



D-41i
UNIVERSAL LED DRIVER
INSTRUCTION MANUAL

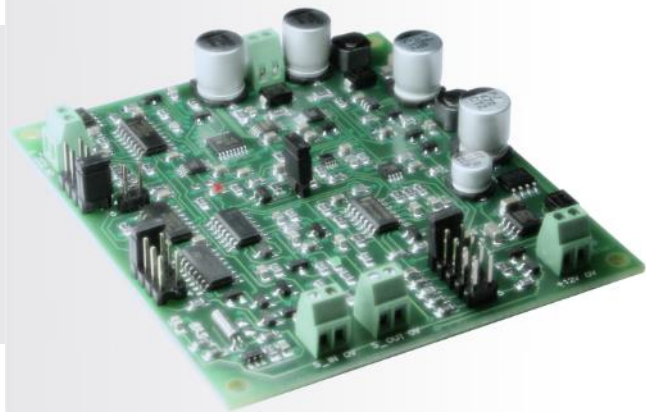


TABLE OF CONTENTS

| | |
|----------------------------|-----|
| General Information | 3 |
| Application | 3 |
| Features | 3 |
| Operation conditions | 3 |
| Precautions | 4 |
| Driver layout | 5 |
| Operating mode description | 6 |
| Operating instruction | 7-9 |
| Driver connections | 10 |
| Technical characteristics | 11 |

GENERAL INFORMATION

Application

D-41i driver is designed for power supply of Mid-IR LEDs.

Compatibility table

| One-element LED models | |
|----------------------------------|---|
| LmsXXLED | ✓ |
| LmsXXLED-R | ✓ |
| LmsXXLED-RW | ✓ |
| LmsXXLED-TEM | ✓ |
| LmsXXLED-TEM-R | ✓ |
| LmsXXLED-CG | ✓ |
| Standard multielement LED models | |
| LmsXXLED-4M | ✓ |
| LmsXXLED-4M-R | ✓ |
| LmsXXLED-4M-RW | ✓ |
| LmsXXLED-4M-TEM | ✓ |
| LmsXXLED-4M-TEM-R | ✓ |
| Lms18-..-23LED-6M | ✗ |
| Lms18-..-23LED-6M-TEM | ✗ |

Note! Please contact us to specify compatibility of custom multielement LED models.

Features

- **Pulse mode operation** (mode that provides **maximum peak optical power**).
- **Adjustment** of LED current amplitude, frequency and pulse duration via driver's jumpers.
- **Synchronization input** terminal block which allows:
 - **synchronising** driver with an external device (synchronous detector etc.);
 - **synchronising** two or more drivers simultaneously;
 - **setting custom** frequency of the LED signal.
- Possibility of **synchronization** with an **external device** with the help of **synchronization output** terminal block.
- **Safety system** for prevention of LED damage in case of **circuit brake**.

Operation conditions

Indoor operation only. Ingress Protection Rating IP00.

PRECAUTIONS

- Do not switch jumpers during work.
- Do not turn on the driver without jumpers inserted.
- Do not use multimeter to control and adjust current.
- Please keep the following driver's regimes listed in the table below. Otherwise excessive load may cause overheating and LED damage.

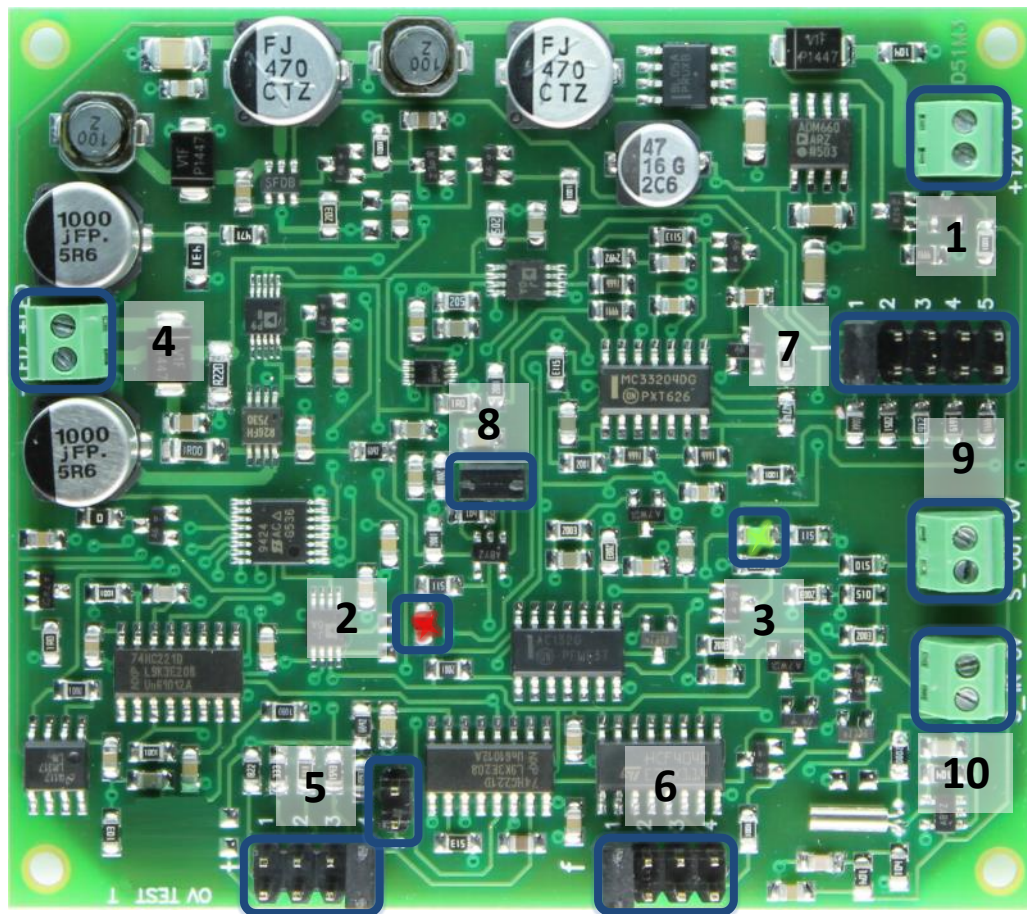
| Current, A | | Frequency | | | |
|-------------------------|-----|-----------|-------|-------|-------------|
| | | 512 Hz | 1 kHz | 2 kHz | 4 kHz |
| Pulse duration, μ s | 5 | 1.9 | 1.9 | 1.9 | 1.5 |
| | 10 | 1.9 | 1.9 | 1.5 | 1 |
| | 20 | 1.9 | 1.5 | 1 | 0.6 |
| | 50 | 1.5 | 1 | 0.6 | 0.2 |
| | 150 | 1 | 0.6 | 0.2 | not allowed |

Maximum allowed current at different operation modes (frequency and pulse duration)*

Note! Please refer to your provider if you have any questions.

*The values are provided for informational purposes only; the exact permitted current values at specific modes differ for different LED models and are presented in the appropriate technical passports.

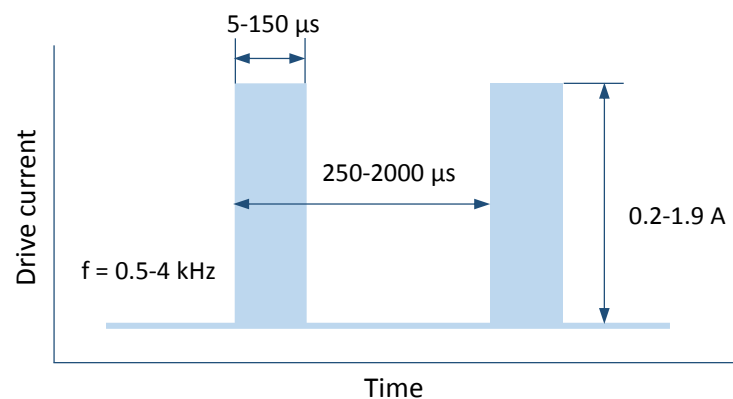
DRIVER LAYOUT



1. Power input terminal block.
2. Circuit break indicator (red).
3. LED current indicator (green).
4. LED connection terminal block.
5. Pulse duration adjustment jumper.
6. Frequency adjustment jumper.
7. LED current adjustment jumper.
8. Circuit break safety system disabling jumper.
9. Synchronization output terminal block.
10. Synchronization input terminal block.

OPERATING MODE DESCRIPTION

D-41i driver works in a **pulse mode**. This mode provides LED maximum peak optical power. LED current can be changed switching the jumper 7 (0.2; 0.6; 1.0; 1.5 and 1.9 A). Pulse duration can be changed using the jumper 5 (5; 10; 20; 50 and 150 μs). Frequency of an LED can be adjusted using the jumper 6 (512 Hz, 1 kHz, 2 kHz or 4 kHz). Frequency can be also adjusted by an external signal source connected via synchronization input.



Pulse mode current-time relation.

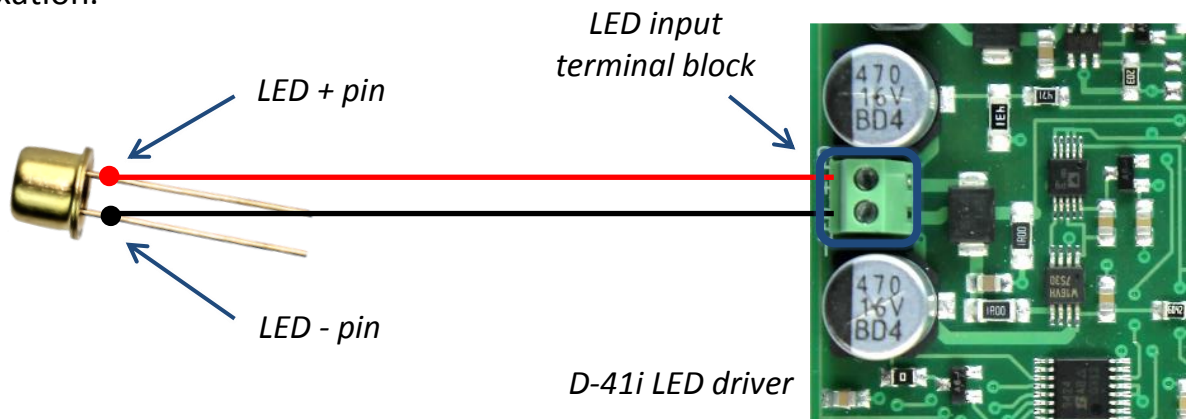
Note! When external signal source is connected to the synchronization input, frequency of an LED is determined by this source and NOT by the jumper, pulse duration and current amplitude are set with the driver jumpers. External signal should meet the following requirements:

| | |
|-------------------------|-------------------|
| Pulse duration | >10 μs |
| Frequency | 0.5 – 16 kHz |
| Pulse voltage amplitude | 5 V |

Note! You can stop driving the LED temporarily by putting external signal with **5V constant voltage** on synchronization input.

OPERATING INSTRUCTIONS

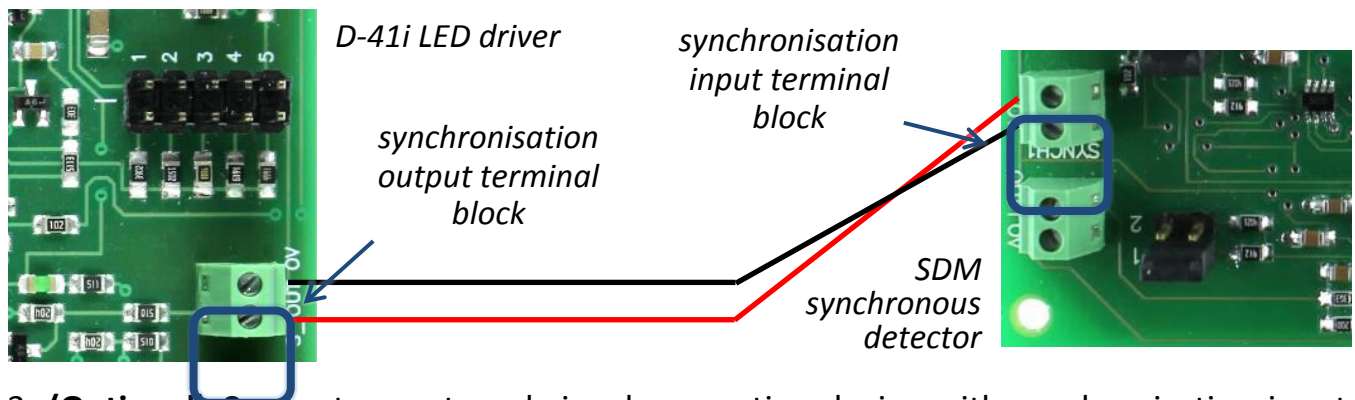
1. Carefully connect appropriate pins of the LED with LED connection terminal block (4) till tight fixation.



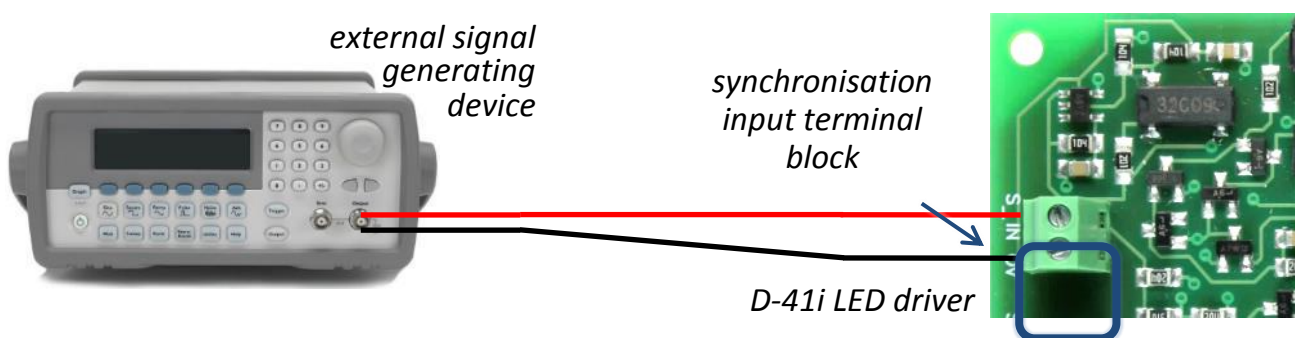
Note! Terminal block header marked with “LED +” must be connected to the appropriate pin of an LED (marked with a red point). Improper connection may cause LED damage.

Note! LED case must be electrically isolated from the ground.

2. Connect driver’s synchronization output terminal block (9) with synchronisation input of LMSNT SDM synchronous detector or other synchronisation device.

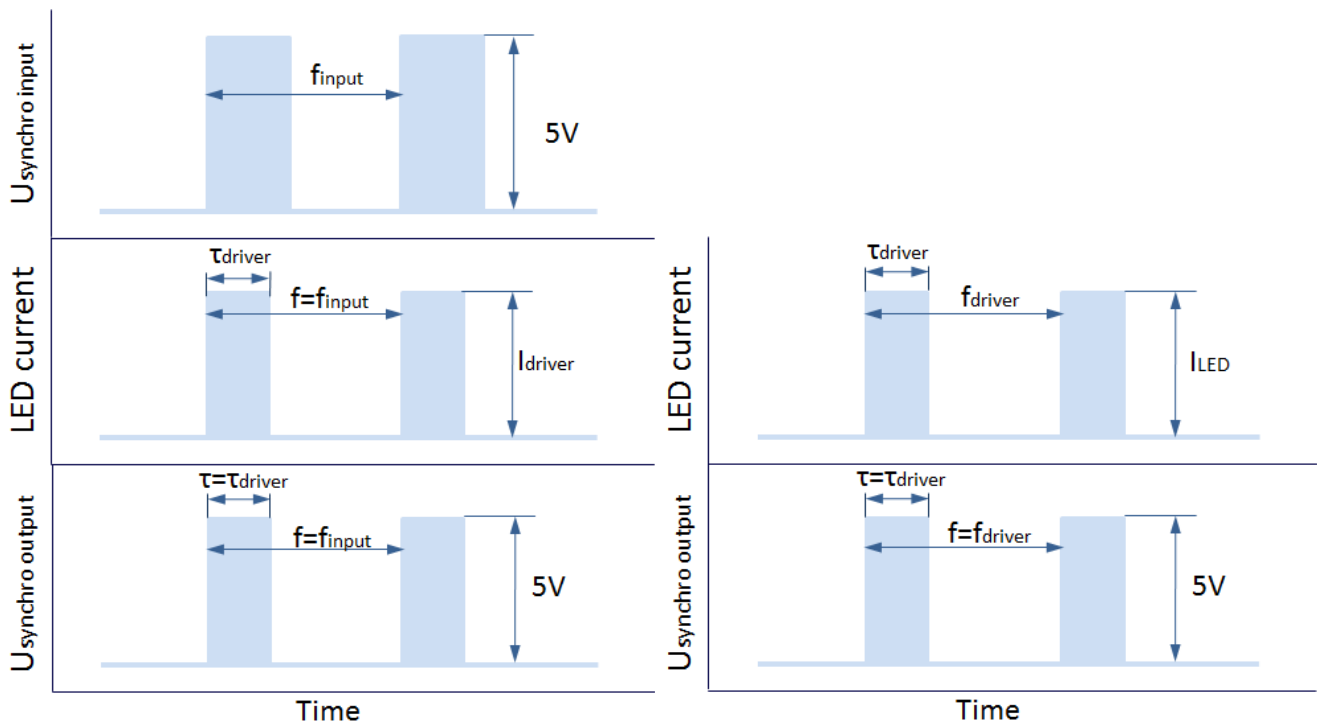


3. **(Optional)** Connect an external signal generating device with synchronization input (10) External signal should meet the requirements presented on the page 6.



OPERATING INSTRUCTIONS

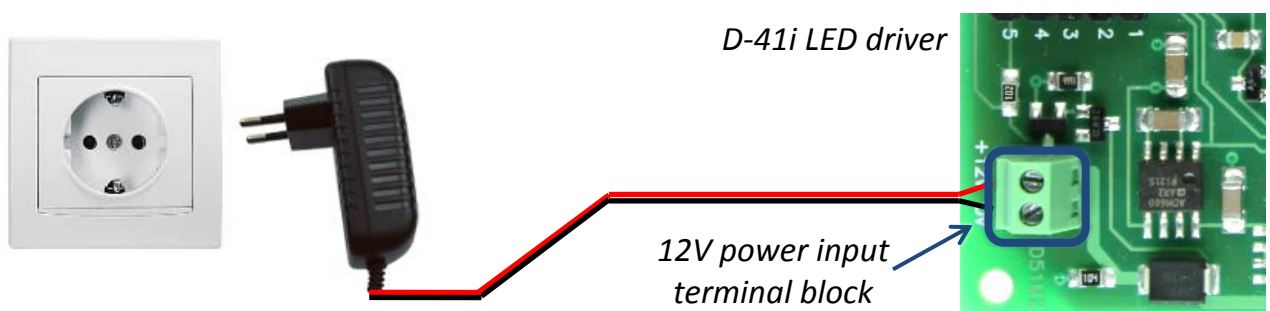
Note! Regarding the resulting signal forms in different conditions please refer to the graph below:



D41i signal synchronization with BOTH synchronization input and synchronization output

D41i signal synchronization with synchronization output

4. Select required mode using pulse duration, frequency and LED current adjustment jumpers (5, 6 and 7 respectively). In case of using an external signal source frequency will be adjusted via the source.
5. Check that the circuit break safety system is turned on – jumper (8) should be put on.
6. Connect a power supply to the power input (1). LED current indicator (green) (3) will turn on if everything is connected properly. In case of circuit break red indicator (2) will turn on and LED current indicator (3) will be pulsing till the problem will be solved.



OPERATING INSTRUCTIONS

Note! Circuit break safety system triggers when operation voltage exceeds 2.5V. Subsequently, the system may turn on in case of using of LED models with high voltage values (some LEDs with peak wavelengths at 1.6-2.4 μm) despite proper connection. If the problem occurs take the following steps:

- make sure that voltage of an LED is more than 2.5V at chosen working current, referring to the appropriate LED current-voltage characteristic pointed in the technical report;
- check that all the connections are proper and secure
- put off the jumper (8) to disable the safety system.

7. Make all the connections of other boards (synchronous detector etc.) following the appropriate instructions manuals. Before turning them on check the required connections and modes:

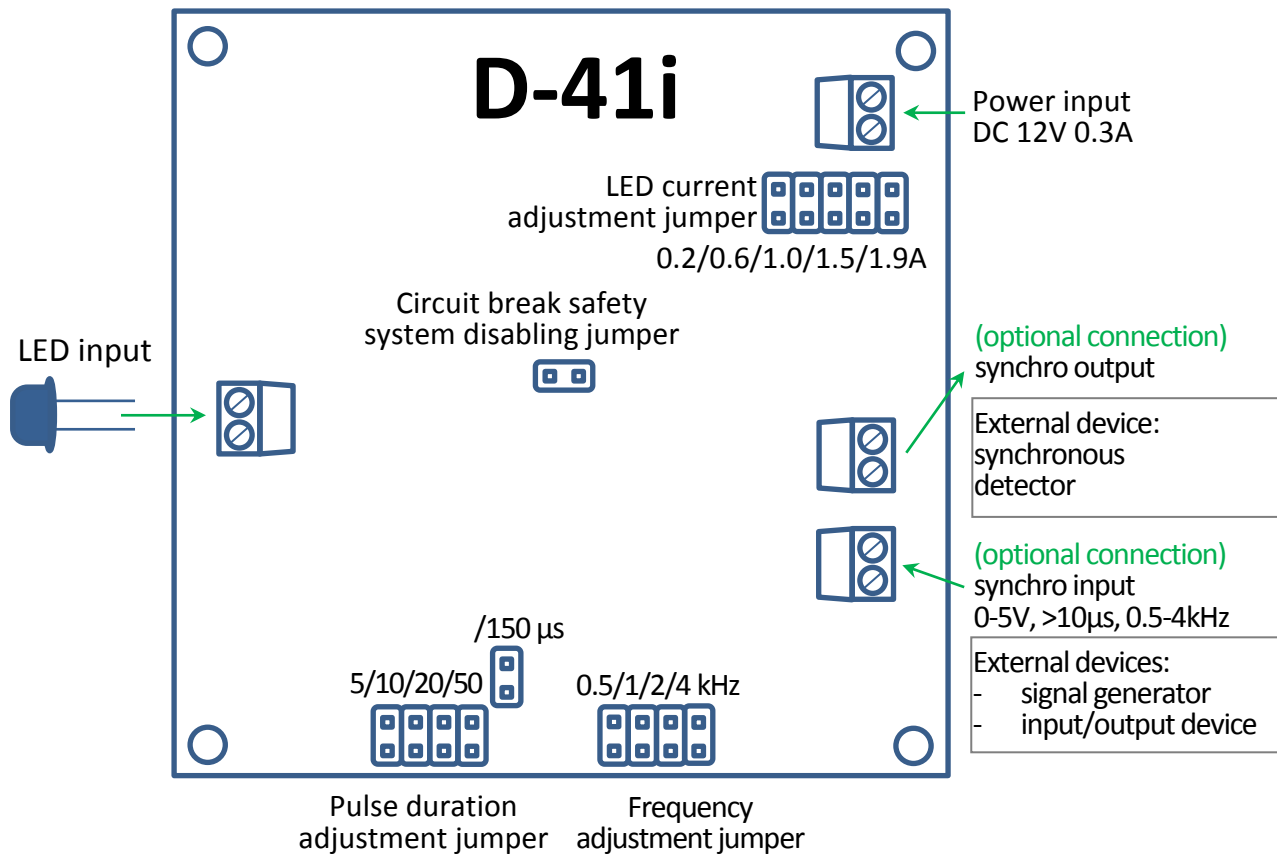
Synchronous detector:

- Photodiode input connection
- Preamplifier power output connection
- Synchronisation with driver
- Averaging time and signal gain selection
- External signal observing device

connection

Note! Please follow the requirements presented in the table on the “Technical Characteristics” page to provide driver’s faultless operation.

DRIVER CONNECTIONS



D-41M connections

TECHNICAL CHARACTERISTICS

| | |
|--------------------------------|-------------------|
| Input voltage | +12 V, stabilized |
| Voltage tolerance | -5..+5 % |
| Input current | max. 0.3 A |
| Board dimensions | 80×70×15 mm |
| Synchronization output voltage | 5 V |

| | |
|--------------------------|-----------------------|
| Adjustable parameters | |
| Pulse duration | 5/10/20/50/150 μs |
| Frequency | 0.5/1/2/4 kHz |
| Output current amplitude | 0.2/0.6/1.0/1.5/1.9 A |