

Busiraks Communicator

Tracking and SMS Controller

User Manual Revision 0.2

The Busiraks communicator is manufactured in South Africa by Busiraks (Pty) Ltd.
Please visit our website for more info: www.busiraks.co.za

Manufacturer details

Although every effort has been made to ensure the accuracy of the contents of this manual, Busiraks cannot be held liable for any damages directly or indirectly resulting from errors in this manual.
Busiraks will under no circumstances be held liable for any damages or injuries resulting from the use of this product.

Disclaimer

Using your Communicator as a vehicle tracking unit

Using the Communicator as a vehicle tracking unit is extremely simple. All you need to do is add a SIM card and supply power to the unit. Place it in your vehicle and away you go!

The SIM card

The Communicator uses a SIM card to connect to a website for live tracking. If you want to use the Communicator without a SIM card (to use only the logbook function), we still recommend inserting a dead/unregistered SIM card which can be bought for a rand or less in most chain stores. The reason for this is that the SIM card is also used to connect the internal backup battery.

Buying a SIM card

You can use any type of SIM card and package for your Communicator. (We have tested Vodacom, MTN and Cell-C SIM cards, but other networks should also work) Unless you use it to send a lot of SMS's, it will use a minimum amount of airtime per month. We recommend either a prepaid SIM or a small telemetry package. Before using the SIM card in the Communicator, put it in your cell phone and make sure that the SIM card is active and can access the Internet (GPRS enabled).

Inserting the SIM card

Slide the SIM card as shown below. Use a credit card or similar object to press it till it clicks. To remove, press firmly against the SIM with credit card and release. The SIM will pop out a few millimeters for easy removal.



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Powering the Busiraks Communicator

The Communicator can be powered either from the USB port or from the power connector.

For a permanent installation, we recommend connecting the Red (positive) and Black (negative) wire of the Power connector to your vehicle's battery terminals.



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LED status lights

The Communicator has a red and green LED that shows the current status of the unit. If the green LED is flashing slowly the unit is in normal state (GPS has a lock and GSM is registered)

Red LED	Green LED	Status
flashing fast	flashing fast	GPS no lock, GSM not registered
off	flashing fast	GPS locked, GSM not registered
off	flashing slow	GPS locked, GSM registered
flashing slow	off	GPS no lock, GSM registered
off	off	Unit sleeping or battery flat (shake to wake)

Installation

WARNING: The unit has a rechargeable battery that can explode if it gets too hot! (Temperatures above 60 degrees Celsius) Do not put the unit too close to the engine or other parts that get very hot.

When installing the Communicator in your vehicle, take the following into consideration:

- Metal objects obstruct the GPS and GSM signals, while plastics, leather, glass, etc. do not.
- The top of the unit must face towards the sky for better GPS reception
- If mounted too close to your Radio, you might hear interference from the GSM signal.
- Connect to the unit with the USB when looking for a mounting place and verify that you get a good GPS signal. (this works better outside, as the reception in your garage might be bad) Alternatively, look at the status lights.

Tracking

The unit can be integrated into existing enterprise applications and services. The latest software and USB drivers can be downloaded from www.busiraks.co.za

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Hardware Description

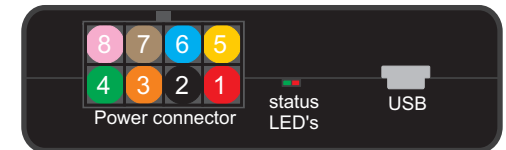
Power Supply

- 6V ... 32V DC 3Watt
- Internal lithium polymer backup battery
- Can operate & charge internal battery from USB port

Inputs & Outputs

- 1x Relay output 3A, 60V DC, 125 Watt (common, N/O & N/C contacts)
- 1x Open collector output (40V, 2 Watts)
- 1x 3.3V switchable output (Max 100mA)
- 4x Analog inputs. 0..36V, 10 Bit Resolution
- 1x Optical Isolated input (0..24V)
- 1x RS232 port (Tx and Rx only)

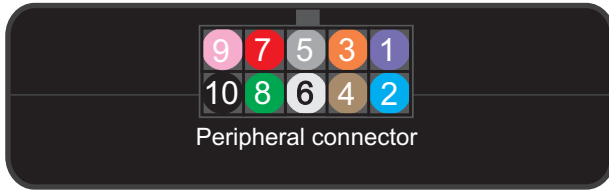
The Power Connector



Pin	Colour	Description
1	Red	Power (+6V...+32V)
2	Black	Ground
3	Orange	Isolated Input -
4	Green	Isolated Input +
5	Yellow	Digital Output
6	Blue	Relay: common
7	Brown	Relay: normally open
8	Purple	Relay: normally closed

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The Peripheral Connector



Pin	Colour	Description
1	Purple	Temperature Probe +
2	Blue	Temperature Probe -
3	Orange	Analog Input 4
4	Brown	Analog Input 3
5	Grey	Analog Input 2
6	White	Analog Input 1
7	Red	+3.3V switchable output
8	Green	RS232 Receive (input)
9	Pink	RS232 Transmit (output)
10	Black	Ground

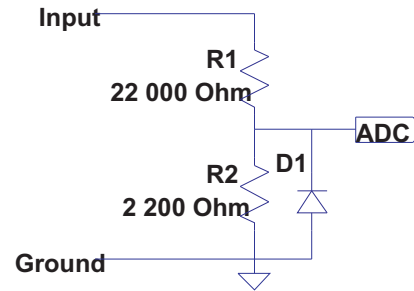
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Analog Inputs

The analog inputs use the same ground as the power supply (Pin 2 on the power connector or pin 10 on the peripheral connector).

Inputs can be from 0V up to 36V. If you need a higher input voltage, add a serial resistor to the input. The range of the internal ADC is 0V ... 3.3V.

Current consumption will be between 0mA (0V input) and 1.5mA (36V input)



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Troubleshooting

Symptom	Possible Cause	Action
Internal battery doesn't charge	No SIM card inserted	Insert a SIM card.
Both LED's off	No power to unit	Make sure the unit has power, either from a USB port or Power connector
	Unit sleeping	Shake unit to wake it. Low power mode can be disabled with the software.
GSM doesn't register	PIN on SIM card	Put SIM in a cellphone and disable the PIN
	SIM not active	Activate the SIM card (remember, all new SIM cards must be RICA'd in South Africa.)
Unit doesn't send SMS messages or connect to website	PIN on SIM card	Put SIM in a cellphone and disable the PIN.
	SIM not active	Activate the SIM card (remember, all new SIM cards must be RICA'd in South Africa.)
	No airtime	Make sure airtime is loaded on SIM. Put SIM in a cellphone and verify if you can send a SMS.
	GPRS not enabled	Enable GPRS. This is specific to each operator. Put SIM in a cellphone and verify if you can connect to a website.
GPS can't get a lock	Bad reception	Place the unit outside with a clear view of the sky. It may take a minute or two for a good lock.

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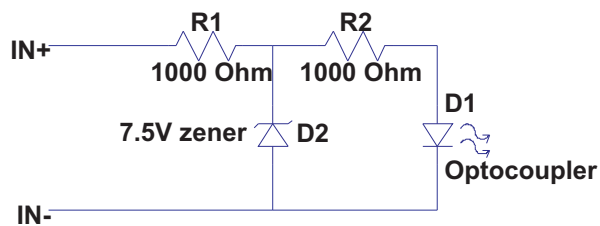
Internal circuits of the Communicator

Optocoupler Inputs

The optocoupler input is isolated from the rest of the circuit (uses its own ground (IN-) and can be different from the supply ground.)

Input voltage can be up to 24 Volts. The current drawn will depend on the input voltage:

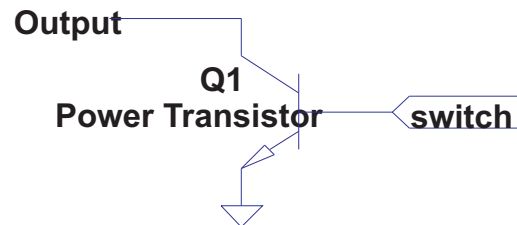
Input Voltage	Current Consumption
3.3V	1.1 mA
5V	2.0 mA
12V	4.5 mA
16V	8.5 mA
24V	16.5 mA



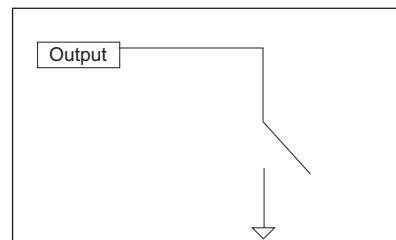
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Digital Output

The digital output is configured as an open collector output. When switched low, it will go to ground, when high it will be in high-impedance state (like an open switch)



If you find it difficult to understand, think of it as a switch, as shown below.



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