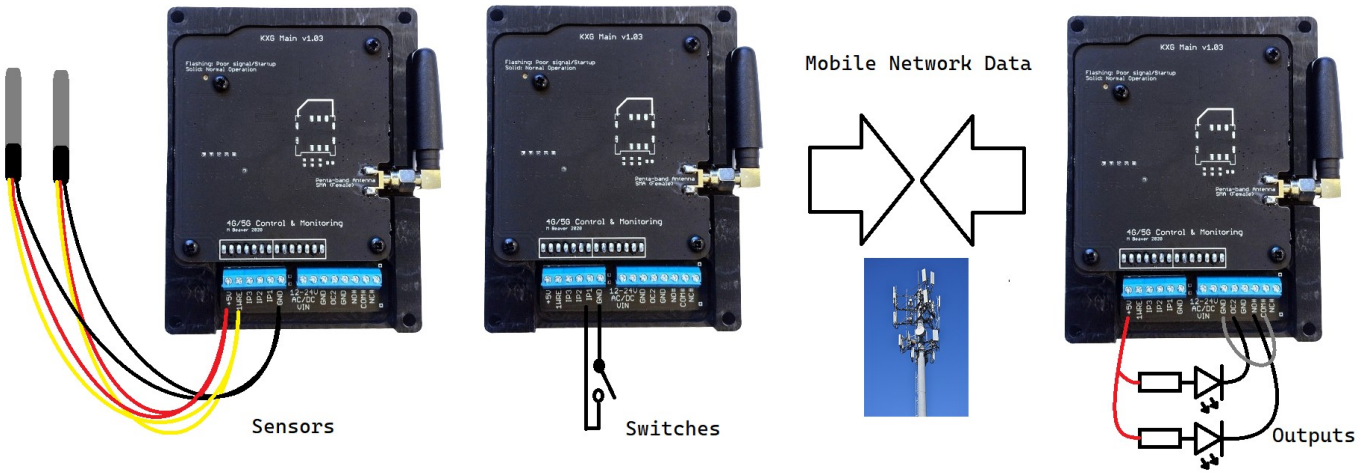
Remote Monitoring Systems

Revision: 1.00
https://iot-portal.com Yes
https://iot-portal.com/app No
Mobile: No
Desktop: Yes

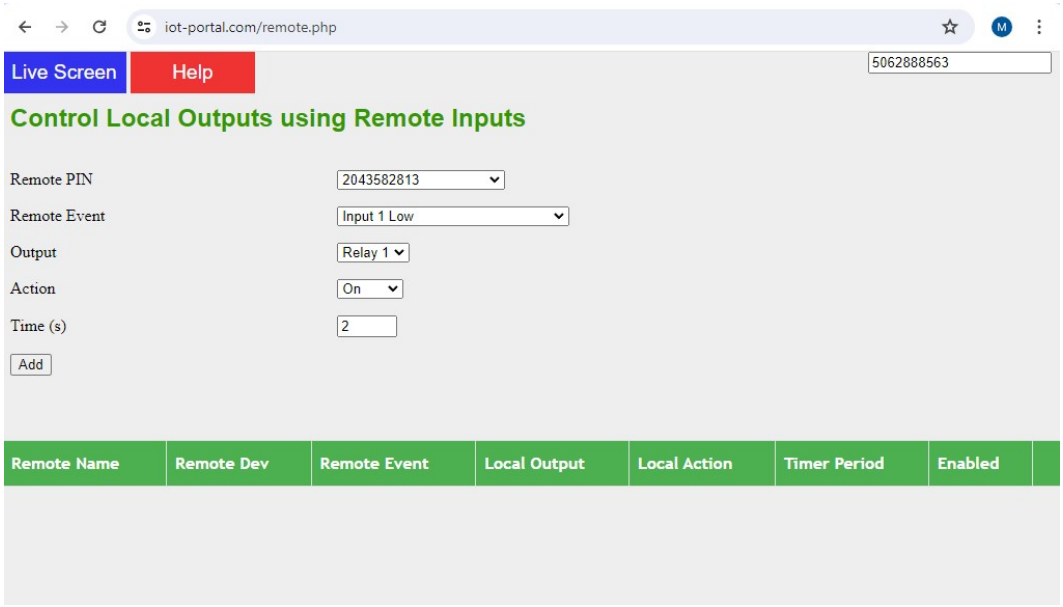
Monitored Remote Control

Two or more iot-portal.com devices are able to create a Monitored Remote Control system. Unlike a simple remote control, which may or may not result in the activation of the remote equipment, the iot-portal.com remote control system is able to check the remote outputs were activated. If they failed to be activated, an email or SMS can be sent to several users warning them of the failure.
The system has unlimited range as long as there is mobile phone coverage at both ends of the system.
The system is bi-directional. Any input contact on any device, linked with a common email address, can activate outputs on another device.



Setup

You set up the Monitored Remote Control on the device which has the output terminals you'd like to control. Visit the Live Screen for this device and click 'Tools' at the bottom of the screen. This will reveal the 'Remote' button which takes you to the remote control page.



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Email: sales@priory-access.com

Remote PIN

This is a selectable list of devices that contain your email address with 'Full Access' permission. If a device you own/manage is not in the list, ensure your email address is in the Users screen and the permission is set to 'Full Access'. It is not sufficient for your phone number to be in the device.

You should select the device with the inputs you would like to use to operate this device's output.

Remote Event

This a selectable list of events associated with the device selected in 'Remote PIN'. There is a comprehensive list with some options not applicable to every device.

The name of the event is described in this select box. If the input has been renamed on the Live Screen, this is what will be presented in this box (i.e. not 'Input 1 Low' for example).

Output/Action/Time

Most devices have 2 relay outputs (1/# and 2/*). This is selected in the output box.

The action selected what you would like to happen when the input event is triggered:

On – this activates the output relay (i.e. the COM/NO terminal is connected)
Off – this turns off the output relay (i.e. the COM/NO terminal is disconnected, COM/NC connected)
Pulse – this activates the output for the period of time set by the **Time** text box
Toggle – this will cause the output to change to a alternate state on each activation

Toggle mode is not reliable in all circumstances. The output state is set to the opposite of the previous state the portal set it to the last time the portal toggled it. If another process has operated the relay in the meantime or last time the operation failed, it will not change state as expected.

Monitoring

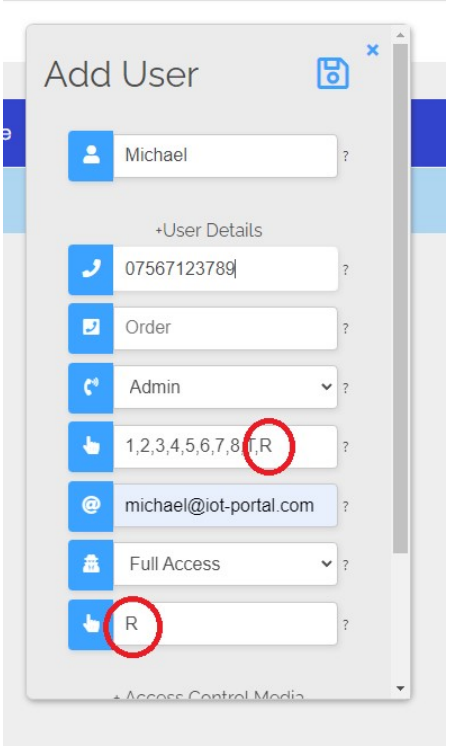
If an activation attempt is made to the local device but the output terminals do not change, it is possible to get an SMS, email or even phone call to inform ***local*** device users of the failure.

This can be caused by the device being powered down or otherwise offline or the local device not replying to the portal within 30s.
On NB-IoT networks, it is possible the data was just too slow to reach the portal in time. Either way the local device should be checked.

To receive remote control failure messages and calls, the ',R' character must be present in the event selection boxes on the Users page.

Either add a new user or select an existing user and add the ',R' characters as shown. The phone type box should also be set to 'Call/Text' as appropriate.

The monitoring message follows the normal user rules as per any other event.



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Security

External Internet

https://iot-portal.com devices connect to the portal through a Virtual Private Network (VPN) connection via the mobile phone network. This is highly secure and all data travels through the public internet in an encrypted form. The remote devices will only connect to portal message brokers and will only listen on the portal private local network. Outside internet traffic cannot send messages to the device.

Internal Network

Devices are linked via 'Full Access' email address. Any device with your 'Full Access' email address will appear in the list of remote devices that can operate the outputs on your local device.

Entering your email address as a 'Full Access' email address into a device allows you full admin access using the portal, app and Live Screen. It is possible another user may add you onto their device without you asking. You will receive an email with a link to their device **giving you control over their device**.

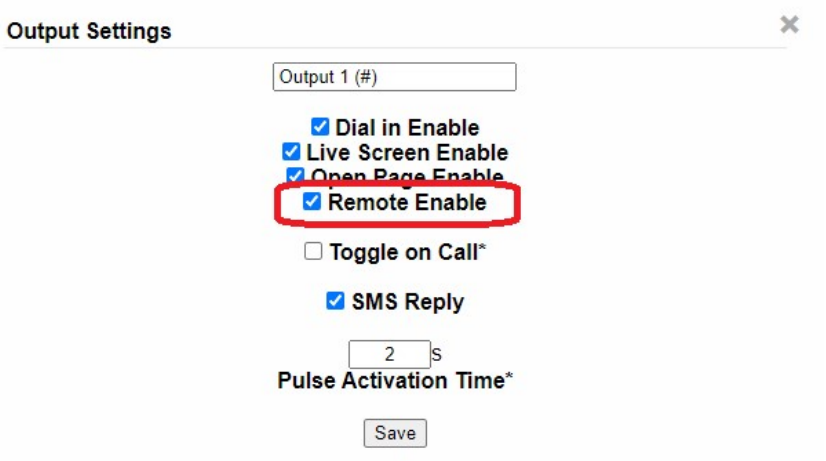
Why would someone want to do that?

Your device will now appear on their list of selectable remote devices for operating a local output on their device. For this reason, emails are sent to 'Full Access' email addresses on the remote devices after monitored remote control is setup. This email allows you to enable/disable the control. Normally it will be you who set it up so you will want to enable it.

You should report any abuse to support@iot-portal.com

Globally Disabling Remote Control

You can disable remote control for any remote device by visiting the Output settings control on the Live Screen for each output. By default this is disabled. It is enabled automatically after you set up the remote control for that output.



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Limitations

Transmitter end(s)

NB-IoT networks provide connectivity where other technologies cannot reach. However, this can come at the cost of increased latency. Most networks will specify latency on NB-IoT of 1.6s-10s. This however, can be as high as 50s and as low as a few hundred milliseconds. This can delay operation.

Only events (as opposed to changes in state) can trigger a remote device. If, for example, an input is set to hold for 2s (default setting on most devices), the input would need to be held in this state for 2s before it will transmit an event to the portal.
Hold times can be set to 0s but this allows transient fluctuations to trigger events.

Even devices with excellent connectivity will occasionally (often several days) have to re-establish the data connection with the network. This will result in a normally short period of 10s (but up to several minutes) where the link will be inactive. Events are queued by the transmitter for when the link is re-established and will be actioned once the transmitter is back online.

If a transmitter is lost completely, it will take over 1 hour but less than 2 hours for the 'Admin' phone numbers and the 'Full Access' email addresses to be notified.

Receiver End

After the portal sends a message to the remote device to change its output state, it listens for a state change notification from the remote device to confirm activation of the output. If this does not arrive within 15s, it will request a state change message.
It is not possible to determine the desired state of the outputs at this stage. Therefore, so long as this state change message is received, it is accepted that the output was activated correctly; i.e. it is online and processing messages.

Should an output activation trigger the inputs on the remote device, the input event will be prioritised and may result in no output state change messages being sent. Therefore, complex output to input wiring is more likely to result in erroneous 'Remote Activation Failure' messages; even when the operation was successful.

If a receiver is lost completely, it will take over 1 hour but less than 2 hours for the 'Admin' phone numbers and the 'Full Access' email addresses to be notified.

Threats to Existing Installations and Recommended Testing

There are no potential threats to existing installations or devices beyond the issue discussed in the security section. No testing is recommended. This system has been available prior to release of v8 firmware.