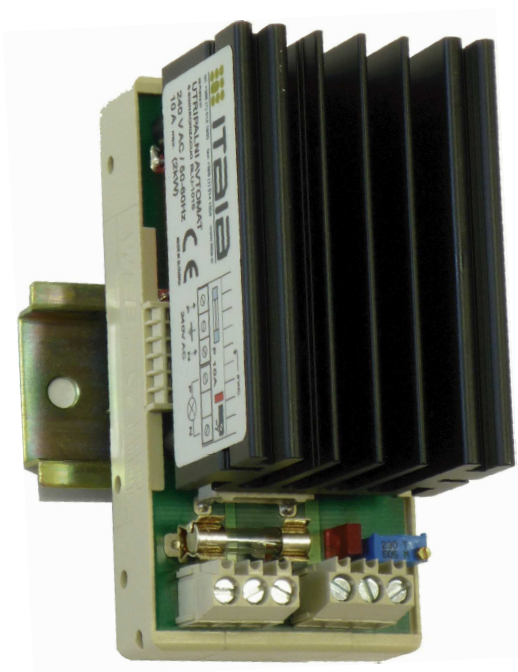


## Operating Manual

### Flashing Lights Controller: BSU 10x/20x/S



Litostrojska cesta 44/d, SI-1000 Ljubljana  
T +386 (1) 514 18 00, F +386 (1) 514 18 04  
[info@itaia.si](mailto:info@itaia.si), [www.itaia.si](http://www.itaia.si)



## Table of Contents

<b>1</b>	<b>Safety Information and Caution .....</b>	<b>1</b>
1. 1.	General .....	1
1. 2.	Safety Precautions .....	1
<b>2</b>	<b>Guideline for Connection and Use .....</b>	<b>3</b>
2. 1.	Field of Use .....	3
2. 2.	Connecting the Controller .....	3
2. 3.	Indications and Management .....	4
2. 3. 1.	Synchronization .....	5
2. 4.	Instructions for Safe and Proper Use .....	5
<b>3</b>	<b>Maintenance.....</b>	<b>6</b>
3. 1.	Checking and Maintenance .....	6
3. 2.	Servicing.....	6
3. 3.	Troubleshooting .....	6
3. 4.	Spare Parts.....	7
<b>4</b>	<b>Technical Specifications .....</b>	<b>7</b>
4. 1.	Environmental Conditions .....	7
4. 2.	Transport and Stocking.....	8
4. 3.	Disposal .....	8
<b>5</b>	<b>CE Declaration of Conformity .....</b>	<b>8</b>



# 1 Safety Information and Caution

## 1. 1. General

The device, connected and used in accordance with following instructions, is safe to use. All electrical parts are protected against water, dust and dirt by the relevant IP class. Housing prevents direct contact with any parts under voltage. Connection of the device must be done in accordance with local standards. Prior to commission control measurements must be preformed to ensure safe and correct operation.



**! CAUTION: For any injury resulting from improper use, the user takes full responsibility.**

**BEFORE MOUNTING AND CONNECTION READ THIS MANUAL CAREFULLY!**

**THE CONNECTION OF DEVICE MUST BE DONE BY QUALIFIED PERSONNEL!**

**PRIOR TO CONNECTION, UNPUG ELECTRICAL POWER!**

**DO NOT BLOCK ACCESS TO ELECTRICAL PARTS USED FOR EMERGENCY STOP, CLEANING AND MAINTENANCE!**

**METAL PARTS OF THE HOUSING MUST BE GROUNDED!**

**MAKE SURE NO WATER GETS IN TOUCH WITH PARTS UNDER VOLTAGE!**

### Fire-extinguishing Gear

In case of fire use CO<sub>2</sub> based fire extinguisher and other equipment following procedures in accordance with fire-safety regulations.

## 1. 2. Safety Precautions

Safety precautions provide personal safety and long service life of the device. Any person taking part in mounting, connecting or maintaining the device must follow this manual and local safety regulation.

### Before starting:

- Disconnect circuit breakers at input and output of the device and make sure there is no voltage present.
- Make sure power stays disconnected during the time of mounting and connecting.
- Take special care when working on a device installed in areas with high-voltage present.
- Check grounding connection.
- Provide protection against touching the parts under voltage.

### Technical Support



Litostrojska cesta 44/d, SI-1000 Ljubljana  
T +386 (1) 514 18 00, F +386 (1) 514 18 04  
[info@itaia.si](mailto:info@itaia.si), [www.itaia.si](http://www.itaia.si)

In case of malfunction please provide us with following information:

- type of the device,
- serial number,
- errors detected,
- overall time of operation,
- environmental conditions and
- application information.

We take no responsibility for proper operation and any consequence resulting from use in discordance with this manual. Safety measures must be provided by user working with the device.

### Declaration of Conformity

The device complies with relevant European directives (CE declaration of conformity):

- **Electromagnetic compatibility (ULRS, no. 132/2006)**  
Directive 2004/108/EC and its amendments
- **Low voltage Directive (ULRS, no. 27/04)**  
Directive 2006/95/EC and its amendments

## 2 Guideline for Connection and Use

### 2.1. Field of Use

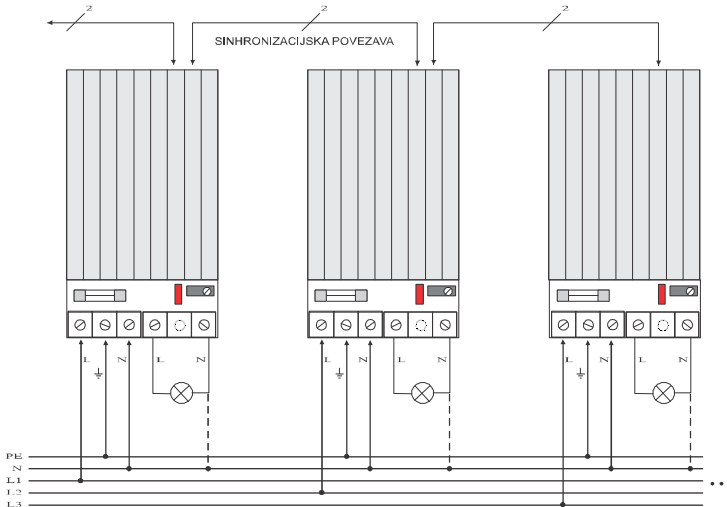
Flashing lights controller type BSU xxx/S is designed to control flashing yellow traffic light at toll stations, border crossings, pedestrian crossings, railway crossings, etc.

Flashing frequency is adjustable. LED indicator shows the operation of the controller. Synchronization in phase or antiphase enables simultaneous control of multiple lights, even at different phases of power supply, or alignment with external flashing rhythm. BSU xx2 model combines outputs which flash alternately (used for pedestrian crossing, level crossing).

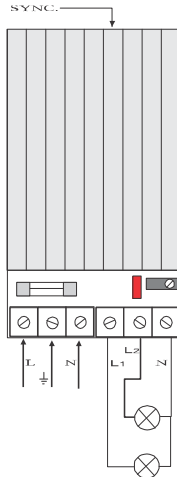
The switching system is the so-called “zero-cross”, which switches on/off at zero voltage to prevent any disturbing emissions to the power line. The bracket is designed for mounting on a DIN mounting rail.

### 2.2. Connecting the Controller

Mount the controller away from any heat sources, water or dirt. Proper ventilation must be ensured in the room to enable extraction of the resulting heat. When mounting and using the controller make sure that inside there are no foreign objects, which could cause a short circuit. The controller is powered from the mains voltage 230 V AC. Typical connection depending on the method of application is shown in *Picture 1* and *Picture 2*.



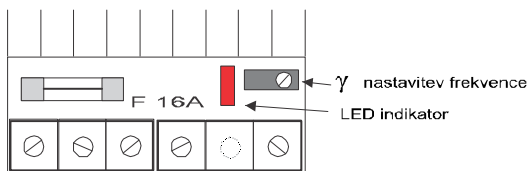
**Picture 1: Connecting the BSU xx1-S controller**



Picture 2: Connecting the BSU xx2-S controller (flashing alternately)

### 2. 3. Indications and Management

LED indicator displays the status of exit 1, which operates synchronized in phase. Choose the frequency in range of 0,3 – 2,5 Hz with  $\gamma$  trimmer. At the connection terminal there is a fuse which protects the controller and the connected lights. In case of a blown fuse **always** replace it with a new one of the **same value and type**.

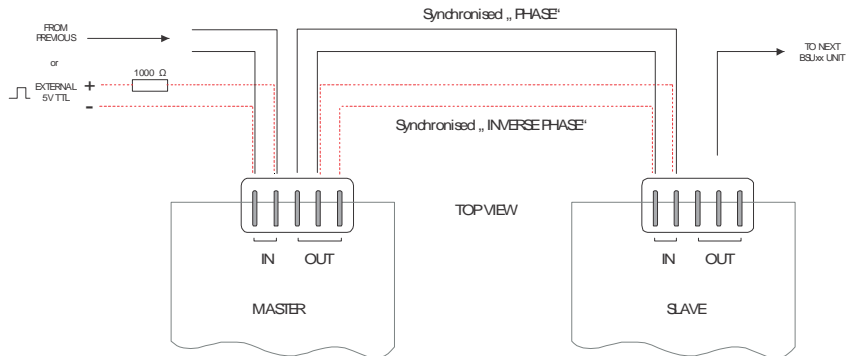


Picture 3: LED indicator and frequency setting



### 2. 3. 1. Synchronization

Multiple controllers type BSU xxx-S are connected to each other via a synchronization port. This ensures coordinated flashing of all connected lights. This is particularly beneficial when we have to use power supply of different phases due to a larger number of lights. Simultaneous (in phase) or alternate (in antiphase) flashing of the lights can be achieved with synchronization. The synchronization port can be used also for controlling the activation of the device or for synchronizing the controller with the flashing rate of other devices in the system (e.g. in a tunnel). The method of connecting is shown in *Picture 4*.



*Picture 4: Connection via synchronization port*

A larger number of flashing lights controllers can be synchronized without noticeable delays. They are synchronized to the first controller in the chain which is connected to the OUT terminal of the synchronization port. All controllers should be set to the same flashing frequency for optimal performance.

External synchronization signal:

5mA / 5 V TTL – 1000 Ω (3 – 25 V with a suitable series resistor!); 0,3 to 2,5 Hz; input (IN) is galvanically isolated.

### 2. 4. Instructions for Safe and Proper Use

- **CAUTION!** The housing surface can become very hot when the device is operating.
- Electrical ground must be connected for all applications.
- Synchronization port's output is **not potential-free**.
- When the synchronization port is not in use, protect the contacts with the rubber cap provided.

- Incorrectly connecting the synchronization port can cause the destruction of one or more controllers in the branch.

## 3 Maintenance

### 3.1. Checking and Maintenance

The device must be regularly visually inspected. Having identified any damage do not use the device and call service. It is recommended to clean the housing occasionally.

**Note!**

The device requires regular checks and maintenance. Keep your maintenance and service log up to date. Shorten check intervals if required.

- Maintenance personnel must be qualified for the job;
- Maintenance contractor company must provide education and training;
- Regular testing and checking must be exercised as described in this manual and local standards;
- Any maintenance activity must be noted in the log.

### 3.2. Servicing

- Servicing can only be done by authorised qualified personnel.
- Keep a servicing log.

Servicing for the time of warranty is provided by manufacturer exclusively. After that time it can be done by an approved maintenance contractor.

### 3.3. Troubleshooting

Error	Possible cause	Action
There is voltage at the output of the controller, the control LED is not lit.	- defective controller	- call service
There is NO voltage at the output of the controller, the control LED is flashing.	- defective controller	- call service
There is no voltage at the output of the controller, the control LED is not flashing.	- blown fuse - voltage at synchronization port	- change fuse - check synchronization connection

Disproportionate time turning on/off when operating with synchronization.	- Natural frequency setting deviates significantly from synchronization frequency	- set flashing frequency
---	---	--------------------------

**Do not try to open the device! In case of a faulty device call service!**

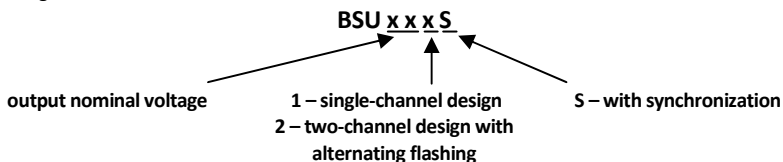
### 3. 4. Spare Parts

Parts that need to be changed must be replaced with original or functional equivalent parts approved by the manufacturer.

## 4 Technical Specifications

Basic technical data is also visible on a sticker on the photometer.

Labelling:



Nominal voltage	240 V AC / 50-60Hz
Voltage range	170 – 250 V AC
Flashing frequency	0,3 to 2,5 Hz (0,5 Hz preset)
Temperature range	-20 ° C to +50 ° C
Power consumption	approximately 0,5 W
Housing	ABS / Aluminium
IP protection	IP 20
Dimensions (W x H x D)	50 x 100 x 75 mm
Weight	0,230 kg

### 4. 1. Environmental Conditions

Maximum environmental temperature is +50 °C. Lowest environmental temperature is -20 °C. Ventilation must be ensured to allow the extraction of the resulting heat. Relative air humidity must not exceed 50% at maximum temperature. Higher humidity is allowed at lower temperature (e.g. 95% at +20°C).

Sea-level elevation must not exceed 2000 metres. When using above 1000 metres consider lower air dielectricity and different cooling conditions.

## **4. 2. Transport and Stocking**

Transport the device in the original packing if possible. When that is not available use protective air bubble foil and protect exposed areas with Styrofoam. If needed place it on wooden pallets.

Temperature while transporting and stocking should be between -25 °C and +55 °C.

Avoid stocking for longer periods of time. After transporting and mounting allow the device at least 1 hour time to settle down before commission. In case that the device is not to be used for a longer period of time, store it in a dry, well ventilated place at room temperature!

## **4. 3. Disposal**

Lifetime of the device significantly depends on the way of use, installation, maintenance and working conditions. Production year is visible on the sticker on the back side. Dispose a deteriorated or ruined device to a place for industry electronic-components disposal according to local regulation.

Components particularly dangerous for the environment (batteries, chemicals, etc.) should be disposed to special places.

# **5 CE Declaration of Conformity**

CE declaration of conformity ensures that the device is safe to use and has been checked and tested to the specified standards. CE statement is enclosed.

**ES - IZJAVA O SKLADNOSTI**  
**CE DECLARATION OF CONFORMITY**

**Manufacturer (name, address):***Proizvajalec (naziv, naslov):*

**ITAIA d.o.o.**  
**Litostrojska 44/d**  
**1000 Ljubljana**

**We declare under our sole responsibility that**  
*s polno odgovornostjo izjavljamo, da*

**product: Blink-steering unit**  
*proizvod: Utripalni krmilnik*

**(type, model):**  
*(tip, model):*

**BSU xx1/2 /S**

**is in conformity with the provisions of the following regulations:***ustreza zahtevam naslednjih predpisov:*

- **Low voltage Directive (Uradni list RS, no. 27/04)**  
*Low voltage directive 2006/95/EC and its amendments*
- **Electromagnetic compatibility (Uradni list RS, no. 132/2006)**  
*EMC directive 2004/108/EC and its amendments*

**and complies with the requirements of the following standards:***in izpolnjuje zahteve naslednjih standardov:*

SIST EN 60335-1:2003 +A11:2004 +A1:2005

SIST EN 60335-2-29:2004

SIST EN 61204:1999

SIST EN 60529:1997 + A1:2000

SIST EN 61204-3:2002

Household and similar electrical appliances-Safety-Part1

Household and similar electrical appliances-Safety-Part2

Low-voltage power supply devices, d.c.output-Performance characteristics and safety requirements

Degrees of protection provided by enclosures

Low-voltage power supply devices, d.c.output-Part3:EMC

**Year of affixing of CE mark:***Leto, ko je bil CE znak nameščen na proizvod: 2008* **ITAIA**

Ljubljana, Slovenija

*Peter Strmčnik, direktor*  
*Ime in priimek, funkcija*  
*Name, surname, position*

### **Limited Warranty Conditions**

Our products are workmanship and materials fault free and will work according to specification for a minimum time of warranty (1 year). We provide spare parts and servicing for at least 5 additional years. We will respond to failure notice immediately (7 days at maximum) and fix it within 48 working days.

During the warranty period we take full responsibility and costs (transport not included) for removal of any malfunction due to faulty materials or workmanship. After this period we charge servicing according to used time and replaced parts.

Warranty related obligations come in power with full payment.

#### **Warranty obligations cease to exist:**

- in case of improper use or use in discordance to this manual;
- in case of mechanical damage;
- in case of consequential damage due to failure or damage of other devices,
- in case of natural or environmental cause (e.g. lightning discharge, flooding, fire, etc.),
- if the device has been repaired by unauthorized personnel,
- if there are unoriginal spare parts built in the device,
- if there are changes made to the device or their parts without written approval of the manufacturer.

#### **Servicing obligations cease to exist:**

- if the device has been ruined,
- if the device has been repaired by unauthorized personnel,
- if there are unoriginal spare parts built in the device,
- if there are changes made to the device or their parts without written approval of the manufacturer,
- for the time of overdue payment for previous services.

Sale Data: \_\_\_\_\_

Serial number: \_\_\_\_\_





Litostrojska cesta 44/d, SI-1000 Ljubljana  
T +386 (1) 514 18 00, F +386 (1) 514 18 04  
[info@itaia.si](mailto:info@itaia.si), [www.itaia.si](http://www.itaia.si)