# LUX-PRG
# Remote Programmer

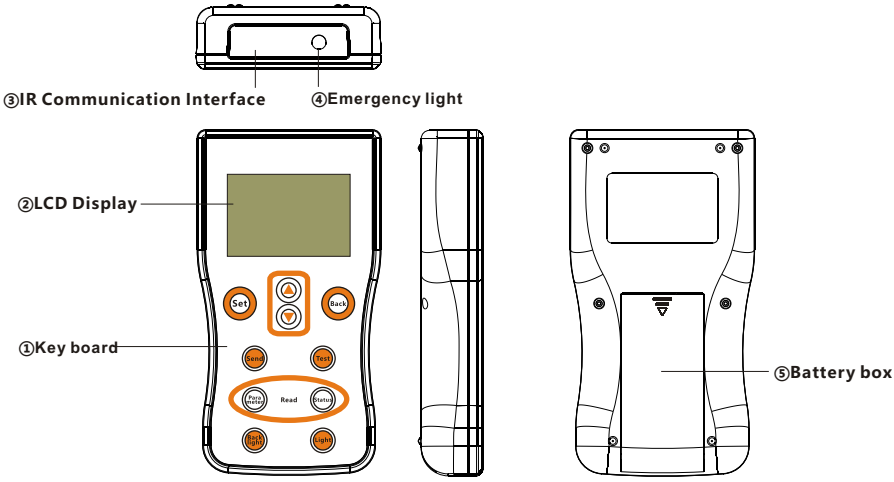

# User Manual

This user manual is subject to change without notice.

# Smart Remote Programmer LUX-PRG User Manual

Thank you for choosing the LUX-PRG series infrared remote programmer. This remote programmer allows for reading and changing of the settings for any compatible solar controller: models LUX1012WP, LUX1012WP-LI, LUX1524WP, LUX1524WP-LI. This manual gives important recommendations for use, please familiarise yourself with it before using the remote programmer.

## 1. Key elements




Front View Side view Back View

## 2. Features

**This professional remote infrared programmer has a number of features:**

- Large LCD display showing parameters and running status
- Simple and clear configuration interface
- Automatic sleep after inactivity, press any key to wake up
- 2x AA power supply, battery capacity indicator
- Emergency light and SOS

## 3. Key operation instructions

| Key Name | | Function | Long press key function |
|---|---|---|---|
| Set | | Parameter setting/ confirmation | Press "Set"and "Light" key to lock or unlock the parameters |
| ▲ | | 1.Menu Page Up<br>2.Increase the setting data | Continuously increase the setting data |
| ▼ | | 1.Menu Page Down<br>2.Decrease the setting data | Continuously decrease the setting data |
| Back | | Return to the menu / exit | ———— |
| Send | | Send Parameters | ———— |
| Test | | Test the setting | ———— |
| Read | Parameter | Read Parameters | ———— |
| | Status | Read running status | ———— |
| Backlight | | Turn on the LCD backlight | ———— |
| Light | | 1.Turn on the emergency lighting<br>2.SOS lights switch | Press "Light" and "Set" key to lock or unlock the parameters |

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## 4. Icon description

### 4.1 Battery capacity indicator

Capacity≥75%

50%≤Capacity＜75%

25%≤Capacity＜50%

Capacity＜25%

Capacity indicator flashes at <25% to remind the user to replace the battery.

### 4.2 Key lock and unlock

Key lock

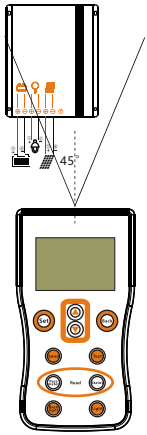
Key unlock

### 4.3 Communication success and failure

Communication success

Communication failure

## 5. Operation




### 5.1 Precautions

- Install two AA batteries, positive and negative poles must not be reversed
- The remote programmer will automatically enter sleep mode after 1 minute with no operation
- The remote controller sets solar controllers one at a time and should not be used with more than one controller
- Using the light or backlight will shorten the battery life.
- Replace the battery when it is low
- Remove the battery if the programmer will be inactive for long periods

### 5.2 Wake up

1. Pressing "**Set**" or "▲▼" or "**Back**" will wake up the remote programmer.
2. Pressing "**Backlight**" key will wake up the remote programmer and also turn on the LCD backlight
3. Pressing the "**Light**" key to wake up the remote programmer will also turn on the light.

### 5.3 Parameter setting

Press "▲▼" to browse the setting parameters. When you want to modify the highlighted parameter, press the "**Set**" key and the cursor will start blinking. Press the "▲▼" keys to adjust the blinking parameter. After adjustment is completer, press "**Set**" to move on to the next parameter or "**Back**" to return to the list. For details, please refer to **7. Parameter setting**.

### 5.4 Send

When the parameters are set up, aim the top of the programmer at the charge controller and press the "**Send**" key. If sent successfully, the programmer will display "**Send Successful**" and emit a long beep. If failed, the programmer will display "**Send Failure**" and beep three short sounds.

If the parameters (such as battery type, load current or voltage settings) are invalid for this controller type, the programmer will display "**Data Error**" and beeps three short sounds.

*Note: do not move the programmer during sending, or the setup will fail.*

### 5.5 Test

Aim the programmer at the charge controller and press "**Test**". The load will turn on. Pressing "**Test**" again will switch the load to 50% power. Test mode will last for 1 minute before normal operation resumes.

*Note: this feature may vary for different controllers, please refer to the charge controller user manual.*

### 5.6 Transport mode

Press and hold the "**Back**" and "**Backlight**" key for 3s. The programmer will beep two short sounds. The upper left of the menu will change from "Setting" to "Transport".

For the lithium series controller, press the "**Test**" key; the remote will show "**Transport OK**" and emit a long beep as the controller enters transport mode. If the remote control shows "**Transport Error**" and beeps three short sounds then the controller has not entered transport mode.

To exit transport mode, press and hold the "**Back**" and "**Backlight**" key for 3s. Please refer to the solar controller user manual for details.

**5.7 Read**

**5.7.1 Read parameters**
Aim at the solar charge controller and press the "**Parameter**" key, the remote programmer will read the settings of the controller. If successful, the remote will emit a long beep and display the setting values.

You can press the "▲▼" keys to navigate through the parameters, press the "**Back**" key to return to the previous page. If failed, the remote will display "**Read Failure**" and beep three short sounds. After 4s the remote programmer will return to the previous page.

**5.7.2 Read the running status**
Aim at the solar charge controller and press the "**Status**" key, the remote programmer will read the status of the controller. If successful, the remote will emit a long beep and display the running status.

You can press the "▲▼" keys to navigate through the data, press the "Back" key to return to the previous page. For details refer to **6. Running status**. If failed, the remote will display "**Read Failure**" and beep three short sounds. After 4s the remote programmer will return to the previous page.

*Note: the "**Send**" key is disabled while displaying parameters or status.*

**5.8 Backlight**
Press the "**Backlight**" key to turn on the backlight of the LCD screen. This will make the screen more visible in dark conditions.

**5.9 Light**
Press the "**Light**" key, the emergency light will turn on. Press again to switch to the SOS beacon. Press the key a third time and the light will turn off. The light will shut down automatically after 30 seconds.

**5.10 Lock**
Press and hold the "**Set**" and "**Light**" key for 3s. The remote programmer will beep two short sounds and the "**Set**" key will lock to prevent accidental operation.

To unlock, press and hold "**Set**" and "**Light**" for 3s again. The remote will beep one short sound and the unlocked symbol will display.

**5.11 Buzzer**

| Beep length | Instruction |
|---|---|
| — (A short sound) | Unlock |
| — — (Two short sounds) | Key lock |
| — — — (Three short sounds) | Communication failure |
| ——— (A long sound) | Communication successful |

## 6. Running status

When you press the "**Status**" key, the first line of the LCD displays the system status, including charging, discharging or converting between charging and discharging.

If the controller's protective features have been activated, the remote programmer will display this as a priority over the running status.

If any of the fault warnings appear on the display, please refer to the controller's manual for troubleshooting.

| Name | Description |
|---|---|
| Charge | Charging |
| Discharge | Discharging |
| Convert | Charge/discharge conversion |
| Over CD | Over current disconnect |
| Short CD | Short circuit disconnect |
| Low VD | Low voltage disconnect |
| Over VP | Over voltage protection |
| Over TD | Over temperature disconnect |
| Open CP | Open circuit protection |
| HardwareP | Hardware protection |

| Num | Name | Description | Unit |
|---|---|---|---|
| | Status: | Charge | |
| 1 | Batt V | Battery voltage | V |
| 2 | Load I | Load current | A |
| 3 | Load V | Load voltage | V |
| 4 | PV V | PV voltage | V |
| 5 | PV I | PV current * | A |
| 6 | Energy | Total generating capacity | AH |
| 7 | OD Times | Over discharge times | Time |
| 8 | FC Times | Fully charge times | Time |
| 9 | Day1-HV | A day ago highest voltage | V |
| 10 | Day1-LV | A day ago lowest voltage | V |
| 11 | Day2-HV | Two days ago highest voltage | V |
| 12 | Day2-LV | Two days ago lowest voltage | V |
| 13 | Day3-HV | Three days ago highest voltage | V |
| 14 | Day3-LV | Three days ago lowest voltage | V |

*Note: * some types of controller are unable to detect PV current. The remote programmer will display "---" if this is the case.*

## 7. Parameters setting

| Num | Name | Range | Description | Step Length | Factory Default |
|---|---|---|---|---|---|
| 1 | Time1 | 0~6.5H+24H+D2D *1 | The first working time for load | 0.5H | 4H |
| 2 | Dim1 | 0~100% | Dimming of the first working time | 10% | 100% |
| 3 | Time2 | 0~7.5H | The second working time for load | 0.5H | 0H |
| 4 | Dim2 | 0~100% | Dimming of the second working time | 10% | 100% |
| 5 | Time3 | 0~7.5H | Third working time for load | 0.5H | 0H |
| 6 | Dim3 | 0~100% | Dimming of the third working time | 10% | 100% |
| 7 | Time4 | 0~7.0H+T0T | Fourth working time for load | 0.5H | 0H |
| 8 | Dim4 | 0~100% | Dimming of the fourth working time | 10% | 0% |
| 9 | Time5 | 0~7.5H | Fifth working time for load | 0.5H | 0H |
| 10 | Dim5 | 0~100% | Dimming of the fifth working time | 10% | 100% |
| 11 | D/N Thr | 3.0~20.0V | Day/Night Threshold voltage | 0.5V | 5V |
| 12 | D/N Dly | 0~30min | Day/Night open load delay time | 5min | 0min |
| 13 | Load I | 0.15~6.0A | Load current | 0.05A | 0.3A |
| 14 | Dim Auto | Yes/No/365 *2 | Automatic dimming | — | Yes |
| 15 | Dim V | 8.0~32.0V *3 | The voltage to start dimming | 0.1V | 12.5V |
| 16 | Dim % | 1~20% | Automatic dimming percentage | 1% | 10% |
| 17 | Battery | LIQ/GEL/LI *4 | Battery type | — | GEL |
| 18 | CVT | 8.0~32.0V | Charging voltage target | 0.1V | 14.6V |
| 19 | CVR | 7.5~31.8V *5 | Charging voltage recovery | 0.1V | 14.0V |
| 20 | LVD | 10.8~11.8V, Soc1~Soc5 *6 | Low voltage disconnect | 0.1V | 11.0V |
| 21 | LVR | 11.4~12.8V *7 | Low voltage reconnect | 0.1V | 12.0V |
| 22 | 0℃ Chg | Yes/No/Slow *8 | 0℃ Charging Protection | — | Yes |
| 23 | DelayOff | 10~150s *9 | Sensing delay off time | 10s | 10s |
| 24 | Dim NP | 0~100% | Dimming when no people | 10% | 10% |

1. If "Time1" is set to "24H" the load will be on constantly
2. Select "Yes" to activate "Dim V" and "Dim %" settings. 365 setting is only applicable to Lithium series controllers.
3. For a Lithium battery, "Dim V" should not be greater than the "CVT". For gel or liquid batteries, "Dim V" should not be greater than 12.5V.
4. If "LI" is selected as the battery type, "CVT" and "CVR" settings will display.
5. "CVR" should be less than "CVT" by 0.2~1.5V. Before reducing "CVT" first reduce "CVR".
6. Soc 1-5 are the 5 State of Charge states for the battery. The data in the table is for gel or liquid batteries only. When "LI" is selected as the battery type, the range for "LVD" is 6.0~30.0V and the range for "LVR" is 6.6~31.0V
7. "LVR" should be less than "LVD" by >0.6V. Before increasing "LVD" first increase "LVR".
8. "0°C Chg" is designed for some Lithium series controllers. When the controller detects an ambient temperature lower than 0°C, it will:
   - If the setting is "Yes" operation will continue as normal
   - If the setting is "No" charging will stop
   - If the setting is "Slow" charging will continue at 20% of the rated current
9. "DelayOff" is the time taken for the movement sensing controllers to deactivate the load when no nearby movement is detected in "Time2" and "Time4" periods.
10. "Dim NP" is the load power setting when no movement is detected by the movement sensing controller in "Time2" and "Time4" periods.

*Voltage parameters given for a 12V system. For a 24V system, these values are doubled. For lithium batteries, please refer to the controller's user manual.*

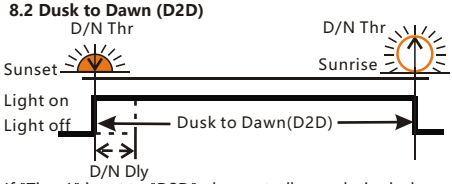
## 8. Work Mode

**8.1 Standard (24H)**


For controllers with "Standard" settings, if "Time1" is set to "24H" or "7.0H" and sent to the controller successfully, the controller's load will be constantly on.

For further details, please refer to the controller's instruction manual.

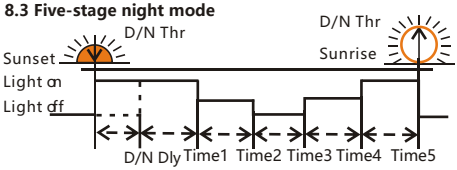
**8.2 Dusk to Dawn (D2D)**




If "Time1" is set to "D2D", the controller works in dusk to dawn mode. The load will turn on while the sun is down, as determined by the solar panel voltage.

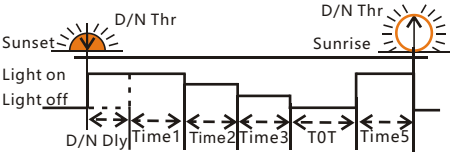
*Note: if "Time1" is set to D2D mode then "Time4" cannot be set to T0T mode.*

**8.3 Five-stage night mode**




Time 1-5 and Dim 1-5 can be set individually to give variable load power throughout the night.

**8.4 T0T mode (turn on before dawn)**




If "Time4" is set to "T0T" then the controller will determine Time4 based on Time5 and previous data on the time of sunrise.

**8.5 Movement sense mode**

For controllers with an movement sensing function, "DelayOff" and "Dim NP" are active in "Time3" and "Time4" periods.

The following table gives some example settings:

| Num | Name | Setting Data |
|---|---|---|
| 1 | Time1 | 1.0H |
| 2 | Dim1 | 100% |
| 3 | Time2 | 2.0H |
| 4 | Dim2 | 80% |
| 5 | Time3 | 3.0H |
| 6 | Dim3 | 60% |
| 7 | Time4 | T0T |
| 8 | Dim4 | 40% |
| 9 | Time5 | 2.0H |
| 10 | Dim5 | 100% |
| 11 | DelayOff | 10s |
| 12 | NP Dim | 10% |

Using the settings above, the controller would work as follows:

1. After the sun sets, the load is powered at 100% for 1 hour
2. The load is then lit at 80% for 2 hours
3. For 3 hours, the load is powered at 60% when movement is detected and at 6% (60% x 10%) when movement is not detected.
4. Until 2 hours before dawn (based on previous data), the load is powered at 40% when movement is detected and at 4% (40% x 10%) when movement is not detected.
5. The load is powered at 100% for 2 hours until sunrise.

## 9. Technical parameters

| | |
|---|---|
| Battery model | (AA) x 2Pcs |
| Power supply voltage | 3.0V |
| Sleep mode power consumption | <6uA |
| Normal power consumption | <6mA |
| Sending power consumption | <20mA |
| Light consumption | <15mA |
| Backlight consumption | <7mA |
| Effective distance | <8m |
| Size | 120x65x20 (L x W x H) |
| Weight | 92g (Not including the battery) |
| Automatic sleep | 1min |
| Lighting time | 30s |
| Backlight time | 30s |
| Working temperature | -25℃~50℃ |
| Protection degree | IP22 |