

# Technical Manual for

## RTCU-A6

Version 1.01





## Introduction

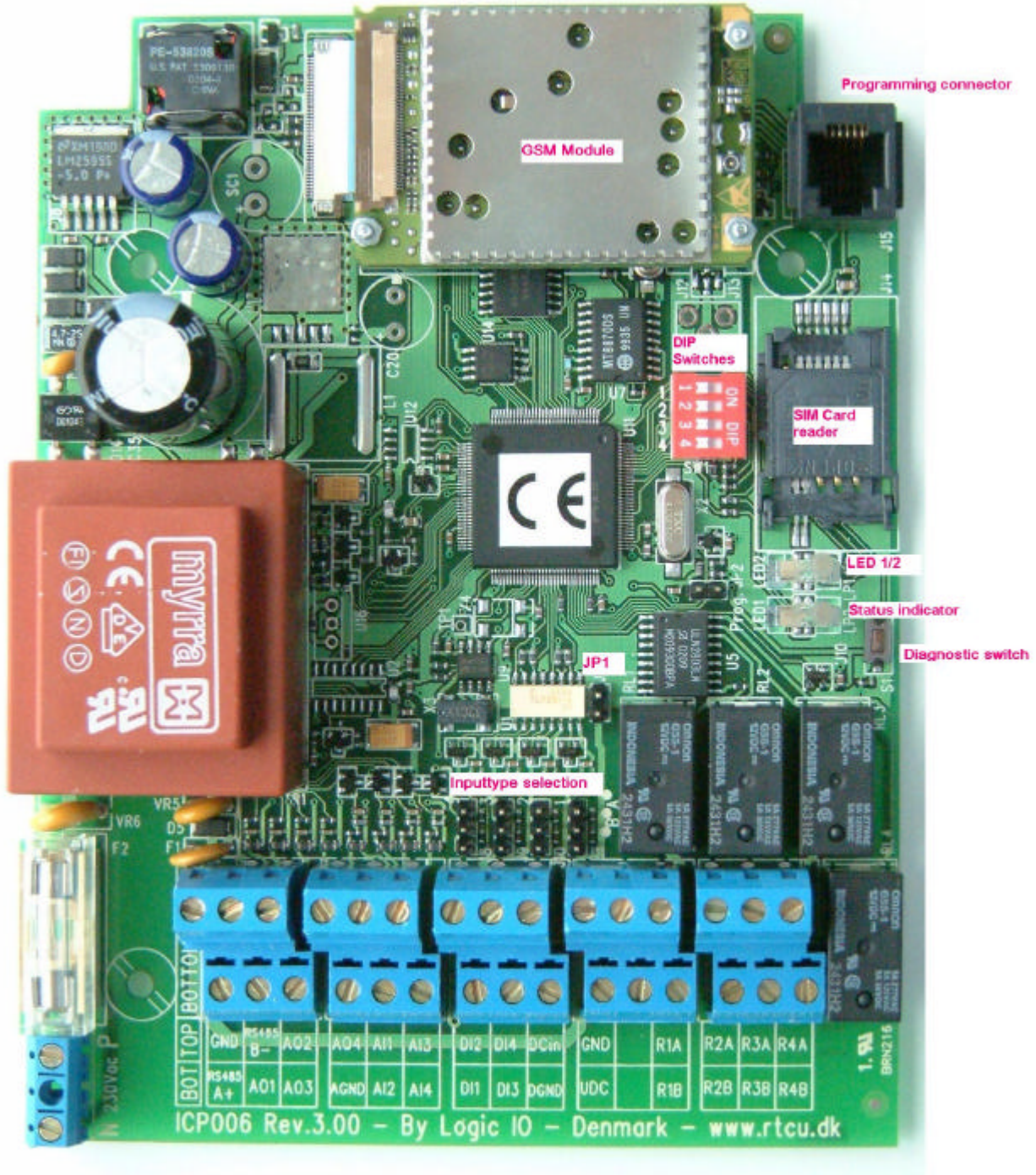
The RTCU-A6 offers an impressive list of features and possibilities. The product is a unique combination of a powerful Programmable Logic Controller (PLC) and a GSM phone tightly connected in a single easy programmable unit. The RTCU-A6 product provides the user friendly answer to your remote monitoring, remote control, surveillance and datalogging needs.

This manual contains technical documentation allowing easy installation and use of the unit. For programming information please consult the RTCU Programming Documentation and/or the RTCU IDE Online help

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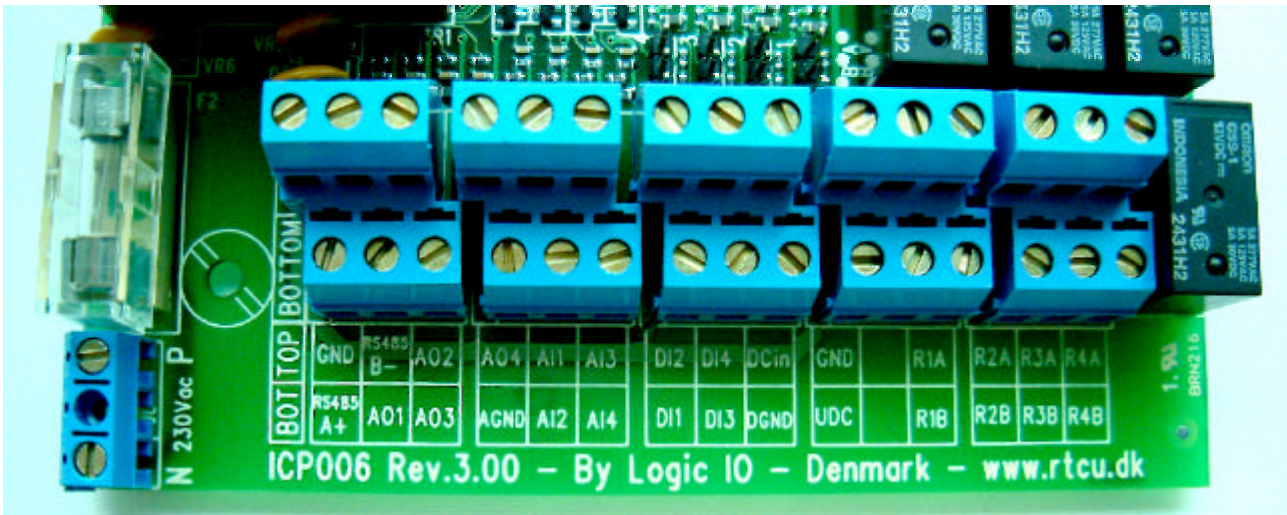
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## Graphical view



## External connections

All connections to external equipment (except the GSM antenna) is done using screw terminals, located at the bottom of the unit, se picture below:



### Power supply

The RTCU-A6 unit can be supplied either by 230VAC 50Hz or via 11..15 VDC. Depending on the power source used, the connections are as follows:

230 VAC Supply:

Terminal	Description
N	Neutral connection for 230 VAC
P	Phase connection for 230 VAC

The 230VAC supply is connected to the P and N terminals on the unit (These are found to the left on the unit, in a separate block, with the "230 VAC" listed in front of them)

11..15 VDC Supply:

Terminal	Description
DCin	Positive (+) connection from DC power supply
GND	Negative (-) connection from DC power supply
UDC	Unfiltered output from built-in transformer, DO NOT CONNECT!

The 11..15 VDC supply is connected to the DCin and GND terminals on the unit (These are found approximately in the middle of the right block of terminals, upper row)

### Analog Inputs

The analog inputs are all voltage inputs, with a range from 0V to 5V DC

The input signal is connected between AI<sub>n</sub> and AGND. AGND must be connected to the reference of the connected equipment.

Terminal	Description
AI1	Analog input number 1
AI2	Analog input number 2
AI3	Analog input number 3
AI4	Analog input number 4
AGND	Analog ground

### Analog outputs

Like the analog inputs, the analog outputs supports a voltage range of 0V to 5V DC

The output signal is taken from AO<sub>n</sub> and AGND. AGND must be connected to the reference of the connected equipment.

Terminal	Description
AO1	Analog output number 1
AO2	Analog output number 2
AO3	Analog output number 3
AO4	Analog output number 4
AGND	Analog ground

### Digital Inputs

The digital inputs are galvanic isolated from the RTCU with optocouplers and they are also low-pass filtered and transient protected. Using the jumpers located at each input, it is possible to configure each input as a normal input, or as a S0-A or S0-B compatible input (S0 configurations supply a current to the input connector, so that a simple switch between Gnd and the input will activate it). If configured as normal inputs (no jumper installed at the input) connect a positive voltage between the input and DGND connector.

Using the JP1 jumper, it is possible to connect the DGND connector to the units internal Ground. This jumper MUST be installed when one or more of the inputs are configured as S0 inputs.

Terminal	Description
DI1	Digital input number 1
DI2	Digital input number 2
DI3	Digital input number 3
DI4	Digital input number 4
DGND	Analog ground

### Digital outputs

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

Optionally, the RTCU-A6 unit can be delivered with solid-state outputs, please ask Logic IO for details.

Terminal	Description
R1A	Contact set for relay output number 1
R1B	
R2A	Contact set for relay output number 2
R2B	
R3A	Contact set for relay output number 3
R3B	
R4A	Contact set for relay output number 4
R4B	

Digital output connections when configured (optionally) as solid-state outputs:

Terminal	Description
R1B	Digital output number 1
R2B	Digital output number 2
R3B	Digital output number 3
R4B	Digital output number 4
GND	Ground for digital outputs (solid state)

(Please note that the RnA terminals are NOT used when outputs are solid state !)

### RS485 port

The connection to the **optional** RS485 port is done using 3 screw terminals (see Graphical view). The RS485 port is a multidrop port, with maximum 64 units connected



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simultaneously to the line. The RS485 connection contains the A (positive) and B (negative) 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, if the RS485 port is used, the RS232 port can not be used, and vice versa. The maximum cable length for the RS485 bus is approx 400 meters; however this limit can be influenced by the quality of the cable, signaling rate, noise etc.

Terminal	Description
RS485 A+	Positive wire for RS485 port
RS485 B-	Negative wire for RS485 port
GND	Ground for RS485 port



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## Installing SIM card / connecting the GSM antenna

### SIM Card

The RTCU unit contains a standard SIM card reader. It is located to the right on the printed circuit board, just below the programming connector. The SIM card reader is opened by carefully pressing down on the lid of the reader, and at the same time, pressing the lid towards the screw terminals. It is then possible to open the SIM card reader, and insert your SIM card into it. Close the lid by pressing it down, while at the same time, pressing it towards the programming connector.

### GSM Antenna

The RTCU unit contains an SMA Female connector for connection of a suitable GSM Dual band antenna (900/1800 MHz). When installing the antenna, please make sure that the antenna is not in close proximity of metallic parts or anything else that can influence the efficiency of the GSM antenna. Please consult the installation guide that follows the GSM antenna.

## Switches / Indicators

A status indicator is present on the front of the unit (see the graphical view). Different colors/blinking patterns are used to signal different types of errors/status change in the RTCU unit:

**Fastest blinking, green**  
**Fast blinking, green (or yellow)**

The unit is initializing, preparing to start the VPL program  
 The VPL program is not executing, stopped by the reset/diagnostic switch.

**Slow blinking, green (or yellow)**  
**Fast blinking, red (or yellow)**  
**Alternating Fast/Slow, red (or yellow)**

The unit is executing the VPL program  
 A runtime error has been detected in the program  
 The unit has lost its Firmware ! This can only happen if, during a firmware upgrade, the RTCU Unit loses power, or the communication is lost completely. In this case, simply upload the firmware to the unit again.


If the color of the status indicator is yellow, the unit is actively communicating with for example, the RTCU-IDE program (or another program, supporting the RTCU protocol, RACP).

The RTCU unit contains a combined reset/diagnostic switch. This switch is located just to the right of the two light pipes. When this switch is activated during reset of the unit (or poweron), the VPL program/project uploaded to the unit, will not be started. The status indicator indicates this. If the switch is activated for more than 3 seconds, the unit will reset (same as poweron).

A two-colored (red/green) indicator is visible above the status indicator. This indicator can be controlled from within the VPL program in the unit, the green part is accessed as LED1 and the red part as LED2



## Specifications

Analog inputs	Min		Max			Resolution is 10 bits. All inputs are protected against transients and lowpass filtered.
	0	-	+5	VDC		
Analog outputs	Min		Max			Resolution is 10 bits. All outputs are protected against transients and low pass filtered.
	0	-	+5	VDC		
Digital inputs		Min	Typ	Max		All inputs are protected against transients and low pass filtered. All inputs are optically isolated
	Logic "High"	8	10	40	VDC	
	Logic "Low"	-5	-	5	VDC	
Digital outputs (Relay SPST)	Min		Max			
	-	-	5	Amp	At 250 VAC	
	0.0	-	5	Amp	At 30 VDC	
Digital outputs (Solid state)	Min		Max			Outputs are protected against inductive loads
	-	-	60	Volt		
	-	-	0.5	Amp		
Power supply	Min	Typ	Max			Selectable between AC and DC supply. DC supply is protected against wrong polarity and with self-healing fuse. 230VAC is fused.
	11	-	15	VDC		
	210	-	250	VAC		
Power consumption	90	140	250	mA	At 12 VDC supply voltage	
Protection	IP67				The enclosure contains 3 PG9 cable glands for cable entries. SMA Female connector for Dual band (900/1800 MHz) GSM antenna	
External dimensions	W 130 x H 180 x D 50 mm					
Storage temperature	-40		+90	°C		
Operating temperature	-20		+50	°C		
Approvals	EN-50081-1 Emission EN-61000-6-2 Immunity				Unit is CE approved	

Technical data subject to change



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## Declaration of Conformity

We, Manufacturer

**Logic IO Aps.  
Jyllandsgade 54  
8700 Horsens  
Denmark**

Declare that the product

**RTCU A6 (ICP006)**

is in conformity with

<b>EN 50081-1, 1992</b>	<b>Generic emission standard Part 1:</b> Residual, commercial and light industry.
<b>EN 50082-1, 1997</b>	<b>Generic immunity standard Part 1:</b> Residual, commercial and light industry.
<b>EN 50081-2, 1993</b>	<b>Generic emission standard Part 2:</b> Industrial environment.
<b>EN 61000-6-2, 1999</b>	<b>Generic immunity standard Part 2:</b> Industrial environment.
<b>EN 60950</b>	Safety for information technology equipment including electrical business equipment.



**February 7, 2002**

**Signature:**

Name:

Technical Manager Mr. Carsten Groen

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