EKOPOWER

Measuring & Monitoring Systems for Energy & Environment

iBOX: iP Datalogger / Telemetry system
## with Embedded Internet connectivity options and webserver
including: embedded TCP/IP-FTP-SMTP-HTTP & optional wireless WiFi (local) or GPRS/EDGE/WiMAX/UMTS

EKOPOWER supplies (for over 20 years) datalogger technology at excellent quality and low price.
The new iBOX family of iP dataloggers (4th generation) -with **internet connectivity** options- it is possible to realize a telemetry & control system over the internet: receive data files at your server and with optional presentation of data at your website (see www.ekopower.net), control outputs via your browser, alarms can trigger outputs and receive alarm notification via email etc.
For remote or mobile applications and additional wireless (GPRS/EDGE/UMTS) router can be used (Wireless WAN structure).

The iBOX has standard Ethernet (LAN), with optional WiFi (Wireless LAN: Ethernet to 802.11g wireless access point) or Internet (WAN) connection and has a **built-in webserver** for reading values & status and for (password protected) setup & setting parameters, like sample interval and ranges & units for each input. The iBOX is supplied in different configurations, according to the **requirements of the user**: see specifications. Standard configurations are available e.g. 8 inputs of 4..20 mA and can be expanded up to 40 inputs.
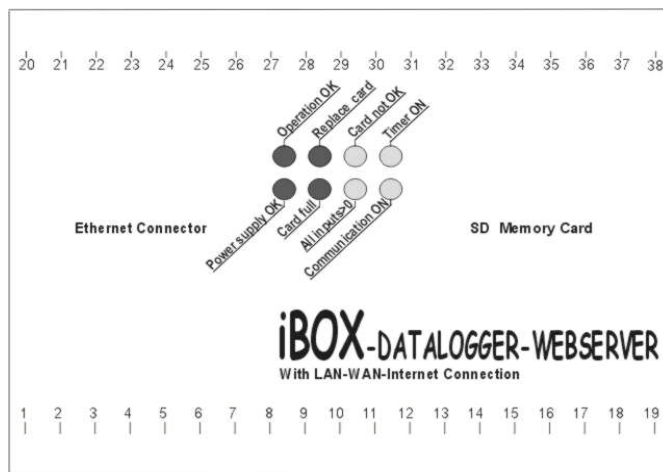
The *iBOX* datalogger is ideal for monitoring & control projects such as:

* Remote control & telemetry
* Energy management
* Weather stations & meteorology
* Environmental data collection
* Traffic
* Safety
* Factory & industrial data acquisition
* Embedded M2M applications
* OEM applications: we design according
   to your specific requirements (including
   your brand on the box **!**)

POSSIBILITIES of the iBOX:
> Simple operation via your web browser e.g. adjustable ranges and units for each input
> Access remote sensors over the internet or via optional Wireless WAN (via EDGE/GPRS/UMTS) connection
> Log data from sensors, voltages, currents and/or serial input (multi channel)
> SD-card memory for secure data storage or backup: Secure Digital (SD) Memory Card: 128Mb...2 Gb
> Instantaneous values automatically transferred to website and optional displayed graphically (either via ethernet or wireless GPRS connection)
> Data files automatically transferred by FTP to a specified server (either via ethernet or wireless GPRS connection)
> Integral online status display or via built-in webserver (either via ethernet or wireless GPRS connection)
> Optional Outputs can be controlled via the user-interface (via webserver)
> Optional Alarms can trigger outputs and send email/SMS text alerts
> Web hosting optional available for demo & test purposes (for data files and/or online historical graphs & status)
> Measure & Control via internet, using your Ethernet/Internet connection
> Built-in web server for setup & reading values & status and for (protected) setup & setting parameters, like sample interval (standard version)

TECHNICAL FEATURES of the iBOX:
> Inputs configurable for mix of 0/4..20 mA signals, volt inputs, status, temperature, frequency, mVolts, anemometer, wind vane etc.
> Analog inputs standard 12 bits resolution, optional 16 bits resolution
> Recording of instantaneous or average values with optional: min, max and standard deviation during each record interval.
> Up to 5 Counter inputs/unit 12 bits (one 24 bits non-volatile counter for eg kWh pulses and 1 Event-logging input
> Up to 2 Serial RS232 inputs (protocol according your specifications, eg Windsonic anemometer without moving parts)
> Alarm outputs with E-mail/SMS notification (3 outputs with remote control possibility)
> Compact design : small (10 cm width) DIN rail cabinet
> A wide range of sensor-excitations available (eg internal 24 V loop power for 4..20 mA sensors/transducers)
> Sensors and Transducers according to your requirements: we also supply complete, ready-for-use systems (like wind, weather sensors)!
> We supply a wide range of sensors and transducers with 4..20 mA, voltage or serial outputs
> Ultra low power version EKO21N with RS232 control (no Ethernet) ideal for remote field applications
   with optional wireless GPRS internet connection (EKO21N-iP) and Lithium power pack for appr 5-10 years.

DESCRIPTION of iBOX system

The iBOX is an easy-to-use, accurate and reliable **internet enabled datalogger system** with built-in web server with versatile inputs :1 up to 40 analog & digital inputs and serial inputs (optional wireless inputs).
The iBOX **has integrated internet connectivity** with Ethernet connector and a **SD memory card** (128Mbyte up to 2 Gbyte) for data storage. Optional possibility: wireless GPRS router for mobile or remote applications in Wireless WAN.

It is an essential tool for state of the art iP measurements for e.g. meteorology, environmental monitoring, wind energy feasibility studies, but also for general purpose projects**: complete systems according your requirements and specifications can be supplied**!
Controlling and working with the IBOX is made easy with the built-in webserver (with help functions).

The iBOX logger configuration (number and type of input channels) and the logger parameters (like sample and record interval) are stored on the SD memory card. Besides the logger configuration also the recorded data is secure stored at the SD card.

The logger configuration (which is stored at the SD card) can only be changed by EKOPOWER or by authorized users by using special iBOX control software (menu part: logger configuration , password available from your supplier). In this menu can be set:
- ranges and units (preset at factory: do not change as this must be according to the physical inputs boards and connected sensors/signals!!)
- optional alarms: software alarms via e-mail (or SMS using GPRS) and hardware alarms: open collector output (with optional DIN rail relais)
- timing variables (do not change)

 The iBOX can send automatically data files via FTP to a specified server(e.g. the server of your website) at pre-adjusted intervals:
 - file with instantaneous values and /or
 - file with recorded values (eg average values with optional min/max/standard deviation during each record interval)

Moreover the data can be presented at a website with **online (historical) graphs**, using optional software running at the server, e.g. the server of your website or a PC with Windows XP-Prof, configured as server. See demo at www.ekopower.net . The graph software is running under php (not in safe mode) and supported by several platforms: Windows, Linux, FreeBSD, Solaris, Mac OS X (PowerPC, Intel). Ask your supplier about the details & conditions. EKOPOWER can supply standard graphs or design special graphs and can assist you to setup the server and to install the graph software.   Example of standard graphs:
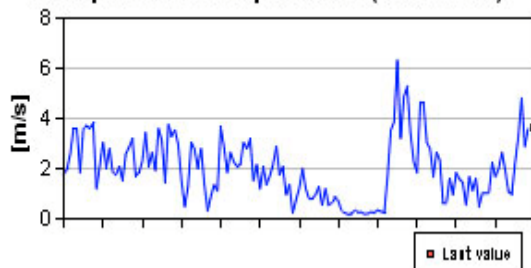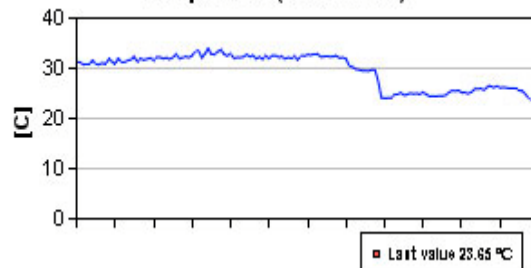
By using the embedded webserver of the iBOX it is possible (by using your browser):
1. to set the logger parameters like:
- time and date, sample and record interval
- internet upload parameters: adjusting IP address of server (destination of data) , directory and the upload frequency of
  > instantaneous & last recorded values values (and status): after adjustable number of samples (with optional online graphs)
  > recorded values (data files): after adjustable number of record intervals
2. Read current and last recorded values, the status of thesystem and the present logger configuration

The **optional wireless GPRS router for Wireless WAN applications** is programmed in advance and loaded with the communication parameters in memory registers, like FTP server, passwords, data GPRS provider etc.

NOTE: A different (but similar) design of the iBOX is the EKO21N, which has no Ethernet but serial RS232 / USB communication with ultra low power consumption (ideal for remote sites). EKO21N with optional GPRS internet connection (called EKO21N-iP) can send datafiles wireless to a specified server, with ultra low power consumption. By using a small battery pack it will operate during appr 5-10 years with one upload/day. Ask your supplier about the availability.

APPLICATIONS: measurement (industrial and remote field applications) e.g.:
monitoring of machines	*energy management*	*renewable energy projects*
meteorology	*research*	*environmental technology*
process monitoring	*feasibility studies*	*water level monitoring*
building physics	*solar energy projects*	*wind energy evaluation*

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MAXIMUM SPECIFICATIONS
Features   **iBOX / EKO21N datalogger family**

MEMORY

memory card	Secure Digital (SD) INTERNAL or removable
memory size	Up to 2 Gb
data file format	ASCII (direct import in Excel)

INPUTS   Optional
                             wireless

analog inputs (or status)	Up to 16 standard or special*) inputs in one unit
expansion units	2 (up to 16 extra channels /unit, total max 40)
RESOLUTION	Analog: 8 ch 12 bits (optional 32 ch 16 bits)
counter inputs	Up to 5 (12bits) or 2 :24 bits non-volatile possible (kWh counter at DIN rai
serial inputs	2 (up to 115.2kb)
SDI serial input	Option
Event logging input	Option
SAMPLE FREQUENCY	Adjustable max 100Hz : special up to 1kHz

OUTPUTS

alarm outputs	up to 2 open collector (8 software) Optional power relais at DIN rail
control outputs	up to 3 open collector
e-mail alarm	Option via ethernet or GPRS connection
sms alarm	Option with GSM/GPRS connection

RS 232 control   **EKO21N**

Modem /GSM	Option
GPRS modem : Data via FTP to server and online graphs & status	**EKO21N-iP**
Remote adjustments of logger parameters	option via internet or serial+ GSM

ETHERNET/INTERNET   **iBOX**   Optional WiFi wireless LAN

Control & datatransfer via internet:	yes (optional via GPRS/UMTS router)
Web server	yes
Transfer Datafiles by FTP via internet	yes (optional via GPRS/UMTS router)
Online graph at website	yes (optional via GPRS/UMTS router)
Online status	yes (optional via GPRS/UMTS router)

POWER

Standard version iBOX/EKO21N	5-12 Volt DC via 220V Or 24 V DC
ultra low power-field version EKO21N	adaptor
(RS232 version only)	Option with Lithium Batteries
Battery life (using Litium power pack for EKO21N field systems)	Up to 10 years
Internal excitation for 4..20 mA	Option
Backup battery	Option (for logger part rechargeable)

*) **standard inputs**: 0/4..20 mA, voltage inputs, temperature inputs, **special** inputs for all kinds of sensors and signals (also mV inputs) **on request**

TEMP. RANGE	-40 to +85 C (industrial / field version)

For remote applications: an ultra low power system EKO21N with battery life up to 10 years, running on one lithium battery pack! (ask for availablity)   sep2006