

Communication interfaces

Ethernet connection

Checking device IP

- **Using iModCloud:** log into iModCloud, click *Devices* in the Menu on the left side.



Select your device and check *ETH IP* in the *Ethernet* box.

- **Using SearchNPE:** use SearchNPE to detect Modberry devices on the network and to determine IP address.



Find the application at http://www.a2s.pl/products/npe/SearchNPE_PZA2S.zip.

Legend:



Network connection via Ethernet port required



Internet connection via Ethernet port required not required

Ethernet interfaces configuration example

IP Address Configuration

Static IP address

In file `/etc/network/interfaces` find section considering `eth0` and change it:

```
auto eth0
iface eth0 inet static
address 192.168.0.156
netmask 255.255.255.0
gateway 192.168.1.1
auto eth1
iface eth1 inet static
address 192.168.0.158
netmask 255.255.255.0
gateway 192.168.1.1
iface lo inet loopback'
```

Of course, your addresses may (and most probably will) differ, so fill these lines accordingly.

Dynamic IP address

In file `/etc/network/interfaces` find section considering `eth0` and change it:

(...)

```
auto eth0
iface eth0 inet dhcp
(...)
```

GPRS/3G



Your board must have 3G (Huawei MU609 by default) modem installed.

There are two way to accomplish 3G connection on Modberry:

- through gprs package
- through 3g package

Establishing 3G connection (TECHBASE gprs package)

gprs package includes TECHBASE's own solution for particular modem model, namely:

- Huawei MU609

It's best to use this package when you don't want to interact with configuration tool everytime you want to connect. You configure it once and then it will auto-start on reboot and be monitored by watchdog, so your connection has guaranteed uptime.

Advantages of gprs package:

- Easy installation
- Almost zero-configuration
- Auto-reconnect
- Auto-start
- Watchdog

Disadvantages:

- Works only with specified modem model (stated before)

To establish connection using gprs package, od the following:

- Insert SIM Card into the slot on the side of the device
- Connect antenna to connector on the top of the device
- Connect via ssh to Modberry
- Use *sudo su*
- Run this command: *softmgr update gprs*
- after installation, execute this command:

```
gprs connect
```

- Connection should be established automatically



gprs abort should be used if anything goes wrong *gprs status return* the actual status of the connection *gprs disconnect* disconnects the connection

Establishing 3G connection (optional TECHBASE 3g package)

3g package includes *sakis3g* script - a well known tool used to connect with variety of modem models connected via USB bus. You may find it useful when using your own modem, but it works with shipped-in Huawei MU609.

Advantages of 3g package:

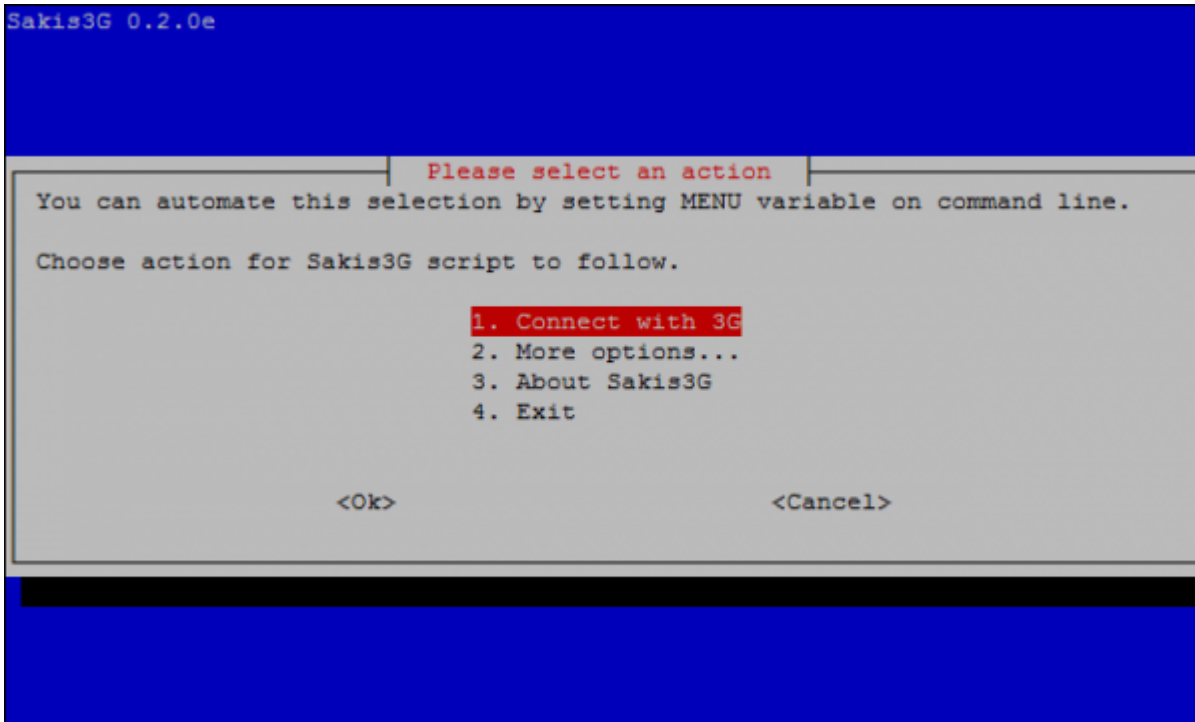
- Easy installation
- Support for many modem models connected through USB bus
- Intuitive configuration interface
- You can use it with external modem connected via USB hub or USB port

Disadvantages (TODO list):

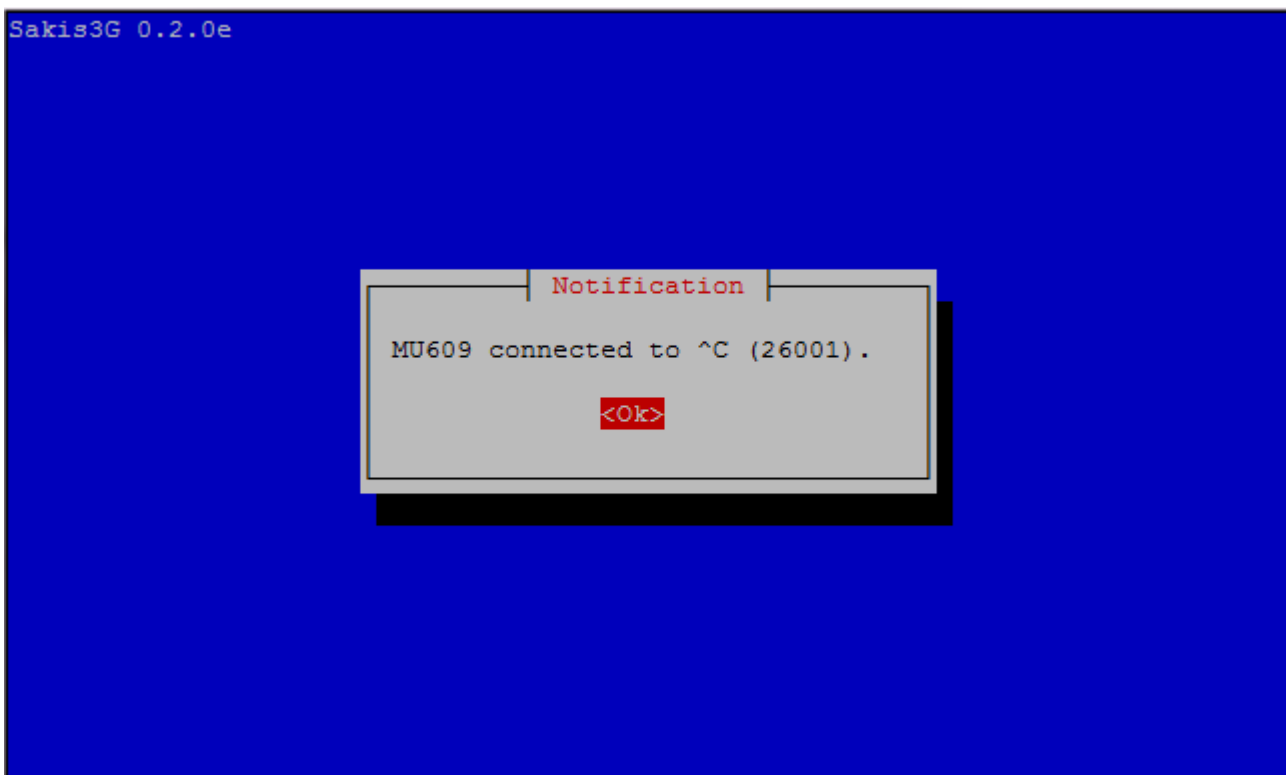
- No auto-reconnect as of now
- No auto-start as of now
- No connection watchdog as of now
- No multiplexation (you cannot send SMS messages and receive/send data packages over ppp0 simultaneously)

To establish connection with 3g package, do the following:

- Insert SIM Card into the slot on the side of the device
- Connect antenna to connector on the top of the device
- Connect via ssh to Modberry
- Use *sudo su*
- Run this command: *softmgr update 3g*
- If everything goes well, you will see such screen:



- Hit Enter and then follow the instructions:
 - Choose USB device,
 - then HUAWEI (or whatever your modem is called),
 - then interface #2,
 - after that you will be asked for PIN, if your card is protected with it,
 - finally choose APN.
- You are now connected to Internet through 3G





You can use `3g_utility disconnect` to disconnect and `3g_utility connect` to restart the connecting procedure.

You may find source-code of sakis3g at this link: [Trixarian/sakis3g GitHub](#)

1-Wire bus

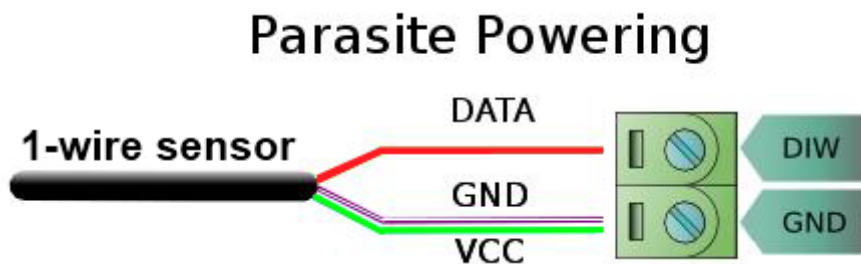
The Modberry device interface powers systems connected to the bus by means of a data line. In constructed measuring networks consisting of single sensors, it is recommended to use a parasitic power supply. The realization of a developed measuring network should be based on the utilization of an external power source +5V and current parameters adapted to the amount of sensors.

1-wire package can be installed using this command:

```
softmgr update owserver
```

Method of bus connection

A way of connecting the sensors:



How to list connected sensors

To list currently connected sensors, execute following command:

```
owlist info
```

Sample output:

```
root@modberry:/home/pi# owlist info
id: 2818FFD8040000 chip: DS18B20 desc: THERMOMETER value: 24
```

How to get temperature value only

To get value of the temperature only, you can execute this command:

```
root@modberry:/home/pi# owlist info | awk {'print $8'}
```

Modbus

Modmas application

Modmas is an application for managing Modbus communication.

The Modberry system includes the modmas application, enabling sending of queries to a device in the Ethernet network that services Modbus TCP commands.

Reading register

To read Modbus single register, execute following command:

```
modmas read:hold:REGNR-REGNR
```

Where REGNR stands for register number, for example reading register 101 would be modmas read:hold:101-101

To read a range of Modbus registers, execute following command:

```
modmas read:hold:REGNR1-REGNR2
```

Where REGNR1 stands for starting register number and REGNR2 stands for ending register, for example reading registers 101 through 104 would be modmas read:hold:101-104

Write to register

To write to a Modbus register:

```
modmas write:REGNR-REGNR:VALUE
```

Where REGNR stands for register number and VALUE for value you wish to write into it, for example writing "1" to register 101 would be modmas write:101-101:1