Logic IO
www.logicio.com

Technical Manual for

RTCU-M11 Series Battery Backup Module

Version 2.00

Logic IO
www.logicio.com

Introduction

This manual contains technical documentation allowing easy installation and use of the RTCU-M11 Series Battery Backup Module. In the following text “Battery Module” will refer to the RTCU-M11 Series Battery Backup Module.
The Battery Module is an accessory to the RTCU-M11 series units. It allows the RTCU-M11 unit to run uninterruptible regardless of external power failures. The Battery Module is very easy to install, also in existing applications where the Battery Module can extend the capabilities of the RTCU-M11 application. An advanced charge circuit is integrated into the Battery Module; this ensures a quick and correct charge of the batteries. By integrating the charger into the Battery Backup Module the very sophisticated charge process is taken out of the hands of the user. The batteries will be charged once a day (scheduled by the RTCU-M11 unit) or whenever a power failure has occurred. This will result in an always fully charged Battery Backup Module ready for use.

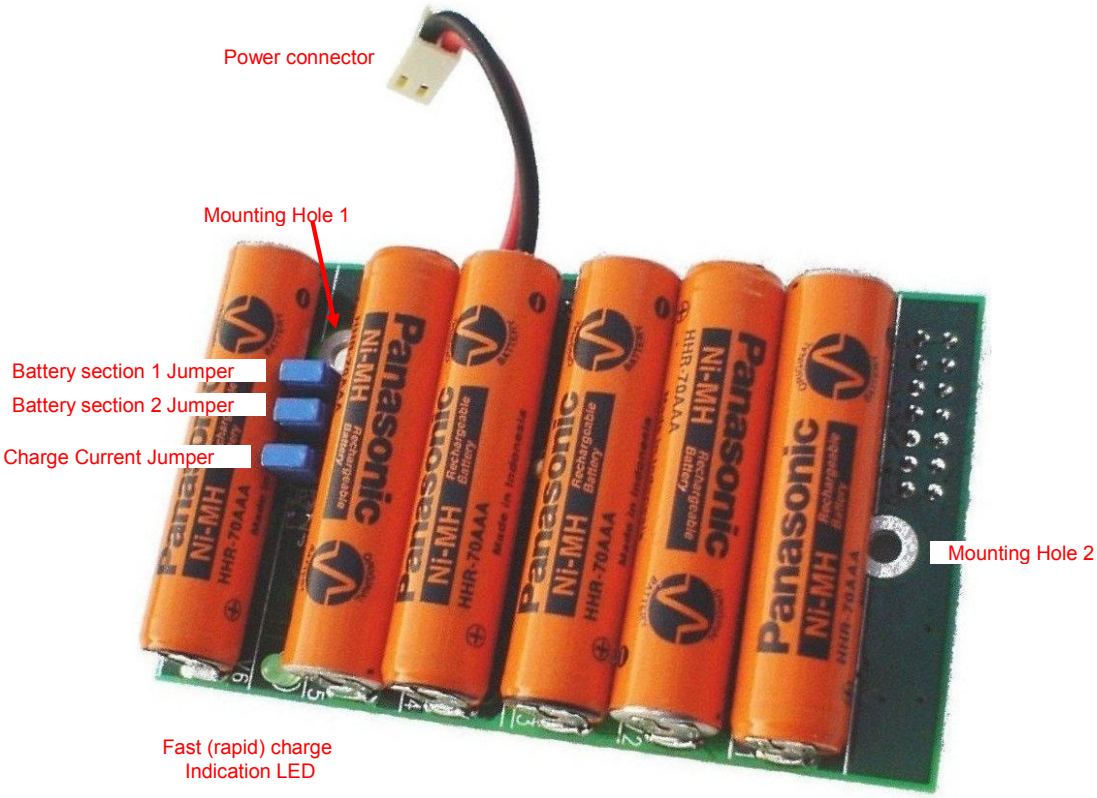
Table of Content

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Logic IO
www.logicio.com

Graphical view



Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Logic IO
www.logicio.com

Power supply and Charge Current

As the Battery Module is an add-on module the power supply range on the RTCU-M11 series unit is narrowed down from the normal operating voltage 8…36Vdc down to 10…36Vdc. Operating below 10VDC will disable charging and the unit will gradually consume power from the battery.
The Battery Module charge current is selectable with the charge current jumper. When the jumper is mounted the batteries are charged with 650mA otherwise they are charged with 350mA. This current is sourced from the external power supply and the user must ensure the power supply is capable of sourcing the extra current. If the power supply is under-dimensioned the batteries cannot be charged.

RTCU-M11 Firmware

The RTCU-M11 series unit must be running firmware version 4.71 or higher in order to control the Battery Module.

Charging

The Battery Module is fitted with an advanced charging circuit. This ensures a quick and optimal charge of the batteries. The charge is timed automatically from the RTCU-M11 unit. The batteries are charged once every 24 hours or whenever the external power has been interrupted. The user has the ability to turn off and turn on the charger through the batChargerEnable VPL function. Please consult the online help for information about the Battery Module functions. By default the charger is enabled making it easier to install the module into existing applications.

Discharging

During battery operation the batteries will eventually be discharged. A low battery indication is available through a VPL function in the RTCU-IDE. Please consult the RTCU-IDE online help for more information about the Battery Module functions.
After the low battery indication has occurred operating time is depended on application specific parameters such as GSM activity, number of enabled digital outputs etc. When the batteries are further discharged the Battery Module power supply will be shut down to prevent deep discharging of the batteries. It's NOT recommended to leave the Battery Module in a discharged or deep discharged state for a longer period of time. Both the capacity and the cycle life of the batteries are affected by leaving the batteries in a discharged or deep discharged state.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

If the Battery Module is not mounted in an RTCU-M11 series unit it's recommended to remove the jumpers to disable the battery sections (See Graphical View) on the battery module to prevent self-discharging of the batteries.

Indicator

A fast (rapid) charge indicator is present on the Battery Module (see the graphical view). When the Battery Modules is being fast charged the LED is turned on.

Battery Configuration

The Battery Module is available in two configurations; a six batteries high capacity version, and a three batteries normal capacity version. The only difference between the two options is the capacity of the Battery Module. The high capacity version allows the RTCU unit to operate longer than on the normal capacity version. Due to the higher capacity the total charge time is also affected. Please see the technical specifications for charge times.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

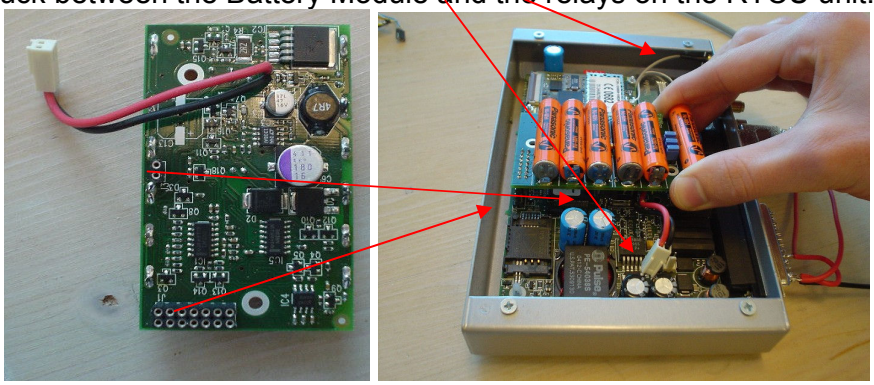
Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Logic IO
www.logicio.com

Installing the Battery Module

1. Mount the three jumpers on the Battery Module.

2. Install the Battery Module on the RTCU unit. First align the Battery Module on top of the dedicated connectors and mounting holes on the RTCU unit. Make sure the GSM-Antenna cable is aligned to the edge of the PCB. Also align the power wires so they won't be stuck between the Battery Module and the relays on the RTCU unit.

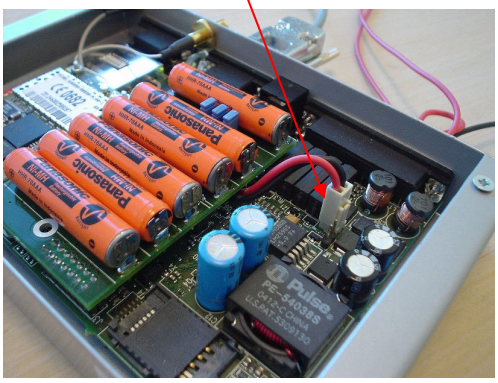


Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

3. Then press gently on the Battery Module to connect it to the RTCU unit.
   In some cases it may be difficult to press down the Battery Module plastic-standoff located closest to the backside of the box. This is due to the bending of the PCB coursed by the pressure applied. In this case a small tool may be used to apply a counterforce to the PCB.

4. Connect the power plug to the white connector on the RTCU unit.
   Notice: The RTCU unit will turn on.



5. Turn on the power supply.
   Notice: The charger will initiate a charge approximately 30 seconds after the power supply has been turned on. The fast charge indicator will indicate this.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

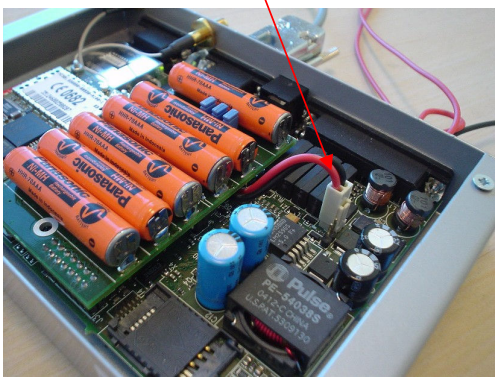
Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Logic IO
www.logicio.com

Warning: Disconnect of Power-connector when installed

Very important

Do **NOT** remove the power-connector from the RTCU unit when the battery module is installed in the RTCU.



Leaving the power-connector disconnected will relatively fast drain the on-board Lithium battery. The on-board Lithium battery is used to maintain the Real-time clock, GPS almanac and is required for power-down to work.

The recommended shipping/storage condition is to remove the two “battery-section” jumpers on the Battery Module. This will effectively disconnect the batteries from the remaining circuit.

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk

Logic IO
www.logicio.com

Specifications for the RTCU-M11 Series Battery Backup Module

	Min	Typ	Max		
RTCU Operating Voltage*	10	-	36	VDC	* Operating below 10VDC will disable charging and the unit will gradually consume power from the
Operating time* Operating time – PowerDown		7:30 >90 0		hour hour	* Sending a SMS every 2 minutes with GPS fix info. PowerDown in between each SMS. (Measurement done using a 1400 mAh module @ 20 °C)
Charge time		1*		hour	* 2 hours for 1400mAh.
Storage temperature*	-20	-	+35	ºC	* Storage at a higher temperature and/or for more than 12 months will increase the risk of deep discharging. * Operating at lower temperatures will reduce the capacity and lifetime of the battery.
Continuous operating	-15	-	+65	ºC	
Charging operating temperature	0	-	+45	ºC	
Humidity (non condensing)	5	-	90	%	
Weight	0.105			Kg	
External dimensions	W 79 x H 48 x D* 27 mm				* D with mounting spacers
Approvals	EN-50081-1 Emission EN-61000-6-2 Immunity				CE

Technical data subject to change

Logic IO ApS.
Holmboes Allé 14
8700 Horsens
Denmark

Ph: (+45) 7625 0210
Fax: (+45) 7625 0211
Email: info@logicio.com
www.logicio.com / www.rtcu.dk