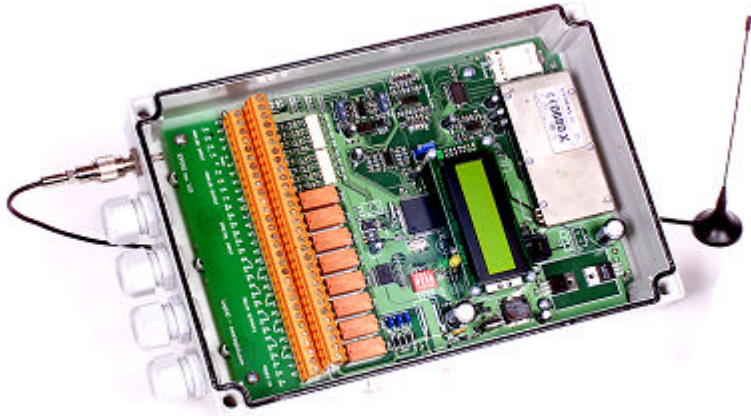


Technical Documentation, RTCU-SA



The RTCU-SA product (GSM antenna not included in product)

The RTCU-SA product is a RTCU unit with a built-in communications module such as GSM, DECT or FSK Modem. The RTCU-SA unit is suitable for mounting in harsh environments, as the unit is mounted in a IP67 enclosure. The electrical connections to the unit are done using a number of screw terminals on the unit. All cables entering the unit, is secured using cable-glands which are also IP67 proof. The connection to the built-in RS232/Programming port is via a RJ-11 connector, which is accessible when the lid of the unit is opened using the 4 plastic screws, located in each corner of the enclosure. The connection for the external 900 MHz GSM antenna is done using a standard TNC Female connector.

Two status indicators are present in the unit (see the graphical view below). Different blinking patterns are used to signal different types of errors/status change in the RTCU unit:

Status LED 1	Status LED 2	
Fast blinking	Off	The unit is initializing, preparing to start the VPL program
Slow blinking	Off	The unit is executing the VPL program
Slow blinking	On	A runtime error has been detected in the program

The unit supports the following features of the RTCU platform functions:

- [GSM](#) Handle the GSM module
- [Voice](#) Play voice messages
- [Display](#) Controls a LCD display
- [DTMF](#) Functions for receiving DTMF key presses
- [Board](#) Functions specific for the RTCU core platform
- [Miscellaneous](#) Other functions

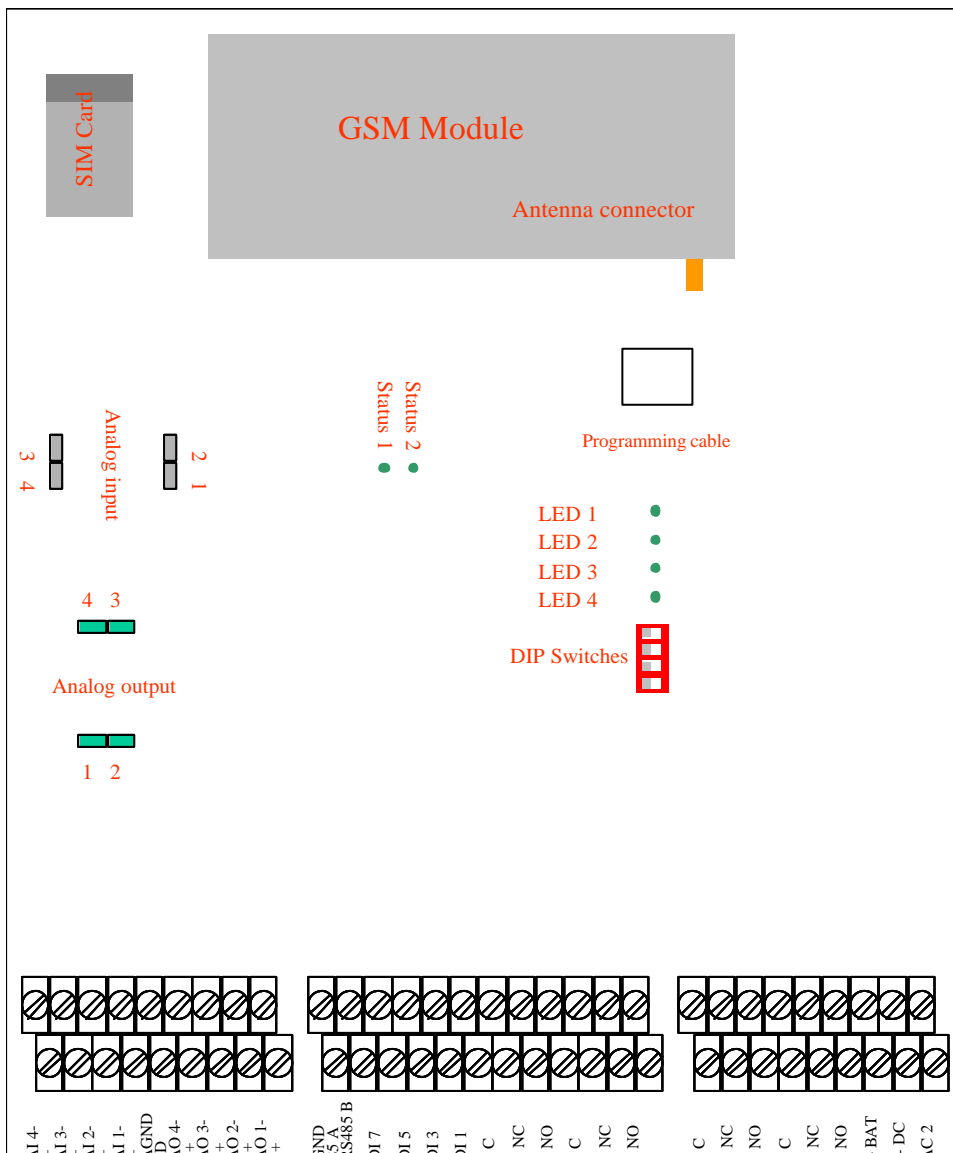
Features:

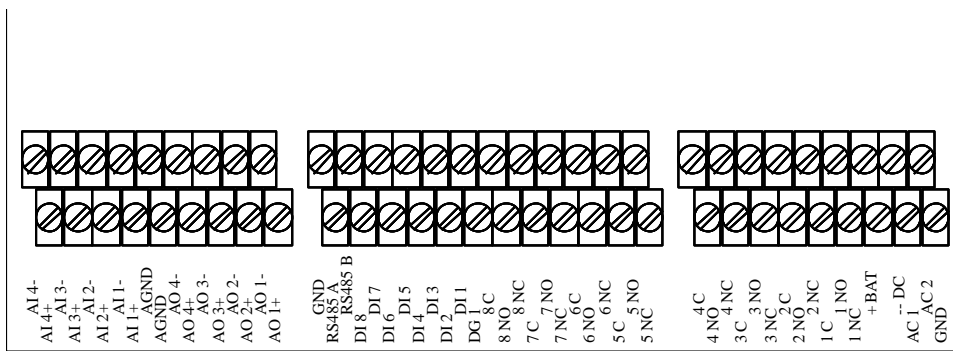
- 8 Digital inputs, galvanically isolated
- 8 Relay outputs
- 4 Analog inputs (each selectable voltage or current)
- 4 Analog outputs (each selectable voltage or current)
- GSM Phone for voice, data, SMS, fax, email etc.
- Real Time Clock with battery backup

- 3 User defined dipswitches
- 4 User defined LED indicators
- Built-in charger for battery operation
- Supervises supply voltage, Battery voltage and current
- RS232/RS485 Serial port (baudrates from 110 baud to 115 Kbaud)
- Standard SIM card reader
- Optional LCD Display (2x16/4x20 characters, w/backlight)
- Optional RS485 multidrop network
- Optional temperature sensor onboard
- Optional DECT support, supports data transfer
- 64 Kbyte storage for VPL programs
- 3 Kbyte storage for user variables
- 64 Kbyte storage for textmessages
- Upto 140 seconds storage for voice messages (upgradeable to 560 sec)
- Maximum of 128 separate voice messages
- 512 Kbyte for datalogging (upgradeable to 2 Mbytes)
- 16 simultaneous VPL jobs operating in one of two priorities

Graphical view:

Below you will find a graphical view of the different connections and the most important components in the RTCU-SA unit.





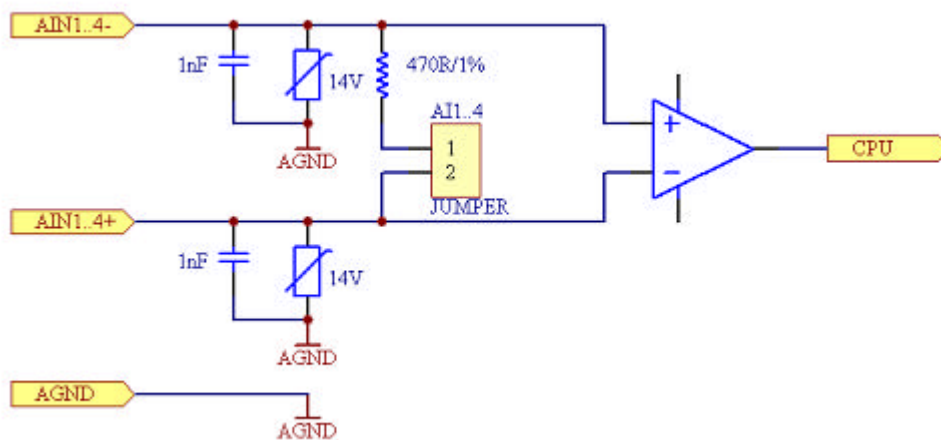
Electrical wiring:

Analog Inputs:

The analog inputs can work either in voltage-mode or in current-mode. The choice between the two modes is done using jumpers. When the jumpers AI1..4 are installed the analog inputs are in current-mode with specifications as shown in the *Technical specification* section below. **WITHOUT jumpers, an input is operated in voltage mode.**

The connections are to be made differently depending on the chosen mode. In current mode, the signal is connected to AIX+ and AIX-, where X is in the range of 1 to 4. In single-ended voltage mode, the signal is connected between AIX+ and AGND, and at the same time AIX- is to be connected to AGND. If differential mode is required, simply connect the signal between AIX+ and AIX-. AGND must in both cases be connected to the reference of the connected equipment.

Electrical schematic for the analog inputs:

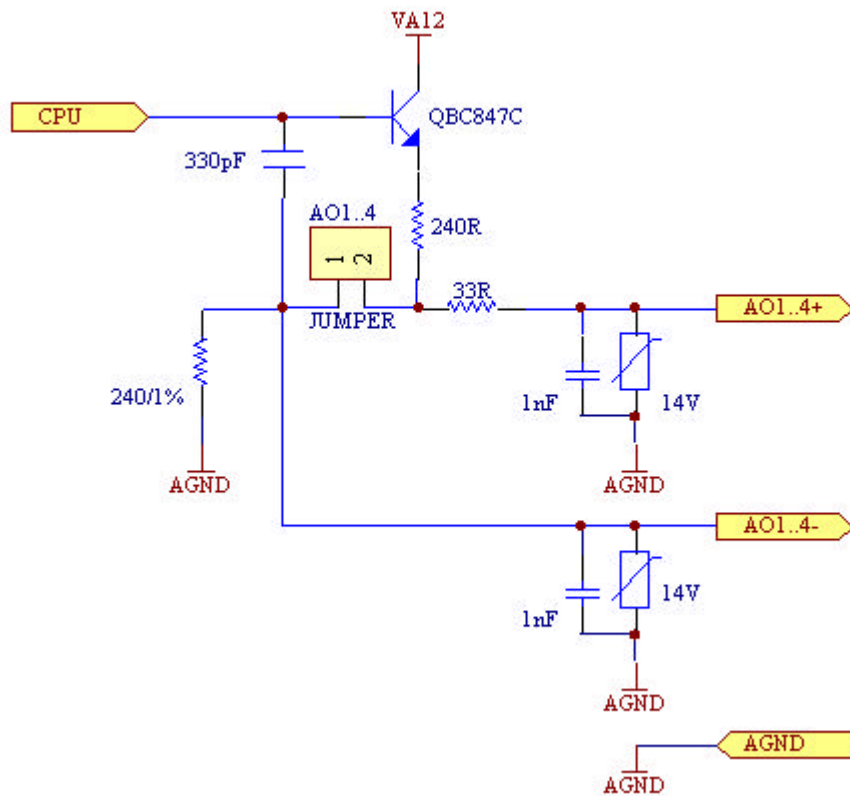


Analog outputs:

Like the analog inputs, the analog outputs can work respectively in current- and voltage-mode. With the Jumpers AO1..4 installed the outputs operate in voltage-mode, **WITHOUT jumper, an output is in current-mode.**

The connections are to be made differently depending on the selected mode. In current mode, the signals are connected to AOX+ and AOX- where X can be 1 to 4. In voltage mode the signals are connected between AOX+ and AGND. AGND must in both cases be connected to the reference of the connected equipment.

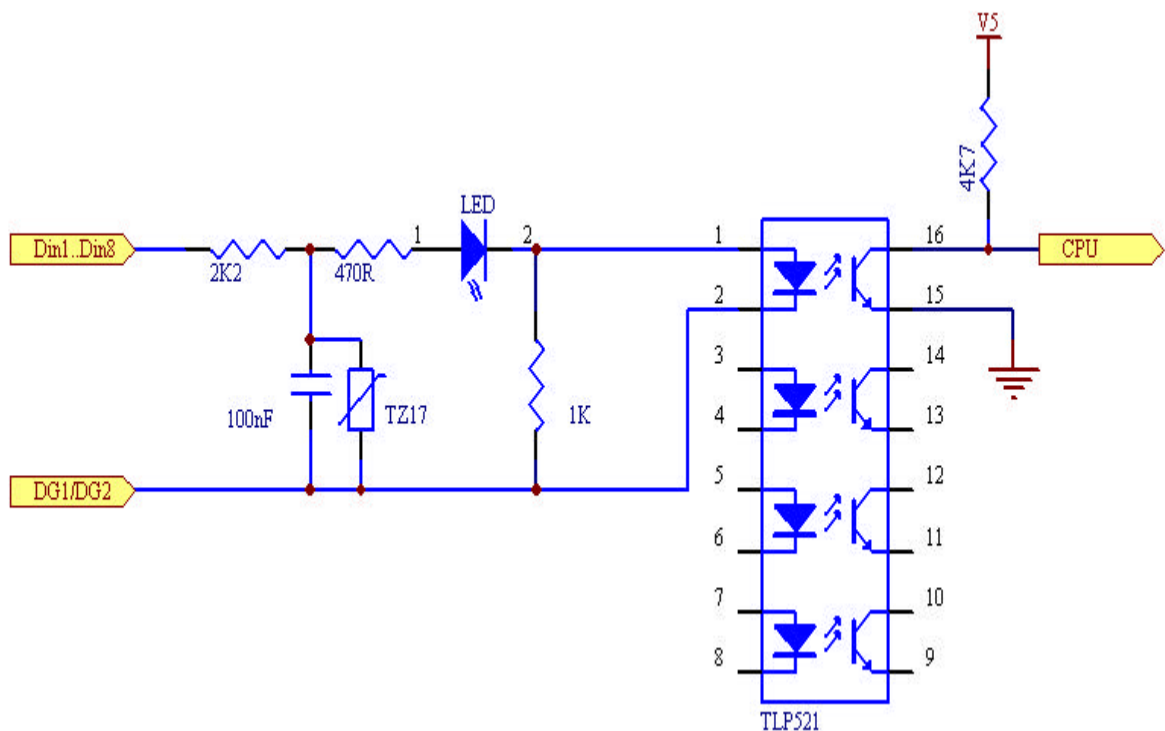
Electrical schematic for the analog outputs:



Digital Inputs:

The digital inputs are galvanic isolated from the RTCU with optocouplers and they are also low-pass filtered and transient protected.

Electrical schematic for the digital inputs

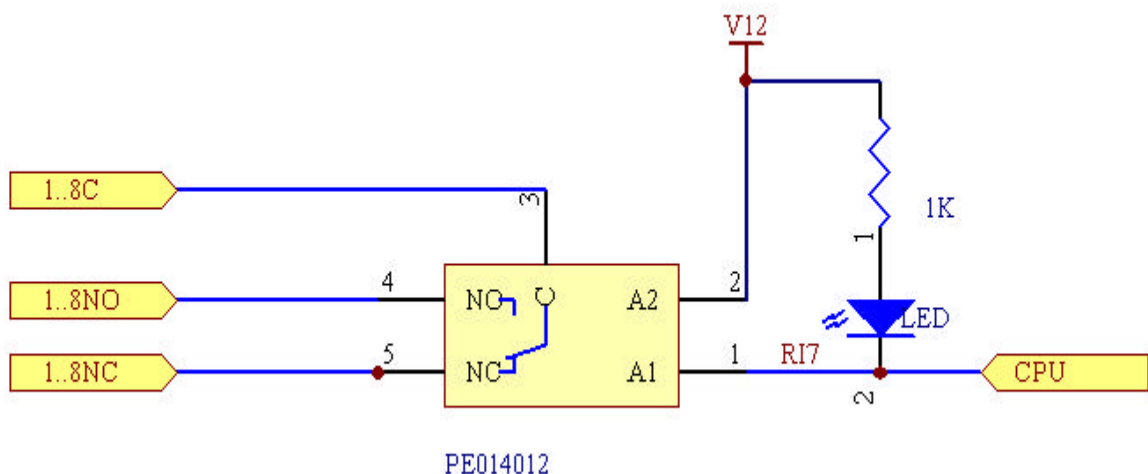


Digital outputs:

The digital outputs interfaces to the outside world via relay contacts. All outputs have both a Normally Open contact set and a Normally Closed contact set.

Each output has an LED, which will indicate when the corresponding output is active.

Electrical schematic of the digital outputs:



RS485 port:

The connection to the RS485 port is done using 3 screw terminals (see Graphical view). The RS485 port is a multidrop port, with maximum 64 units connected simultaneously to the line. The RS485 connection contains the A and B signals, as well as a signal ground, which always needs to be connected to the common signal ground for all units connected to the RS485 bus ! The RS485 port is shared with the programming port/RS232 port, and the unit can only communicate with one at a time. If the RS485 port is used, you have to make sure that no

communication is taking place on the RS485 line while a new project is uploaded to the RTCU, or the communication can fail to the RTCU unit, and/or to the attached RS485 devices. The maximum cable length is 1300 feet, however the limit can be influenced by the quality of the cable, signalling rate, noise etc.

Technical specifications:

Analog inputs		Min		Max		Resolution is 10 bits. All inputs are protected against transients and lowpass filtered.
	Voltage mode	0	-	+10	VDC	
	Current mode	0	-	+20	mA	
Analog outputs		Min		Max		Resolution is 10 bits. All outputs are protected against transients.
	Voltage mode	0	-	+10	VDC	
	Current mode	0	-	+20	mA	
Digital inputs		Min	Typ	Max		All inputs are protected against transients and lowpass filtered
	Logic "High"	8	10	40	VDC	
	Logic "Low"	-5	-	5	VDC	
Digital outputs (Relay DPST)		Min		Max		
		-	-	5	Amp	At 250 VAC
		0.01	-	5	Amp	At 30 VDC
Power supply		Min	Typ	Max		Selectable between AC and DC supply, protected against wrong polarity and self healing fuse
		12	-	28	VDC	
		12	-	18	VAC	
Power consumption		90	160	300	mA	At 24 VDC supply voltage
Protection	IP67					The enclosure contains a TNC female connector for GSM antenna, and 4 PG13.5 for cable entries
External dimensions	W 180 x H 280 x D 60 mm					
Storage temperature	-40		+90	°C		
Operating temperature	-20		+45	°C		

Technical data subject to change