C-BOX Tiny

CBOX Tiny is a low cost solution for efficent remote streetlight cabinet control in real time. Using latest LTE communication technologies and built-in relays allows to switch ON/OFF streetlights remotely and adjust contactor switching schedules to achieve maximum energy saving. Combined with a 3- or 1-phase meter, detailed measurements of each phase enable accurate energy monitoring and precise fault detection. In unlikely event of communication loss CBOX Tiny will operate in standalone mode according to customer predefined switching schedules.

Modbus · CE · RoHS · 4G LTE · WARRANTY 5 YEAR

Features

- ((·)) **4G LTE**
- 📏 **COMPACT DESIGN**
- I/O **3 RELAY OUTPUT**
- ✳ **RS485 MODBUS**

How it works

4G LTE

AES128

MODBUS

Cloud server

citylight

citylight
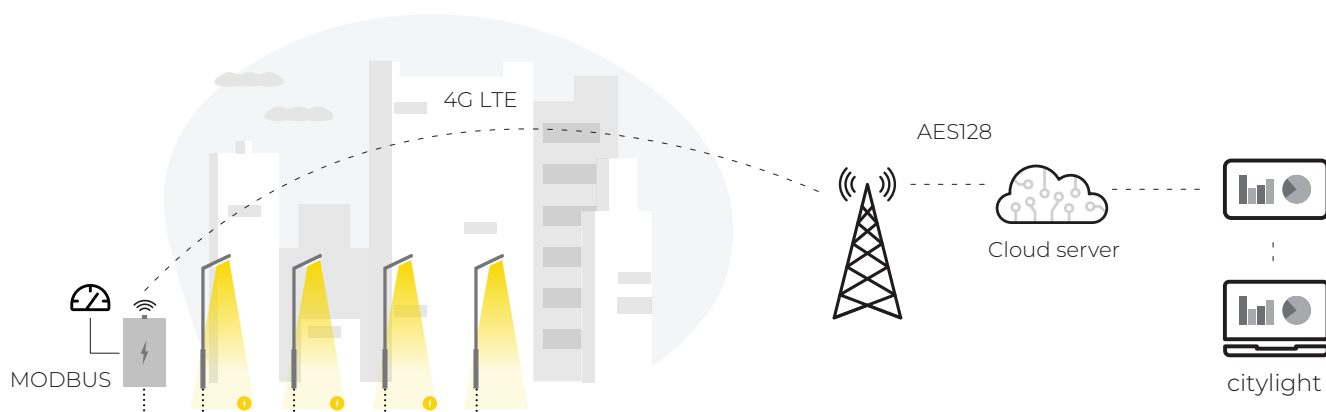
SPECIFICATION

PRODUCT CODE

CBXT

DIMENSIONS AND WEIGHT

Width: 35 mm
Height: 86 mm
Depth: 59 mm
Weight: 100 g

ENCLOSURES

IP class: IP20
Material: ABS Plastic
Flame classification: UL 94 V-0
Electrical protection: Class II

MOUNTING

Installation type/mounting: DIN
rail 35 mm
Size: 2M (module)

SERVER COMMUNICATION

MOBILE NETWORK
2G/4G LTE
SIM card type: Micro SIM/MFF2
Network protocol: TCP/IP
Antenna connector type: SMA
(female)

Data speed:
LTE FDD: Max. 10 (Mbps)
EDGE: Max. 236.8 (Kbps)
GPRS: Max. 85.6 (Kbps)

Frequency Bands:
LTE-FDD: B1/B3/B7/B8/B20
GSM: EGSM900/DCS1800

ELECTRICAL PARAMETERS

POWER SUPPLY
Operating voltage: 85V AC - 265V
AC
Frequency: 50/60 Hz
Power consumption: 2.5 W
Surge protection: 2.5 kV
Electrical safety: Galvanic
isolation

ENVIRONMENTAL REQUIREMENTS
Ambient temperature: from -25* to
+85* C
Relative humidity: < 95%
non-condensing

INTERFACES

RELAY OUTPUT
Number of sockets: 3
Type: Thyristor
State: Normally closed
Load: 300 W on socket

SERIAL INTERFACE
Type: RS-485
Protocol: MODBUS

IDENTICATION:

LED
LED
R3: LED
R2: LED
R1: LED
Status: LED (2 color)
Power: LED

OTHER

ENCRYPTION AND FIRMWARE
Encryption: AES 128
Firmware update: Over-the-Air
(OTA)

DEBUG PORT

Type: USB Type-C

MANUFACTURED

Manufactured: EU
Designed: EU

SAFETY

Directive 2014/35/EU Low Voltage
Directive (LVD)
EN 62311:2008
EN 62368-1:2014/AC:2015
EN 60529

Directive 2014/30/EU
Electromagnetic compatibility(EMC)
EN 301-489-1 V2.1.1
EN 61000-3-2:2014
EN 61000-3-3:2013
EN 61000-4-2:2009
EN 61000-4-3:2006+A1:2008+A2:2010
EN 61000-4-4:2013
EN 61000-4-5:2014
EN 61000-4-6:2014
EN 61000-4-8:2010
EN 61000-4-11:2004
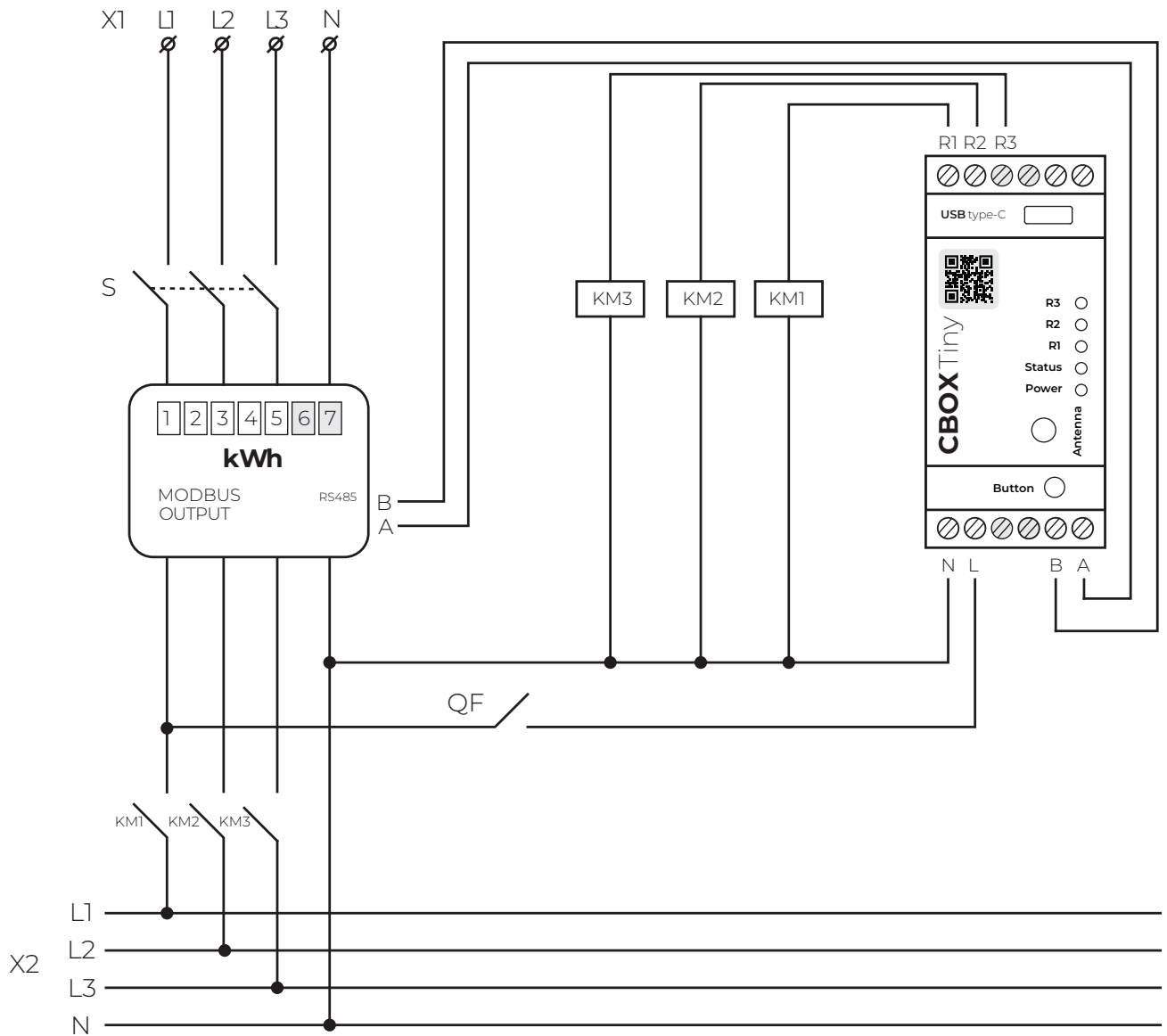EN 301 489-3 V2.1.1
EN 55015:2013+A1:2015
EN 61547:2009

Directive 2014/53/EU Radio
Equipment (RED)
EN 300 440 V2.1.1
EN 301 511 V12.5.1
EN 300 220-2 V3.1.1

Directive 2011/65/EU RoHS directive
Directive 2012/19/EU WEEE directive

DIMENSIONS

citylight
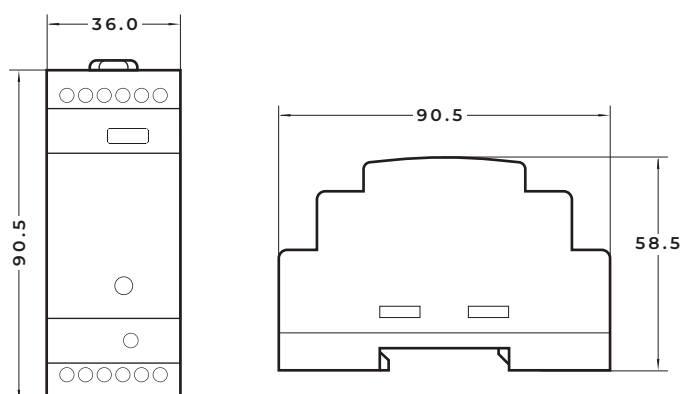
WIRING DIAGRAM

DESCRIPTION

S - Main isolator switch 3 phase

QF - Circuit breaker

KM - Contactor 1-3 phase 230V/AC

X1 - Power supply terminals Phase L1, Phase L2, Phase L3 cable

X2 - Light terminals Phase L1, Phase L2, Phase L3 cable

MODBUS METER PARAMETERS

Serial number	Total Active Power	Total Active Energy	Forward Reactive Energy
Meter ID	L1 Active Power	L1 Total Active Energy	L1 Forward Reactive Energy
Baud Rate	L2 Active Power	L2 Total Active Energy	L2 Forward Reactive Energy
Software Version	L3 Active Power	L3 Total Active Energy	L3 Forward Reactive Energy
Hardware Version	Total reactive power	Forward Active Energy	Reverse Reactive Energy
CT Rate	L1 reactive power	L1 Forward Active Energy	L1 Reverse Reactive Energy
S0 output rate	L2 reactive power	L2 Forward Active Energy	L2 Reverse Reactive Energy
Combined Code	L3 reactive power	L3 Forward Active Energy	L3 Reverse Reactive Energy
L1 Voltage	Total Apparent Power	Reverse Active Energy	
L2 Voltage	L1 Apparent Power	L1 Reverse Active Energy	
L3 Voltage	L2 Apparent Power	L2 Reverse Active Energy	
Grid Frequency	L3 Apparent Power	L3 Reverse Active Energy	
L1 Current	Total Power Factor	Total Reactive Energy	
L2 Current	Power Factor	L1 Reactive Energy	
L3 Current	Power Factor	L2 Reactive Energy	
Time	Power Factor	L3 Reactive Energy	

citylight

INSTALATION INSTRUCTIONS

⚠️ CAUTION:
Only qualified persons are allowed to install and start up Citylight.net products.
Inappropriate opening of the products is prohibited.

⚠️ WARNINGS:
Ensure that the AC power mains are turned OFF before handling the wiring, or any other work is carried out on CBOX Tiny.

⚠️ DO NOT apply power to the device until you have checked all wiring connections and you are instructed to apply power.
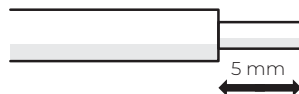

1

Observe all the applicable safety and accident prevention regulations.

2 Wire requirements and before preparation.

5 mm

Power cables
0.35 - 2.5mm

3
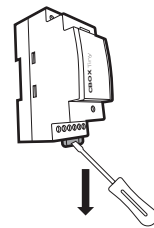
Open the fixing brackets of the CBOX using flat-headed screwdriver.
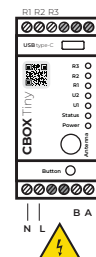

4
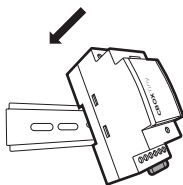
Place the CBOX on the DIN rail.

5
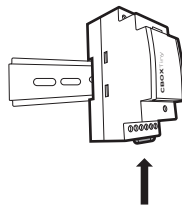
Fasten CBOX by closing the fixing brackets.

6 Connecting MAIN power supply (230V)

Using a flat-headed screwdriver, loosen the terminal screws, and then insert the cable wire into the terminal.
Complete the connection by tightening the terminal screw firmly.

---

7 Connecting Relay output

Using a flat-headed screwdriver, loosen the terminal screws, and then insert the cable wire into the terminal.
Complete the connection by tightening the terminal screw firmly.

8 Connecting Serial interface

Using a flat-headed screwdriver, loosen the terminal screws, and then insert the cable wire into the terminal.
Complete the connection by tightening the terminal screw firmly.

10
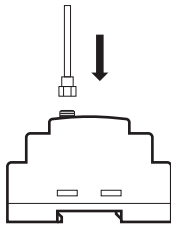
Connect the antenna plug to the CBOX and fasten it.

11
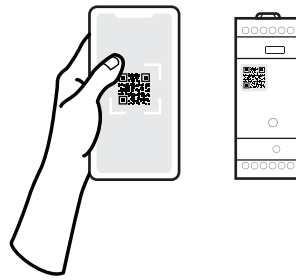
Scan the CBOX Tiny unique ID number using QR scanner.

12

Upload device ID number

Upload device ID numbers to citylight.net system.

MANUAL FUNCTIONS

Press ⎍

R1 + R2 + R3 ⇥ R1 ⇥ R2 ⇥ R3 ⇥ Off

Long press ⎍ **(5s)**

Reset

LED IDICATION

Power:

🔵 CBOX main power source connected.

⚪ CBOX main power source disconnected

Din:

SWITCH

⚪ Switch state Open

🟡 Switch state Closed

R1 / R2 / R3:

🟡 Relay output is in open position.

⚪ Relay is in closed position.

Status:

CBOX registered, weak coverage

🟢⚪⚪⚪⚪⚪⚪⚪⚪⚪⚪⚪

CBOX registered, normal coverage

🟢⚪🟢⚪⚪⚪⚪⚪⚪⚪⚪⚪

CBOX registered, good coverage

🟢⚪🟢⚪🟢⚪⚪⚪⚪⚪⚪⚪

CBOX registration in progress

🟢🟢🟢🟢🟢⚪⚪⚪⚪⚪⚪⚪

USB connection mode

🟢🔴🟢🔴🟢🔴🟢🔴🟢🔴🟢🔴

Waiting TCP connection

🔴⚪🔴⚪⚪⚪⚪⚪⚪⚪⚪⚪

GSM module Error

🔴🔴🔴🔴🔴⚪⚪⚪🔴⚪⚪⚪

SIM Error

🔴🔴🔴🔴🔴⚪⚪🔴⚪⚪🔴⚪

APN Error

🔴🔴🔴🔴🔴⚪🔴⚪🔴⚪🔴⚪