EtherPower

SUN-2242
User manual

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Benefits and Technical Information.

SUN-2242 is an Ethernet I/O controller with build-in web server. It has **2** digital inputs, **2** analog inputs, **2** relay outputs and 1-Wire input for up to **5** temperature & humidity sensors.

SUN-2242 can be controlled and monitored over any TCP/IP network and Internet by web browser or any specialized monitoring software by SNMP v1 and v2 protocol.

Benefits

Easy and fast configuration – full configuration can be performed through the Web using a web browser

- Control and configuration over SNMP

IP security – access is protected by name and password

Removable terminal connectors

2 dry contact inputs for monitor discrete detectors - door sensor, motion sensor, smoke detector and etc. (volt free)

2 analog inputs

2 relays with NO contacts; ON/OFF or Pulse modes

1-Wire input for up to 5 Temperature & humidity sensors

- HTTP API commands
- XML (over HTTP)
- SNTP synchronization protocol
- Firmware update over IP
- Alarm alert – SNMP trap and E-mail
- **SMTP with TLS Encryption**
- **TLS 1.0, TLS 1.1 and TLS 1.2 support**
- **E-mails to up 2 recipients like alarm alert**
- **Dynamic DNS with support of DynDNS and No-IP services**

Technical information

Power requirements

Input Voltage: 12VDC / 0.5 A (adapter)

Power Connector: Jack Ø5.5 x 2.0 / 10mm

Ethernet Interface

Connector: 8-pin RJ45

Magnetic Isolation Protection: 1.5 kV (built-in)

Number of ports: 1

Speed: 10/100 Mbps, Auto MDIX

Protocols

HTTP, DHCP, SNMP v1 and v2, SNTP, SMTP, SMTP TLS, XML

Operating conditions

Operating temperature: -20 to +70 °C

Operating Relative Humidity: 5 to 85% (non-condensing)

Digital inputs

Number: 2

Type: Dry contact

Isolation: Non isolated

Dry Contact Level: Logic “0”: Short to GND

Logic “1”: Open

Analog inputs

Number: 2

Type: Single ended

Input range: 0 to 60 VDC

Isolation: Non isolated

Resolution: 10-bit

Relay outputs

Number: 2

Contact type: Form A (N.O. contact)

Max. switched current: 3A

Max. switched voltage: 30VDC

Insulation Resistance: 1000 mega-ohms 500 VDC at 20°C, 50% RH

Mechanical Life Expectancy: 5 000 000 operations

Electrical Life Expectancy: 120 000 operations

1-Wire interface

RJ11 for connecting 5x temperature & humidity sensors

Physical Characteristics

Housing: Aluminum enclosure / wall mount
Weight: 170 g
Dimensions: 112 x 82 x 40 [mm]

Warranty – 2 years

Device Connection

Connect the SUN-2242 to 10/100 Mb/s network. Use a classic TP patch cable for connection to switch, router or to PC.

If the Ethernet connection is OK, the ACT and LINK indicator should light up and then ACT indicator blink according to network data transfer.

Restoring defaults factory configuration

Press and hold the Reset button located on the back of the box, connect power, and hold the button pressed for 10 seconds or more.

Default network parameters configuration:

IP address: 192.168.2.2
Network mask: 255.255.255.0
Default gateway: 192.168.2.1
IP configuration via DHCP: Disabled
User name: admin
Password: admin

Installation Guidelines

SUN-2242 controller must be installed by qualified personnel.

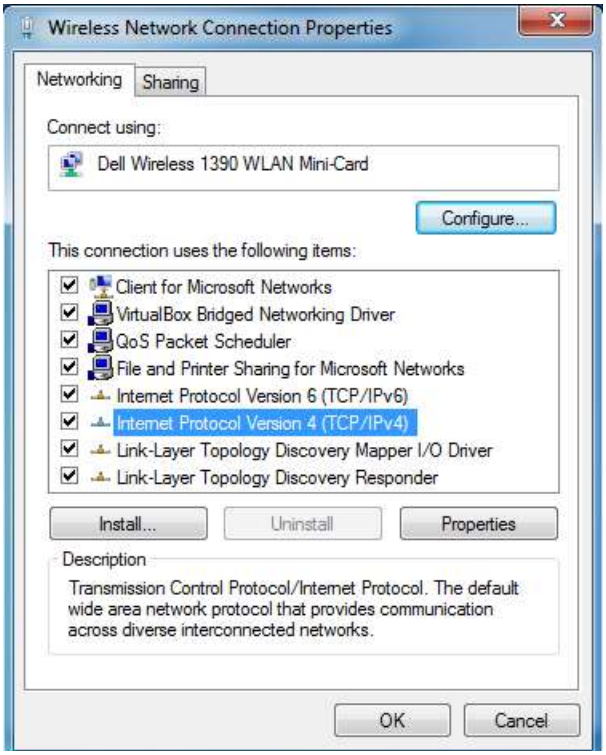
Controller must not be installed directly outdoors.

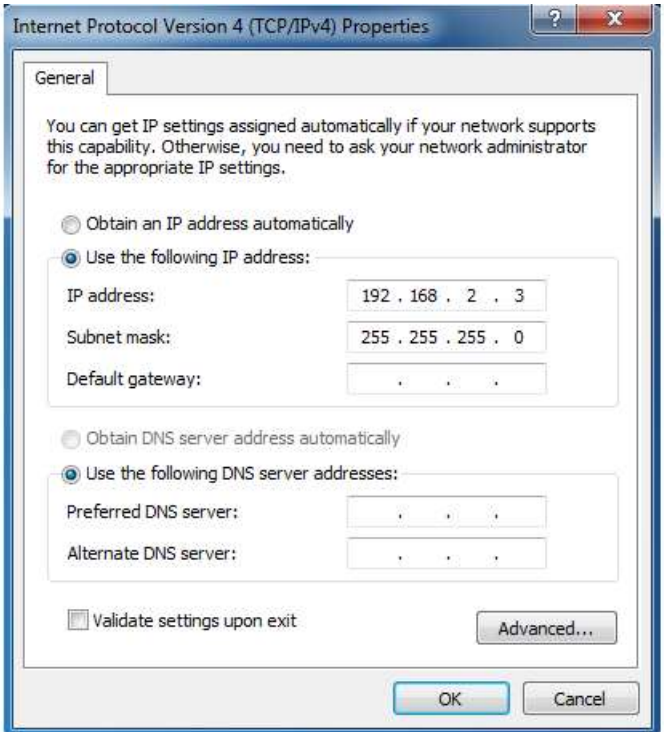
SUN-2242 must not be used for medical, life saving purposes, or for any purpose where its failure could cause serious injury or the loss of life.

This unit must not be used in any way where it's function or failure could cause significant loss or property damage.

The first step is to establish communication between computer and SUN-2242 controller. This can be done by assigning a temporary IP address to the computer.

For computers with Windows OS assigning of IP address is made in “Local area connection properties” or “Wireless Network Connection Properties”.





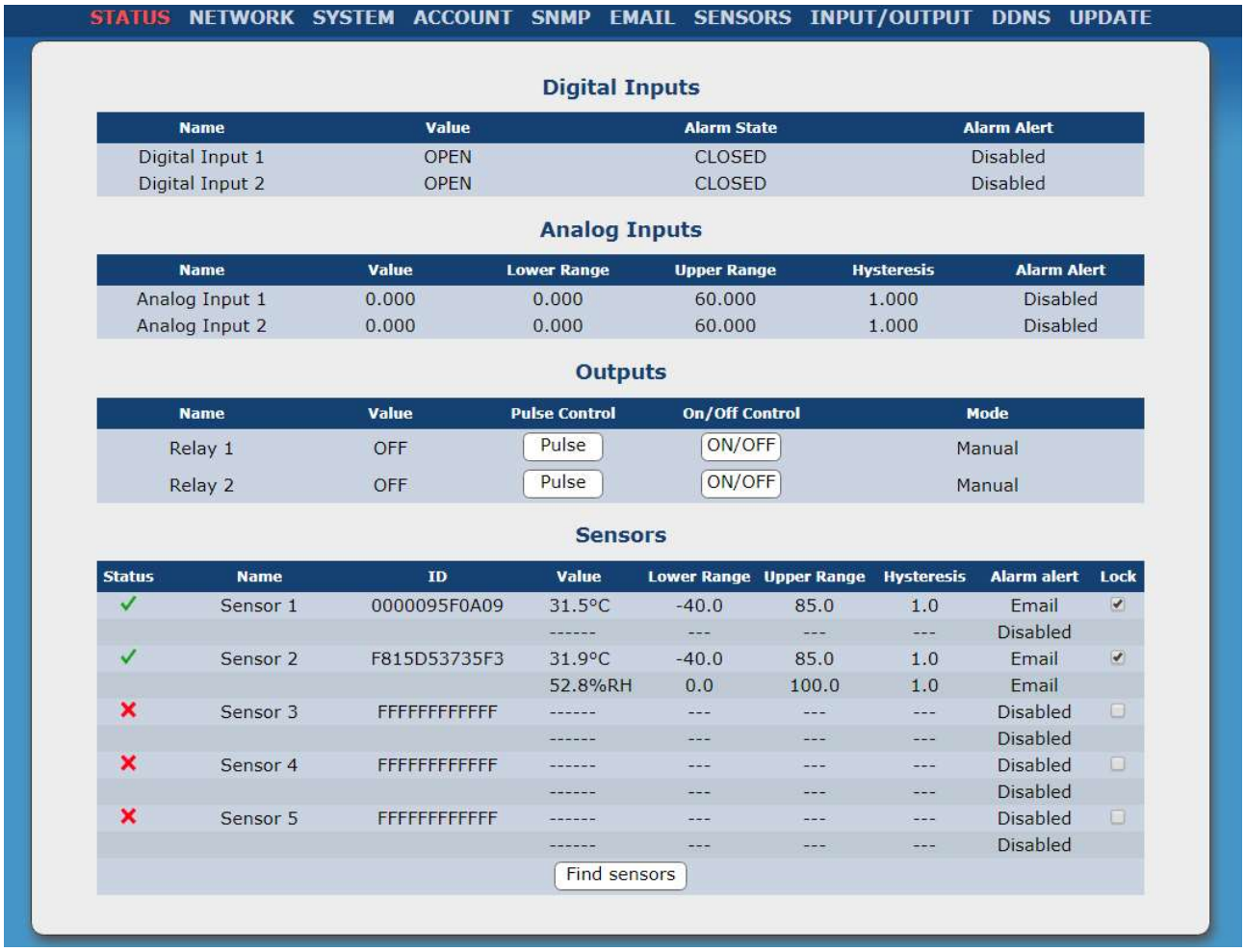
IP Address of the computer should be at the same network.

Into the web browser you should type **http://192.168.2.2**. If network settings are correct the login page will appear.

Web Pages

❖ Login Page - access to the SUN-2242 is protected by name and password

❖ Status Page - Monitoring parameters



Status page has 4 sections – “Digital inputs”, “Analog inputs”, “Outputs” and “Sensors”.

- **Digital Inputs section** can be used for monitoring sensors in “dry contact”(volt free) mode - motion PIR sensors, Water Leak sensors, Water level sensors, Door/window sensors, Smoke detectors.

  One side of the sensor is connected to IN1 or IN2 terminal and the other is connected to GND terminal.

  Please note that Digital inputs are not galvanic isolated!

- **Analog Inputs section** can be used for monitoring directly batteries, power supplies, solar panels and any analog sensor with voltage up to 60V DC.

  Please note that Analog inputs are not galvanic isolated!

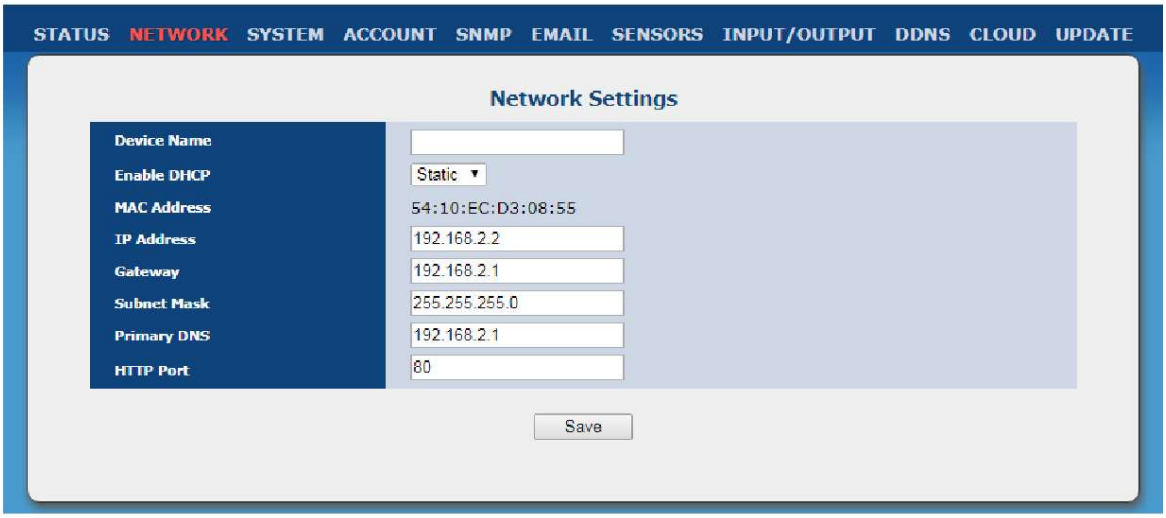
- **Outputs section** can be used to open/close garage door and control motors, pumps, valves, lights …

  For loads greater than 3A/30V DC an external relay should be used.

- **Sensors section** can be used for control 5x1-Wire sensors for temperature and humidity.

  Maximum cable length when is used UTP cable is 50m.

❖ Network Settings page – configuration of network parameters



Device name – up to 15 characters.

MAC address – hardware address of the device. It is unique and cannot be changed.

IP address – The SUN-2242 IP address configuration can be either static or set through DHCP.

Enable DHCP - allows device automatically obtain a valid IP address from Gateway

Gateway – default gateway IP address

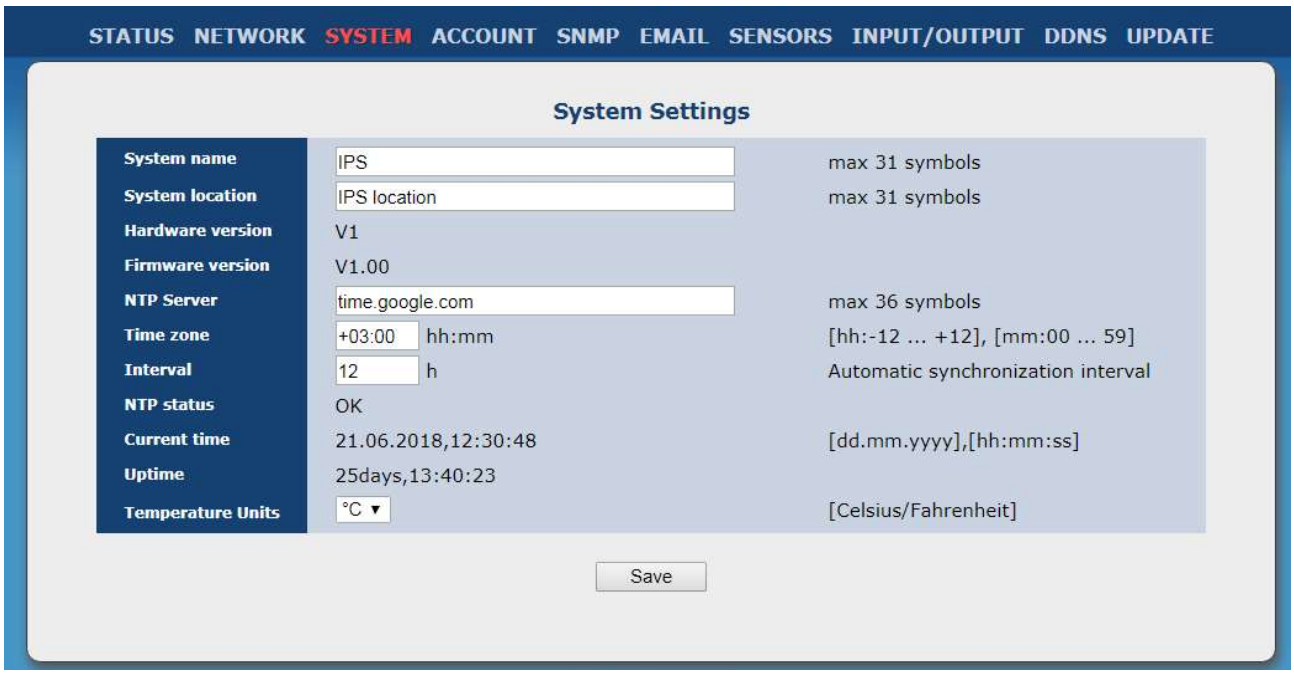
Subnet mask – local network mask

Primary DNS – needs to be set properly for correct operation. Domain Name Service associates host names with IP addresses. Without a correctly configured DNS server, the following functions will not work:

- Time synchronization (SNTP), used in e-mails and SNMP traps
- E- mailing (SMTP)

HTTP Port – The TCP port used for HTTP communications with SUN-2242. A default setting for this port is 80. Value of HTTP port can be changed from 80 to 65500. It is recommended that the port be left unchanged unless the user has an understanding of TCP/IP and ports

❖ System Settings



System name – used in the XML to easy identify of the device

System location – used in the XML to easy identify of the device

NTP server – host name of the NTP server used to synchronize time of the controller

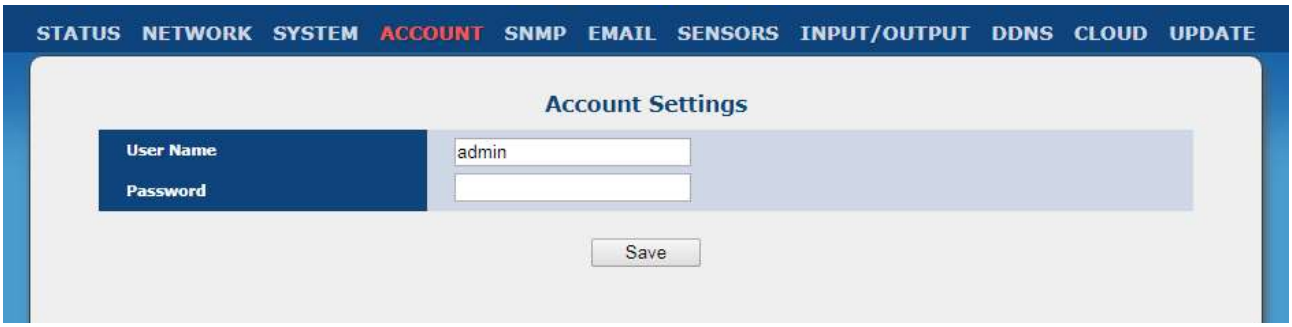
Time zone – offset of time zone with respect to that of the NTP Server.

Interval – Automatic synchronization interval. This option allows the user to specify how often the time on the SUN-2242 will be synchronized with the NTP server

Uptime - time since SUN-2242 was last powered.

Temperature Units - Specifies the unit of temperature (C – Celsius / centigrade, F – Fahrenheit)

Account Settings - One user account with username and password can be configured for HTTP access.

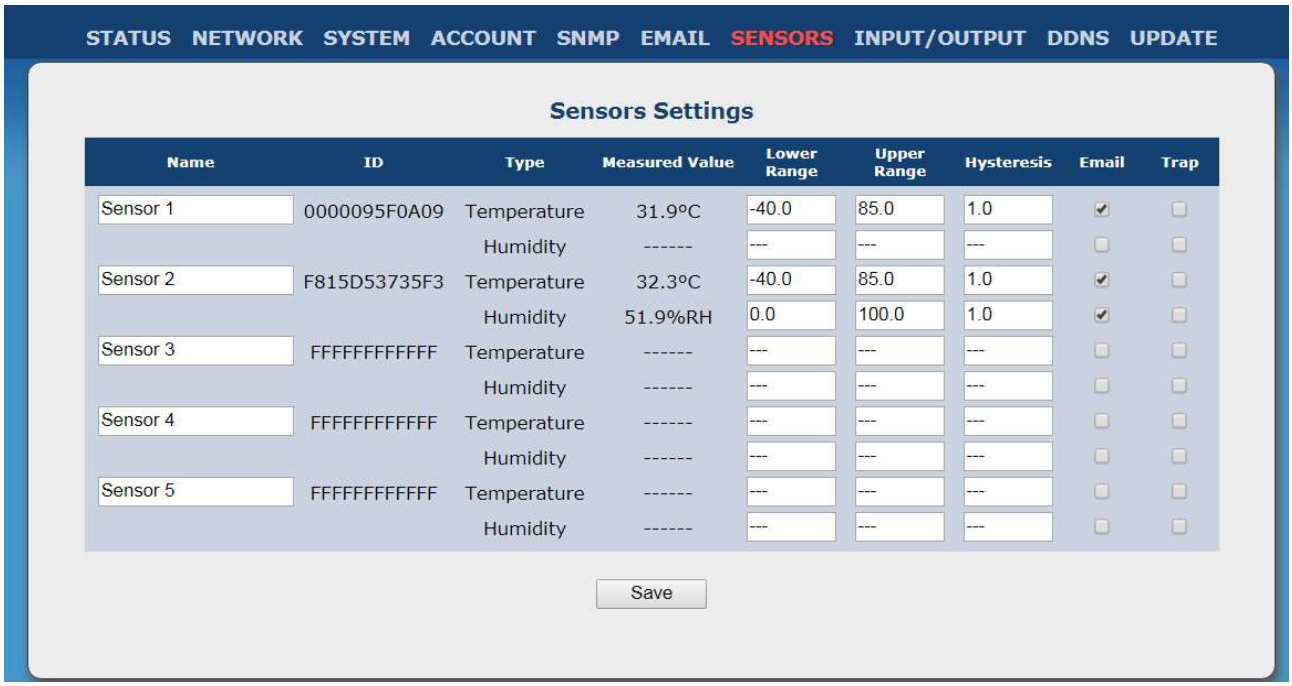


Sensor Settings

This page is used to configure temperature and humidity sensors.

Up to 5 x 1-Wire sensors can be connected to the SUN-2242.

Every 1-Wire sensor comes with a unique ID. After a sensor is connected must to find it by click on the button "Find sensors".of Status web page.



Name – can be entered a description up to 15 characters

ID – unique number for each sensor

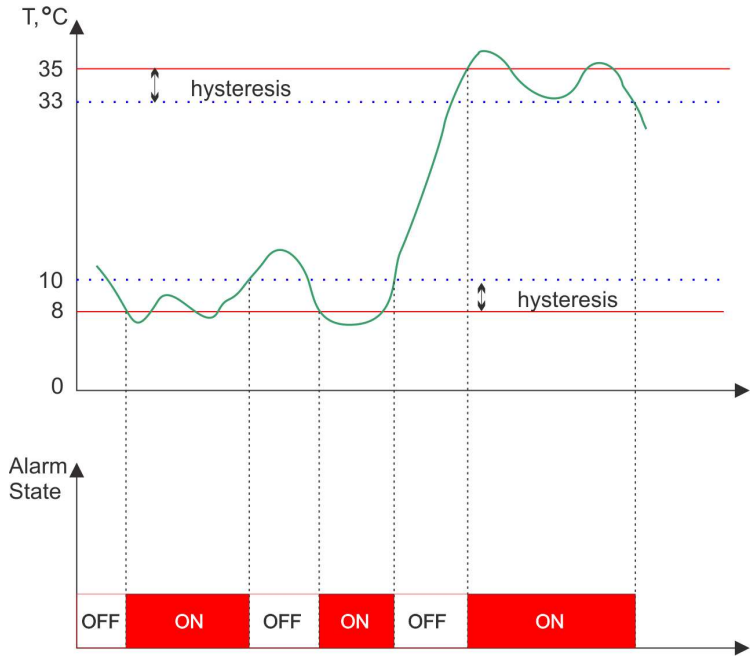
Type – Temperature or Humidity

Measured value – the value that sensor is reading.

Lower range - value below this range are considered to be “incorrect” and alarm event occurs

Upper range - value above this range are considered to be “incorrect” and alarm event occurs

Hysteresis – hysteresis is used to avoid multiple alarms when the measured value fluctuate.

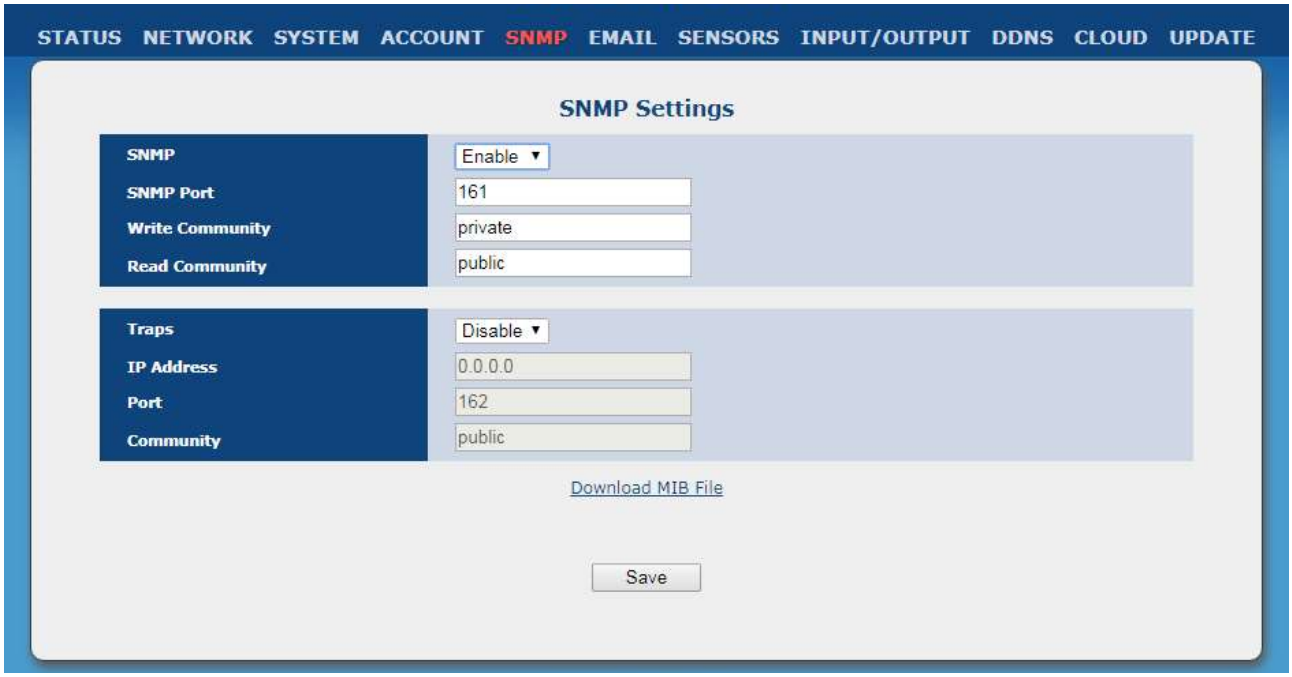


Trap – device send a **SNMP Trap** when alarm event occurs and this option is checked

E-mail - device send an **E-mail** when alarm event occurs and this option is checked

After connecting new sensors or changing RJ11 connections, click again on the button of the Status web page “Find sensors”.

SNMP Settings



The Simple Network Management Protocol - SNMP, is a commonly used service that provides network management and monitoring capabilities. SNMP offers the capability to poll network device and monitor data. SNMP is also capable changing the configurations on the host, allowing the remote management of the network device. The protocol uses a community string for authentication from the SNMP client to the SNMP agent on the managed device.

The **SNMP Settings** page allows you to configure the settings for communication with the device using the SNMP protocol v2.0.

SNMP settings

SNMP - Enable / Disable communication by SNMP

SNMP Port – communication port for SNMP protocol. Default port is 161.

Write Community - The community is authorized to write values to variables over SNMP. The default write community string is “private”.

Read Community - The community is authorized to read values to variables over SNMP . The default read community string is “public”.

Trap settings

Trap - Enable / Disable sending trap messages

Trap IP address — IP address of the trap destination

Trap community – default trap community is “public”

Traps are sent in following conditions:

dry contact inputs change their status

measured value on analog inputs goes outside the range

measured temperature or humidity goes outside the range

Email Settings

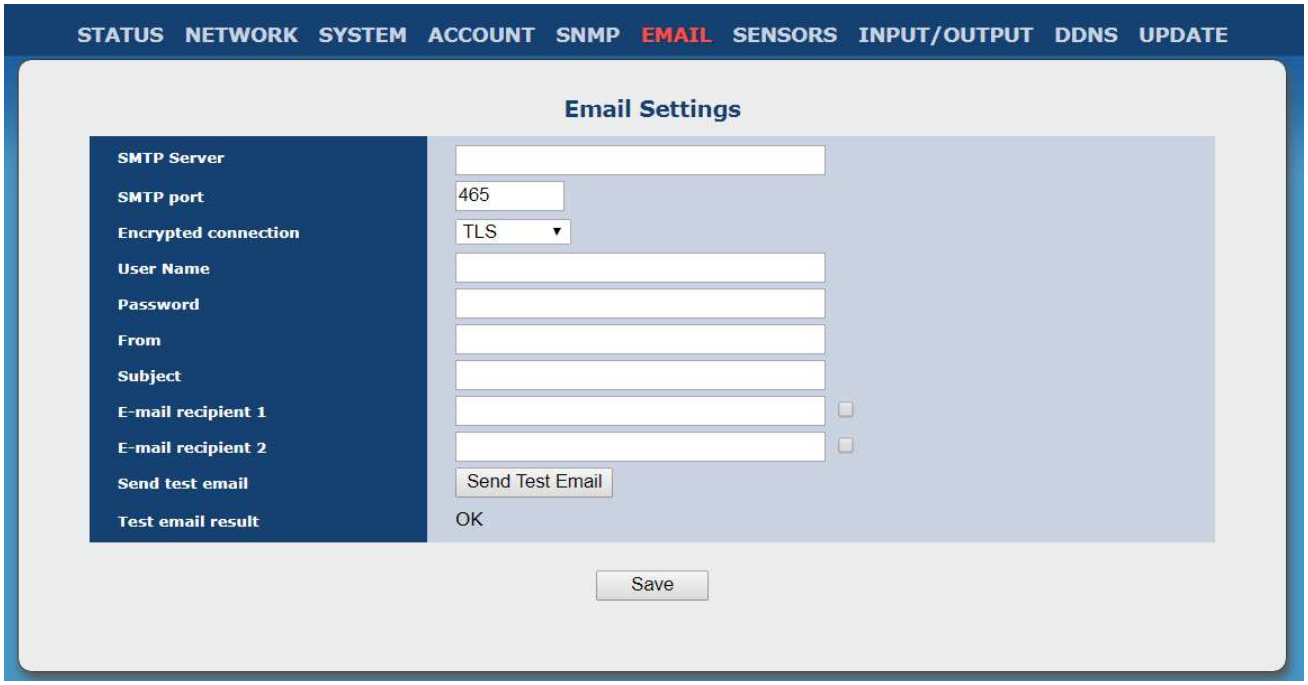
Mail server address can be set by hostname or IP address.

SUN-2242 supports TLS 1.0, TLS 1.1 and TLS 1.2 encryption. This ensures successful send emails with most of the public email servers .

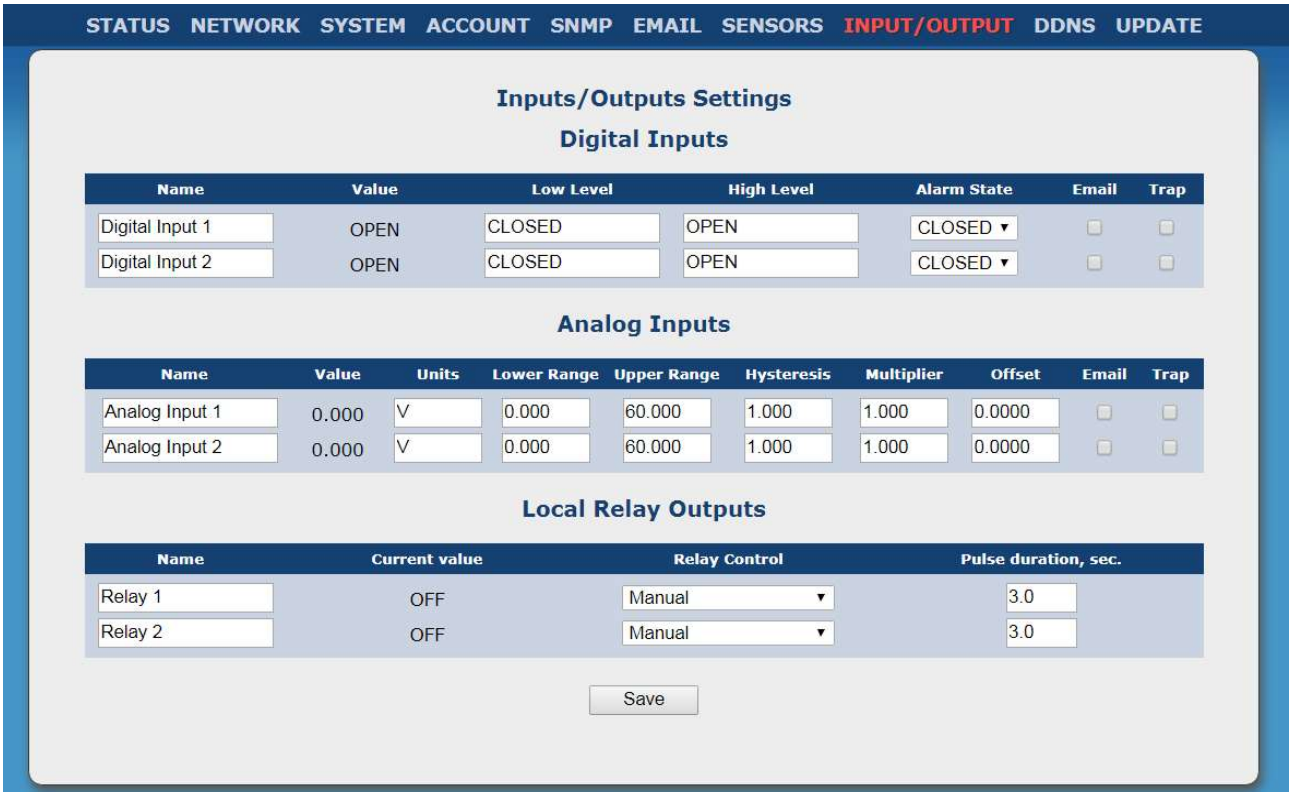
When TLS encrypted connection is selected, the connection to the email server will be securely. TLS generally requires the use of port 465.

By default SMTP port is 25, without encrypted connection,. Sender e-mail, username, and password are standard authentication details.

There is a button for test email settings with a feedback.



Inputs / Outputs Settings

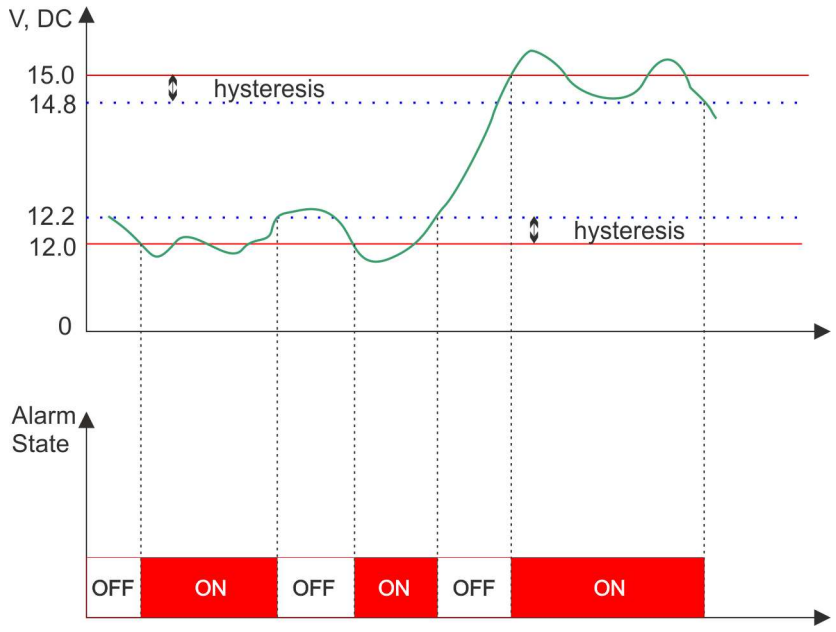


Name - this text field describes the function of the selected input or output. Up to 15 characters may be entered.

Digital inputs – used for direct connection of volt-free contacts. One side of the contact is connected to Input1 or Input2 and the other side is connected to terminal in the middle – GND. User can choose and type own name on the Low and High levels. Also user can choose which type of alarm to be activated – Trap or Email or both alarms**. Digital inputs are not galvanic isolated!**

Analog inputs - used for measuring DC voltages. Before using alarm alerts need to set values in the fields Lower Range and Upper Range. Parameters "Units", "Multiplier" and "Offset" can be used to convert measured voltage from any sensor to meaningful engineering values. **Analog inputs are not galvanic isolated!**

Use hysteresis value to avoid numerous false alerts (by e-mail or SNMP Trap) whenever the reading value fluctuates around the threshold !



Local Relay Outpus settings can select whether the local relay to be activated manually by click button “ON/OFF” or automatic by any of the following parameters:

Digital Input 1

Digital Input 2

Analog input 1

Analog input 2

Sensor 1 Temperature

Sensor 1 Humidity

Sensor 2 Temperature

Sensor 2 Humidity

Sensor 3 Temperature

Sensor 3 Humidity

Sensor 4 Temperature

Sensor 4 Humidity

Sensor 5 Temperature

Sensor 5 Humidity

Any alarm

For every Relay control can be set different time for Pulse duration. The resolution is 0.1 second. By default both relays are activated manualy by web interface of the Status web page.

Only one parameter can be assigned for relay activation, at the same time.

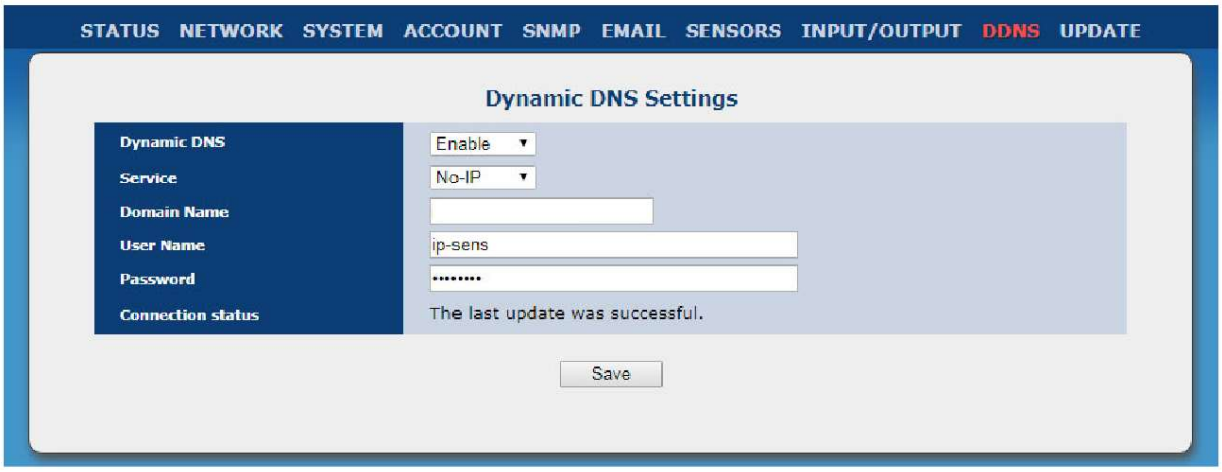
When the relay is triggered automatically by a parameter then button for manual operation on the Status page hides.

For loads greater than 3A/30V DC an external relay should be used !

Dynamic DNS

Dynamic DNS service lets you assign a fixed host and domain name to a dynamic Internet IP address .

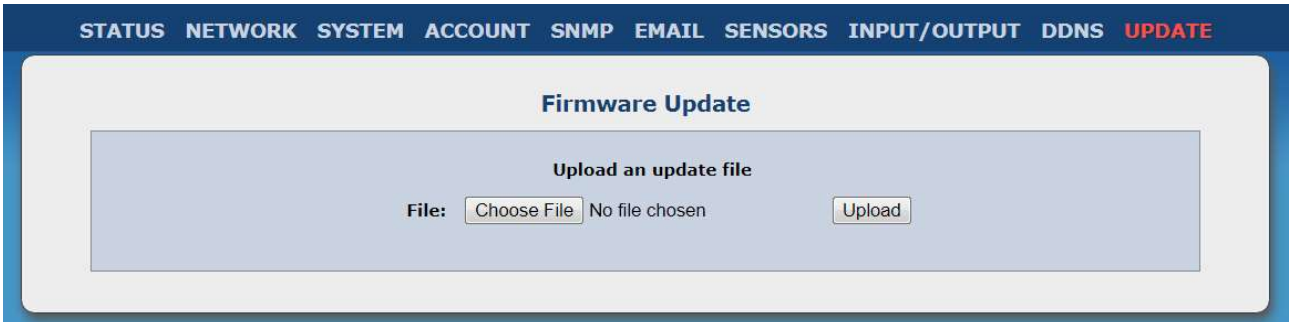
SUN-2242 supports Dynamic DNS services from DynDNS and No-IP.



Firmware update

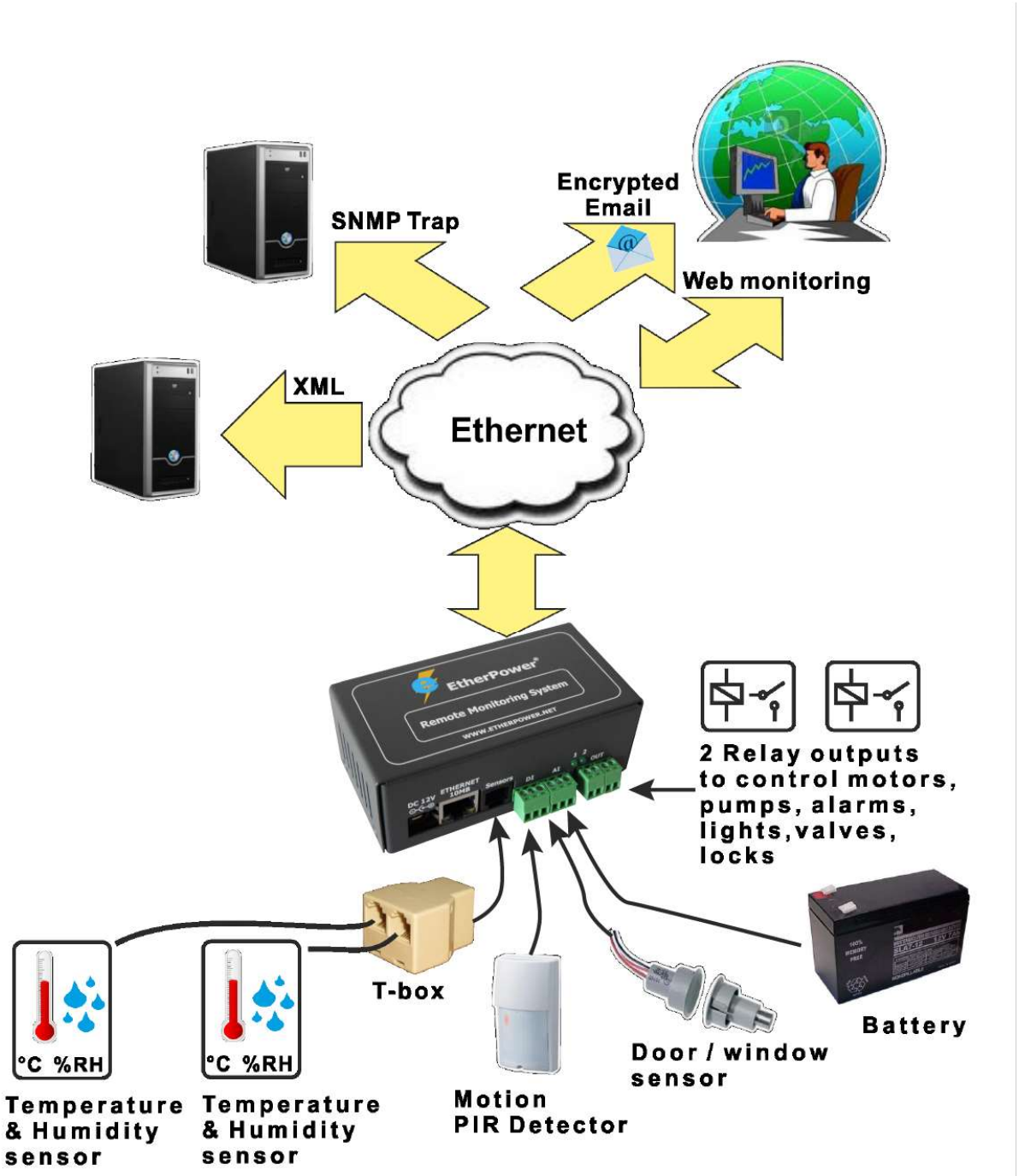
On this web page you can update SUN-2242 with the new firmware.

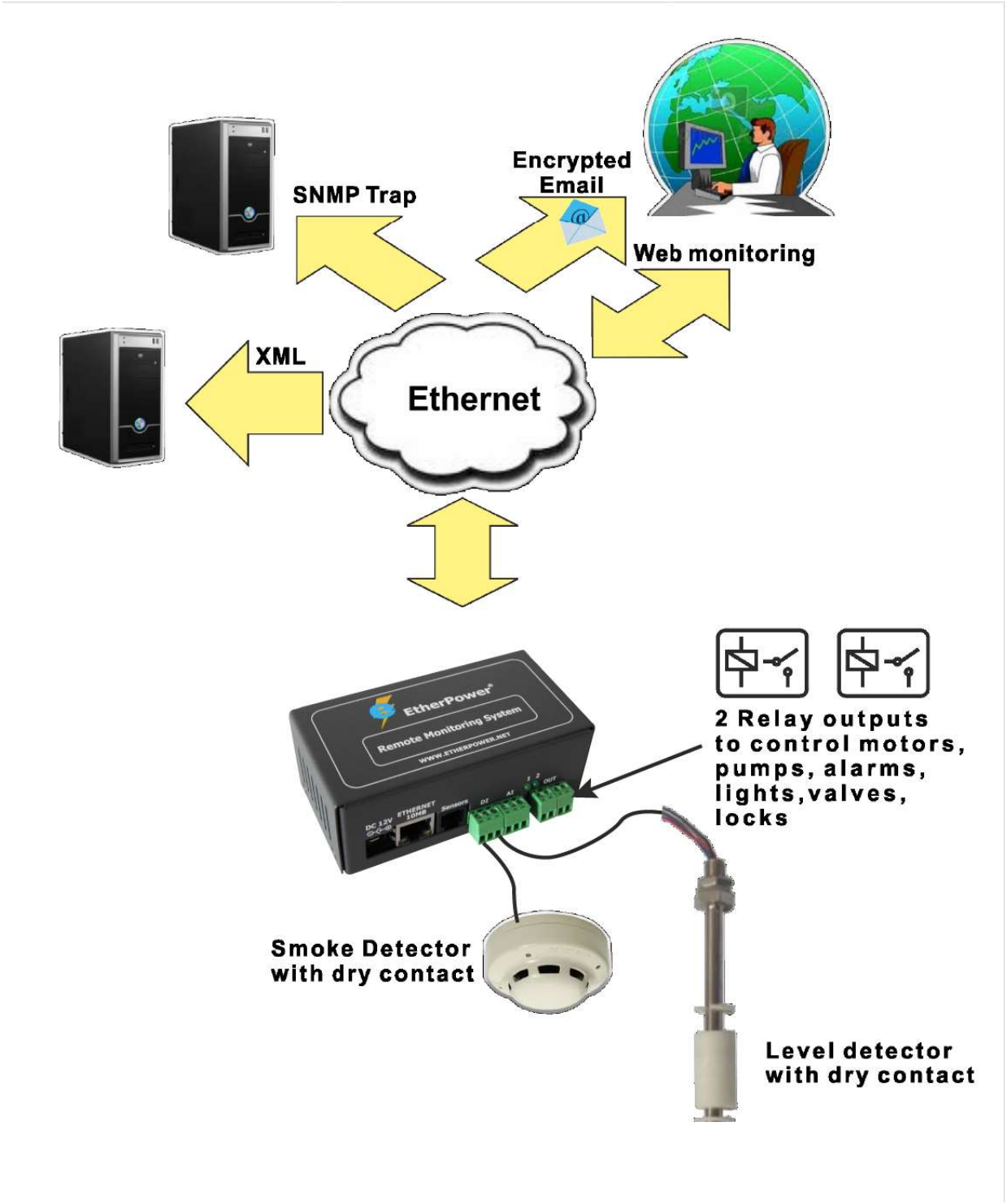
Please keep in mind not to power off the device during the update! It can damage the device!



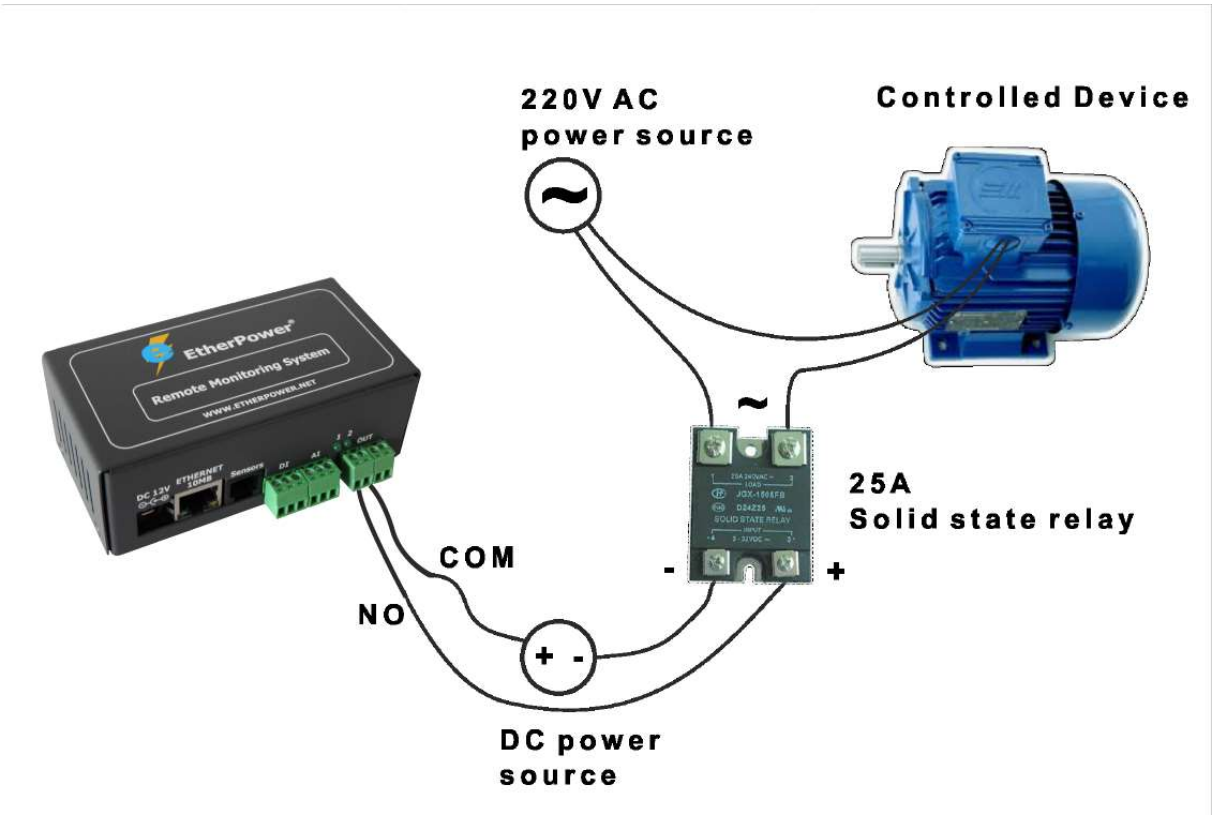
Application Examples

Remote monitoring application




SNMP Trap
Encrypted Email
Web monitoring
XML
Ethernet
EtherPower
Remote Monitoring System
WWW.ETHERPOWER.NET
2 Relay outputs to control motors, pumps, alarms, lights,valves, locks
Smoke Detector with dry contact
Level detector with dry contact

Control of 220V AC / 20 A motor using external relay



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