 50$	R
Prolong Time	0 .. 127.5 minutes	$7000 * y + (100 * xx) + 51$	R
Duration Test Result	0 .. 510 minutes	$7000 * y + (100 * xx) + 52$	R
Lamp Total Operation Time	0 .. 1016 hours	$7000 * y + (100 * xx) + 53$	R
Emergency Level	0 .. 100%	$7000 * y + (100 * xx) + 54$	R
Emergency Min Level	0 .. 100%	$7000 * y + (100 * xx) + 55$	R
Emergency Max Level	0 .. 100%	$7000 * y + (100 * xx) + 56$	R
Rated Duration	0 .. 510 minutes	$7000 * y + (100 * xx) + 57$	R
Features	b7: RelightRestSup b6: PhysicSelSup b5: HardInSup b4: AdjsEmLvl b3: AutoTestCap b2: SwitchMainCG b1: MainCG b0: IntegralEmCG	$7000 * y + (100 * xx) + 58$	R
Lamp Emergency Time	0 .. 254 hours	$7000 * y + (100 * xx) + 59$	R
Rest	1: Extinguish Lamp	$7000 * y + (100 * xx) + 60$	W (T)
Inhibit	1: Start Inhibit Mode	$7000 * y + (100 * xx) + 61$	W (T)
Re-Light/Reset Inhibit	1: Cancel Inhibit Mode	$7000 * y + (100 * xx) + 62$	W (T)
Start Function Test	1: Start Function Test	$7000 * y + (100 * xx) + 63$	W (T)
Start Duration Test	1: Start Duration Test	$7000 * y + (100 * xx) + 64$	W (T)
Stop Test	1: Stop Function/Duration Test	$7000 * y + (100 * xx) + 65$	W (T)
Reset Function Test Done Flag	1: Reset Function Flag	$7000 * y + (100 * xx) + 66$	W (T)
Reset Duration Test Done Flag	1: Reset Duration Flag	$7000 * y + (100 * xx) + 67$	W (T)
Reset Lamp Time	1: Lamp Emergency Time Reset	$7000 * y + (100 * xx) + 68$	W (T)
Store Test Execution Timeout	0 .. 255 days	$7000 * y + (100 * xx) + 69$	RW
Store Prolong Time	0 .. 127.5 minutes	$7000 * y + (100 * xx) + 70$	RW
Store Function Test Interval	0: Disabled 1 .. 255 days	$7000 * y + (100 * xx) + 71$	RW
Store Duration Test Interval	0: Disabled 1 .. 97 weeks	$7000 * y + (100 * xx) + 72$	RW
Store Emergency Level	0 .. 100%	$7000 * y + (100 * xx) + 73$	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Table 19. LED ballasts (Type 6)

Register name	Possible values	Address formula	R/W
Failure Status	b7: RefMeasurFail b6: ThermLightLvl b5: ThermShut b4: CurrProtAct b3: LoadInc b2: LoadDec b1: OpenC b0: ShortC	$7000 * y + (100 * xx) + 80$	R
Gear Type	b3: dcSuppPoss b2: acSuppPoss b1: LEDModInt b0: LEDPowerSInt	$7000 * y + (100 * xx) + 81$	R
Dimming Curve	0: Standard Logarithmic Dim Curve 1: Linear Dim Curve	$7000 * y + (100 * xx) + 82$	R
Possible Operating Modes	b3: HighCurrPulMod b2: OutCurrContr b1: AMModePoss b0: PWMModePoss	$7000 * y + (100 * xx) + 83$	R
Features	b7: PhysicSelSupp b6: LightLvlRedReq b5: ThermShutReq b4: CurrProtActReq b3: LoadIncReq b2: LoadDecReq b1: OpenCQ b0: ShortCQ	$7000 * y + (100 * xx) + 84$	R
Reference Running	0: No 1: Yes	$7000 * y + (100 * xx) + 85$	R
Current Protector	0: Disabled 1: Enabled	$7000 * y + (100 * xx) + 86$	R
Operating Mode	b4: NonLogDimCurveAct b3: HighCurrPulModeAct b2: OutCurrContr b1: AMModeAct b0: PWMModeAct	$7000 * y + (100 * xx) + 87$	R
Fast Fade Time	0 .. 27	$7000 * y + (100 * xx) + 88$	R
Min Fast Fade Time	0 .. 27	$7000 * y + (100 * xx) + 89$	R
Reference System Power	1: Trigger DALI Power Referencing	$7000 * y + (100 * xx) + 90$	W (T)
Enable/Disable Current Protector	0: Disable 1: Enable	$7000 * y + (100 * xx) + 91$	RW
Select Dimming Curve	0: Standard Logarithmic Dim Curve 1: Linear Dim Curve	$7000 * y + (100 * xx) + 92$	RW
Store Fast Fade Time	0 .. 27	$7000 * y + (100 * xx) + 93$	RW
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Table 20. Color control (Type 8)

Object name	Possible values	Object type	Object instance	R/W
Uyxx_Store Current Level & Colour as Scene	0 .. 15	1-Analog Output	$25000+(3200*y)+(100*xx)+0$	W
Uyxx_Clear/Remove Colour from Scene	0 .. 15	1-Analog Output	$25000+(3200*y)+(100*xx)+1$	W
Uyxx_Arc Colour Level	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	$25000+(3200*y)+(100*xx)+2$	W
Uyxx_Arc Colour White Level- RGBW <i>For RGBW only</i>	W: 0 .. 100	1-Analog Output	$25000+(3200*y)+(100*xx)+4$	W
Uyxx_Colour Tc Step W/C	0: Step Cooler 1: Step Warmer	4-Binary Output	$25000+(3200*y)+(100*xx)+5$	W
Uyxx_Actual Colour Level	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	0-Analog Input	$25000+(3200*y)+(100*xx)+6$	R
Uyxx_Actual Colour White Level- RGBW <i>For RGBW only</i>	W: 0 .. 100	0-Analog Input	$25000+(3200*y)+(100*xx)+8$	R
Uyxx_Power ON Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	0-Analog Input	$25000+(3200*y)+(100*xx)+10$	R
Uyxx_Power ON Colour White Level- RGBW	W: 0 .. 100	0-Analog Input	$25000+(3200*y)+(100*xx)+12$	R
Uyxx_System Fail Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	0-Analog Input	$25000+(3200*y)+(100*xx)+14$	R
Uyxx_Syst Fail Colour White Level- RGBW	W: 0 .. 100	0-Analog Input	$25000+(3200*y)+(100*xx)+16$	R
Uyxx_Min Colour Range (°K)	Tc: 1000 .. 10000°K	0-Analog Input	$25000+(3200*y)+(100*xx)+18$	R
Uyxx_Max Colour Range (°K)	Tc: 1000 .. 10000°K	0-Analog Input	$25000+(3200*y)+(100*xx)+20$	R
Uyxx_Set Power ON Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	$25000+(3200*y)+(100*xx)+22$	W
Uyxx_Set PWR ON Colour White Level- RGBW	W: 0 .. 100	1-Analog Output	$25000+(3200*y)+(100*xx)+24$	W
Uyxx_Set System Fail Colour	Tc: 1000 .. 10000°K RGB: 0 .. 0xFEFEFE	1-Analog Output	$25000+(3200*y)+(100*xx)+26$	W
Uyxx_Set Syst Fail Colour White Level- RGBW	W: 0 .. 100	1-Analog Output	$25000+(3200*y)+(100*xx)+28$	W
Uyxx_Set Min Colour Range (°K)	Tc: 1000 .. 10000°K	1-Analog Output	$25000+(3200*y)+(100*xx)+30$	W
Uyxx_Set Max Colour Range (°K)	Tc: 1000 .. 10000°K	1-Analog Output	$25000+(3200*y)+(100*xx)+32$	W
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)				

Table 21. DALI groups - Color ballasts (Type 8)

Register name	Possible values	Address formula	R/W
Gyxx_Arc Colour level	Tc: 1000 .. 10000°K RGB: 0 .. 251600	$7000*y+(20*xx)+6416$	RW
Address formula: y: Line number (0) xx: Group number (0 .. 15)			

Register name	Possible values	Address formula	R/W
Gyxx_Arc Colour White level for RGBW <i>For RGBW only</i>	W: 0 .. 100	$7000*y+(20*xx)+6417$	RW
Gyxx_Colour Tc Step Warmer/Cooler	0: Step Cooler 1: Step Warmer	$7000*y+(20*xx)+6418$	RW
Address formula: y: Line number (0) xx: Group number (0 .. 15)			

Table 22. Broadcast - Color ballasts (Type 8)

Register name	Possible values	Address formula	R/W
Arc Colour Level	Tc: 1000 .. 10000°K RGB: 0 .. 251600	$7000*y+6815$	RW
Arc Colour White Level for RGBW <i>For RGBW only</i>	W: 0 .. 100	$7000*y+6816$	RW
Colour Tc Step Warmer/Cooler	0: Step Cooler 1: Step Warmer	$7000*y+6817$	RW
Address formula: y: Line number (0)			

Table 23. Energy reporting (Type 51)

Register name	Possible values	Address formula	R/W
Uyxx_Active Energy	0 .. 281474976710653 Wh	$25000+(3200*y)+(100*xx)+34$	R
Uyxx_Active Power	0 .. 4294967293 W	$25000+(3200*y)+(100*xx)+36$	R
Uyxx_Apparent Energy <i>Optional signal</i>	0 .. 281474976710653 VAh	$25000+(3200*y)+(100*xx)+38$	R
Uyxx_Apparent Power <i>Optional signal</i>	0 .. 4294967293 VA	$25000+(3200*y)+(100*xx)+40$	R
Uyxx_Active Energy Loadside <i>Optional signal</i>	0 .. 281474976710653 Wh	$25000+(3200*y)+(100*xx)+42$	R
Uyxx_Active Power Loadside <i>Optional signal</i>	0 .. 4294967293 W	$25000+(3200*y)+(100*xx)+44$	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Table 24. Diagnostics and maintenance (Type 52)

Register name	Possible values	Address formula	R/W
Control Gear Operation Time	0 .. 4294967293 seconds	$25000+(3200*y)+(100*xx)+46$	R
Control Gear Start Counter	0 .. 16777213	$25000+(3200*y)+(100*xx)+48$	R
Control Gear Temperature	-60 .. 193°C	$25000+(3200*y)+(100*xx)+50$	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Register name	Possible values	Address formula	R/W
Control Gear Failure	bitfields 0: Overall failure 1: Ext. Supply Undervoltage 2: Ext. Supply Overvoltage 3: ECG Output Power Limit 4: Thermal derating 5: Thermal shutdown	$25000+(3200*y)+(100*xx)+51$	R
Light Source Start Counter Resettable	0 .. 16777213	$25000+(3200*y)+(100*xx)+52$	R
Light Source Set Start Counter Resettable	0 .. 16777213	$25000+(3200*y)+(100*xx)+54$	RW
Light Source Start Counter	0 .. 16777213	$25000+(3200*y)+(100*xx)+56$	R
Light Source On Time Resettable	0 .. 16777213 seconds	$25000+(3200*y)+(100*xx)+58$	R
Light Source Set On Time Resettable	0 .. 4294967293 seconds	$25000+(3200*y)+(100*xx)+60$	RW
Light Source On Time	0 .. 4294967293 seconds	$25000+(3200*y)+(100*xx)+62$	R
Light Source Temperature <i>Optional signal</i>	-60 .. 193°C	$25000+(3200*y)+(100*xx)+64$	R
Lamp Failure	bitfields 0: Overall failure 1: Open Circuit 2: Short Circuit 3: Thermal Derating 4: Thermal Shutdown	$25000+(3200*y)+(100*xx)+65$	R
Rated Median Useful Life Of Luminaire <i>Optional signal</i>	0 .. 253 (x1000 hours)	$25000+(3200*y)+(100*xx)+66$	R
Internal Control Gear Reference Temperature <i>Optional signal</i>	-60 .. 193°C	$25000+(3200*y)+(100*xx)+67$	R
Rated Median Useful Light Source Starts <i>Optional signal</i>	0 .. 65534 (x100 times)	$25000+(3200*y)+(100*xx)+68$	R
Address formula: y: Channel number (0) xx: Ballast short address (0 .. 63)			

Table 25. Area

Register name	Possible values	Address formula	R/W
Ay-x Occupancy State	0: Vacant 1: Occupied 2: Transition 3: Unknown	$7000*y+6840+(9*x)+0$	R
Ay-x Light Average	Average readings of the sensors in the area	$7000*y+6840+(9*x)+1$	R
Ay-x Daylight Scene Active	0: Inactive 1: Active	$7000*y+6840+(9*x)+2$	R
Address formula: y: Line number (0) x: Area index (0 .. 16)			

Table 26. Input devices

Register name	Possible values	Address formula	R/W
lyxx_Occupancy Input Value	0: Vacant + No Mov 1: Vacant + Mov 2: Occupied + No Mov 3: Occupied + Mov	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Light Input Value	Lux	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Buttons-Events	As an input value register: 0: Released 1: Pressed As an event bitfields register: b0: Button released b1: Button pressed b2: Short press b3: Double press b4: Long press start b5: Long press repeat b6: Long press stop	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Push Buttons-Button Stuck	0: Button free 1: Button stuck	$14000+(640*y)+(10*x)+z+SI*1280$	R
lyxx_Absolute Input	Percent: 0 .. 100% Absolute value: 0 .. (2^resolution -1)	$14000+(640*y)+(10*x)+z+SI*1280$	R
Input Device Comm Error Bit Fields CH1 (ID 15 - ID 0)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13992	R
Input Device Cerror Bit Fields CH1 (ID 31 - ID 16)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13993	R
Input Device Comm Error Bit Fields CH1 (ID 47 - ID 32)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13994	R
Input Device Comm Error Bit Fields CH1 (ID 63 - ID 48)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13995	R
Input Device Comm Error Bit Fields CH2 (ID 15 - ID 0)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13996	R
Input Device Comm Error Bit Fields CH2 (ID 31 - ID 16)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13997	R
Input Device Comm Error Bit Fields CH2 (ID 47 - ID 32)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13998	R
Input Device Comm Error Bit Fields CH2 (ID 63 - ID 48)	0: OK 1: Comm error bi [i=xx-(16*(y-1))]	13999	R
Address formula: y: Line number (0) x: Input device index (0 .. 63) z: Instance index (0 .. 9) SI: Signal index (0 .. 7)			

6. Late Configuration: Change the Gateway's Protocol

Reconfiguring the gateway with a different protocol is very easy:

1. Connect the gateway to the PC and open the configuration tool Intesis MAPS.
2. Select the new template you need.
3. Click **Next** or double-click the template in the list.
4. A message will pop up, asking if you want to save the project currently loaded in the gateway.
5. Click **Yes** or **No**, depending on your needs.
6. Configure the needed parameters and signals for your new project.
7. Send the configuration to the gateway.



NOTE

For a complete gateway configuration guide, please refer to the [Intesis MAPS Configuration Guide for IN703DAL0640000](#).