Additional notes for using the iBOX and iBOX-2S
in low power mode and with a switched 3/4 G Router   **update august 2016** (for version 12 and higher)

Power Modes of the iBOX
The iBOX can operate in two power modes:
- **Full Power (FP) mode** (average current appr 75 mA excluding sensors etc)
- **Low Power (LP) mode** (average current appr 0.5 mA, excluding sensors etc.).
The power mode can be set by using the control software (Ethernet settings) and after preparation
of the SD Card, **see also manual of iBOX**

Power switch for 3/4G Router
The iBOX can be supplied with an additional Router power switch, so the 3/4G Router (or WiFi module) will
only switch on when the iBOX datalogger is sending a file to a server.
This switch is only active when the iBOX is set in low power mode.
In this way an iBOX (running in low power mode) can operate with a battery or small solar power supply at remote sites.
Note: if powered with battery do not use frequent uploads!
Also when you use a fixed connection to a wired Router you can use the low power mode.
Advantages are: lower power consumption as the Ethernet part of the logger is only active during sending a file.

Contact with embedded webserver
It is possible to contact the webserver for reading values etc:
The embedded webserver of a full powered iBOX is available via the browser of a PC by typing the ip nr of the
iBOX, **both connected to a (3/4G) Router** (wired via Ethernet cable or via a WiFi connection if available).
Note that the webserver is only available when NO FTP session is active!
When the iBOX is running in low power mode you cannot normally make direct contact to the embedded webserver
as it is "sleeping". However there are two ways to contact the webserver if the iBOX is operating in low power mode
via the (3/4G) Router:

> A) Prepare an extra SD card with full power mode
See Ethernet settings in the control software and prepare Card
Insert this card in the iBOX and the (switched) 3/4 G Router will also switch on in this case!
When WiFi is active in the (3/4G) Router, the PC (or laptop) can make contact with this network
and so the laptop can make a wireless contact to the webserver.
Insert the original SD card again in the iBOX to continue in low power mode!
On request Ekopower can supply an extra SD card prepared for full power mode.
If such a SD card (prepared with full power mode) is not available there is a second way:

> B) Wake-up a low power (LP) iBOX temporary into full power mode you can (temporary) wake-up the iBOX
and make contact with the webserver of the iBOX by using the 3/4 G Router (also via WiFi)
1. Connect the Ethernet cable from the iBOX to a full powered 3/4 G Router
    If 3/4 G router is switched by iBOX connect the 3G Router temporary to power supply
    for iBOX is this possible: disconnect 17 and connect this wire to19 (plus power) and for iBOX-2S: disconnect 12
    and connect this wire to11 (plus power) . **Do not forget to reconnect after the use of full power mode,**
2 Restart the iBOX: Take out the SD Card and Re-insert the SD card again OR disconnect and reconnect power
Now the iBOX is temporary in full power mode and the webserver is available (after startup of the Router!):
* **during appr 5 minutes** for reading values and changing settings etc. (when upload is not activated) and
* **until the next upload** (when upload is activated)
The iBOX will switch afterwards again in the Low Power Mode. When upload is once a day this is a (too) long time
However you can also "manually" re-activate the low power mode again by following this procedure:
1. Take care there is no active Ethernet connection to the iBOX:
    - Switch the 3/4 G router off (do not forget to re-connect again to the switch, see above) or
    - Take out the Ethernet cable from the iBOX
2 Restart the iBOX: Take out the SD Card and Re-insert the SD card again OR disconnect and reconnect power

Settings of parameters
In software you can also adjust some parameters like in the Ethernet menu of the control software
(prepare card afterwards!):
> Wait time is the time the system wait until the 3/4G Router has found the network
    When network is found it will be indicated at the 3/4G Router (typical 90 sec but depending on Router type
    and network provider).

> Keep alive time is the time the system is available for contact after an upload (during max 10 minutes),
   When you know the time a file is uploaded to the server you also know when you can contact the low power iBOX!
   See also the notes below. If you do not need keep alive set this value at zero.
> Synchronisation with UTC time can be selected (is only active when a current file is send, when you
   want this and do not use the current file for other purposes, set upload interval eg once a day)

Static ip address of sim card
When you use a wireless 3G router you may use a sim card with **static (fixed) ip number**,
Only in this case you can remotely make direct contact with the webserver for reading values and changing parameters,
when port forwarding in router is activated, see also [manual of iBOX](#) and [instructions for GPRS/3G router](#).
But a static ip number of the sim card is not required for sending files to a server!
APN settings are not always required and are depending on the provider

IP Address of iBOX
Note that the ip address of the iBOX must be in the range of your router, eg:
Ip address of iBOX   : 192.168.0.112 (this is for example, is adjustable)
Ip address of Router : 192.168.0.1   (this is the default ip address we use of 3G router, is adjustable)
Note: The **default factory setting of the iP address of the 3G Router is different: see label at the 3G router**!
The gateway address is equal to the ip address of your router
You can change the iP address of the iBOX by using the control software and prepare the SD card with this new
settings! And the iP address of the 3G Router can be changed using the webserver of the 3G Router.

Upload Frequency & Energy consumption
You can choose the upload frequency for :
* **recorded datafiles**
* **current values** (a file with string of **current values, which overwrite at the server)**
This can be adjusted by using the control software (and prepare card afterwards!).
Datafiles are send eg once a day or once a week.
An upload with a standard switched 3G Router takes about 10 mAh (typical 2 minutes @12 V - 300 mA   *)
depending on the file size, connection speed, wait time for finding 3G network and type of 3G Router.
*) Standard 3G Router with optional (6 to 12V) DC-DC converter appr 20 mAh

Power supply options
The system can be powered by:
* A Power supply with mains adaptor to DC voltage (see label for voltage range)
* A Battery (eg non rechargeable Lithium Power Pack or rechargeable Battery)
* A 6V Solar power supply (with optional 6 V to 12 V DC-DC converter for 12 Volt system).
A 6V Solar power supply with rechargeable battery (12000mAh built in waterproof cabinet) is available from Ekopower.
Daily upload **of collected data files** are no problem for this system using a (switched) industrial 3G Router.
Note that the battery capacity can be expanded to max 24000 mAh inside the cabinet of the 6V solar power supply.
For more frequent uploads of **current values (eg** for generating a webdisplay or online graphs) with 6 V solar power
supply (eg each 10 minutes) contact Ekopower.

Types of 3/4 G Routers:
Industrial 3G Routers can be used outdoor with high temperature range:
 1 Standard industrial 3G Router type RUT500, power voltage minimum is 9 V DC,
    > *with optional DC-DC converter the minimum voltage is 5 V DC so can be powered with 6V solar power supply!*
 Also available:
 2 Special industrial 3G or 4G Router, power voltage minimum is 5 V DC, can be used with 6V solar power supply!
    Eg model 3G100 a compact 3G Router which fits inside the cabinet of the 6V solar power supply
 3 Low cost 3/4G (MiFi) Router operating at 5 V DC (via usb power supply) with integrated internal battery
    (cannot be switched off by Router switch) and is intended for indoor use with continuous operation
For the sim card : no pin code! When you send us the sim for testing please activate roaming
if not from the Netherlands.

For questions send a mail to Ekopower via info@ekopower.nl

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