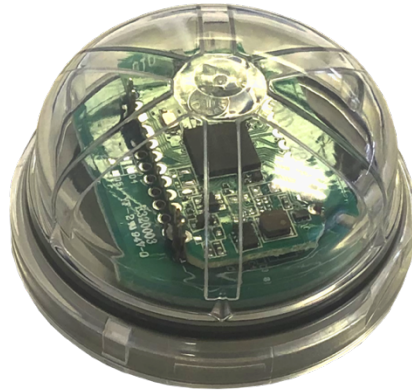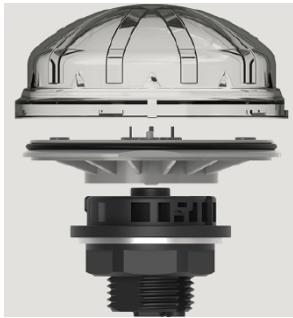# GT Developments

Bluetooth Mesh

Device Datasheets

2022

Bluetooth Mesh Luminaire Control (LC) node
BTC01-SR-ZB18

The **BTC01-SR-ZB18** is a Bluetooth mesh luminaire node fitted into a Zhaga book 18 certified housing. Luminaire manufacturers can fit products with the standard Zhaga adapter and fit the communication node to the luminaire either during manufacture, installation or commissioning via the socket. The Zhaga Book 18 housing is an IP68 certified 4 pin enclosure which is specifically designed for outdoor luminaires such as street and floodlights but can also be used with metal body luminaires in order to have the Bluetooth antennae outside of the metal enclosure.

The BTC01-SR-ZB18 unit makes use of the D4i communication standard which is an intra-luminaire extension of the DALI2 standard which removes the need for an additional 24VDC power supply. The D4i driver provides power to the node and can be used with any D4i certified driver, ballast or power supply. The device provides all standard lighting control functionality as well as the Signify Sensor Ready feature set.

Technical Data:

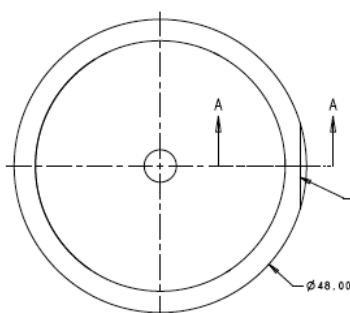|	
Rated supply voltage (max)	24Vac
Max. bus current	< 10mA
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- Luminaire control node
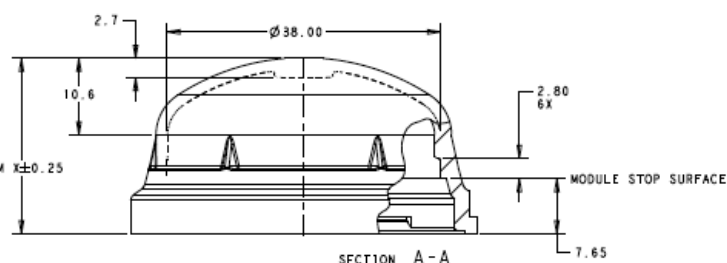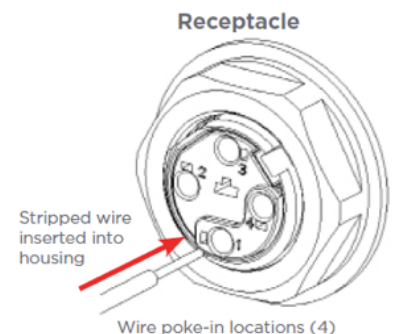- Sensor Ready Certified

Ordering information:

Cat No: **BTC01-SR-ZB18**

Dimensions [mm]:

Wiring Diagram:

1	+24V power supply
2	Negative pole for Dali or Dali based protocol & shared ground return for 24V power supply
3	Positive pole for Dali or Dali based protocol
4	General digital I/O (greater than 7V)

Receptacle

Stripped wire inserted into housing

Wire poke-in locations (4)

POLARIZATION INDICATOR FOR ALIGNMENT WITH MODULE BASE

Ø48.00

2.7

Ø38.00

10.6

2.80 6X

MODULE STOP SURFACE

DIM X±0.25

7.65

SECTION A-A

Bluetooth Mesh Luminaire Control (LC) node
BTC01-SR-IP44

The **BTC01-SR-IP44** is a Bluetooth mesh luminaire node. The node is intended for indoor use with downlighters, linear fittings or LED panels. The node is pre-fitted with 200mm leads (red and Black).

The BTC01-SR-IP44 unit makes use of the D4i communication standard which is an intra-luminaire extension of the DALI2 standard which removes the need for an additional 24VDC power supply. The D4i driver provides power to the node and can be used with any D4i certified driver, ballast or power supply. The device provides all standard lighting control functionality as well as the Signify Sensor Ready feature set.

Technical Data:

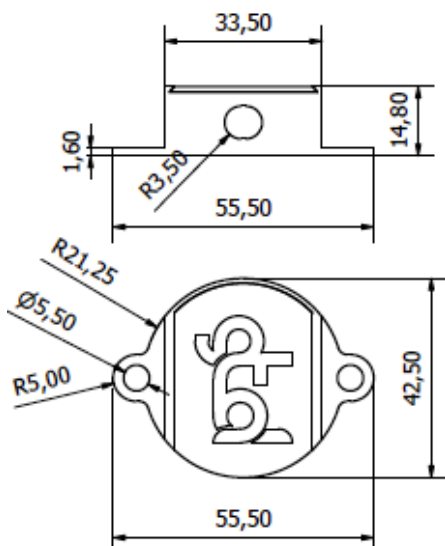|	
Rated supply voltage (max)	24Vac
Max. bus current	< 10mA
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
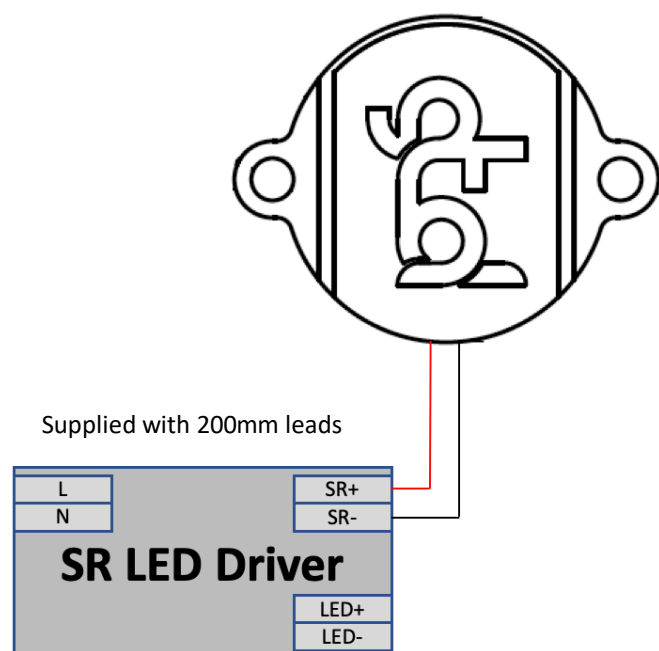- Luminaire control node
- Sensor Ready Certified

Ordering information:

Cat No: **BTC01-SR-IP44**

Wiring Diagram:

Supplied with 200mm leads

Dimensions[mm]:

Bluetooth Mesh Luminaire Control (LC) node

BTC01-SR-IP44-STR

The **BTC01-SR-IP44-STR** is a Bluetooth mesh luminaire node fitted into an enclosure with strain relief. The node is intended for indoor use with downlighters, linear fittings or LED panels. The device is pre-fitted with 200mm leads.

The BTC01-SR-IP44 unit makes use of the D4i communication standard which is an intra-luminaire extension of the DALI2 standard which removes the need for an additional 24VDC power supply. The D4i driver provides power to the node and can be used with any D4i certified driver, ballast or power supply. The device provides all standard lighting control functionality as well as the Signify Sensor Ready feature set.

Technical Data:

Rated supply voltage (max)	24Vac
Max. bus current	< 10mA
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
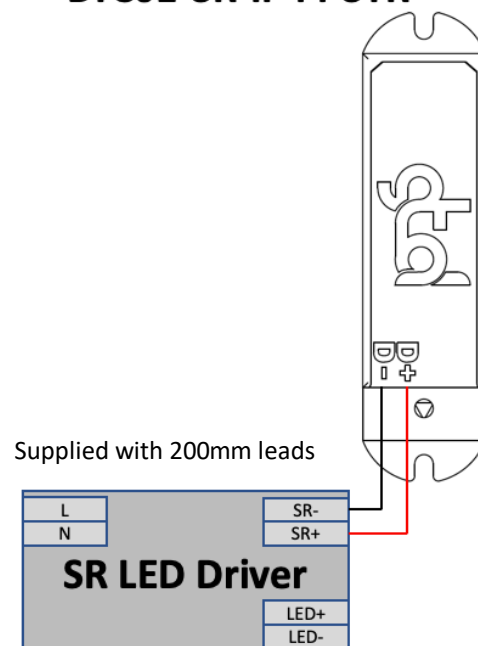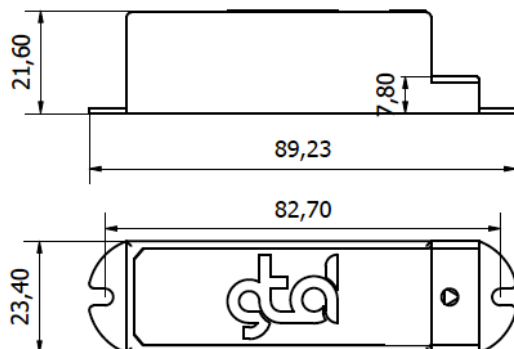- Luminaire control node
- Sensor Ready Certified

Ordering information:

Cat No: **BTC01-SR-IP44-STR**

Wiring Diagram:

BTC01-SR-IP44-STR

Supplied with 200mm leads

Dimensions [mm]:

21,60

7,80

89,23

82,70

23,40

Bluetooth Mesh Luminaire Control (LC) node
BTC01-SR-24VPSU-STR

The **BTC01-SR-24VPSU-STR** is a Bluetooth mesh luminaire node with internal power supply. The inclusion of an on-board power supply makes this node suitable to control digital luminaire drivers which do not have the internal power supply as per D4i spec. This node can power 8 DALI drivers. The node is pre-fitted with 100mm leads and a strain relief clamp.

The **BTC01-SR-24VPSU-STR** unit makes use of the D4i communication standard and provides the additional 24VDC power supply.

Technical Data:

|	
Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. current draw	<10mA
Max. supply current	20mA
Max. number of connected drivers	8
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- Luminaire control node
- Sensor Ready Certified
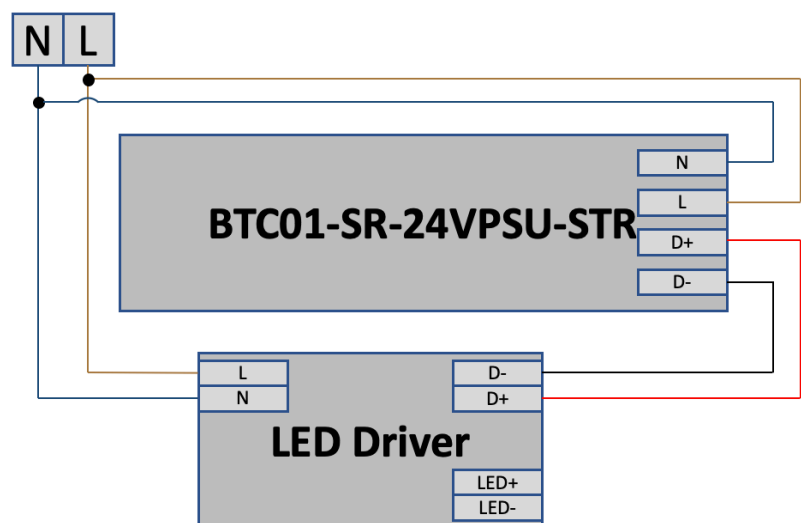- Integrated bus power supply
- Supports up to 8 devices

Ordering information:

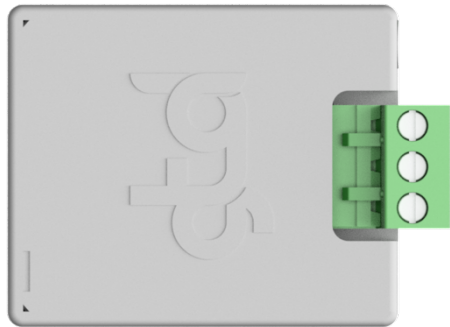Cat No: **BTC01-SR-24VPSU-STR**

Dimensions [mm]:
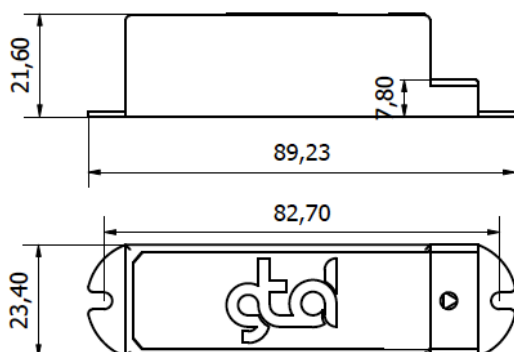
Wiring Diagram:

Motion detector interface module
BTC01-DLM-IP44

The **BTC01-DLM-IP44** is a Bluetooth mesh digital lux and motion detector interface node. The device is fitted with a removable connector terminal mated pair for ease of installation. The device runs a LC (Luminaire Control) server can be used to interface with motion detectors and lux sensors. The device is powered by 230V mains and has an input pin for the motion detector output (Load). When the motion detector triggers the LC node detects the change on the sensor output and sends a mesh LC 'motion detected' message to the programmed group. The device can interface with any type of motion detector and the GT Developments LC LUX sensor.

Technical Data:

Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. mains current draw	< 10mA
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Ordering information:

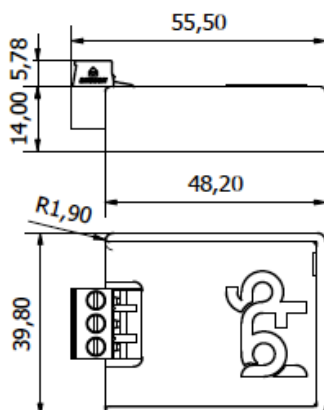Cat No: **BTC01-DLM-IP44**

Dimensions [mm]:

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- Motion and Lux control node
- Interfaces any relay-based motion detector
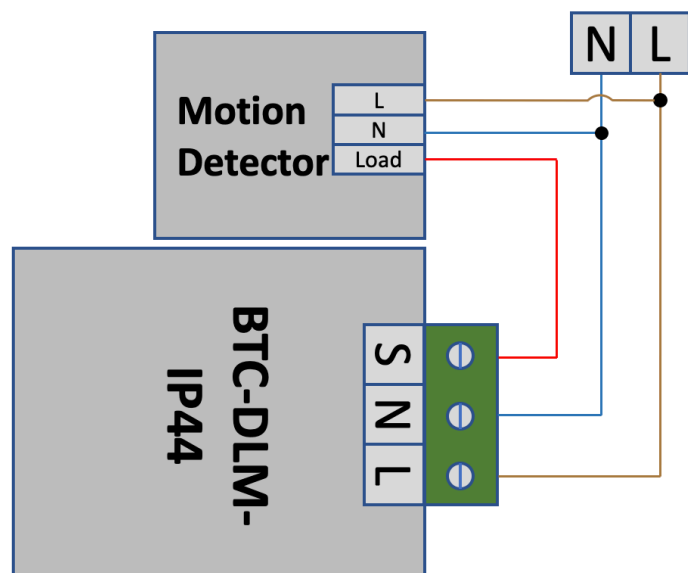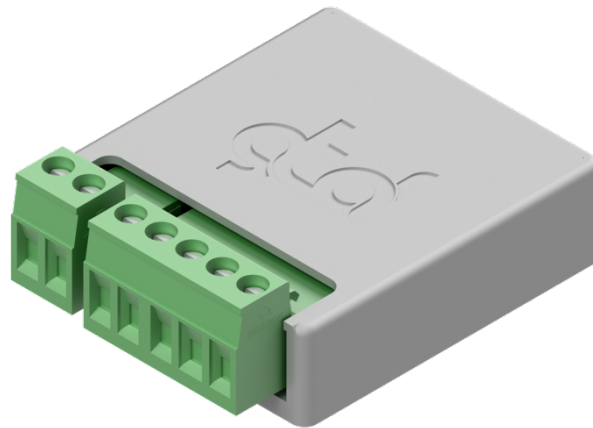- LC Device Client

Wiring Diagram:

Wall switch interface module
BTC01-FS4-IP44

The **BTC01-FS4-IP44** is a Bluetooth mesh wall switch node. The device is supplied with pre-fitted cables to connect directly to standard rocker, toggle or bell press switches. These switch actions are then converted into Bluetooth messages that can invoke group or scene commands in the Bluetooth network. Each unit can interface with 4 individual switches and invoke different actions.

Technical Data:

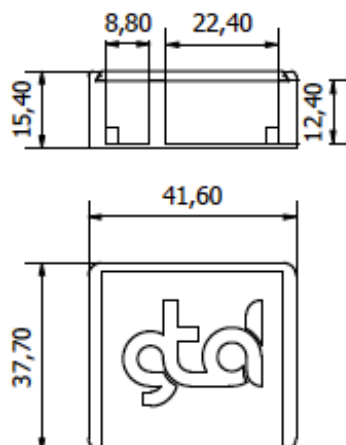|	
Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. mains current draw	< 10mA
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- Supports up to 4 switches
- Switch, dim and scene commands

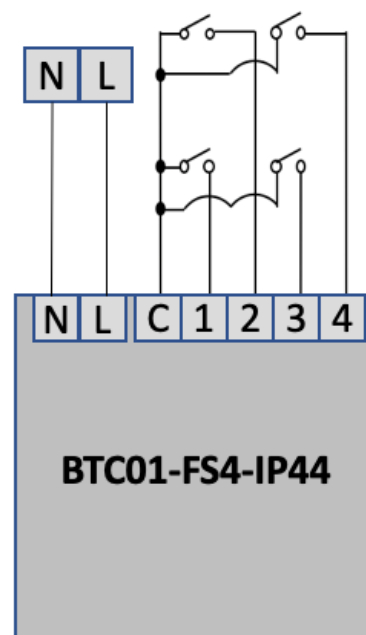## Ordering information:

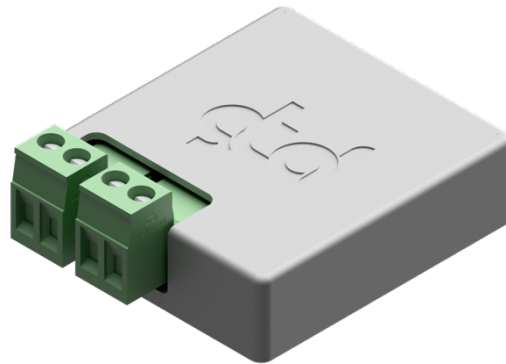Cat No*: **BTC01-FS4-IP44**

Dimensions [mm]:

Wiring Diagram:

Bluetooth Mesh PWM Control node
BTC01-PWM-24V-IP44

The *BTC01-PWM-24V-IP44* is a single channel PWM Bluetooth 5.2 Mesh node. It is powered from mains voltage and provides a 24V PWM output. The unit can switch a maximum of 200W per channel. The node can be used as any 24V PWM interface, examples include; dimming a 24V DC LED, interfacing of a PWM based power supply or LED driver onto a Bluetooth network or controlling a fan or motor speed controller.

Technical Data:

|	
Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. mains current	< 10mA
Typ. power input on stand-by Input	< 2mA
Max. load @ 24V	200W
Warranty	5 years

Dimensions:

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- PWM control node
- Interfaces any 24V PWM device, luminaires, motors, servos, audio, telecoms, power delivery or voltage regulation
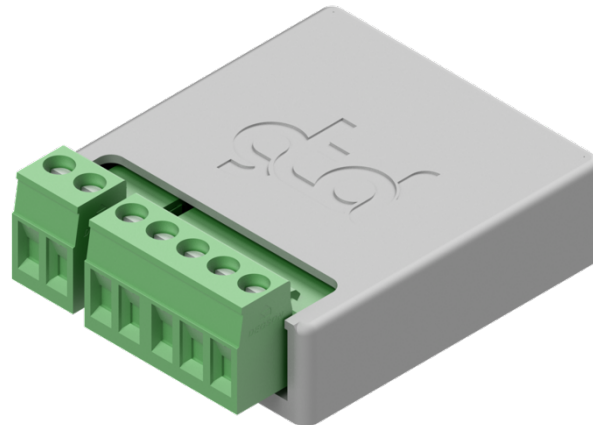
Ordering information:

Cat No: *BTC01-PWM-24V-IP44*

Wiring Diagram:
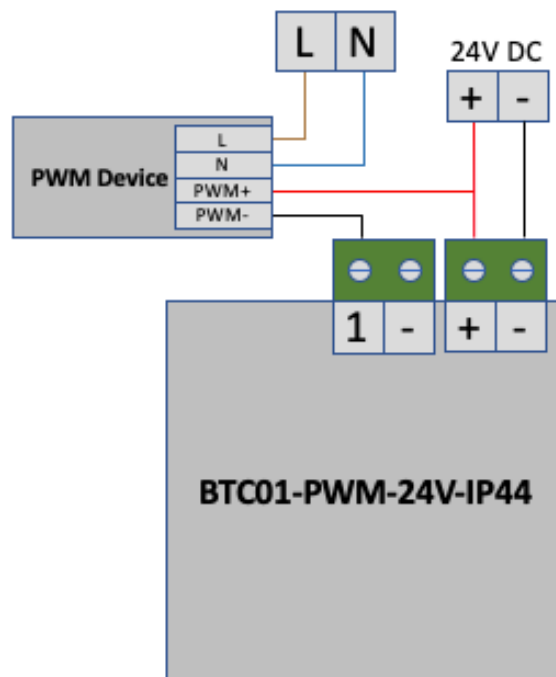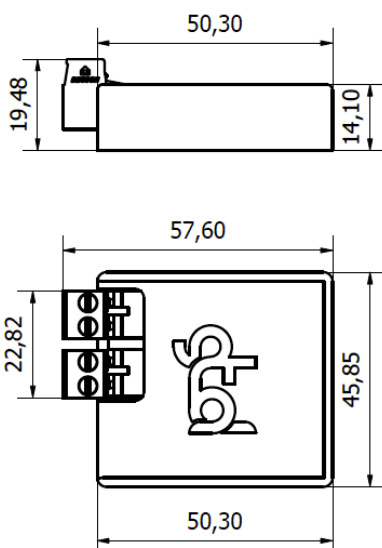
Bluetooth Mesh PWM Control node
BTC01-PWM4-24V-IP44

The **BTC01-PWM4-24V-IP44** is a four channel PWM Bluetooth 5.2 Mesh node. It is powered from mains voltage and provides a 24V PWM output. The unit can switch a maximum of 200W per channel. The node can be used as any 24V PWM interface, examples include; dimming a 24V DC LED, interfacing of a PWM based power supply or LED driver onto a Bluetooth network or controlling a fan or motor speed controller.

Technical Data:

|	
Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. mains current	< 10mA
Typ. power input on stand-by Input	< 2mA
Max. load @ 24V (per channel)	200W
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- PWM control node
- Interfaces any 24V PWM device, luminaires, motors, servos, audio, telecoms, power delivery or voltage regulation
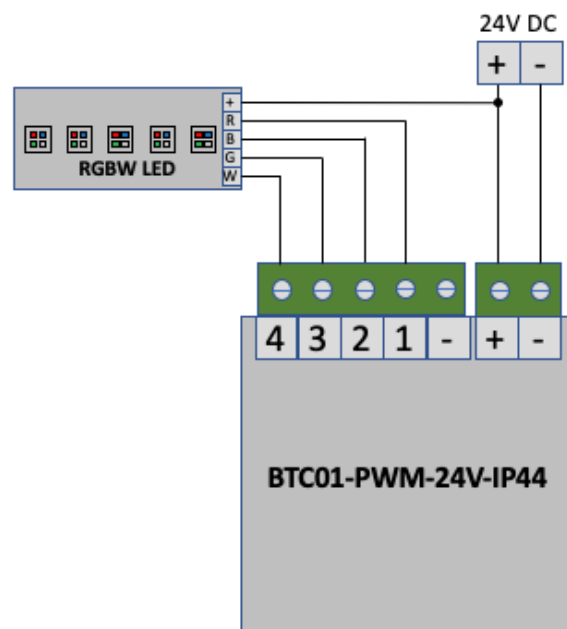- Multi-channel PWM can be used for RGB/RGBW LED's

Ordering information:

Cat No: **BTC01-PWM4-24V-IP44**

Dimensions:
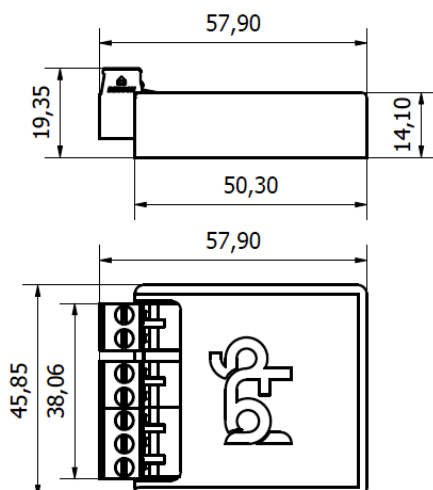
Wiring Diagram:

Bluetooth Actuator module
BTC01-IP44-230V-RELAY-S-16A

The **BTC01-RELAY230V-16A-IP44** is a Bluetooth mesh wireless relay interface. The device subscribes to Bluetooth mesh messages and controls a load according to messages received. The device runs a generic on/off server and is powered by 230V mains. The unit has both a normal open and normal closed contactor closure.

The wiring diagram below is for NO connection. A 'generic on' command connects the load and a 'generic off' command disconnects it.

Technical Data:

|	
Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. mains current	< 10mA
Typ. power input on stand-by Input	< 2mA
Max. load @ 24V (per channel)	3,600W
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- Relay Server
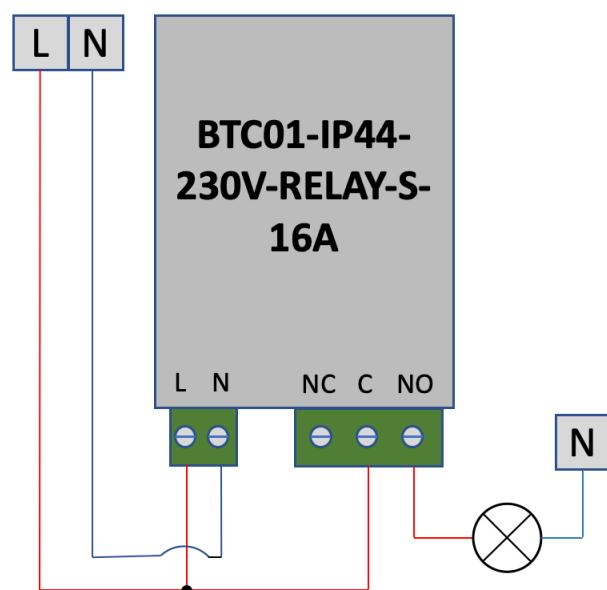- 16A relay to control any load via generic on/off server

Ordering information:

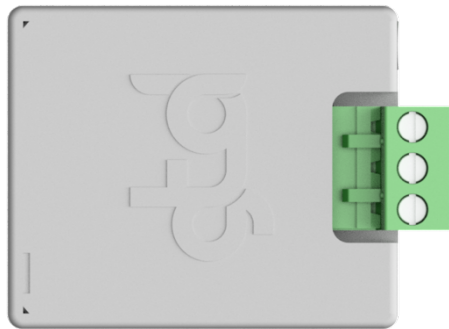Cat No: **BTC01-RELAY230V-16A-IP44**

Dimensions:
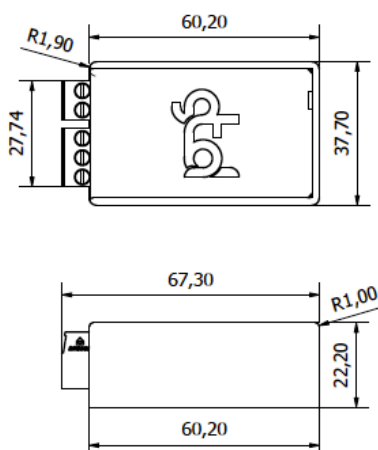
Wiring Diagram:

Bluetooth Sensor Module
BTC01-RELAY-Client-IP44

The **BTC01-RELAY-Client-IP44** is a Bluetooth mesh 230V input device. It can read a mains voltage input from switches, relays, contactors or device actuators. The device runs a generic on/off client. This client converts the voltage input to an on or off command and broadcasts it across the Bluetooth network. The device is powered by 230V mains and reads a 230V input.

Technical Data:

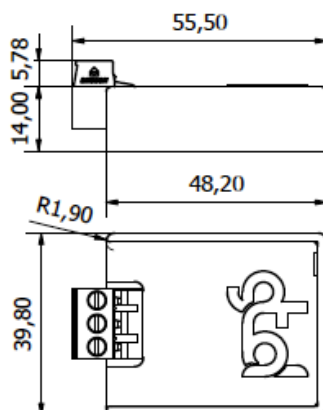|	
Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. mains current	< 50mA
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- Relay Client
- Device detects mains voltage and transmits 'on' and 'off' commands to the network
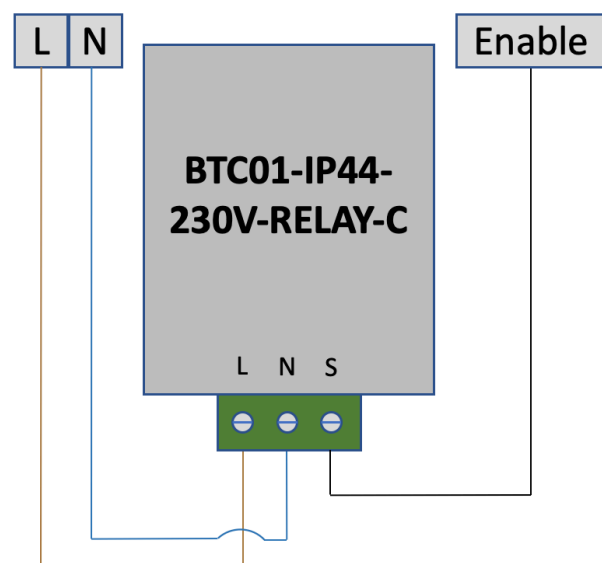
Ordering information:

Cat No: **BTC01-RELAY-Client-IP44**

Dimensions [mm]:

Wiring Diagram:

Bluetooth Mesh Remote
BTC01-3B-Remote

The **BTC01-3B-Remote** is a Bluetooth mesh client device. It operates the same software as the **BTC01-FS4-IP44** 4 button flex switch. Each button can be bound to on, off, dim, scene or LC commands. The device is ideally suited for testing or over-ride commands for security personnel.

Technical Data:

Rated supply voltage	3V DC
Max. transmit current	< 15mA
Typ. power input on stand-by Input	< 20uA
Warranty	5 years

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
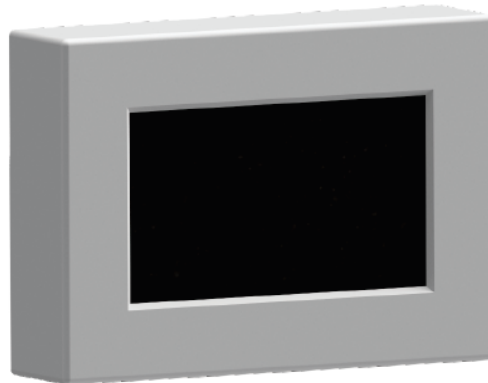- Low power node (does not relay)
- Switch, dim and scene commands

Ordering information:

Cat No: **BTC01-3B-Remote**

Dimensions [mm]:

Bluetooth Mesh Touchscreen
BTC01-TS

The BTC01-TS is a 4.3-inch Bluetooth mesh enabled, fully programmable capacitive touchscreen. The mounting assembly and bezel are designed to fit over a standard 2x4 recessed or surface wall box. It is recommended that the wall box be made of polycarbonate as metal boxes will attenuate the wireless signal and reduce the range.

The touchscreen has the following standard functions available:

1. On/off switching for devices, groups and network broadcast
2. Dimming/level control for devices, groups and network broadcast
3. On/off timers for devices, groups and network broadcast
4. Time dim function for devices, groups and network broadcast
5. Scene control
6. RGBW and tuneable white control
7. Luminaire LC node control (motion and daylight harvesting)
8. Sensor data readout (temperature, CO^2, EC, pH, etc)

The standard touchscreen has 4 pages and can be extended to a total of 8. Bezel is standard in white but also available in black and grey. The unit is powered directly from 230V mains and is available with a 3-hour battery backup to not lose the device time during power outages.

Device specification:

- 4.3" RGB 480x272 colour LCD-TFT with capacitive touch
- STM32F746NGH6 Arm® Cortex® core-based microcontroller

- 230V 50Hz mains power input
- Dimensions 144.2 x 102.2 x 34mm
- GT Developments BTC01 Bluetooth Mesh radio
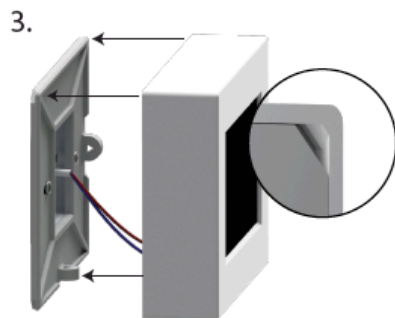- 10/100 Ethernet

Touch Screen Installation Guide

1.
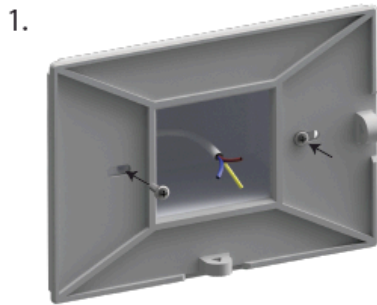
Mount the back plate to the wall box using 2 screws and feed the wires through the opening.

2.
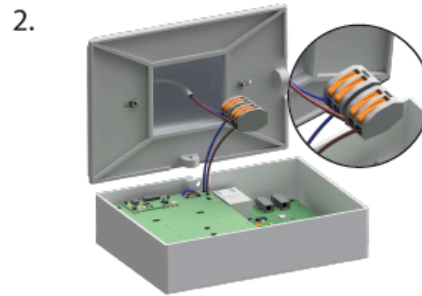
Connect the power cables to their corresponding connector which are wired to the Board.

3.

Clip the front of the unit to the back plate using the clips on the top corners. Make sure to line up the screw hole on the bottom of the Bezel with the base plate's mounting point.

4.
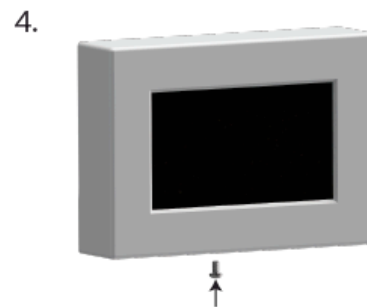
Screw the final screw into the bottom of the bezel securing it onto the wall.

Touch Screen

34,00
R2,00

R2,00
102,20
60,00
102,00
144,20

Bluetooth Mesh Luminaire Control (LC) node
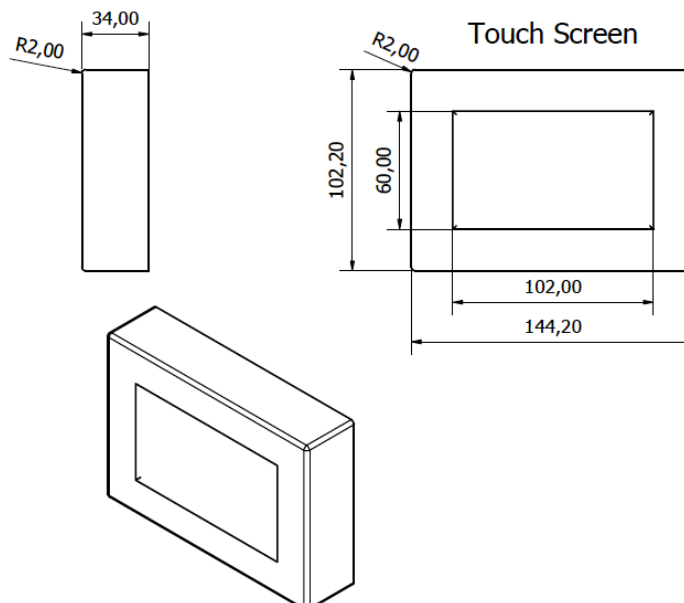## Developers interface node: BTC01-LC

The BTC01-LC is an interface and development module for luminaire manufacturers and integrators. The device implements the Bluetooth Mesh LC model on the Nordic nRF52840. The model provides all LC functionality on an interface device with pre-configured lighting interfaces. It has is a generic communication module implementing Bluetooth Mesh 5.2. The USB portion of the PCB is v-scored and can be broken off to reduce overall PCB size.

The BTC01 can be updated 'over the air' allowing for configuration changes and updates after installation.

The device carries electrical safety, EMC, RF and ICASA certification. BLE SIG, and SR certification currently underway.
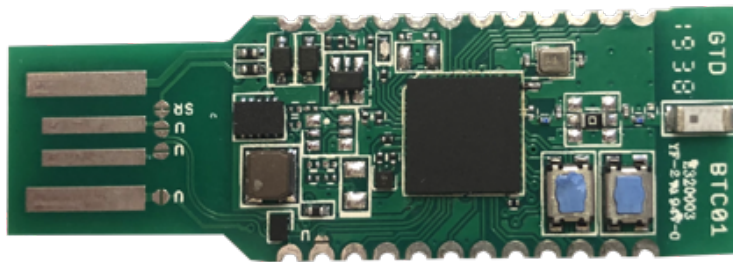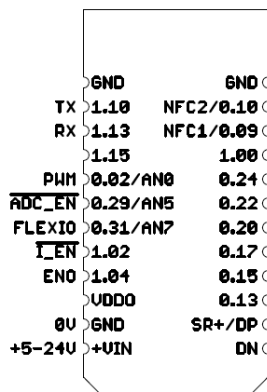
Key features

- 64 MHz Cortex-M4 with FPU
- 1 MB Flash, 256 KB RAM
- 2.4 GHz Transceiver
- 1 Mbps or Long Range mode
- Bluetooth mesh
- +8 dBm TX Power

- 128-bit AES CCM, ARM CryptoCell
- UART, SPI, TWI, PDM, I2S, QSPI
- PWM
- 12-bit ADC
- NFC-A

Device pin outs

The **BTC01-LC** has pre-defined pins that react to Bluetooth mesh LC messages. The pins are:

1. 1.04 – ENO digital output
2. 0.02 – PWM output
3. 1.10 – Serial communication TX (Signify SR commands)
4. 1.13 – Serial communications RX (Signify SR commands)
5. FLEXIO – hardware programmable pin

The FLEXIO pin can be configured as either a digital input, digital output or ADC by pulling pins 1.02 (I_EN) and 0.29 (ADC_EN) to either a logic high or low.

FLEXIO	I_EN	ADC_EN
OUTPUT	1	1
INPUT	0	1
ADC	0	0

Device operation

The **BTC01-LC** is a Bluetooth mesh LC server. When subscribed to an LC client the node will receive Bluetooth mesh commands and set the respective pins. LC lightness set commands are transmitted as integers between 0 and 65,536 (uint16).

Command	ENO	PWM (Duty cycle)	Serial data
Off	0	0	Direct arc level '0'
On	1	100	Direct arc level '254'
Lightness set 50%	1	50	Direct arc level '127'
Lightness set 80%	1	80	Direct arc level '203'

Technical Data:

Rated supply voltage	5 – 24 V DC
Output Voltage	3.3V
Max. current	< 50mA (SR Spec)
Typ. power input on stand-by Input	< 2mA @ 24V DC
Warranty	5 years

Ordering information:

Cat No: **BTC01-LC**

Range (Environmentally dependent)

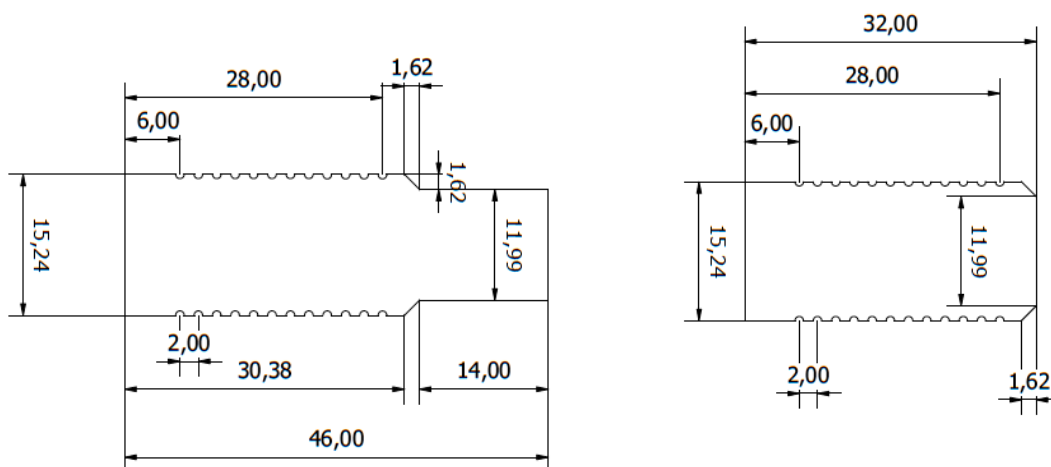- Full speed mode (1Mbps) node ranges of 40 – 80 meters
- Long Range mode over 500 meters

Device overview:

- Self-forming Mesh network
- Bluetooth Mesh Compliant
- Luminaire control node
- Sensor Ready Certified

Dimensions [mm]:

2mm pitch spacing SIL header

Bluetooth Tuneable white interface module
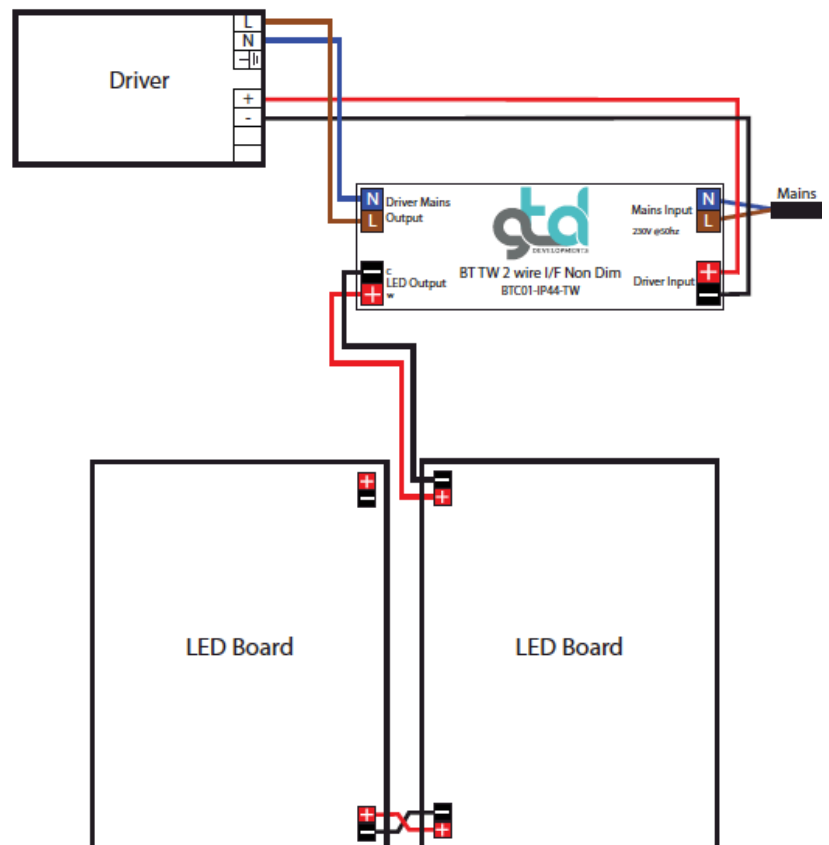## Non-dimmable Indoor Interface unit
BTC01-TW-SELV-IP44

The **BTC01-TW-SELV-IP44** is a Bluetooth mesh tuneable white luminaire node fitted into a strain relief housing. The device runs the LC (Luminaire Control) and CTL (Colour tuneable Light) clients. The device acts as an interface unit between a non-dimmable driver and the GT developments proprietary 2-wire tuneable white interface. The device requires 230V mains input. The drivers LED output is fed to the interface control unit. The output of the interface control unit is then fed to the LED PCB. The device provides full Human centric lighting and Bluetooth mesh functionality without dimming. This device uses a non-dimmable LED driver.

Technical Data:

Rated supply voltage	220 – 240Vac
Mains frequency	50/60Hz
Max. mains current	< 50mA
Typ. power input on stand-by Input	< 2mA
Maximum driver Voltage	48V
Maximum driver current	2100mA
Warranty	5 years

Wiring Diagram:

Ordering information:

Cat No: **BTC01-TW-SELV-IP44**

Bluetooth Tuneable white interface module
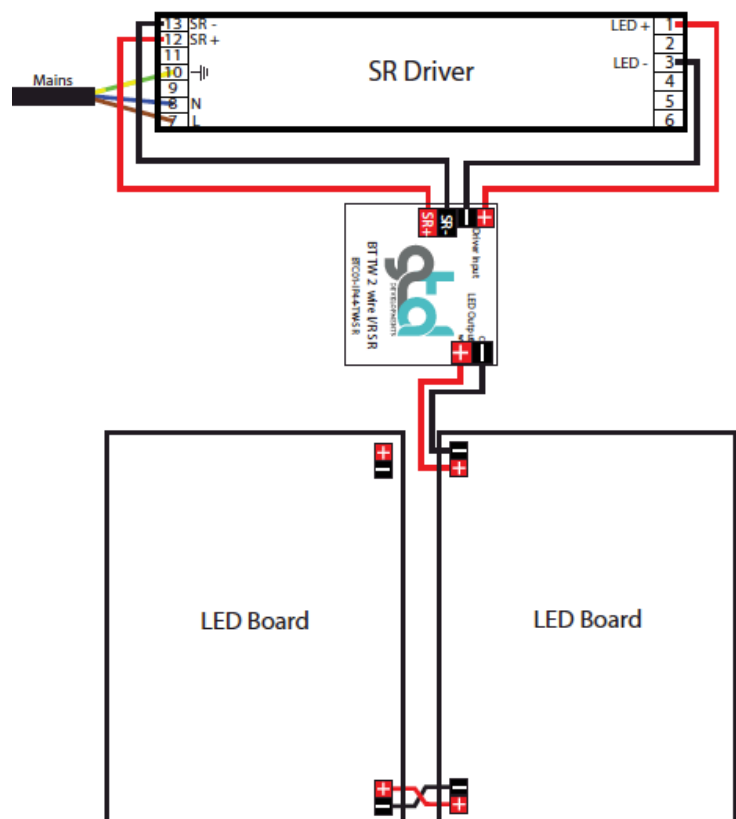## Sensor Ready Indoor Interface unit
BTC01-TW-SELV-SR-IP44

The **BTC01-TW-SELV-SR-IP44** is a Bluetooth mesh tuneable white luminaire node fitted into a strain relief housing. The device runs the LC (Luminaire Control) and CTL (Colour tuneable Light) clients. The device acts as an interface unit between a SR driver and the GT developments proprietary 2-wire tuneable white interface. The device requires no additional mains input and is powered via the SR bus. The LED output of the driver is fed to the interface control unit. The output of the interface control unit is then fed to the LED PCB. The device provides full Human centric lighting and Bluetooth mesh functionality as well as the Signify Sensor Ready feature set.

Technical Data:

Rated supply voltage	SR
Mains frequency	NA
Maximum driver Voltage	48V
Maximum driver current	2100mA
SR current	< 30mA
Typ. power input on stand-by Input	< 2mA
Warranty	5 years

Wiring Diagram:

Ordering information:

Cat No: **BTC01-TW-SELV-SR-IP44**