



# REMOTE EXCHANGE CONTROLLER



Simple System, Powerful Feature, Easy to Deploy



## INTRODUCTION

Every equipment is vital in managing and maintaining our business operation to run smoothly and effectively. Therefore, well-maintained and frequently checked facilities and equipment are important to avoid unnecessary downtime. Downtime or unexpected equipment breakdown is an expensive affair that can lead to business losses once leave unnoticed.

**REX (Remote Exchange Controller)** is a built-in all in one monitoring controller designed to meet all the aspects of facility monitoring. It can monitor some equipment or small facility and instantly notifies the personnel through **SMS and email** when something goes wrong. It can integrate with any third-party sensor and equipment via dry contact or 4-20mA interface.

REX is easy to use yet it is packed with powerful features to meet a wide range of industrial and commercial applications.



## BENEFITS

EASY TO INSTALL

LOW MAINTENANCE

LOW COST OF OWNERSHIP

24 X 7 OPERATION



DEDICATED STANDALONE OPERATION

NO EXTERNAL PC OR EXTERNAL APPLICATION SOFTWARE

OPEN STANDARDS PROTOCOL, EASY FOR EXTERNAL APPLICATION INTERFACE

## FEATURES

- ✓ Standalone - built in software housed in a small robust enclosure.
- ✓ One-time setup device with user friendly HTML interface using any web browser
- ✓ The interface can be accessed by laptop, computer or mobile phones.
- ✓ 8 digital input, 2 digital output & 2 analog inputs.
- ✓ Able to monitor 32 monitoring points at the same time.  
\*with expansion modules
- ✓ Built-in supervisory circuit ensures high reliability and stable operation.
- ✓ Remote on/off control of equipment via logic expression and SMS command.
- ✓ Send alarm and status from all sites via text message and e-mail
- ✓ SMS alarm messages up to 10 mobile numbers and additional 4 mobile numbers for escalation
- ✓ Can monitor devices for more than 200 meters away from the unit.

## Easily monitor your facilities through SMS or email.

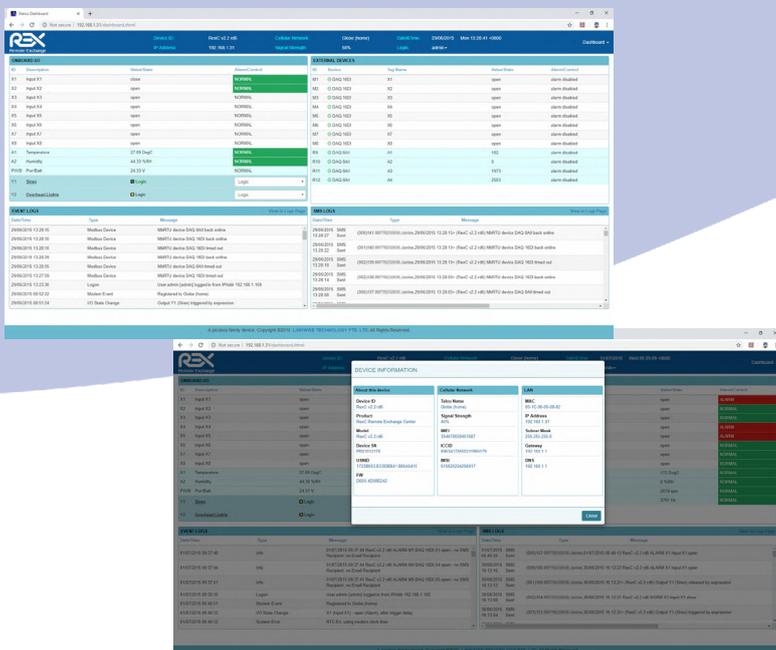
Picobox REX is designed to provide alert status in the most convenient way-through SMS/text and email. In just 2-3 seconds you will be able to receive an alarm updates when something happened to your facility and therefore preventive action can be taken care of immediately. The facilities manager can now easily monitor the status of each device and equipment in real time and remotely.

A truly unique small device with full powerful features and functionality.



## Easy to configure User Interface

REX has an outstanding graphical user interface that shows the current status and information of devices connected to it. User Interface is web-based, no need to install software, it is 100% open source. The user-friendly UI made the configuration easier to set up and maintain.



## Top-class compact device with high I/O expandability

It can easily expand the monitoring capabilities of REX up to 32 points by using expansion modules like DAQ. Able to monitor status, alarms and IO availability using remote PC by visual representation(dashboard) and log reports.



## LED Indicator

Forgot the IP you set on REX? No worries, REX has its own LED indicators that show various status and even the IP and MAC address of your device.

- Power Status
- Telco Status
- Modbus Status
- Network Status
- IO Status

## Low-cost with full functionality

A compact all in one device that provides a simple yet reliable monitoring system with just a very low-cost ownership. Designed to easily install, use and maintain with 24 /7 system operation.

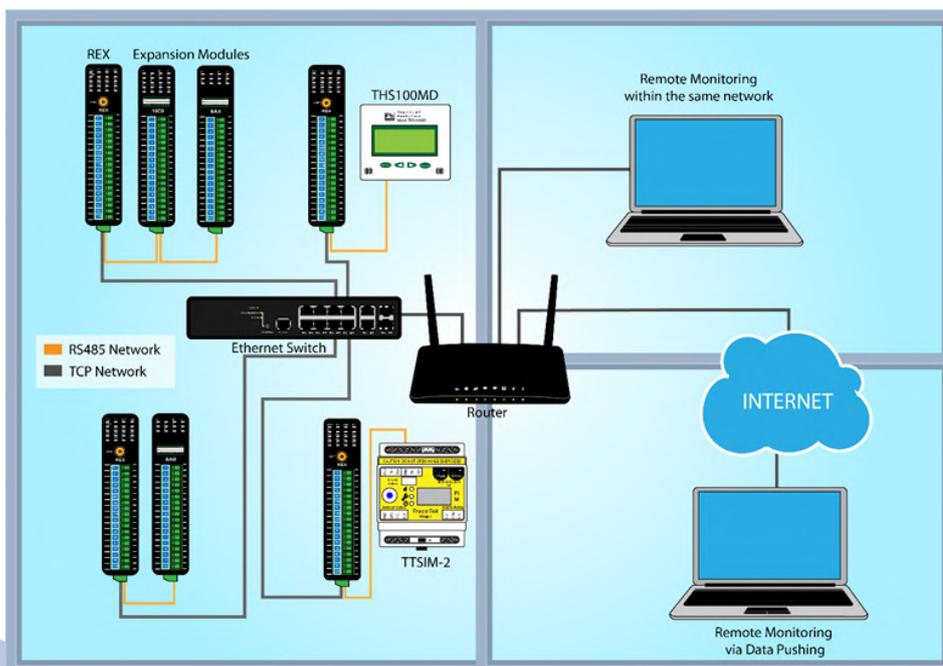


# Modbus Communication for REX Remote Exchange Controller

**Modbus DAQ** is designed to collect data from low level interface devices then send the data to REX through MODBUS RTU. With multiple Modbus DAQ, REX can monitor up to 42 monitoring points including the built in IOs of REX.

REX has automatic connectivity supervision that ensures all devices are communicating. Communication failure to any devices will be reported to the users via SMS.

Devices such as sensors and leak detection systems (ex. THS100MD and TTSIM-2) are capable of sending data to REX via MODBUS RTU. REX can read the real time values of these devices 24/7.



## DIFFERENT WAYS OF MONITORING

### Monitoring via SMS and Email Alerts

REX can prompt the user via SMS and Email alerts when there is a change in the state of the equipment, system or device connected to it. It only takes 2-3 seconds to receive the alarm notification. REX can even send messages to a specific person for the specific device.

REX is an intelligent device that can answer pre configured SMS to the numbers registered on it. Users can ask the status of each device connected to it, the signal strength and more. Users with authoritative rights can also command REX to turn ON and OFF devices connected to the digital output.

### Monitoring via User Interface

REX is packed with a user interface that can be easily accessed using any web browser. The users can view real-time status of all devices connected to REX. They can also configure the REX settings using this interface.

### Monitoring using Data Pushing

REX can send data to a server with a given time interval and during the occurrence of an alarm. Using this feature, the user can check REX status anytime and anywhere around the world.

## Why Monitor your facilities?

Have you ever experienced your facilities shut down without you noticing it?

If not, some questions might have crossed your mind. Do I need to monitor my equipment? Is it worth the investment? How can monitoring system help my business operation?

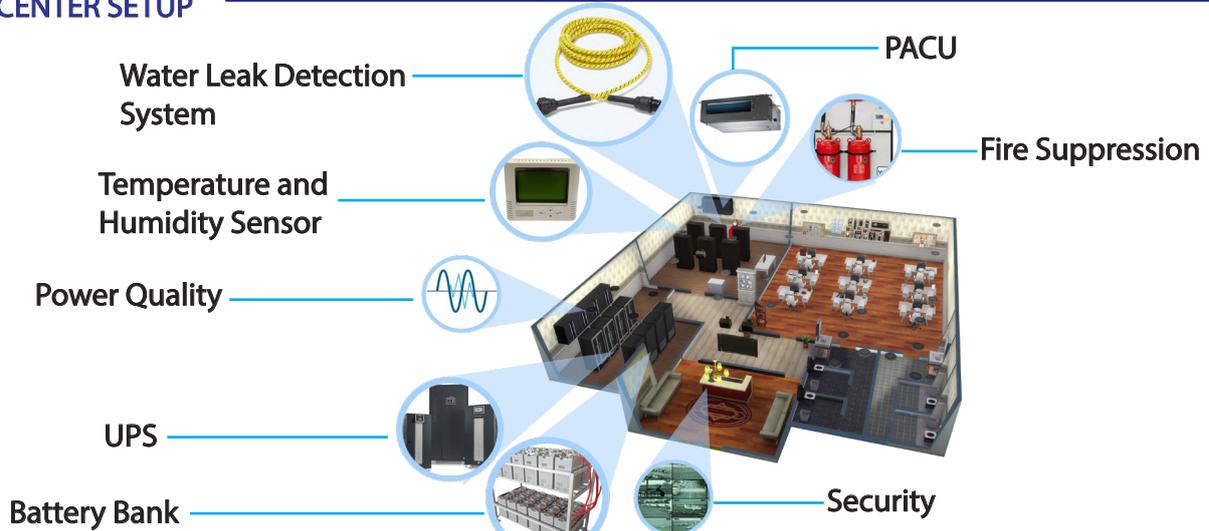
The answer is to estimate any losses when one of your equipment breakdowns. Can you afford downtime from your crucial equipment? What are the consequences if a problem left unnoticed?

PICOBOX REX can easily address these concerns a proven monitoring system which is used in Data Center, Facilities and a wide variety of applications.

## APPLICATIONS

-  Data Center
-  Manufacturing Process
-  Telecommunication
-  Fire and Security
-  Energy Efficient & Power Management
-  Environmental
-  M&E Facility Management

## DATA CENTER SETUP



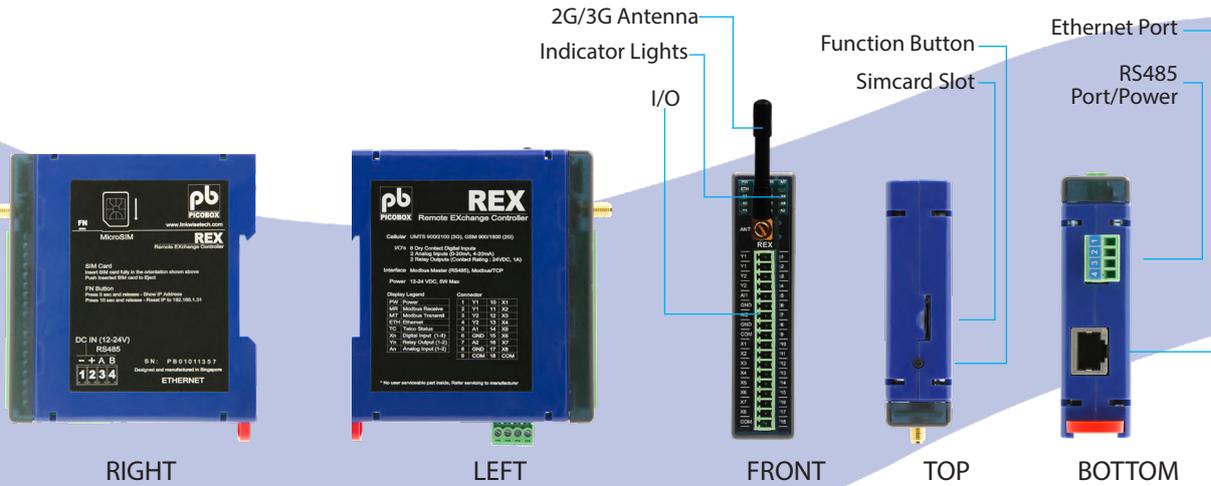
## TECHNICAL SPECIFICATION

PHYSICAL	
Operating Voltage	12-24 VDC, 5W max power consumption
Processor	32-bit high-speed microcontroller
Memory	Non-volatile storage memory stores history logs
Cellular Modem	UTMS 900/2100 (3G), GSM 900/1800 (2G)
Humidity	0 - 90% non-condensing
Operating Temperature	0 - 55 degree Celsius
Physical Size	86.5 (L) x 97(H) x 22.6 (D) mm
Weight	200 gm
Security	2 level security, admin and guest
Mounting	Industrial standard ABS housing with Din rail mounting, Pluggable 3.5 mm screw terminal block
Connectors	4way and 18way 3.5mm Plug cable Connector
Security Feature	2 Level security, Administrator and User level
Date & Time	Support NTP server time zone synchronization
Real Time Clock	Date time with Super cap backup and NTP support

LED Indicators	PW = Power, MR = Modbus Receive, MT = Modbus Transmit, ETH = Ethernet, TC = Telco Status, X1-X8 = Digital Inputs, Y1-Y2 = Relay Outputs, A1-A2 = Analog Inputs
Communication Port	1 x RJ45 port, Ethernet 10/100Mbit 1 x RS485, Modbus RTU
Interface	HTML interface, accessible via web browser software
<b>NETWORK</b>	
Network Support	Static and Dynamic IP support
Network Protocol	a) TCP (Transmission Control Protocol) b) IP (Internet Protocol) c) HTTP (Hypertext Transfer Protocol) d) Modbus Serial e) UDP (User Datagram Protocol) f) DNS (Domain Name Server) g) SNTP (Simple Network Time Protocol) h) SMTP (Simple Mail Transfer Protocol) i) GSM (Global System for Mobile Communication)
<b>DIGITAL INPUT</b>	
No. of Input points	8 optically coupled dry contacts digital inputs, onto-isolated
Configuration	Independent configuration of input description, open/close status description
Input Response Time	Individual selection of response time for each input from 0.2 to 30 seconds (trigger sensitivity)
Alarm State	Definable normally open or close as the alarm condition
<b>RELAY OUTPUT</b>	
No. of Output points	2 relay outputs, contact rated at 24 VDC 1A
Configuration	User defined output description
Output control	Through SMS or locally on/off relay outputs through a web browser
Internal Buzzer	Optional interval buzzer that will turn ON using logic expression. Can set on either continuous buzz, delayed ON or one shot buzzer for 0-60 seconds.
<b>ANALOG INPUT</b>	
No. of Analog points	2 analog inputs, 4-20mA
Configuration	Configurable input description, scaling, trigger delay, high/low alarm points.
Set Points	Has two configurable alarm points, low and high alarm.
<b>REMOTE MANAGEMENT</b>	
Remote Command	a) Add / Edit / Delete mobile phone groups, repeat time
	b) Query Operational / Authorizer mobile phone numbers
	c) Query health check
	d) Query input / output / analog status
	e) On / Off output equipment / devices
	f) Acknowledgments
<b>SMS AND EMAIL ALERTS</b>	
Phone Groups	a) 10 Operation Numbers / Email
	b) 3 Authorized Numbers / Email
	c) 4 Escalation Numbers / Email
	d) Accepts International Phone Number format and support Auto Roaming
Configurable Alarm Message	Digital inputs, relay outputs & analog input (2 messages per input, "Low Alarm" and "High Alarm" Triggering)
Auto Health Check	Programmable daily/weekly system health check
Time Stamp	SMS sent & received with time stamps

Email Compatibility	Supports SMTP (port 25 and 587) and TLS 1.2 (port 465)
EVENT LOGS	
Event Logging	Stores up to 160 history events with data and time stamp, FIFO event recording
Data Format	XML (Extensible Markup Language) and CSV (Comma-Separated Values)

## PHYSICAL LAYOUT



## OPTIONAL ACCESSORIES

### ANTENNA EXTENDER



**Model:** Ant3db3m  
**Type:** 3db gain 900/1800MHz Antenna  
**Mount:** Magnetic base mounting  
**Length:** 32cm  
**Cable:** 3m RG179 coaxial cable  
**Features:** Boost up GSM signal in an enclosed area. Use to maximize signal performance.

### TEMPERATURE AND HUMIDITY SENSOR



**Model:** THS-100MD  
**Power:** 12-4V DC  
**Range:** -20-70 DegC, 0-100%RH  
**Accuracy:** +/-0.3 DegC, +/- 3%RH  
**Dimension:** 86x86x34mm  
**Modbus Connection:** 2 wired Modbus RTU  
**Connection Interface:** RS485

### SPOT SENSOR



**Model:** SP-12  
**Type:** Spot water detection probe  
**Power:** 1 2VDC or 24VDC non polarity  
**Output:** Normally close (NC) relay dry contact 12 or 24VDC, 1A (non polarity)  
**Sensing Height:** 1mm to 6mm (adjustable)  
**Dimension:** 24 (h) x 44 (diameter) mm

### TEMPERATURE AND HUMIDITY SENSOR



**Model:** THS-100D  
**Power:** 12-24V DC  
**Range:** 0-50 DegC, 0-100% RH  
**Accuracy:** +/- 0.5 DegC, +/- 5% RH  
**Output:** 4-20mA  
**Dimension:** 86x86x34mm