

# AarLogic family

Thank you for buying the Round Solutions AarLogic board. For new customers we would like to recommend to test the basics like voice call, SMS and data call first, before moving on to GPRS.

For further technical advise please make use of the Round Solutions User forum (<http://www.roundsolutions.com/forum>), and use the "SEARCH" function to find former postings with the same topic. It is always very helpful to mention which firmware version is inside the GE863-GPS/GE863PRO<sup>3</sup> (AT+CGMR).

Please note that we also offer a wide spectrum of accessories including RF cables and GSM/GPS antennas. Very useful for the AarLogic family are the following cables:

CAB-RFR553 U.FL to SMA

CAB-RFR551 U.FL to FME

CAB-ROU-200 (CMOS level to USB)

CAB-ROU-210 (CMOS level to RS232 +/-12V)

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# 1 Quickstart/FAQ

## 1.1 FAQ

- *Where do I find the RS232 interface?*

You'll find the RS232 interface on CMOS level (2.8V) on pins 1,3,5,7,9,11,13 and 15 on the X2 connector

- *Does the GE863-PRO<sup>3</sup> provides GPS information?*

No, the GE863-PRO<sup>3</sup> has no GPS receiver.

- *Can I plug the AarLogic boards on my mother board?*

Yes, that's what they are made for. You'll find the pin out information on pages (C01/3), 8 (C05/3) and 10 (C10/3). The pins have a raster of 1.27mm.

- *Is ON/OFF button present or does it turn on automatically?*

You have to build a On/Off by external logic or better by small  $\mu$ C. The  $\mu$ C can run as external watchdog if you use Python.

- *What type of battery is charger designed for?*

The battery charger is designed for **Lithion-Ion** and **Lithium-ion polymer** batteries.

- *Why are there two pins for GND and VCC?*

To handle to possible high currents, there are each two pins for VCC and GND

- *Why doesn't start the module after connecting with energy supply?*

You have to pull the ON/OFF pin to ground as described in the hardware description guide of the GE863 to start up the module.

- *Why I don't get any GPS information?*

If you are going to use the AarLogic boards without the S4 Basis Board you have to connect the following pins: X1-17<->X2-11, X1-16<->X2-12. (See the GE863-GPS hardware user guide)

## 1.2 Revisions

The main difference between Revision 2 and Revision 3 is the pin out of the CMOS RS232 interface. Revision 3 of AarLogic has turned RXD/TXD pins for easier connection with our cable CAB-ROU-200 (CMOS to USB).

The complete pin out and of the CMOS RS232 can be found in section 2.1 (RS232 interface) on page 4.

## 2 General Issues

### 2.1 RS232 interface

All AarLogic boards provide a RS232 interface at CMOS-level, the C05/3 additionally provides a RS232 interface at +/- 12 Volts.

Pin description for CMOS RS232 Interface:

AarLogic board pin out		Name	Function
C01/3 and C05/3	C10/3		
X2-1	X2-1	C125	RING
X2-2	X2-3	C107	DSR
X2-3	X2-5	C109	DCD
X2-4	X2-7	C106	CTS
X2-5	X2-9	C105	RTS
X2-6	X2-11	C108	DTR
X2-7	X2-13	C104 (Rev.2) / C103 (Rev. 3)	RXD (2) /TXD (3)
X2-8	X2-15	C103 (Rev. 2) / C104 (Rev.3)	TXD (2) / RXD (3)

### 2.2 Basic Pins

#### Reset (X1-6/X1-12):

The RESET is used to reset the Telit GE863 modules. Whenever this signal is pulled low, the GE863 is reset. When the device is reset it stops any operation. After the release of the reset GE863-QUAD and GE863-PY are unconditionally rebooted, while GE863-GPS is unconditionally shut down, without doing any detach operation from the network where it is registered to.

NOTE: do not use this signal to power off the Telit GE863 module. Use the ON/OFF signal to perform this function or the AT#SHDN command.

#### On/Off (X1-7/X1-14):

Input for switching power on/off

#### GPS signals:

GPS signals can be found on pins X2-10 to X2-13

### 2.3 Charging Abilities

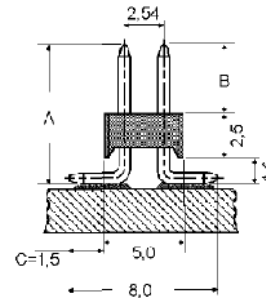
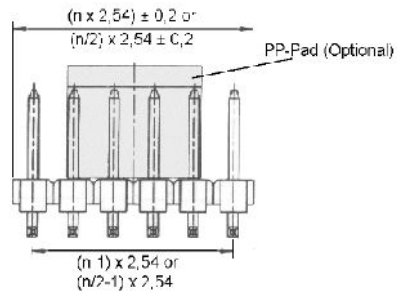
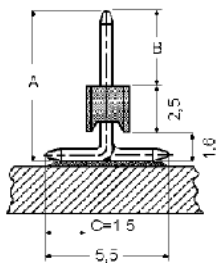
Out of the box only the C05/03 of the AarLogic Family is not capable of charging a LiPo battery. Three resistors have to be changed as shown in the table below.

Resistor	Version of C05/3	
	no charging	with charger
R2	2K2	3K0
R10	0R	n.c.
R11	n.c.	0R

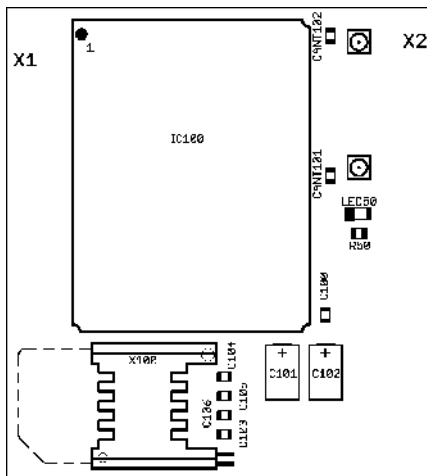
**Important:** The charging current on Vcharge must be limited to 1A at 4.9V.

## 2.4 Multi Pin Connector

All dimensions are given in mm:



### 3 AarLogic C01/3 – GPRS/GPS module



- IC100: combined GSM/GPRS/GPS module: GE863-GPS-LP48 Pins @ 1.27 mm raster
- X100: SIM card holder/reader
- LED50: status LED (yellow)
- RF connectors GSM & GPS: 2x UFL
- Dimensions: 56.4mm x 62.3mm

#### 3.1 Pin out information

X1-1	GPIO3
X1-2	GPIO6
X1-3	GPIO5
X1-4	PWRCTL
X1-5	GPIO7
X1-6	RESET
X1-7	ON/OFF
X1-8	DAC_OUT
X1-9	GND
X1-10	TX_GPS
X1-11	RX_GPS
X1-12	EAR_MT-
X1-13	EAR_MT+
X1-14	MIC_MT-
X1-15	MIC_MT+
X1-16	RX_TRACE
X1-17	TX_TRACE
X1-18	VRTC
X1-19	ADC_IN1
X1-20	SIMIN
X1-21	SIMCLK
X1-22	SIMRST
X1-23	SIMVCC
X1-24	SIMIO

X2-1	C125
X2-2	C107
X2-3	C109
X2-4	C106
X2-5	C105
X2-6	C108
X2-7	C103
X2-8	C104
X2-9	GND
X2-10	GPS_ANT
X2-11	RX_GPS_BIN
X2-12	TX_GPS_BIN
X2-13	PPS
X2-14	VCHARGE
X2-15	GPIO1
X2-16	GPIO2
X2-17	GPIO4
X2-18	VAUX1
X2-19	AXE
X2-20	STAT_LED
X2-21	GND
X2-22	GND
X2-23	VCC
X2-24	VCC

X2-1	C125
X2-2	C107
X2-3	C109
X2-4	C106
X2-5	C105
X2-6	C108
X2-7	C104
X2-8	C103
X2-9	GND
X2-10	GPS_ANT
X2-11	RX_GPS_BIN
X2-12	TX_GPS_BIN
X2-13	PPS
X2-14	VCHARGE
X2-15	GPIO1
X2-16	GPIO2
X2-17	GPIO4
X2-18	VAUX1
X2-19	AXE
X2-20	STAT_LED
X2-21	GND
X2-22	GND
X2-23	VCC
X2-24	VCC

Pin out **Revision 3**

Pin out **Revision 2**

#### 3.2 Power Supply

The nominal operating voltage is 3.8V. The C01/3 can operate from 3.4-4.2V. Power supply has to be connected to pins X2-21,X2-22 (GND) and X2-23,X2-24 (VCC)

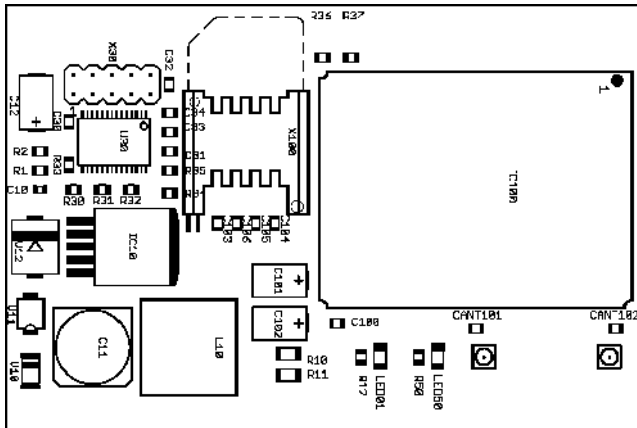
Using the battery charger of the GE863-GPS-LP module is possible. The battery is to be connected on pins X2-21,X2-22 (GND) and X2-23,X2-24 (VCC) and the input voltage for the battery charger has to be connected to X2-14. More information can be found within the Hardware user guide of the GE863-GPS and the Battery Charger Application Note on <http://www.roundsolutions.com/techdocs>

#### Important:

The charging current on pin X2-14 must be limited to 1 amp.

The battery charger is designed only for **Lithion-Ion** and **Lithium-ion polymer** batteries

# 4 AarLogic C05/3 - GPRS/GPS module



- **IC100:** combined GSM/GPRS/GPS module:  
GE863-GPS-LP48 Pins @ 1.27 mm raster
- **X100:** SIM card holder/reader
- **X30:** RS232 interface @ +/-12V
- **LED01:** power on (green)
- **LED50:** status LED (yellow)
- RF connectors GSM/GPS: 2x UFL
- Dimensions: 56.4mm x 84.5mm
- Power-Supply (6-32V)

## 4.1 Pin out information

### connector X1:

X1-1	GPIO3
X1-2	GPIO6
X1-3	GPIO5
X1-4	PWRCTL
X1-5	GPIO7
X1-6	RESET
X1-7	ON/OFF
X1-8	DAC_OUT
X1-9	GND
X1-10	TX_GPS
X1-11	RX_GPS
X1-12	EAR_MT-
X1-13	EAR_MT+
X1-14	MIC_MT-
X1-15	MIC_MT+
X1-16	RX_TRACE
X1-17	TX_TRACE
X1-18	VRTC
X1-19	ADC_IN1
X1-20	SIMIN
X1-21	SIMCLK
X1-22	SIMRST
X1-23	SIMVCC
X1-24	SIMIO
X1-25	GPIO8
X1-26	GPIO9
X1-27	CAM_CLK
X1-28	GPIO17
X1-29	GPIO18
X1-30	GND
X1-31	GND
X1-32	GND

### connector X2:

X2-1	C125
X2-2	C107
X2-3	C109
X2-4	C106
X2-5	C105
X2-6	C108
X2-7	C103 (C104 on Rev. 2)
X2-8	C104 (C103 on Rev. 2)
X2-9	GND
X2-10	GPS_ANT
X2-11	RX_GPS_BIN
X2-12	TX_GPS_BIN
X2-13	PPS
X2-14	VCHARGE
X2-15	GPIO1
X2-16	GPIO2
X2-17	GPIO4
X2-18	VAUX1
X2-19	AXE
X2-20	STAT_LED
X2-21	GND
X2-22	GND
X2-23	VCC
X2-24	VCC
X2-25	VIN
X2-26	VIN
X2-27	GND
X2-28	GND
X2-29	GND
X2-30	SSC0_CLK
X2-31	SSC0_MRST
X2-32	SSC0_MTSR

### connector X30:

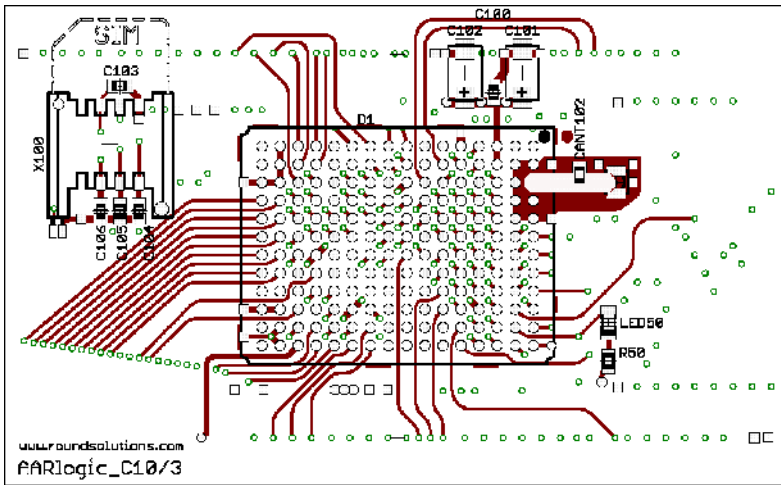
pin	function	pin	function
1	DCD	2	DSR
3	TXD	4	RTS
5	RXD	6	CTS
7	DTR	8	RING
9	GND	10	n.c.

## 4.2 Power Supply

- The AarLogic C05/3 provides a integrated simple switcher power converter.
- Connect input for power supply (6-32V) on pins X2-25,X2-26 (VIN) and X2-27,X2-28 (GND)
- Operating voltage range: 6.0V-32.0V

- VCC pins (X2-23,X2-24) provide the operating voltage of the module if the integrated DC voltage converter is used. If not the module can here be directly supplied with 3.4-4.2V.

# 5 AarLogic C10/3 – GPRS module



- X100: SIM card holder/reader
- GSM/GPRS module: GE863-PRO<sup>3</sup>
- connector GSM antenna: 1x UFL
- OS: Linux or Nucleus
- X100: SIM card holder
- LED50: status LED (yellow)
- Dimensions: 104.0mm x 63.6mm

## 5.1 Pin out information

-	X1-1	X1-2	GPIO3
-	X1-3	X1-4	GPIO6
-	X1-5	X1-6	GPIO5
-	X1-7	X1-8	PWRCTL
-	X1-9	X1-10	GPIO7
NRST	X1-11	X1-12	RESET
PC29	X1-13	X1-14	ON/OFF
PC28	X1-15	X1-16	DAC_OUT
PC21	X1-17	X1-18	GND
PC31	X1-19	X1-20	TX_GPS
PC30	X1-21	X1-22	RX_GPS
EAR_HF-	X1-23	X1-24	EAR_MT-
EAR_HF+	X1-25	X1-26	EAR_MT+
MIC_HF+	X1-27	X1-28	MIC_MT-
MIC_HF-	X1-29	X1-30	MIC_MT+
JTAGSEL	X1-31	X1-32	RX_TRACE_GSM
TDO	X1-33	X1-34	TX_TRACE_GSM
TDI	X1-35	X1-36	VRTC
TCK	X1-37	X1-38	ADC_IN1
TMS	X1-39	X1-40	SIMIN
RTCK	X1-41	X1-42	SIMCLK
NTRST	X1-43	X1-44	SIMRST
MCDA1	X1-45	X1-46	SIMVCC
MCDA2	X1-47	X1-48	SIMIO
MCDA3	X1-49	X1-50	GPIO8
MCDA0	X1-51	X1-52	GPIO9
MCCDA	X1-53	X1-54	CAM_CLK
MCCK	X1-55	X1-56	GPIO17
IIC_SDA_HW	X1-57	X1-58	GPIO18
IIC_SCL_HW	X1-59	X1-60	GND
RXDDBG-AP	X1-61	X1-62	GND
TXDDBG-AP	X1-63	X1-64	GND
PCK0	X1-65	X1-66	SCK1
IRQ0	X1-67	X1-68	TXD4
PCK1	X1-69	X1-70	RXD4
TXD1	X1-71	X1-72	-
RXD1	X1-73	X1-74	-
CTS1	X1-75	X1-76	-
RTS1	X1-77	X1-78	-
GND	X1-79	X1-80	-

C125	X2-1	X2-2	GND
C107	X2-3	X2-4	GND
C109	X2-5	X2-6	ON/OFF-AP
C106	X2-7	X2-8	SHDN_AP
C105	X2-9	X2-10	IRQ1
C108	X2-11	X2-12	IRQ2
C103 (C104 on Rev. 2)	X2-13	X2-14	FIQ
C104 (C103 on Rev. 2)	X2-15	X2-16	GPIO13
GND	X2-17	X2-18	TXD2
	X2-19	X2-20	RXD2
	X2-21	X2-22	RIO
	X2-23	X2-24	DSR0
	X2-25	X2-26	DTR0
	X2-27	X2-28	DCD0
VCHARGE	X2-29	X2-30	RTS0
GPIO1	X2-31	X2-32	CTS0
GPIO2	X2-33	X2-34	TXD0
GPIO4	X2-35	X2-36	RXD0
VAUX1	X2-37	X2-38	SSC_TD
AXE	X2-39	X2-40	SSC_RD
STAT_LED	X2-41	X2-42	SSC_RF
GND	X2-43	X2-44	SSC_TF
GND	X2-45	X2-46	SSC_RK
VCC	X2-47	X2-48	SSC_TK
	X2-49	X2-50	USB_H_DPA
	X2-51	X2-52	USB_H_DMA
GND	X2-53	X2-54	USB_H_DPB
GND	X2-55	X2-56	USB_H_DMB
GND	X2-57	X2-58	SPIO_MISO
USB_D_DM	X2-59	X2-60	USB_D_DP
SPIO_MOSI	X2-61	X2-62	VBAT_T2
SPIO_CLK	X2-63	X2-64	3.1V_OUT
SPIO_NPCS3	X2-65	X2-66	SPIO_NPCS=
SPIO_NPCS2	X2-67	X2-68	ADTRG
AD0	X2-69	X2-70	AD1
ETX1	X2-71	X2-72	ETXEN
ETX0	X2-73	X2-74	ETRXCK
ERX1	X2-75	X2-76	ERXDV
ERX0	X2-77	X2-78	ERXER
EMDC	X2-79	X2-80	EMDIO

## 5.2 Power Supply

The nominal operating voltage is 3.8V. The C10/3 can operate from 3.4-4.2V.

Use pins X2-41, X2-43 (GROUND) and X2-45, X2-47 (VCC) for power supply.

Assure that your power supply unit can handle the high current peaks that can occur in GSM/GPRS applications.

For using the internal battery charger of the GE863-PRO<sup>3</sup> module, you have to connect the battery on pins X2-41, X2-43 and X2-45, X2-47. The pin for charging voltage is X2-27. This charging current on pin X2-27 must be limited to 1 amp.

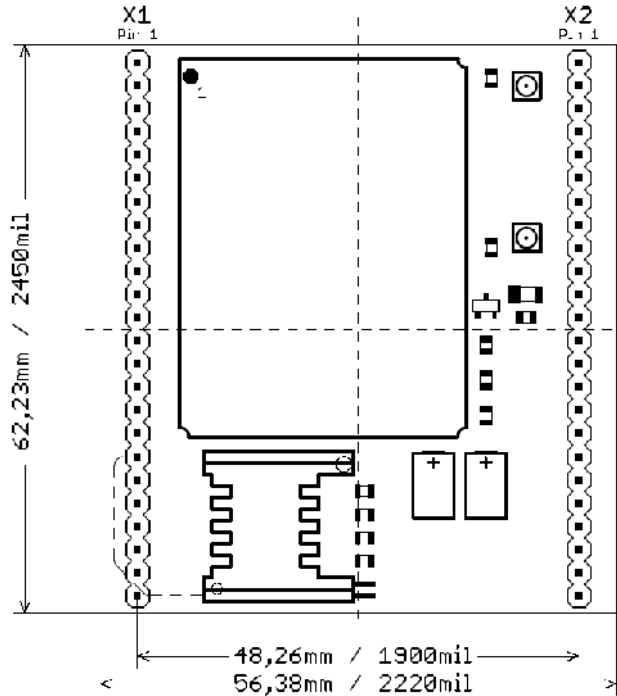
### Important:

The charging current on pin X2-27 must be limited to 1 amp.

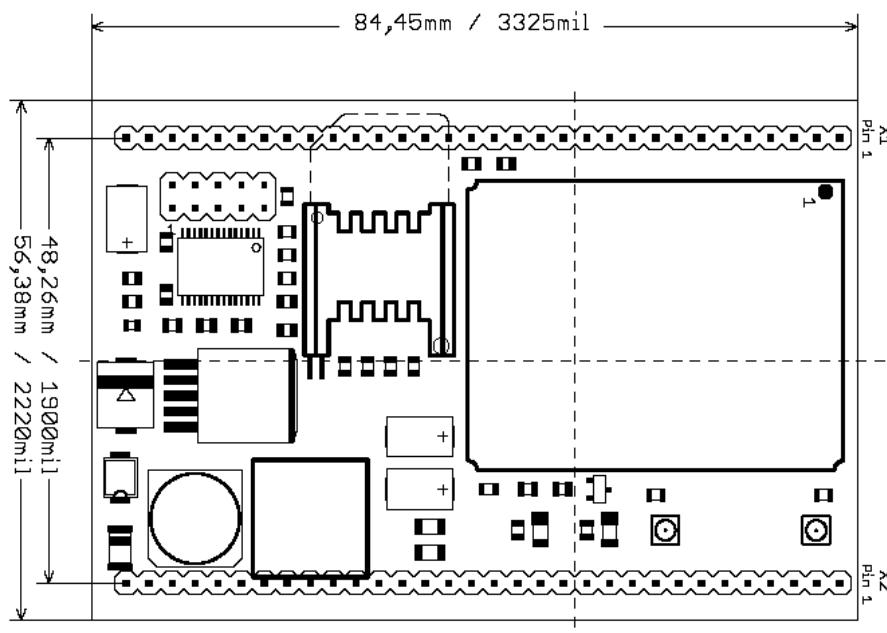
The battery charger is designed only for **Lithion-Ion** and **Lithium-ion polymer** batteries

# 6 Dimensions

## 6.1 AarLogic C01/3



## 6.2 AarLogic C05/3



## 7 Appendix

### 7.1 Schematic diagrams

The schematic diagrams are listed on [www.roundsolutions.com/techdocs](http://www.roundsolutions.com/techdocs) and [www.roundsolutions.com/AarLogic](http://www.roundsolutions.com/AarLogic)

### 7.2 Additional documentation

More information (AT commands, Hardware guides, Software guides) about the integrated Telit GSM/GPRS/GSM module can be found on [www.roundsolutions.com/techdocs](http://www.roundsolutions.com/techdocs)

We also provide the detailed datasheet of the used SMT header.