

Using the ezeio



The ezeio is a fully-integrated IoT device that allows you to gather data and control devices over your farm network.

See <http://ezesys.com/store/products/ezeio-controller-standard/>

About the ezeio Standard

- Small device, easily mounted inside on a wall or outside in a weatherproof box
- 4 Analog inputs, 0-10V, 4-20mA current loop, pulse, or on/off (digital)
- Microlan (1-Wire) input port
- Modbus input port
- Standard Ethernet (802.3) port for network connection (connect to router, AyrMesh Hub, Receiver, or Bridge)

Setup on ezesys.com

- Create an account, add your controller and subscription information

The screenshot displays the eze web interface. At the top, a green header bar contains the eze logo, the tagline "Access the real world", and a user greeting "Welcome Bill Moffitt" with a "Log out" link. Below the header is a navigation bar with tabs for "Dashboard", "Status", "Configure" (which is highlighted), and "Account".

The main content area is divided into two columns. The left column has a "Controllers" section with a search bar and a table listing controllers (Serial, Name, Status). Below this is an "Account" section with buttons for "Add service", "Add controller", and "Log out".

The right column is titled "Configuration of AAD-085 : :". It features a "Save changes" button and a sidebar menu with icons for Inputs, Outputs, Schedules, Timers, Thermostats, Devices, and System. The main configuration area is titled "Service status and settings for AAD-085 """.

Status

Service paid until: 2016-05-29
SMS/Voice alarms: 10 remain (resets in 2 days)
API requests: 5 remain (resets in 16 h)

Setting


Please select the desired service level for this controller.

	Basic	Standard	Premium
Logged inputs	5	15	40
Minimum log interval	60 sec	30 sec	10 sec
Historic data storage	6 mo	13 mo	37 mo
API calls per 24h	5	2000	20000
SMS/Voice messages	10/mo	50/mo	100/mo
Cost per month	\$7.00	\$15.00	\$25.00
SELECTION	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

The system will prorate service time if service level is changed.
See the [add service](#) page for volume discounts.

The Dashboard

- See the values of the inputs, turn the relays on and off



Access the real world

Welcome Bill Moffitt
[Log out](#)

DashboardStatusConfigureAccount

Controllers

Find:

Serial	Name
AAD-085	



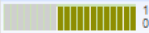


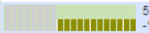
Account

Add service

Add controller

Log out

Status of AAD-085 : :

Input	Graph	Value	Unit	Count	Set	Raw	Alarms
<input type="checkbox"/> Input 1		10000 0	9095 mV	0		9095	
<input type="checkbox"/> Input 2		10000 0	9115 mV	0		9115	
<input type="checkbox"/> Input 3		10000 0	9136 mV	0		9136	
<input type="checkbox"/> Input 4		10000 0	9146 mV	0		9146	
<input type="checkbox"/> Supply voltage		30 7	12.3 V	0		12331	
<input type="checkbox"/> #2950/ML Temp sensor, Celcius		55 -10	19.8 C	0		1196	

From 2016-04-09 22:00 To 2016-04-10 10:59 Quick preset Last 12 hours Data is current

Output	State	Control
1: Relay 1	off	unlimited
2: Relay 2	off	unlimited

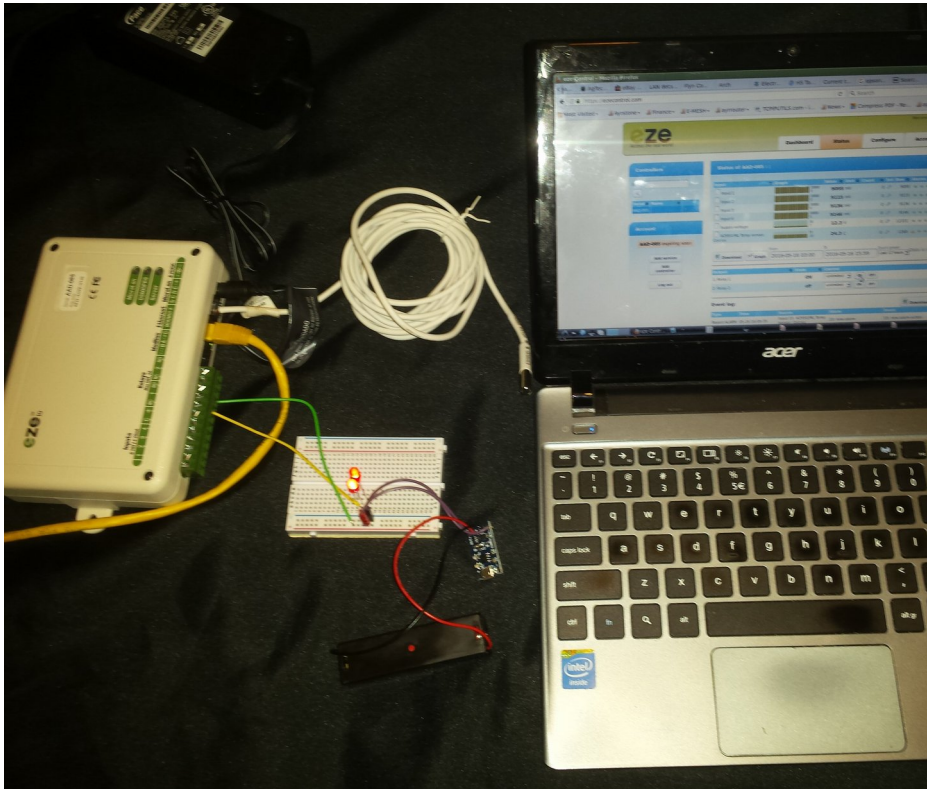
Event log:

Type	Time	Source	Alarm	Event
Restore	04-09 10:30:02	System	Communication	
FAIL	04-09 10:23:45	System	Communication	
Restore	04-07 05:09:21	System	Communication	
FAIL	04-07 05:03:22	System	Communication	
Restore	04-03 16:43:26	System	Communication	
FAIL	04-03 16:11:41	System	Communication	
Restore	04-03 14:26:42	System	Communication	

Sample Problem

- Let's say we have an orchard – we want to turn on a wind machine when you have frost
- Assumptions: you can turn on the wind machine by sending it an electrical signal (using the relay)
- You want to turn it on any time the temperature drops below a certain level
- You could also use sensors like a humidity sensor and the relay could trip a bigger relay

Our Test Configuration



- Ezeio connected to AyrMesh Receiver
- Microlan temperature probe
- Two LEDs on Relay port (with battery) – proxy for wind machine

System Configuration

- This screen shows the entire system configuration

The screenshot displays the 'eze' system configuration interface. The top navigation bar includes the 'eze' logo, the tagline 'Access the real world', and a user welcome message 'Welcome Bill Moffitt' with a 'Log out' link. Below this is a menu with 'Dashboard', 'Status', 'Configure' (highlighted), and 'Account'.

The main content area is divided into three sections:

- Controllers:** A sidebar on the left with a search bar and a table listing controllers. The table has columns for 'Serial' and 'Name'. One controller, 'AAD-085', is listed.
- Account:** A sidebar on the left with buttons for 'Add service', 'Add controller', and 'Log out'.
- Configuration of AAD-085 :** The main configuration area, which includes:
 - Save changes:** A button at the top left of the configuration area.
 - Inputs:** A tree view showing inputs for the controller, including '1:Input 1', '2:Input 2', '3:Input 3', '4:Input 4', '5:Supply voltage', and '#2950/ML Temp sensor, Celcius'. It also shows 'new alarm' and 'new alarm action'.
 - Outputs:** A tree view showing outputs, including 'Relay 1' and 'Relay 2'.
 - Schedules:** A tree view showing 'new schedule'.
 - Timers:** A tree view showing 'new timer', 'new timer action', and 'new timer action'.
 - Thermostats:** A tree view showing 'new thermostat schedule'.
 - Devices:** A tree view showing 'eZE Controller' and 'DS18x20'.
 - System:** A tree view showing the 'System'.
 - Informational settings:** A form with fields for 'Controller name', 'Controller location', 'System info email', and 'Time zone' (set to 'US/Pacific [UTC-07:00]'). It also has a 'Note' field.
 - Access control settings:** A form with fields for 'Read passcode', 'Control passcode' (set to '617-UEE'), and 'Registration code' (set to '4831-LCVT-0735'). It also has checkboxes for 'Allow firmware update' and 'Allow config update'.
 - Ethernet settings:** A form with fields for 'IP' (with a note '(blank for auto)'), 'Net mask', 'Gateway', 'DNS', 'External server', and 'URL'. It also has an 'Extended timeout' checkbox (unchecked) with a note '(Normal=4min, Extended=20min)'.

Configure the Temperature Probe

- Select the probe, set the units, max and min

The screenshot displays the eze web interface for configuring a temperature probe. The top navigation bar includes the eze logo, a user welcome message, and tabs for Dashboard, Status, Configure (active), and Account.

Controllers: A table lists controllers with columns for Find, Serial, and Name. The controller AAD-085 is selected.

Account: Buttons for Add service, Add controller, and Log out are visible.

Configuration of AAD-085 :

- Save changes:** A button to save the configuration.
- Inputs:** A list of inputs for the controller. Input 6, labeled "#2950/ML Temp sensor, Celcius", is selected.
- Input 6 configuration:**
 - Input display settings:**
 - Input name: #2950/ML Temp sensor, Celcius
 - Unit: C
 - Decimals to show: 1
 - Auto scale: ☐
 - Max value in graphs: 55
 - Min value in graphs: -10
 - Input type and conversion:**
 - Input type: MicroLAN temp, Celcius
 - Logging:**
 - Log interval: 5 min
 - Hardware/device setting:**
 - Input location: DS18x20 2950, input#1
 - Alarm setting summary:**

Alarm name	Alarm	Restore	Actions
Add alarm			

[Delete this input](#)

Configure the Relay

- Select the relay, set a Control Condition for the temperature dropping below a certain level – turn on the “wind machine” by turning the relay on

The screenshot displays the eze web interface. At the top, a green header bar contains the eze logo, the tagline "Access the real world", a user greeting "Welcome Bill Moffitt", a "Log out" link, and navigation buttons for "Dashboard", "Status", "Configure" (highlighted), and "Account".

On the left, a sidebar menu includes "Controllers" with a search bar and a table listing "AAD-085", and "Account" with buttons for "Add service", "Add controller", and "Log out".

The main content area is titled "Configuration of AAD-085 : :". It features a "Save changes" button and a tree view of the system configuration. The tree shows inputs (1:Input 1 to 5:Supply voltage), a temperature sensor (#2950/ML Temp sensor, Celcius), and a new alarm action. Under "Outputs", "Relay 1" is selected.


The "Output 1" configuration panel on the right includes:

- Output display settings:** Output name "Relay 1".
- Hardware/device setting:** Output location "eZE Controller, out#1".
- Control conditions:** A section with a "Use only" checkbox (disabled), "conditions", and two conditions:
 - First condition: "Input less than" with value "#2950/ML Temp sensor, Celcius".
 - Is less than: "20" with unit "C".
 - Second condition: "no condition".
- Turn output ON if:** Radio buttons for "both conditions are true (AND)" (selected) and "either or both are true (OR)".

A "Delete this output" link is located at the bottom right of the configuration panel.

Set an Alarm

- Create a condition when the temperature drops below a threshold

Welcome Bill Moffitt
[Log out](#)

[Dashboard](#) [Status](#) [Configure](#) [Account](#)

Controllers

Find:

Serial	Name
AAD-085	

Account

[Add service](#)
[Add controller](#)
[Log out](#)

Configuration of AAD-085 :

[Save changes](#)

Inputs

- 1:Input 1
- 2:Input 2
- 3:Input 3
- 4:Input 4
- 5:Supply voltage
- #2950/ML Temp sensor, Celcius
- new alarm**
- new alarm action

Outputs

Schedules

Timers

Thermostats

Devices

System

Alarm 1 on Input 6

Alarm display settings

Alarm name

Alarm settings

Threshold for C
alarm
Holdoff seconds (0.1 - 6000)

Restore settings

Threshold for C
restore
Holdoff seconds (0.1 - 6000)

Actions on alarm

#	Action name	Type
1	new alarm action	0

[Add alarm action](#)

Actions on restore

#	Action name	Type
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[Add restore action](#)

[Delete this alarm](#)



Set an alarm action

- When the alarm goes off, send an email

The screenshot displays the 'eze' web interface with the tagline 'Access the real world'. The top navigation bar includes 'Dashboard', 'Status', 'Configure' (highlighted), and 'Account'. A user greeting 'Welcome Bill Moffitt' and a 'Log out' link are in the top right.

On the left sidebar, the 'Controllers' section shows a search bar and a table with one entry: AAD-085. Below this is the 'Account' section with buttons for 'Add service', 'Add controller', and 'Log out'.

The main content area is titled 'Configuration of AAD-085 : :'. It features a 'Save changes' button and a tree view of the system configuration. The tree includes 'Inputs' (1:Input 1 to 5:Supply voltage), 'Outputs', 'Schedules', 'Timers', 'Thermostats', 'Devices', and 'System'. A 'new alarm' entry is expanded, showing a 'new alarm action'.

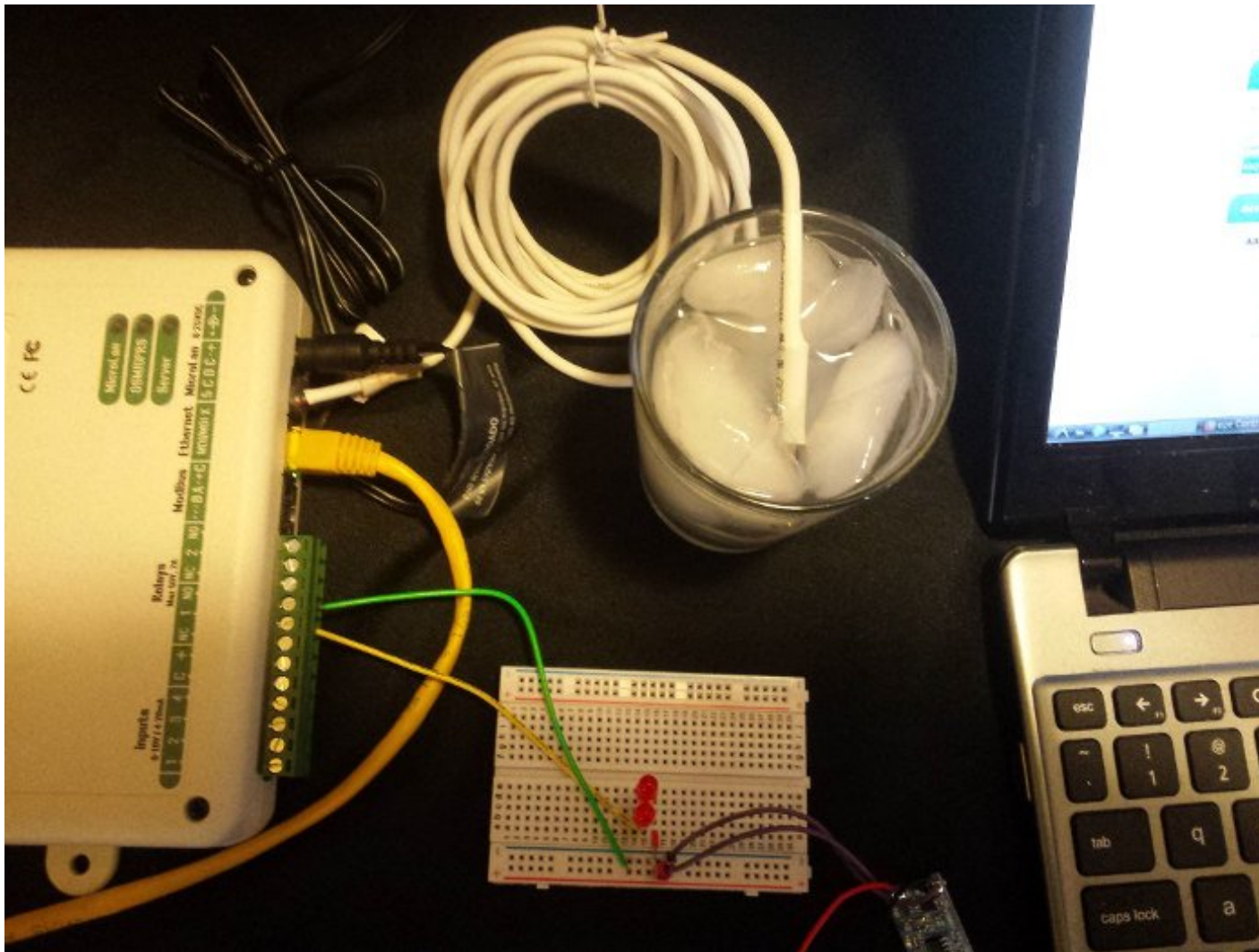
The 'Alarmaction 1 for Alarm 1 on Input 6' configuration panel is shown on the right. It contains three sections:

- Action display settings:** Action name is 'new alarm action'.
- Action settings:** Action type is 'Send message', Destination is 'alarm@ayrstone.com', and the Message is 'ALARM new alarm on #2950/ML Temp sensor, Celcius'.
- Conditions:** First condition is 'Input in alarm' for input '#2950/ML Temp sensor, Celcius'. Second condition is 'no condition'. The 'Do action if' options are 'both conditions are true (AND)' (selected) and 'either or both are true (OR)'.

A 'Delete this action' link is at the bottom right of the configuration panel.

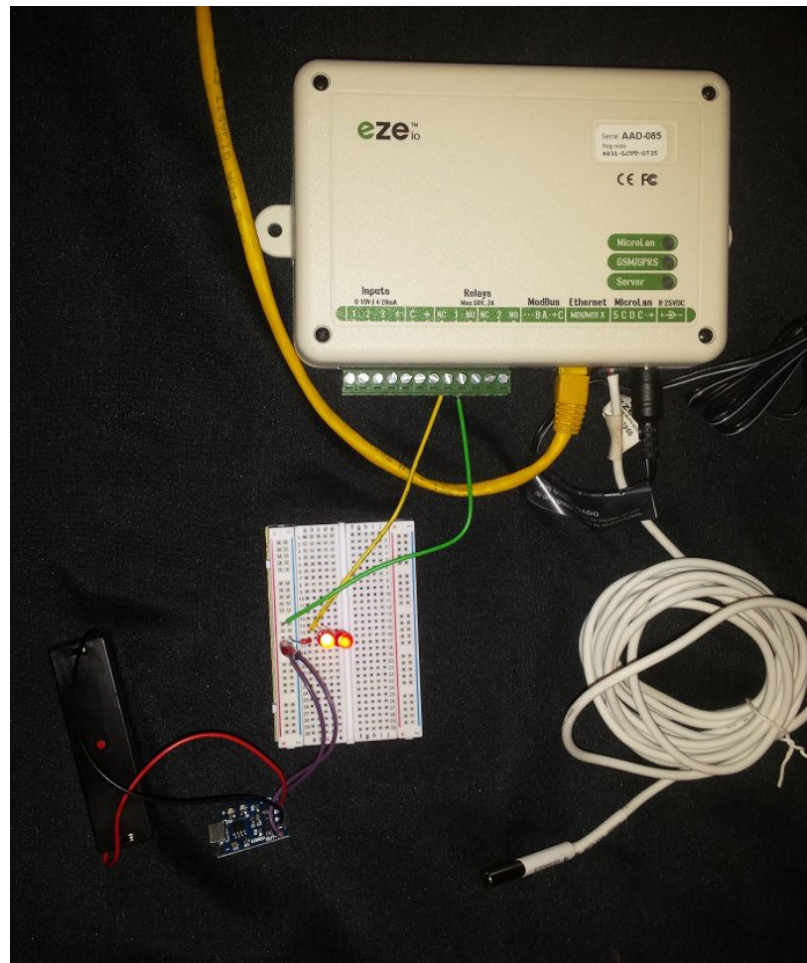
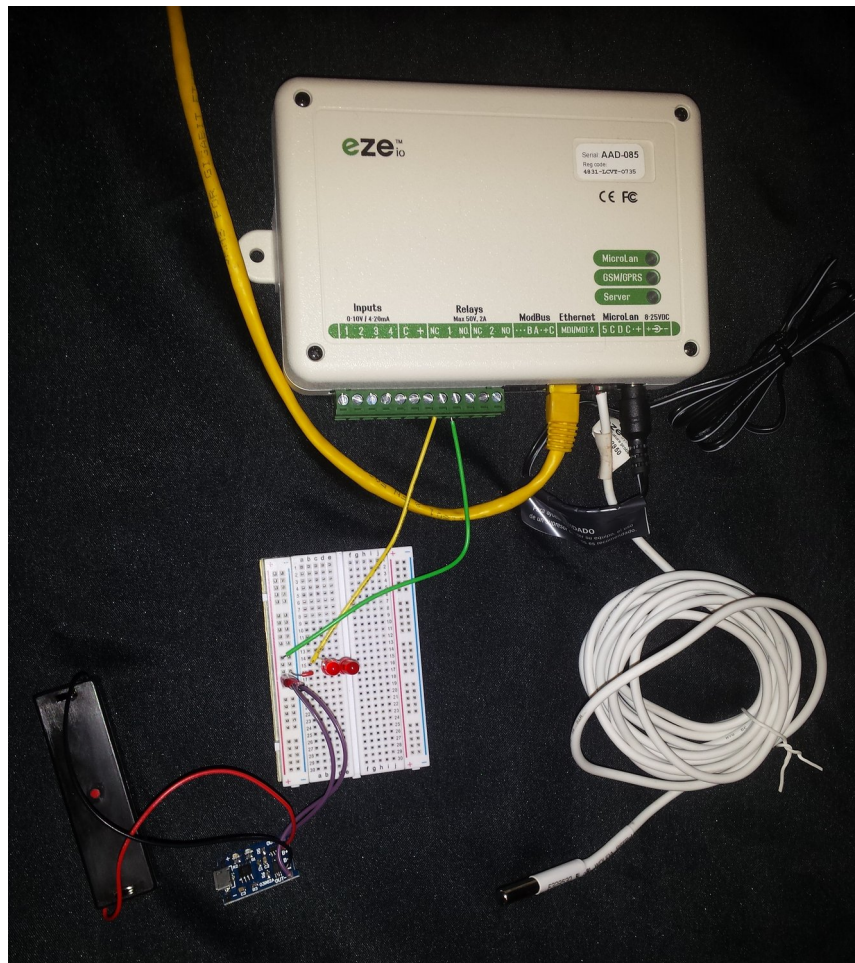
Now what happens?

- Let's put the temperature probe in ice water



When Temperature Drops...

- Relay goes on, LEDs light



A trivial example, but...

- Instead of lighting an LED, it could be switching on a wind machine, or a light, a pump, etc.
 - Can have the ezeio's relay trip a larger relay, e.g. a 3pst relay for a three-phase pump
- Instead of a temperature probe, it could be a bin level or tank level sensor, or a moisture probe, or some other sensor. It could be multiple sensors with more complex conditions
- You could use both relays for more complicated actions

Conclusion



The ezeio is simple and effective at gathering data and controlling devices on your farm, and works perfectly with the AyrMesh network.

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