

LED solutions

ready2mains Programmer

Product Manual



TRIDONIC

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Scope of documentation

1. Scope of documentation

These operating instructions are valid for the ready2mains Programmer.

TRIDONIC GmbH & Co KG is constantly striving to develop all its products. This means that there may be changes in form, equipment and technology.

Therefore, claims cannot be made on the basis of information, diagrams or descriptions in these instructions.

The latest version of these operating instructions is available on our home page.

1.1. Copyright

This documentation may not be changed, expanded, copied or passed to third parties without the prior written agreement of TRIDONIC GmbH & Co KG.

We are always open to comments, corrections and requests. Please send them to info@tridonic.com.

1.2. Imprint

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Safety instructions

2. Safety instructions

The instructions in this section have been compiled to ensure that operators and users of the ready2mains Programmer from Tridonic are able to detect potential risks in good time and take the necessary preventive measures.

The operator must ensure that all users fully understand these instructions and adhere to them. This device may only be used, installed and configured by suitably qualified personnel.

2.1. Intended use

2.1.1. Proper use

The ready2mains Programmer is a versatile tool to program various Tridonic products via ready2mains and U6Me2. It is used in luminaire productions and covers a wide range of manufacturing setups, from manual programming to fully automated production lines. In addition, the Programmer can be used in outdoor applications to configure LED Drivers via U6Me2.

2.1.2. Improper use

Extensions and modifications to the product.

WARNING!

Improper use could result in injury, malfunction or damage to property.

The operator must inform all users of the potential risks associated with the use of the equipment and of protective countermeasures.

2.2. Dangers associated with the operation of the system

DANGER!

Danger of electrocution

Disconnect the power to the entire system before installing the ready2mains Programmer.

CAUTION!

Risk of damage caused by condensation

Prior to commissioning the system, wait until the control device is at room temperature and completely dry!

CAUTION!

Risk of damage caused by humidity or water

Only use the control device in dry areas and protect it against humidity and water!

Safety instructions

 CAUTION!

Electromagnetic compatibility (EMC)

Although the Tridonic control device meets the stringent requirements of the appropriate directives and standards on electromagnetic compatibility, it could potentially interfere with other devices under certain circumstances!

Introduction

3. ready2mains Programmer - Introduction

The ready2mains Programmer is a versatile tool to configure various Tridonic products via ready2mains and U6Me2. It is used in luminaire productions and covers a wide range of manufacturing setups, from manual programming to fully automated production lines. In addition, the Programmer can be used in outdoor applications to configure LED Drivers via U6Me2.

3.1. Basic information

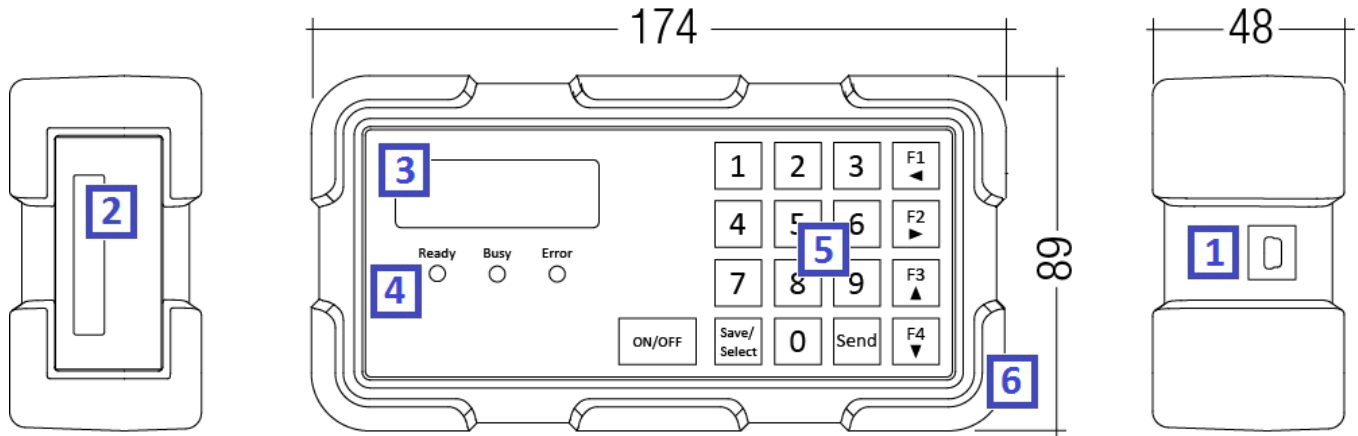


3.1.1. Delivery contents

- _ ready2mains Programmer
- _ Protective cover
- _ USB cable
- _ System connector (Phoenix Contact)
- _ Installation instructions

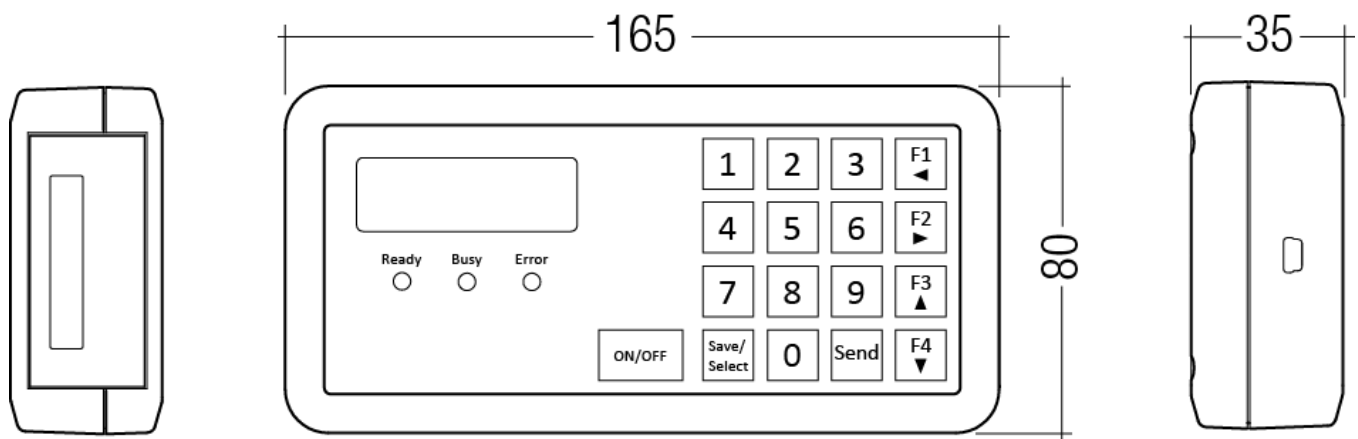
Introduction

3.1.2. Programmer overview with protective cover



1. USB connection
2. System connection (including mains)
3. Display
4. Status LEDs
5. Keypad
6. Protective cover

3.1.3. Programmer overview without protective cover



Introduction

3.2. Usage of the ready2mains Programmer in production lines

The device can be used in multiple ways to program one or more LED Drivers.

3.2.1. Current programming via graphical user interface (GUI)

Programming via the GUI is the simplest way as only the Programmer itself is required.

This mode is especially useful for initial tests or small production batch sizes when only the output current needs to be set. Optionally, also the lockbit can be set in this mode.

- _ programming of output current and lockbit only
- _ programming via mains wiring by using ready2mains protocol
- _ adjustment of output current and execution on the device itself or via an external push button; no PC required

For more information see chapter Programmer GUI > [Mode Program current](#), p. 24.

3.2.2. Execution of scripts via GUI

A more sophisticated way of programming an LED Driver is the use of customer-defined configuration scripts. These scripts can be compiled separately and then stored and executed on the Programmer.

Three different types of scripts can be generated, containing ready2mains or U6Me2 parameters. This enables a wide range of applications and allows for delegable working procedures.

- _ Excel scriptGENERATOR for easy generation of scripts
- _ available script types: ready2mains and U6Me2
- _ content of script is highly adaptable, from only a few parameter up to the entire data set valid for each protocol
- _ storage of the scripts on the Programmer
- _ use of hot keys for most used scripts
- _ execution on the device itself or via an external push button; no PC required

More information can be found in chapter [Mode Program script](#), p. 24 and in the Handbook scriptGENERATOR (see [Reference list](#), p. 57).

3.2.3. Execution of scripts via application programming interface (API)

In semi or fully automated production setups, the Programmer can be controlled directly via PC software, using a dedicated Programmer API (which is the interface with which the GUI can be programmed).

This provides full control of the Programmer's overall functionality without requiring manual process steps.

- _ full control of Programmer via software

Introduction

- _ access to entire data set which is valid for each protocol
- _ handling of all script types
- _ omission of manual steps

More information can be found in the Handbook scriptGENERATOR (see [Reference list](#), p. 57).

For more information on how to control the Programmer via the API, please contact the manufacturer.

3.3. Usage of the ready2mains Programmer in development

The ready2mains Programmer can also be used for development purposes when certain parameters need to be tested, e.g. in order to determine the correct output current required for a certain luminous flux. For doing so, a dedicated mode is implemented for testing a current setting without saving it to the LED Driver.

- _ set current for testing purposes without saving it to the LED Driver
- _ create user defined scripts and store them centrally or on the Programmer for later use at the production line

More information can be found in the chapters [Mode Test current](#), p. 23 and [Mode Program script](#), p. 24 and in the Handbook scriptGENERATOR (see [Reference list](#), p. 57).

3.4. Usage of the ready2mains Programmer in outdoor applications

While the Programmer is mainly designed for the use in luminaire productions, it can also be used on site in outdoor applications, thanks to the implemented U6Me2 functionality. This protocol enables the Programmer to program chronoSTEP profiles in outdoor LED Drivers.

In combination with a contactor, it is possible to program the luminaires of an entire street.

For more information see chapter:

- _ Programmer GUI > [Mode Program script](#), p. 24

3.5. Implemented security precautions

3.5.1. Short-circuit behaviour and protection

In case of a short-circuit at the output, the Programmer will switch off immediately and restart after 10 s. If another short-circuit is detected, the Programmer will switch off and will only be reactivated after a mains reset.

If a ground fault without isolating transformer happens the programmer can be destroyed.

Introduction

3.5.2. Overload protection

If the max. permissible connected load is exceeded, the Programmer will switch off the output and automatically restart after 10 s. If the overload persists, the Programmer will switch off and will only be reactivated after a mains reset.

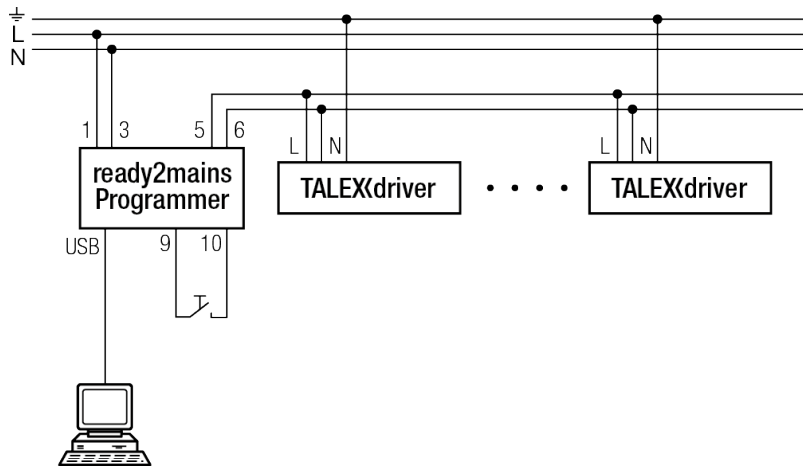
3.5.3. Overtemperature protection

If a temperature of 65 °C is exceeded within the Programmer, the data rate will be gradually reduced. Therefore, commands will be transferred to the LED Driver with a slight delay. If the temperature continues to rise and reaches a value of 120 °C, the Programmer will switch off and will only be reactivated after a mains reset.

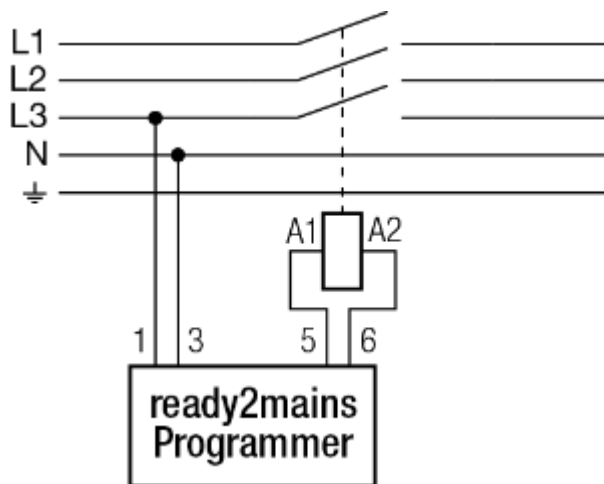
Wiring diagrams and installation

4. Wiring diagrams and installation

4.1. Wiring ready2mains only

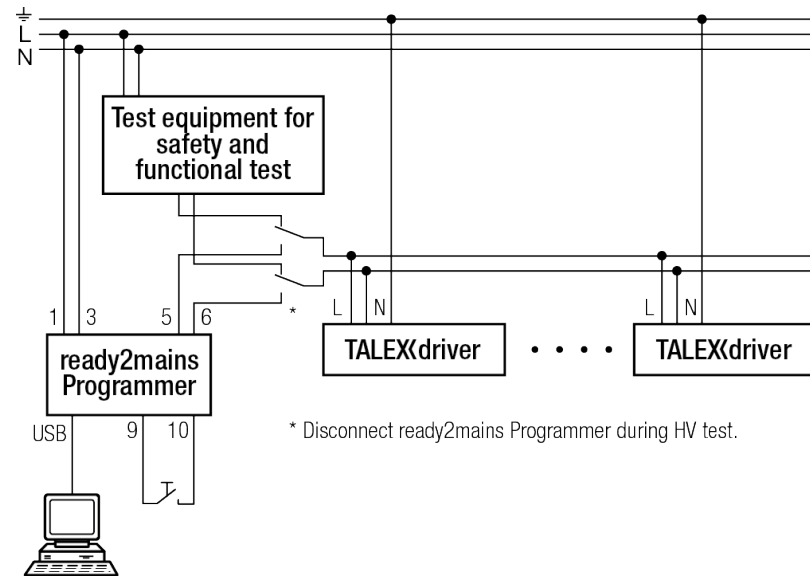


4.2. Wiring U6M

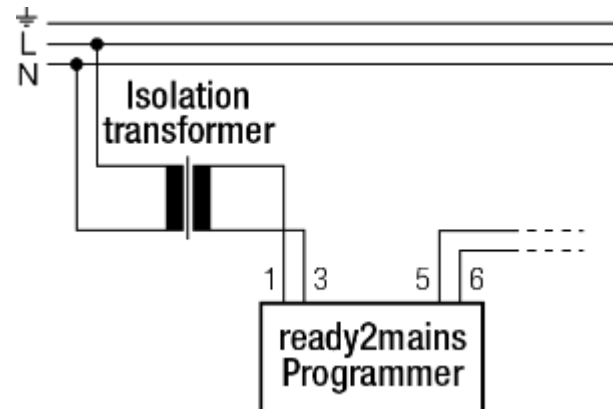


Wiring diagrams and installation

4.3. Production



4.4. Security circuit against ground fault (incorrect wiring of the luminaire)



Tested transformer:

RS Pro 500VA Isolating Transformer

Reference number at RS components: 504-228


Isolation transformer should be protected against secondary short-circuit (B10circuit breaker primary or a fuse secondary).

4.5. External momentary-action switch

To execute scripts in production it is recommended to use an external momentary-action switch instead of the integrated keypad.

Wiring diagrams and installation



External switches can be connected via the system connector and offer the same functionality as the  button on the Programmer.

The following criteria must be fulfilled:

- _ momentary-action switch has to be rated for mains voltage
- _ potential-free contact
- _ switch impulse > 200 ms

Connect the switch to pin 9 and 10 of the system connector, see chapter [Pin configuration of the Programmer](#), p. 16.

4.6. Wiring type and cross section

The wiring can be done with stranded wires and ferrules or solid wires. The wire's cross section must be 0.25 - 1.5 mm².

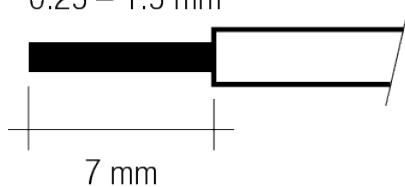
Strip 7 mm of insulation from the cables to ensure a proper operation of the screw terminals.

Use one wire for each terminal connector only.

Additional information about the connector can be found in the chapter [Connector data](#), p. 53.

wire preparation:

0.25 – 1.5 mm²



Wiring diagrams and installation

NOTICE

The following points must be considered during installation.

For all devices in general:

- _ Connect max. 5 LED Drivers to the Programmer.
- _ Momentary-action switch has to be rated for mains voltage.
- _ Always disconnect the Programmer before conducting any high voltage tests!
- _ At low mains voltages the max. mains current of 3 A has to be considered (max. 330 VA at 110 V).
- _ To guarantee a selective shut-down in case of a hardware defect, it is recommended to use an extra circuit breaker for the Programmer.
- _ For proper programming, LED Drivers require a load to be connected during programming.
- _ To prevent destruction of the programmer at incorrect wiring of the luminaire (ground fault), it is recommended to use an isolating transformer plus an adequate fuse.

For ready2mains:

- _ The ready2mains Programmer may only be used in conjunction with ready2mains compatible LED Drivers.
- _ Any other LED Driver or load shall not be connected when programming via ready2mains.

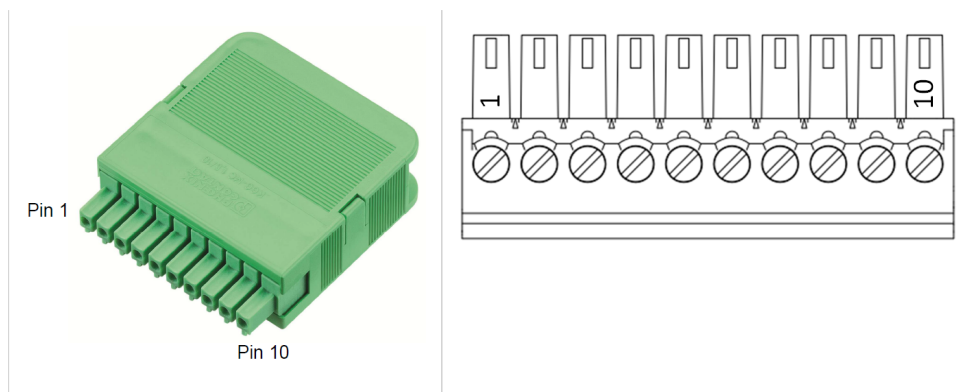
For U6Me2:

- _ If the load exceeds the stated maximum load, a contactor must be used in between the Programmer and the connected LED Driver.

Wiring diagrams and installation

4.7. Pin configuration of the Programmer

Connector type: Phoenix Contact MC 1,5/10-ST-3,81 - 1803659



Pin No.	Input / Output	Description
1	Input	Mains input L
2	---	n.c.
3	Input	Mains input N
4	---	n.c.
5	Output	Mains output L'
6	Output	Mains output N'
7	Output	n.c.
8	Output	n.c.
9	Input	Switch
10	Input	Switch

⚠ WARNING!

Avoid wrong wiring! Wrong wiring will destroy the programmer! (Especially for ground faults)

Logging

5. Logging

The latest version of the ready2mains Programmer offers an extended logging function which stores the logs on the internal storage. The logfiles can be used to get debugging information in case of technical problems.

Due to the fact that the ready2mains Programmer has no internal clock a time stamp is used which is based on the milliseconds passed since the last start of the Programmer.

There are 3 logfile types available:

- _ Error.log
- _ Command.log
- _ Keypad.log

Each logfile type (except for Error.log) can be deactivated, used in standard mode or used in verbose mode. For more informations how to set up logging see [Graphical User Interface](#), p. 20!

5.1. Error.log

The Error.log contains all the information necessary for error diagnostics. Therefore errors of the device, occurring problems in scripts and faulty commands via USB will be logged.

The following errors are logged:

- _ In Standard mode:
 - _ Error running commands
 - _ Error reading a configuration
 - _ Error saving the data in the flash memory
 - _ Error reading a script
 - _ Shortcircuit at output
 - _ Overload at output (measured current is also stored)
 - _ Overtemperature (incl. temperature)
 - _ Overload (incl. Leistung)
- _ In Verbose mode
 - _ No mains at switch on command
 - _ File not found on memory card
 - _ Invalid command received via USB
 - _ Overvoltage, Undervoltage
 - _ Error saving data to the memory card

Logging

- _ Error reading data from the memory card

5.2. Command.log

In the Command.log all sent commands are logged with the corresponding response. This is valid for commands via USB, commands from the script and commands from the Keypad (Programm current and Test current mode). Also ready2mains Programmer specific commands belong to the log.

Available options:

- _ Off: parameters not logged
- _ Error: commands are only logged in case of an error
- _ All: all commands are logged

5.3. Keypad.log

In the Keypad.log all activities from the Keypad are logged.

Available options:

- _ Off: parameters not logged
- _ Standard:
 - _ Current programmer with xxx mA incl.lockbyte status
 - _ Script xxx started
 - _ Script xxx finished
- _ All: Standard following parameters logged:
 - _ Current programming tested with XXX mA
 - _ Script xxx selected in Filesystem (File and Folder)
 - _ Script xxx selected via Hotkey X (File, Folder and Hotkey)
 - _ Script xxx assigned to Hotkey X (File and Folder)
 - _ Display settings changed
 - _ Detailed information what is changed
 - _ Current changed
 - _ From Value 1 to Value 2
 - _ Output ON / OFF

Logging

NOTICE

The following points must generally be considered in the logfiles:

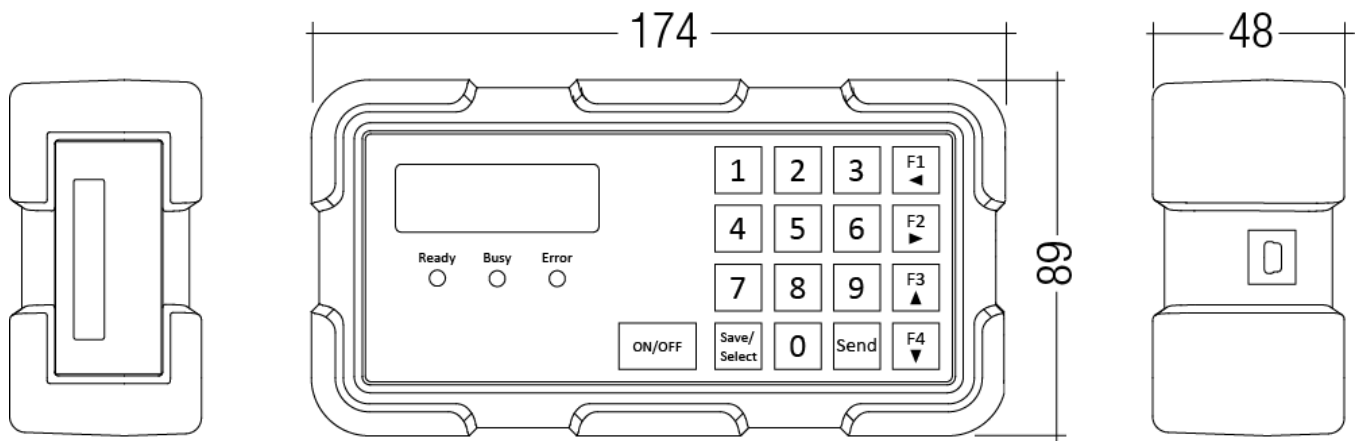
- At each start of the ready2mains Programmer new logfiles are created (except for Error.log)
- A maximum of 50 logfiles per logfile type can be created (Error.log: maximum 20)
- Maximum file size is 20 MB
- Logfiles are managed in a log rotation system. The latest file is always the one with the lowest number. The oldest file has the highest number.
- Latest entry in the log is always at the end of the file
- The storage space of the ready2mains Programmer is divided in 2 partitions. One of these partitions is always visible and used to store scripts. The other partition is hidden and used to store logfiles. The partition with the logfiles can be set to visible in the menu of the ready2mains Programmer. For more information see [Graphical User Interface](#), p. 20!

Graphical User Interface

6. Graphical User Interface

6.1. General information

The Programmer GUI provides users with the possibility to operate the Programmer stand-alone but also to configure several internal settings.



There are several ways to configure the LED Driver:

- _ Set the output current and lockbit (note: via the GUI no additional parameters can be set, except when using scripts)
- _ Execute scripts stored on the Programmer (*.r2m, *.u6m)




6.1.1. Main keys

Key	Function
ON/OFF	Short press** to switch ON/OFF the output of the Programmer Long press** to shut down the Programmer Short press** if switched off -> switch on
Save/ Select	Short press** to select a value Long press** to enter the menu / save settings and leave the menu
Send	Execute script same functionality then with the external momentary-action switch
F1 F2 F3 F4 ◀ ▶ ▲ ▼	Arrow keys to navigate the menu Hot keys to allocate a script to a hotkey
0 1 2 3	Number keys to set a current value

Graphical User Interface

** short press < 1s > long press

6.1.2. Status LEDs

LED colour	Label	Description
	Ready	Constantly on as soon as the Programmer is ready to use
	Busy	Constantly on when the Programmer output is activated Blinking during an active communication to the connected LED Driver
	Error	Constantly on if an error has occurred See the chapter Error messages , p. 40 for more details.

Graphical User Interface

6.1.3. Switch Programmer ON / OFF

Switch ON

The Programmer switches automatically on if mains supply or USB is connected.

Display	Description
<div style="border: 1px solid black; padding: 2px; width: fit-content;">ON/OFF</div>	<ul style="list-style-type: none"> _ Press ON/OFF to switch the Programmer on if it has been switched off while mains or USB is connected.

Switch OFF

Display	Description
<div style="border: 1px solid black; padding: 2px; width: fit-content;">ON/OFF</div>	<ul style="list-style-type: none"> _ To switch off the Programmer press ON/OFF for > 1 sec. → Device powering off message appears.

CAUTION!



Removing the Programmer from mains or USB without shutting it down beforehand may cause loss of data.

6.2. General operation and modes

The content of the display depends on the selected Programmer mode. The available modes are Test current, Program current (preset) and Program script as described below.

Display	Description
	<ul style="list-style-type: none"> _ To execute the individual modes, ensure that the Programmer is supplied by mains.
	<ul style="list-style-type: none"> _ Connect a LED Driver including load (max. 5 drivers) to the output of the Programmer.
	<ul style="list-style-type: none"> _ Choose the targeted mode as described in this document.
<div style="border: 1px solid black; padding: 2px; width: fit-content;">ON/OFF</div>	<ul style="list-style-type: none"> _ Enable the Programmer output by pressing ON/OFF.

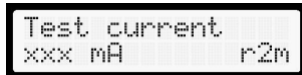
Graphical User Interface

	_ Press Send or use the momentary-action switch to transfer the data to the connected LED Driver.
	_ Check optical feedback to ensure successful programming
	_ Disable the output by pressing ON/OFF .
	_ Connect the next LED Driver to the Programmer output to continue.




6.2.1. Mode Test current

The mode Test current is intended mainly for use in the research and development department (R&D) as it allows changing the output current of the connected LED Driver without saving it. This may be helpful when adjusting the current to determine a desired luminous flux.

In addition, this mode is essential when testing EXC LED Drivers as these allow for a maximum of 5 save operations, due to their limited storage capacity. After the fifth save operation, the current will be locked permanently and no further change is possible.



To change the target current conduct the following steps:

Display	Description
	_ Press Save/Select to enter the *Test current menu.
	_ Remove the preset value by using the F1 button and enter the required value.
	_ Press Save/Select to confirm the new value and exit the menu.

Graphical User Interface

6.2.2. Mode Program current

While the mode Test current does not store the current value in the LED Driver, the mode Program current does. It is the simplest method to program an LED Driver with a desired current value and optionally set the lockbit. The lockbit is an additional safety feature to prevent any further change of the output current via the ready2mains protocol.



⚠ VORSICHT!

Note that this is not reversible.

```
Program current
>t @ xxx mA r2m
```

The characters >t indicate whether the output of the Programmer is automatically switched on or off at each sending process.

The key symbol in front of the current value exists in two variations which indicate whether the lockbit will be set or not.

Display	Description
	Lockbit set; the current value cannot be changed later on via ready2mains
	Lockbit not set; the current value remains accessible via ready2mains

⚠ CAUTION!

- _ With fixed-output EXCITE LED Drivers it is only possible to set a current 5 times; any subsequent programming will be ignored
- _ Setting the optional lockbit prevents any further access to the current setting via ready2mains and is not reversible
- _ The mode Program current allows only the programming of the output current and optional lockbit (no programming of e. g. chronoSTEP or corridorFUNCTION as with script programming)
- _ See the chapter [Optical Feedback](#), p. 26 for details on the optical feedback after successful programming

6.2.3. Mode Program script

The mode Program script allows selecting and executing pre-configured parameter scripts that are stored on the Programmer. These scripts can either be ready2mains or U6Me2 types and are generated via the scriptGENERATOR. More information can be found in the Handbook scriptGENERATOR (see [Reference list](#), p. 57).

Graphical User Interface

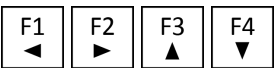



```

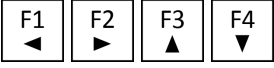
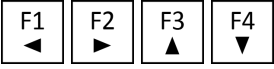

Program script
250mA.r2m
  
```

The second line shows the selected script name. If no script has been chosen, the text **<not set>** is shown.

There are 2 possibilities to choose a script to program:

Display	Description
	_ Choose a script linked to a hot key F1, F2, F3, F4
	_ Choose a script directly from the integrated memory by a short press on Save/Select .


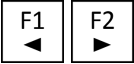

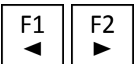


Choose a script linked to a hot key:

Display	Description
	<p>_ Short press on the hot key buttons F1, F2, F3, F4 to display the name of the script linked to the hot key.</p> <p>→ The message Script info is shown in the upper line. If no script is linked to the hot key the message <not set> is shown.</p>
	<p>_ Long press on the hot key buttons F1, F2, F3, F4 selects the script linked to the hotkey.</p> <p>→ The message Script selected is shortly displayed, followed by the chosen mode and the selected script.</p>
	<p>_ Press Send or use the momentary-action switch to execute the script and send the parameters to the connected LED Driver.</p> <div style="border: 1px solid #00aaff; border-radius: 10px; padding: 10px; margin-top: 10px;"> <p>NOTICE</p> <p>Note that the output of the Programmer has to be switched on either before transmitting a script or switching on and off must be included in the script.</p> </div>

Choose a script directly from the integrated memory:

Display	Description
---------	-------------

Graphical User Interface

	<p>_ Short press Save/Select.</p>
	<p>_ Select the script type with F1, F2; available types: r2m - U6Me</p>
	<p>_ Press Save/Select to confirm the script type</p>
	<p>_ Select the desired script with F1, F2; the message <empty> indicates that no script is available with the chosen type</p>
	<p>_ Press Save/Select to confirm the script → The mode and the selected script are shown</p>
	<p>_ Press Send or use the momentary-action switch to execute the script and send the parameter to the connected LED Driver.</p> <div data-bbox="456 1169 1471 1317" style="border: 1px solid #00aaff; padding: 10px; margin-top: 10px;"> <p>NOTICE</p> <p>Note that the output of the Programmer has to be switched on either before transmitting a script or switching on and off must be included in the script.</p> </div>

⚠ CAUTION!

- _ All scripts need to be stored in the root folder of the storage! Subfolders are not supported.
- _ In order to reduce handling errors it is recommended to store only active scripts on the Programmer. Obsolete scripts should be deleted.
- _ Optical feedback via the luminaire is only provided when programming via ready2mains. For more information see chapter [Optical Feedback](#), p. 26.

6.3. Optical feedback

The luminaire provides an optical feedback during/after successful programming via ready2mains. This feedback is triggered by the LED Driver itself and confirms that the received parameters have successfully been saved. Any invalid output current value (outside the operating range of the LED Driver) will result in a negative feedback.

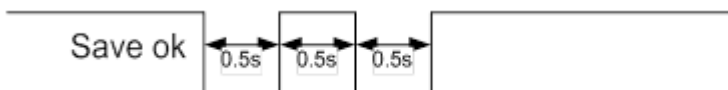
Graphical User Interface

NOTICE

Note that this feedback is visible only when programming via ready2mains. No optical feedback is provided when using U6Me2.

Possible feedbacks:

- _ Feedback after successful programming: the LED Driver output is switched off twice with a period time of 1 sec and then switched on again.



- _ Feedback after corrupted programming: the LED Driver switches its output of and does not restart.



As a result, any successfully programmed luminaire will be on after programming, any error will be indicated by a turned off luminaire. Keep in mind not to switch the Programmer output off after programming as part of a script if the optical feedback shall be used to manually judge on the programming result.

Mode Test current

In the mode Test current no optical feedback will be generated because there is no store command. The values are directly set at the output and can be measured in current or light output.


Modus Program current

In the mode Program current the optical feedback occurs after successful programming.

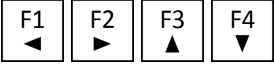

Mode Program script

In the mode Program script the number of optical feedbacks depends on the chosen number of "save and exit" events within the script handling. After transmitting the output current value it is automatically stored and an optical feedback is given. If no other values are transmitted afterwards, no additional feedback will be given. Otherwise, an optical feedback will be provided after each following "save and exit" command. More information can be found in the Handbook scriptGENERATOR (see [Reference list](#), p. 57).

6.4. Main menu and mode adjustments

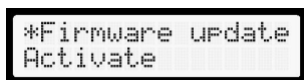
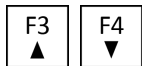
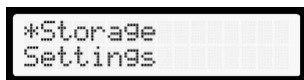
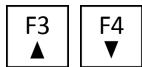
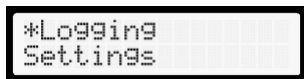
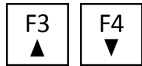
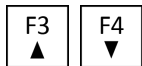
Display	Description
	_ Press and hold Save/Select to enter the menu.

Graphical User Interface

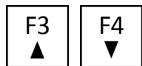
	_ Use the arrow keys F1 , F2 , F3 , F4 to navigate through the menu.
	_ Press and hold Save/Select to save and exit the menu.

6.4.1. Structure

For easier recognition, every menu item is marked with an asterisk (*) in the upper left corner.



Graphical User Interface



6.4.2. Submenu *Mode



Display	Description
	_ Select the desired mode by using F1 and F2 and confirm the selection by pressing Save/Select .
	_ Adjust the individual mode as described further on in this document (depending on mode: set current and lockbit, choose script, etc.)
	_ Press and hold Save/Select to exit the menu.


Adjust mode Test current





Follow below steps to use the mode Test current:

Display	Description
	_ Select the mode in the menu with F1 and F2 and confirm with Save/Select . The last set value is shown.

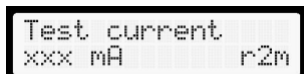
Graphical User Interface

	<p>_ Select the desired interface. Available is ready2mains.</p> <p>_ If ready2mains is selected the programmer exit automatically to the Main Screen of the mode.</p>
---	--

Follow below steps to set the current in mode Test current:

Display	Description
	<p>_ To change the current value press Save/Select and remove the preset value by using the button F1.</p>
	<p>_ Enter the required current value and press Save/Select to confirm and to exit the menu. → The current can now be transferred to the connected LED Driver.</p>
<div style="border: 1px solid #007bff; padding: 5px; background-color: #e6f2ff;"> <p>NOTICE</p> <p>Note that it is not permanently stored when using the mode Test current.</p> </div>	



Main screen:



Adjust mode Program current




To select and adjust the mode Program current proceed as described below:

Display	Description
	<p>_ Select the mode in the menu with F1 and F2 and confirm with Save/Select. The last set value is shown.</p>
	<p>_ Select the desired interface. Available is ready2mains.</p>

Graphical User Interface

If ready2mains was chosen:

Display	Description
	<ul style="list-style-type: none"> _ Enter the desired current value _ Remove the preset value by using the button F1 and enter a new current value. Confirm change with Save/Select.
	<ul style="list-style-type: none"> _ Set optional lockbit if any further current change via ready2mains shall be prohibited. <div style="border: 1px solid yellow; padding: 5px; margin-top: 10px;"> <p>⚠ CAUTION! Note that this lock is not reversible in the LED Driver.</p> </div>
	<ul style="list-style-type: none"> _ Select whether the output should be switched off (switch on/off manually) or automatically turned on or off. _ If off is selected the programmer exit automatically to the Main Screen of the mode.
	<ul style="list-style-type: none"> _ Choose the switch on delay in seconds
	<ul style="list-style-type: none"> _ Choose the switch off delay in seconds _ If the switch off delay is selected the programmer exit automatically to the Main Screen of the mode.

Main screen:




```
Program current
>t 0 xxx mA r2m
```

Adjust mode Program script

```
*Mode
Program script
```


To select and adjust the mode Program script proceed as described below:

Graphical User Interface


Display	Description
  	_ Select the mode with F1 and F2 and confirm with Save/Select .

Configure the hot key assignments:




```
*Hot keys
Assignments
```

Display	Description
	Press Save/Select to enter Hot keys Assignment menu.




```
*F1
<empty>
```







```
*F2
<empty>
```

Display	Description
  	_ Select the hot key that shall be modified with F1 and F2 and press Save/Select to confirm.

```
*Script Type
r2m
```

Display	Description
  	_ Select the desired script type (r2m , U6Me2) with F1 and F2 and press Save/Select to confirm.

```
*Assign F1
250mA.r2m
```

Display	Description
  	_ Select the desired script with F1 and F2 and confirm selection with Save/Select . The hot key is now assigned to the script. Select <empty> to clear hot key.

Graphical User Interface

Save/ Select	<p>_ Continue to assign other hot keys or press and hold Save/Select to save and exit the menu.</p> <p>→ The scripts can now be chosen by a long press on the individual hot key and then be transferred to the connected LED Driver.</p>
-----------------	--

Mains screen:

```
Program script
xxx.r2m
```

6.4.3. Submenu *Display Settings

```
*Display
Settings
```

Display	Description
Save/ Select	_ Press Save/Select to enter the Display Settings submenu.

Structur

```
*Backlight off [F1] [F2] *Backlight on demand [5s] [F1] [F2] *Backlight on
```

```
F3 [F4]
```

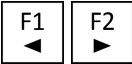

```
*Display mode Standard [F1] [F2] *Display mode Current [mA] [F1] [F2] *Display mode Voltage [V] [F1]
```

```
F2
```

*Backlight

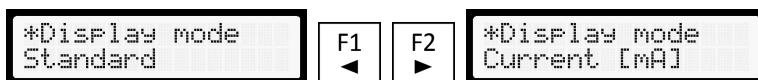
```
*Backlight on
```

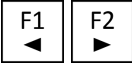

Graphical User Interface

Display	Description
	_ Choose behaviour of backlight with F1 and F2 .
	_ Press and hold Save/Select to save the mode and exit the menu.

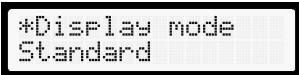



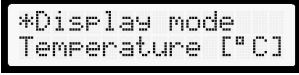
*Display mode

This mode defines the content that will be shown on the main display.



Display	Description
	_ Select the display mode as listed below with F1 and F2 .
	_ Press and hold Save/Select to save the mode and exit the menu.

Options for display mode:


Display	Description
	Shows selected mode (Test current, Program current, Program script)
	Shows actual mains current **
	Shows actual mains voltage **
	Shows actual mains load **
	Shows actual temperature of the discharge resistor. If this temperature exceeds a certain limit, the Programmer starts to reduce its frame rate.

**These modes are designed for R&D purposes mainly, to get a deeper insight on the operating conditions.

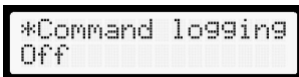
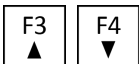
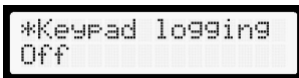
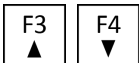
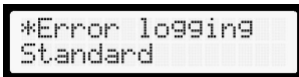
Graphical User Interface


6.4.4. Submenu *Logging



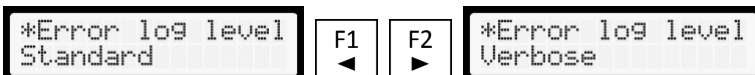
Display	Description
	_ Press Save/Select to enter the Display Settings submenu.

Structur



Display	Description
	_ Press Save/Select to enter the desired submenu.

*Error logging



Graphical User Interface



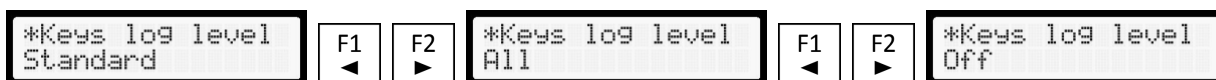
*Error log level

Display	Description
	_ Select the desired logging variant by pressing F1 and F2. More details about the logging variants are described in the chapter Logging in the Handbook scriptGENERATOR (see Reference list , p. 57)
	_ Press Save/Select , to choose the correlating logging variant.

*Delete logfiles

Display	Description
	_ Select *Delete logfiles with F1 und F2
	_ Press Save/Select to delete correlating logfiles

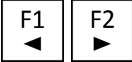

*Keypad logging



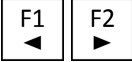

*Keys log level

Display	Description
---------	-------------

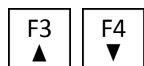
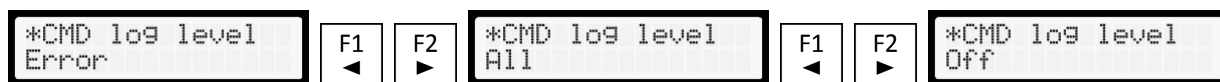
Graphical User Interface

	<p>_ Select the desired logging variant by pressing F1 and F2. More details about the logging variants are described in the chapter Logging in the Handbook scriptGENERATOR (see Reference list, p. 57).</p>
	<p>_ Press Save/Select, to choose the correlating logging variant.</p>

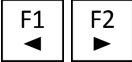

*Delete logfiles

Display	Description
	<p>_ Select *Delete logfiles with F1 und F2</p>
	<p>_ Press Save/Select to delete correlating logfiles</p>

*Command logging

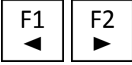



*CMD log level

Display	Description
	<p>_ Select the desired logging variant by pressing F1 and F2. More details about the logging variants are described in the chapter Logging in the Handbook scriptGENERATOR (see Reference list, p. 57).</p>
	<p>_ Press Save/Select, to choose the correlating logging variant.</p>


*Delete logfiles

Graphical User Interface

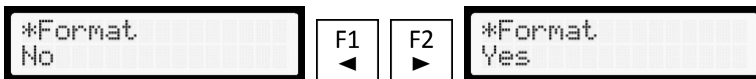
Display	Description
	_ Select *Delete logfiles with F1 und F2
	_ Press Save/Select to delete correlating logfiles

6.4.5. Submenu *Storage



Display	Description
	_ Press Save/Select to enter the Display Settings submenu.

Structur:

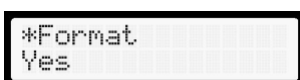


*Format

Here the internal SD card can be formatted.

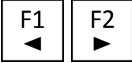

⚠ CAUTION!

After formatting the SD card, all data on the SD card are lost!



Display	Description
---------	-------------

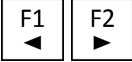

Graphical User Interface

	_ Select *Format Yes with F1 und F2 .
	_ Press Save/Select to format the SD Card

*USB log volume

The programmer has internally 2 partitions. One for the scripts and one for the log files which is hidden by default. To make this partition visible switch USB log volume to visible.

```
*USB log volume
Visible
```

Display	Description
	_ Choose behaviour of USB log volume with F1 and F2
	_ Press and hold Save/Select to save the mode and exit the menu.

6.4.6. Submenu *Firmware update


This setting is required for firmware updates.

CAUTION!

Do not activate the firmware updates unless a firmware update shall be conducted!

See chapter [Firmware Upgrade](#), p. 46 for more information.

```
*Firmware update
Activate
```

Display	Description
	_ Press Save/Select to enter the Bootloader settings.

Graphical User Interface



Display	Description
<p>Buttons: F1 (left arrow), F2 (right arrow), Save/Select</p>	<p>_ Use the buttons F1 and F2 to select <Yes> in order to activate the Bootloader, then press Save/Select to confirm.</p> <p>The Programmer will automatically enter Bootloader mode and the display will go blank.</p>

⚠ CAUTION!

- _ Activate Bootloader mode for a firmware upgrade only!
- _ To exit the Bootloader mode disconnect Programmer from USB and mains supply!

6.4.7. *Version



This menu shows the installed Programmer firmware version.

See [Firmware Upgrade](#), p. 46 for information how to upgrade the Programmer.

6.5. Error messages

Error message	Description
<p>ready2mains no mains</p>	No mains supply connected. The Programmer can only be used for pre-configuration (e.g loading scripts into its memory).
<p>ready2mains DC mains</p>	DC is connected to mains
<p>ready2mains com failure</p>	This error may occur if no load is connected while programming
<p>ready2mains Conf19 failed</p>	This error is displayed when the configuration failed

Script data file format

7. Script data file format

Programming sequences shall be received via USB (class 08) as csv files. These files are stored on the internal memory card (μ SD).

The csv files will be created with a PC tool and will have dedicated suffixes:

- *.r2m programming sequence (in csv format) to be sent on the mains output as ready2mains frames
- *.u6m programming sequence (in csv format) to be sent on the mains output as U6M, U6Me or U6Me2 signals

On request the programmer loads a specific programming sequence from the memory card and sends the specified frames to the corresponding interface.

Script data file format

All generated csv files have the following structure:

csv file format, all fields are separated by 0x3B (semicolon), lines separated by CR + LF

File header	Field 1	Field 2	Field 3	Field 4	Field 5	Field 6
single line only!	SOH (0x01)	File version	Data type	File created by XXX	File_id	reserved
Header description text	Description text for the file. Can be multi line. This text is enclosed by STX and ETX					
Data set header, single line only!	FS (0x1C)	GUI type	Gui version	Reserved	reserved	reserved
Data record (15 fields each)	15 fields separated by 0x3B (semicolon), lines separated by 0x0D (CR) and 0x0A (LF). Start and end of data records are marked with STX and ETX. Default values for not used fields are 0.					
...	Maybe additionally Datasets including headers					
End of File	0x04 (that is the real end of the file)					

7.1. File Header

- _ SOH (field 1)
 - _ Start of header for easy recognition
- _ File version (field 2)
 - _ Version number of file for handling changes in future versions. Minor versions are incremented on changing content or small changes in file format which is backward compatible. Major version is incremented in case of incompatibility to previous file format
- _ Data Type (field 3):
 - _ gives the data type of the data records inside the file:
 - _ 1 or r2m data ... r2m data records
 - _ 2 or U6m data... U6Me2 data records
 - _ >2 ... reserved
- _ Created by XXX (field 4):
 - _ No action for the programmer. This gives the information about the software which was used to create the file
- _ FileID (field 5):
 - _ Number generated by the scriptGENERATOR to check for the user if the file has changed. Every time a file is generated that number is incremented.
- _ field 6
 - _ reserved for future needs

Script data file format

NOTICE

The programmer verifies the data type with the file extension as described in chapter [Script data file format](#), p. 42.

7.2. Dataset Header

- _ FS (field 1)
 - _ File separator. Used for simple recognition of datasets coming from different GUI. Only single line is allowed behind this identifier
- _ GUI Type (field 2):
 - _ No action for the programmer. This gives the GUI type of the data records for read operations on the PC
- _ GUI version (field 4)
 - _ Version Number of GUI which was used to generate this data, this is needed for handling changes in future versions
- _ field 5, field 6
 - _ reserved for future needs

7.3. Data records for ready2mains

Each data record consists of 15 fields. Each field is coded as 1 byte data and separated by semicolon. The fields are the same as defined for using over the DLL except the fact that the script contains an additionally field delay which is not transferred via USB.

File data record definition for R2M

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12-14
Com- mand	Se- quence	Control	Mode	Data0	Data1	Data2	Data3	DTR Data	Prio- rity	Device Type	Delay	reserved

Delay: A delay time in 100 ms step for the next command

- _ For others: 0 = no delay between frames

Reserved: default 0

7.4. Data records for programmer specific commands

The U6Me2 Protocol is supported on behalf of the programmer specific commands because only switching functionality is needed. All timings if not otherwise mentioned are in 100ms steps. That means a field value of 10 is equal to 1 second.

Script data file format

Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8	Byte 9	Byte 10	Byte 11	Byte 12-14
Com- mand	Se- quence	Control	Mode	Data0	Data1	Data2	Data3	Data4	Data5	Data6	Delay	reserved

7.5. Verify file format and extension

The Programmer verifies if the given file extensions is aligned with the file header. If the header is not matching the content then the file will be deleted on the Programmer.

7.5.1. Sample of file according above definitions

```

1 0000Fileversion;Datatype;Created by XXX (show creation software);FileID(unique id for mapping to buttons);Reserve;0000
2 0000Here a multi line text is allowed0000
3 all special characters except ETX are allowed0000
4 within the text.00000000
5 0000Guitype;Guiversion;Reserve;Reserve;0000
6 00001;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
7 1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
8 1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
9 1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
10 000000Guitype2;Guiversion2;Reserve;Reserve;0000
11 00001;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
12 1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
13 1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
14 1;2;3;4;5;6;7;8;9;10;11;12;13;14;15;0000
15 000000

```

Firmware Upgrade

8. Firmware Upgrade

Regular firmware upgrades help to further improve and extend the performance of the ready2mains Programmer.

The latest firmware version is available at www.tridonic.com.

Conduct the following steps to upgrade the ready2mains Programmer:


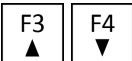
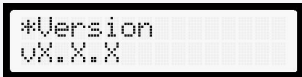
- _ Check which version is currently installed on the ready2mains Programmer. See [Check installed version](#), p. 46 for further information.
- _ Uninstall old firmware upgrade tools and drivers
- _ Download and install the Tridonic Programmer Upgrade Tool from Tridonic at www.tridonic.com
- _ Download the latest ready2mains Programmer firmware (file format *.dfu)
- _ Activate the firmware upgrade mode on the Programmer and connect the Programmer via USB to the PC
- _ Execute the firmware upgrade

⚠ CAUTION!

If STMicroelectronics firmware upgrade tool and driver is installed (first version of firmware upgrade tool), uninstall this tool and the driver completely!

8.1. Check installed version

To verify the currently installed firmware version proceed as described below:


Display	Description
	_ Enter the Programmer menu by pressing and holding Save/Select .
	_ Scroll down with F3 and F4 until the software version is shown. 

⚠ CAUTION!

Only install newer firmware versions. Do not downgrade to an older version!

Display	Description
---------	-------------

Firmware Upgrade

	<p>_ If there is no newer version available, exit the menu by press and hold Save/Select.</p>
	<p>_ If there is a firmware upgrade available, activate the firmware upgrade mode as described in the chapter Firmware Upgrade, p. 46.</p>

8.2. Install Tridonic Programmer Upgrade Tool

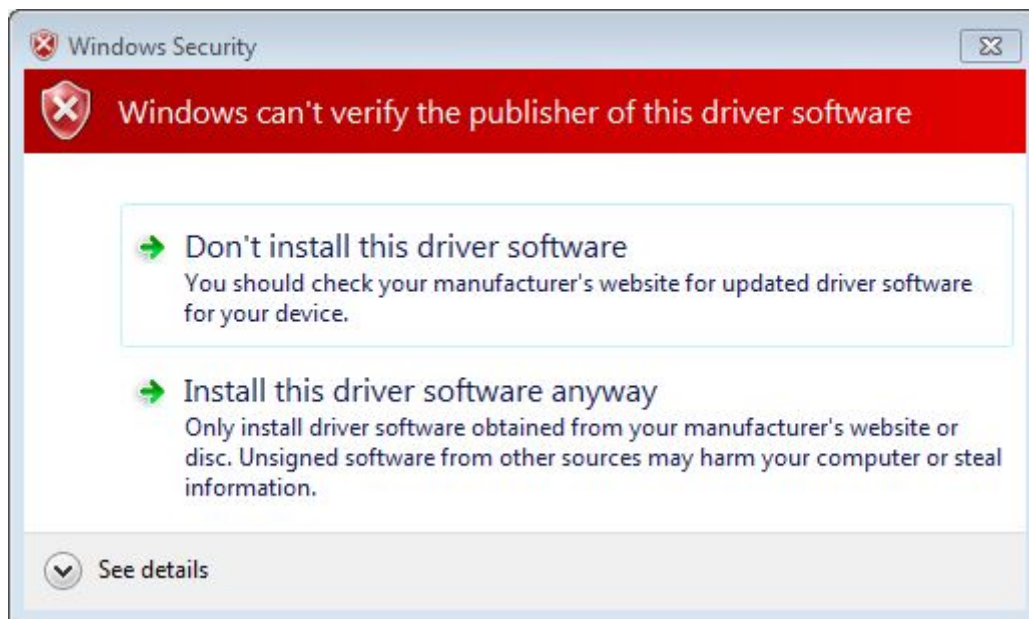
To execute the firmware upgrade a dedicated upgrade tool from Tridonic is required. Download is available at www.tridonic.com.

After the download is finished, unzip the zip file and start the installation.

Follow the instructions of the Windows installer to install the Tridonic Programmer Upgrade Tool.

With this installation the driver for the Programmer in firmware upgrade mode is also installed.

Before the driver is installed, this message will appear:



Choose **Install this driver software anyway!**


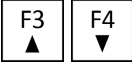

After finishing the installation the software is ready to upgrade the ready2mains Programmer.

8.3. Activate Firmware Upgrade

Before installing the new firmware the Bootloader of the Programmer needs to be activated.

Firmware Upgrade

Connect the Programmer via USB to the PC. Then activate the Bootloader on the Programmer.

Display	Description
	_ To activate the Bootloader press and hold Save/Select to enter the menu.
	_ Scroll down with F3 and F4 until the page Bootloader activate is shown:
	_ Press Save/Select to enter the Bootloader settings:
	_ Use the buttons F1 and F2 to select Yes in order to activate the Bootloader, then press Save/Select to confirm. → The Programmer will automatically enter the Bootloader mode and the display will go blank.

⚠ CAUTION!

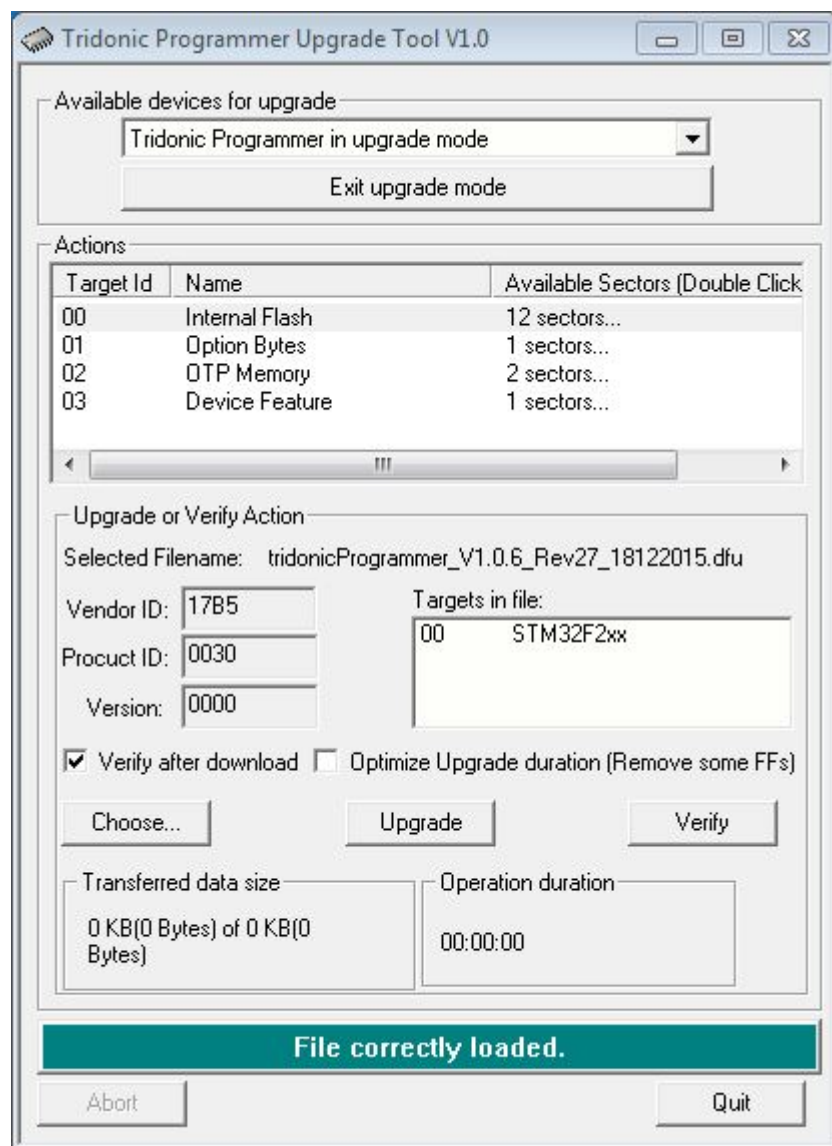
- _ Activate Firmware Upgrade mode for a firmware upgrade only!
- _ To exit the Bootloader mode, disconnect the Programmer from USB and mains supply or Exit upgrade mode in the Software!
- _ If the ready2mains Programmer is connected to the PC in Firmware upgrade mode for the first time, it may take some minutes before the driver is installed.

8.4. Execute Firmware Upgrade

Download the latest ready2mains Programmer firmware (file format *.dfu) from www.tridonic.com

Start the Tridonic Programmer Upgrade Tool.

Firmware Upgrade



Available devices for upgrade:

Choose the option **Tridonic Programmer in upgrade mode**. All settings are automatically set.

To release the Programmer from upgrade mode, press **Exit upgrade mode**.

Upgrade or verify action:

⚠ DANGER!

Some upgrades may cause a data loss of the internal storage! It is highly recommended to backup the data on the storage!

Press the button **Choose...** to select the latest Programmer firmware (*.dfu file). The message **"File correctly loaded."** appears at the bottom.

Firmware Upgrade

Press **Upgrade** to execute the firmware upgrade.

The status of the upgrade process is shown at the bottom of the upgrade tool.

⚠ CAUTION!

Do not disconnect the Programmer during the upgrade process as this may damage the Programmer!

After a successful upgrade, the message **"Target 00: Verify successful!"** is shown.

Close the upgrade tool to exit Bootloader mode.



8.5. Uninstalling old drivers

In some cases it is necessary to remove the old drivers completely.

The ready2mains Programmer requires 2 drivers for proper work. To uninstall both drivers, open the Windows device manager.

The drivers can be found:

- _ at Human Interface Devices as USB input device and
- _ at Universal Serial Bus controllers as USB Mass Storage Device.

Both need to be uninstalled.

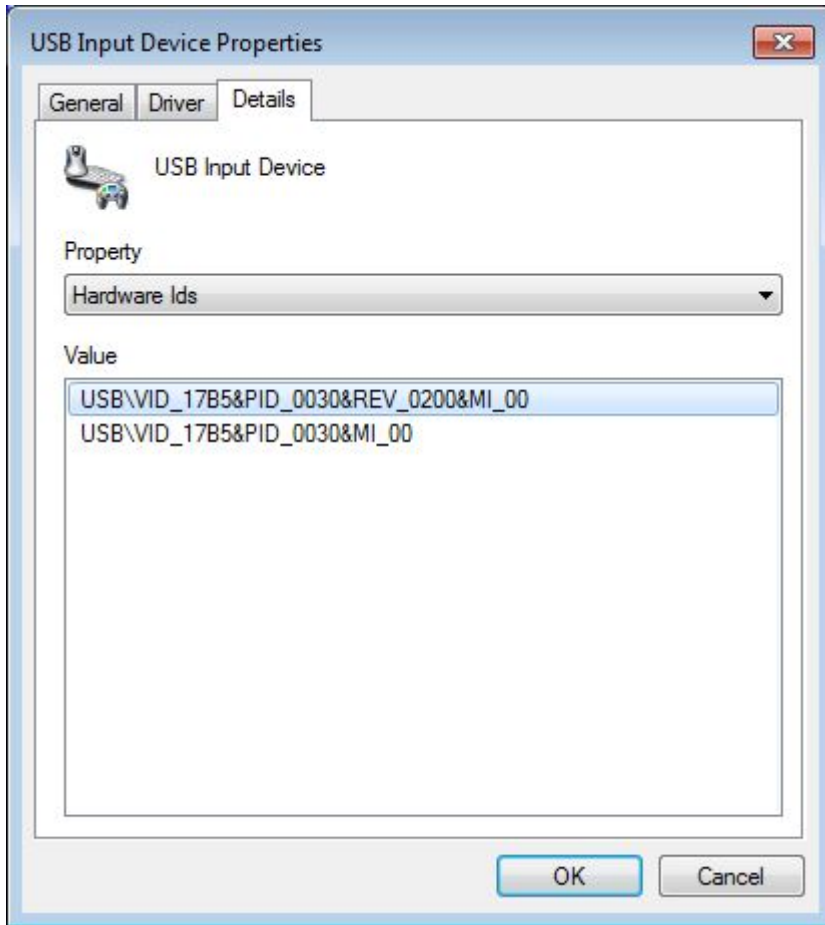
Proceed as described below:

To uninstall the USB Input Device, you have to find out which one corresponds to the ready2mains Programmer.

For this, select the USB Input Device with the following Hardware Ids:

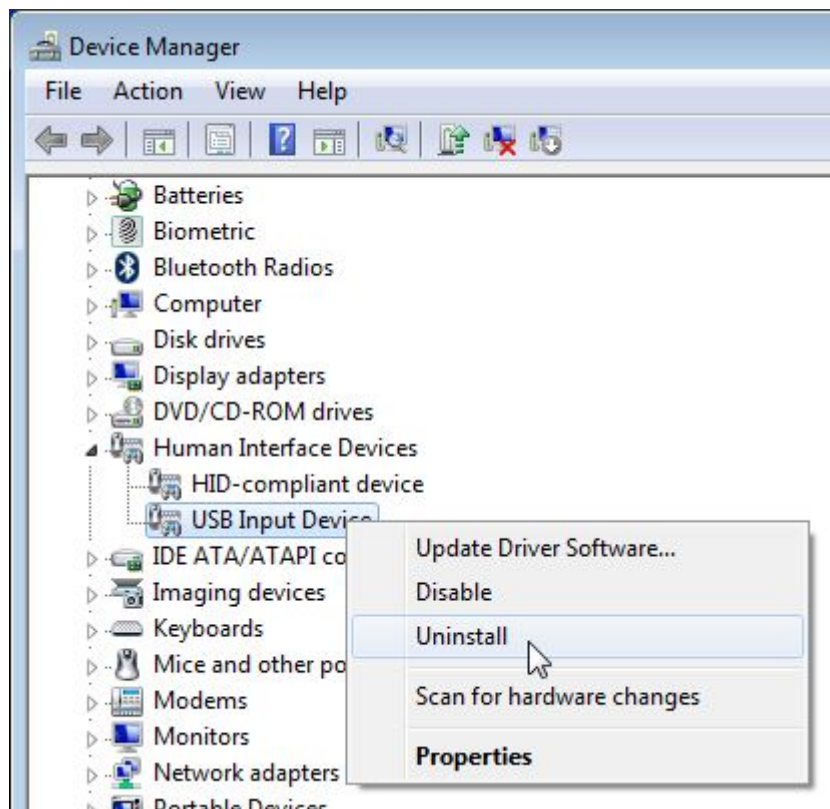
USB\VID_17B5&PID_0030&REV_0200&MI_00

Firmware Upgrade



Uninstall this driver.

Firmware Upgrade





After confirming with OK, the driver is uninstalled.



Proceed in the same way with the USB Mass Storage Device.

Connector Data

9. Connector Data

PHOENIX CONTACT - MC 1,5/10-ST-3,81	PHOENIX CONTACT - KGG-MC 1,5/10
Art. Nr.: 1803659	Art. Nr.: 1834424
	

9.1. Dimensions

Parameter	Wert
Length	16.1 mm
Height	11.1 mm
Width	38.89 mm
Pitch	3.81 mm
Dimension a	34.29 mm

9.2. General

Parameter	Wert
Range of articles	MC 1,5/..-ST
Insulating material group	I
Rated surge voltage (III/3)	2.5 kV
Rated surge voltage (III/2)	2.5 kV
Rated surge voltage (II/2)	2.5 kV
Rated voltage (III/3)	160 V

Connector Data

Rated voltage (III/2)	160 V
Rated voltage (II/2)	320 V
Connection in acc. standard	EN-VDE
Nominal current I_N	8 A
Nominal cross section	1.5 mm ²
Maximum load current	8 A (with 1.5 mm ² Leiterquerschnitt)
Insulating material	PA
Inflammability class according to UL 94	V0
Internal cylindrical gauge	A1
Stripping length	7 mm
Number of positions	10
Screw thread	M2
Tightening torque, min	0.22 Nm
Tightening torque max	0.25 Nm

9.3. Connection Data

Parameter	Wert
Conductor cross section solid min.	0.14 mm ²
Conductor cross section solid max.	1.5 mm ²
Conductor cross section flexible min.	0.14 mm ²
Conductor cross section flexible max.	1.5 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve min.	0.25 mm ²
Conductor cross section flexible, with ferrule without plastic sleeve max.	1.5 mm ²
Conductor cross section flexible, with ferrule with plastic sleeve min.	0.25 mm ²
Conductor cross section flexible, with ferrule with plastic sleeve max.	0.5 mm ²
Conductor cross section AWG min.	28
Conductor cross section AWG max.	16
2 conductors with same cross section, solid min.	0.08 mm ²

Connector Data

2 conductors with same cross section, solid max.	0.5 mm ²
2 conductors with same cross section, stranded min.	0.08 mm ²
2 conductors with same cross section, stranded max.	0.75 mm ²
2 conductors with same cross section, stranded, ferrules without plastic sleeve, min.	0.25 mm ²
2 conductors with same cross section, stranded, ferrules without plastic sleeve, max.	0.34 mm ²
2 conductors with same cross section, stranded, TWIN ferrules with plastic sleeve, min.	0.5 mm ²
2 conductors with same cross section, stranded, TWIN ferrules with plastic sleeve, max.	0.5 mm ²
Minimum AWG according to UL/CUL	30
Maximum AWG according to UL/CUL	14

Manufacturer Link

<https://www.phoenixcontact.com/online/portal/gb?uri=pxc-oc-itemdetail:pid=1803659&library=gben&tab=1>

Glossary

10. Glossary

The following abbreviations are used in this document:

Abbreviation	Description
API	Application programming interface, the interface used to program a graphical user interface
DUT	Device under test
GUI	Graphical user interface
R&D	Research and development department
U6Me2	A programming mode which makes it possible to configure drivers of outdoor luminaires. (The original meaning of the letters and numbers is not officially publicised anymore.)

Reference list

11. Reference list

11.1. Additional information

- _ Handbook scriptGENERATOR
- _ Handbook deviceCONFIGURATOR
- _ Data sheets: Go to above web page link and click "Products" > "Downloads" > "Data sheet"
- _ Data sheets DC-String: <http://www.tridonic.com/com/en/products/led-dc-string.asp>
- _ Leaflet DC-String: http://www.tridonic.com/com/en/download/brochures/Leaflet_DC-String_EN_web.pdf
- _ Documentation masterCONFIGURATOR: http://www.tridonic.com/com/en/download/Manual_masterConfigurator_en.pdf
- _ Leaflet ready2mains: http://www.tridonic.com/com/en/download/brochures/Leaflet_ready2mains_EN_web.pdf
- _ Webpage corridorFUNCTION: <http://www.corridorfunction.com/corridorFUNCTION/index.html>

11.2. Downloads

- _ Tridonic software: <http://www.tridonic.com/com/en/software.asp>
- _ Download masterCONFIGURATOR: <http://www.tridonic.com/com/de/software-masterconfigurator.asp>

11.3. Technical data

- _ Data sheets: <http://www.tridonic.com/com/en/data-sheets.asp>
- _ Company certificates: <http://www.tridonic.com/com/en/company-certificates.asp>
- _ Environmental declarations: <http://www.tridonic.com/com/en/environmental-declarations.asp>
- _ LED/lamp matrix: <http://www.tridonic.com/com/en/lamp-matrix.asp>
- _ Operating instructions: <http://www.tridonic.com/com/en/operating-instructions.asp>
- _ Other technical documents: <http://www.tridonic.com/com/en/technical-docs.asp>
- _ Tender text: <http://www.tridonic.com/com/en/tender.asp>
- _ Declarations of conformity: Available documents are found on each product page of our website in the "Certificates" tab for the specific product, www.tridonic.com/com/en/products.asp