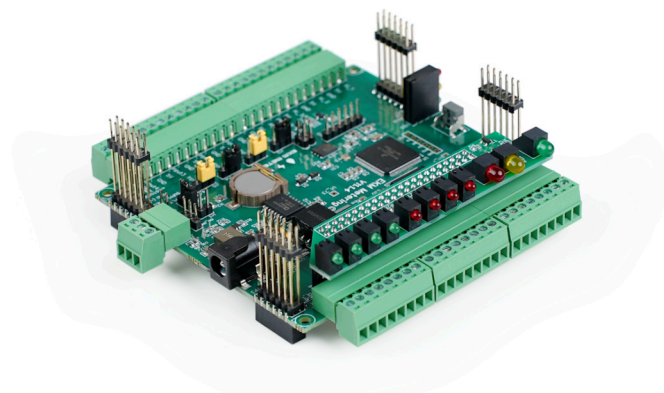


# EKM METERING INC.

## EKM ioStack (beta) Spec Sheet



Our EKM-ioStack is a powerful addition to our line of remote readable, affordable metering products. It is not a meter itself, but it does include a lot of features which support or augment your metering system. Fundamentally the ioStack is a sensor input and output hub. It is supported by our EKM Push3 data system via RS485, just like our EKM-Omnimeters.

We think the ioStack is a great addition to our offerings so that you will have more insight and control into your remote assets. Not only can you use the EKM Push system to remotely meter your thousands of electricity, water, or gas meters around the world, but you will also be able to remotely sense the temperature, voltage, pressure, humidity, light levels, etc at your thousands of sites. This combined with great data access and web based charting, makes for a really powerful and scalable system. It becomes even more powerful if you are able to leverage EKM Push3 gateway based triggers to alert you to issues or automatically control devices if thresholds are reached. You could save thousands in avoided damages just by sensing a leak or water on your floor for example by triggering on either the pulse counts, pulse rate, or the analog inputs for example.

The ioStack makes it easy to install, easy to connect to your EKM Push3 gateway, easy to access your data from the cloud for free, easy to see the data on online charts and graphs, and easy to setup triggers to alert you to issues.

### Specs:

- Dimensions: 123x118x30mm
- Input Voltage: 9-24VDC
- Temperature: 0-75°C (32-167°F)

### Features:

- 4x Pulse Inputs
- 4x Analog Inputs
- 4x Controllable Output
- 2x I2C Inputs
- Powered by 9VDC to 28VDC
- Stackable with Push3
- pluggable terminal blocks

### Pulse Inputs

These can be used as:

- 4 x Pulse Counters
- 4 x Inputs States (open or closed)
- 4 x Runtime timers (time a machine has been on or off)
- 4 x Pulse rates (rate of flow or speed of an object, etc)

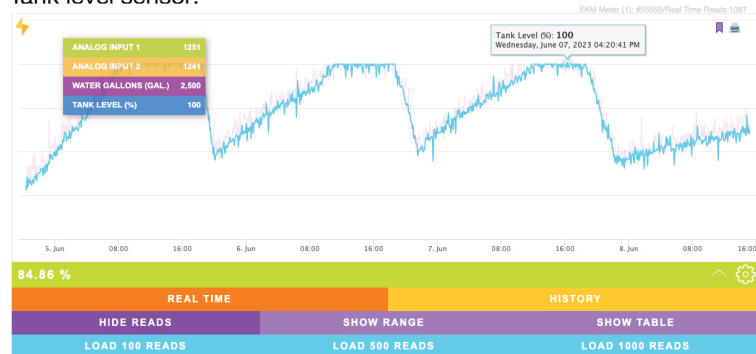
These pulse inputs can be used for counting the pulses of water meters and/or gas meters in order to know the volume of water or gas measured over time. They could be used to know if a door is open or a float valve senses that your tank is full, they could be used to allocate how much time a tenant has used the central air conditioner, they could be used to know how fast the water is flowing through the water meter or how fast the shaft on a motor is spinning, etc.

One of the main advantages to the ioStack for pulse counting, vs our v.4 Omnimeters, is that it is powered by low voltage (4.5VDC to 28VDC), which is safe and easy to install. In comparison, our Omnimeters require at least 110V AC. The ioStack also has 4 separate pulse inputs vs. 3 separate inputs with the v.4 Omnimeters. The v.4 Omnimeters remain a great option for pulse counting if you are also using them for metering electricity.

### Analog Inputs

These sensor inputs are great for measuring things like temperature, pressure, humidity, light levels, DC voltages, etc. For example, you could use these to know how full your water tank is, what the temperature and humidity in your remote warehouse or building is, the average light level per hour, remotely sense the voltage of a boats battery over time, etc. These values are especially valuable when the data is sent to the cloud where you can see the real-time values and the values historically over long periods of time.

### Tank level sensor:



### 1-wire Buses

These are primarily used for temperature sensors. You can have multiple 1-wire temperature sensors on the same bus, or on multiple buses. These are similar to the analog sensors above, but the data does not need to be converted from an analog value to a human readable value, they are already human readable.

### Controllable Outputs

These outputs can be used to control up to 4 separate devices. These could be relays, solid state relays, valves, etc. You can control these outputs remotely via the EKM Push3 gateway over the internet. You can control them via our web interface, by using Push3 gateway based triggers, by our open web APIs, or locally over RS485.

### I2C Inputs

The ioStack also has 2x I2C Inputs. These have been included on the beta units as a test to measure interest from users. There is currently no support for the I2C data via the Push3 system or our software. If the I2C data interests you please let us know!

## LEDs

There are 11 LEDs across the top of the pulse inputs, controllable outputs, and I2C inputs. From left to right:

1. Pulse Input 1 LED
2. Pulse Input 2 LED
3. Pulse Input 3 LED
4. Pulse Input 4 LED
5. Control Output 1 LED
6. Control Output 2 LED
7. Control Output 3 LED
8. Control Output 4 LED
9. Aux LED
10. RS-485 LED
11. Power LED

The Pulse Input LEDs light up green when a pulse count increments (when the switch is closed). The Control Output LEDs turn red when an output is turned on. The Aux LED blinks red when the ioStack is first powered. The RS-485 LED blinks yellow when the ioStack receives a read request and/or it sends a read. The RS485 LED also has a faint heart beat blink when it is healthy and waiting for a request to send data. The Power LED is solid green when the ioStack is powered.

## Stacking

The ioStack is stackable with the Push3, meaning that both devices have pins and headers with the same spacing and layout, which allow the two devices to be physically connected. The stacking connection sends DC power and RS-485 communication up and down the stack so that the devices can share a DC power supply and no RS-485 wires are needed to connect the devices.

