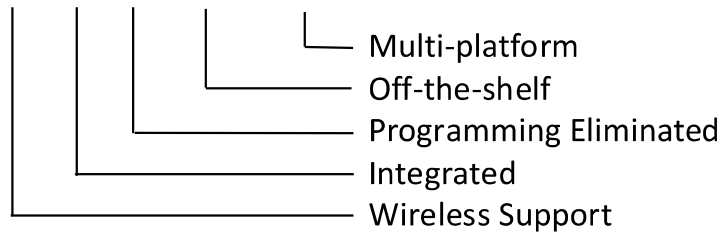


# WiPOM



# WiPOM

by BiPOM Electronics, Inc.

Presenter: Oz Murtezaoglu,  
Electronics Engineer - President



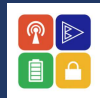
Who is BiPOM ?



BiPOM was founded in 1984 with the objective of using microcontroller technologies to solve real world problems



( BiPOM = Best in Programming Of Microcontrollers )



What is WiPOM ?

A multi-platform software package and corresponding core hardware design that eliminates programming for rapid deployment of embedded and industrial IoT applications

### PROBLEMS

- Projects Take Too Long To Deliver
- Products Take Too Long To Bring To Market
- Software Development Is Costly
- There aren't Enough Experienced Embedded Software Developers
- Custom Software Requires On-Going Maintenance & Field Support
- New Features Require Additional Development



### SOLUTIONS

- Wipom, A Multi-Platform, Modules Software Application
- Modular Embedded Software Application That Handles Most Needs Of Embedded And IoT Applications
- Requires No Software Development By User
- Proven Software Application Eliminates Debugging
- New Features Are Continuously Being Added

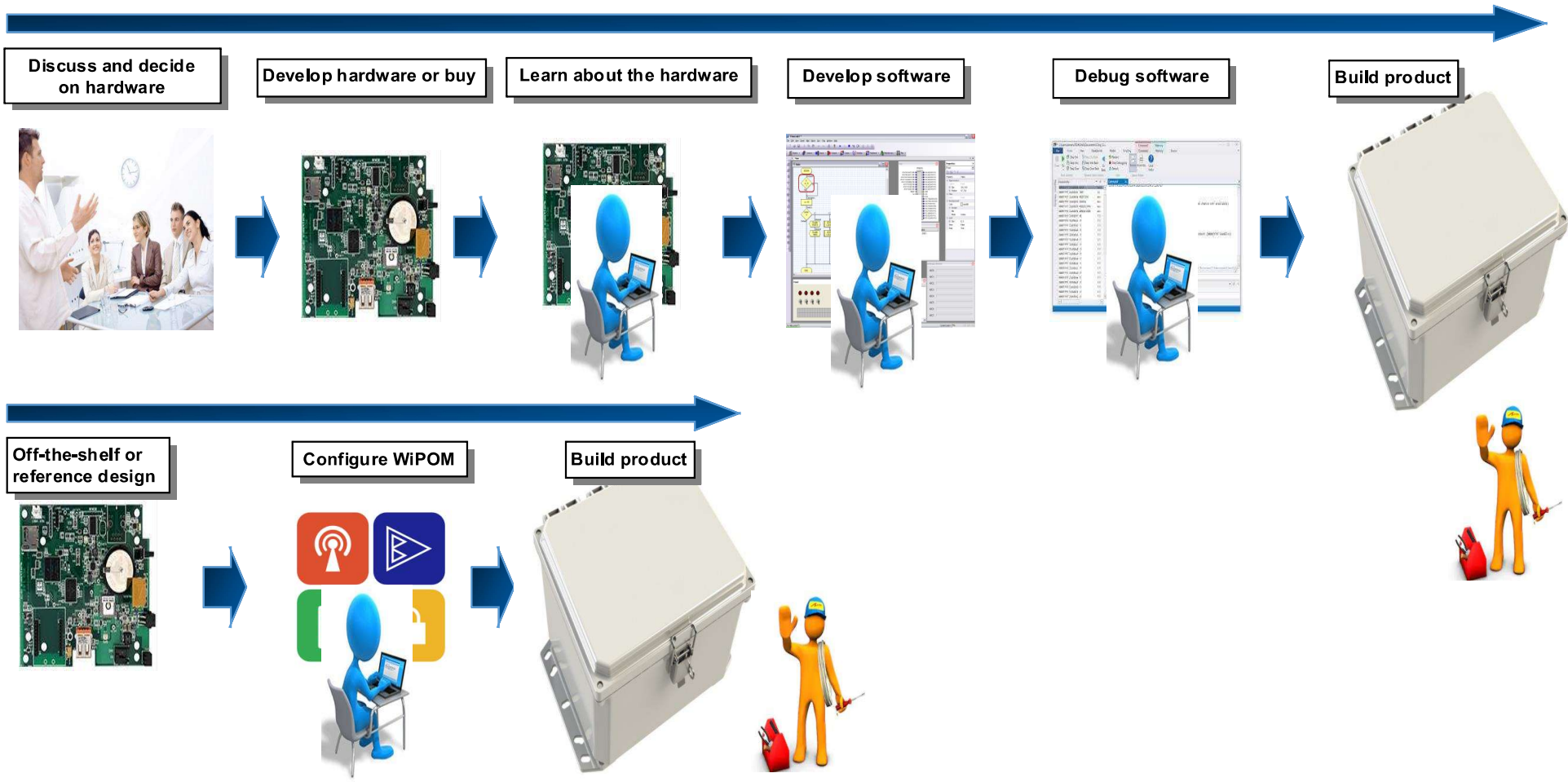


### RESULTS

- Cost savings of 75% to 90% with only nominal fees for the WiPOM resources and Support.
- Time savings: 50% to 80% of "Idea to deployment" time.
- Simplicity, reliability, scalability, maintainability.



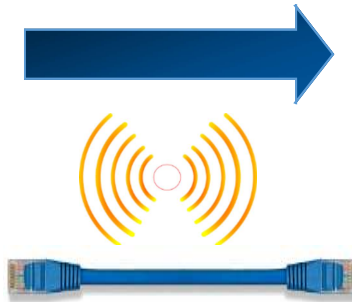
# TIME & COST ADVANTAGES





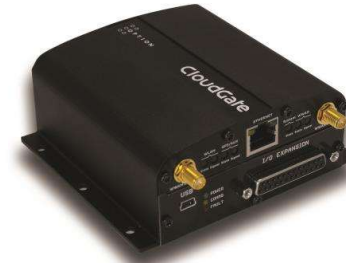
WiPOM Client running on Windows PC

## Download Configuration



Ethernet, USB, Serial, Over the Air

## TYPICAL SETUP



WiPOM Software running on CloudGate

WRTU Client ver.2.65 [VTB-RS485\* : OFFLINE]

File Tools View Help

System Communications General Peripherals Tags Contacts Logged data Software Log

#	Name	RTU	Address	Type	Log Period (sec)	Alarms State	Realtime Value	Units
1	S#1 - Temperature	64	40032	MODBUS	60	Not Set		F
2	S#2 - Temperature	67	40032	MODBUS	60	Not Set		F
3	S#3 - Temperature	70	40032	MODBUS	60	Not Set		F
4	S#1 - A1 Acceleration	64	40173	MODBUS	60	Not Set		g
5	S#1 - A2 Acceleration	64	40175	MODBUS	60	Not Set		g
6	S#1 - A3 Acceleration	64	40177	MODBUS	60	Not Set		g
7	S#1 - A1 Velocity	64	40179	MODBUS	60	Not Set		ips
8	S#1 - A2 Velocity	64	40181	MODBUS	60	Not Set		ips
9	S#1 - A3 Velocity	64	40183	MODBUS	60	Not Set		ips
10	S#2 - A1 Acceleration	67	40173	MODBUS	60	Enabled		g
11	S#2 - A2 Acceleration	67	40175	MODBUS	60	Not Set		g
12	S#2 - A3 Acceleration	67	40177	MODBUS	60	Not Set		g
13	S#2 - A1 Velocity	67	40179	MODBUS	60	Not Set		ips
14	S#2 - A2 Velocity	67	40181	MODBUS	60	Not Set		ips
15	S#2 - A3 Velocity	67	40183	MODBUS	60	Enabled		ips
16	S#3 - A1 Acceleration	70	40173	MODBUS	60	Not Set		g
17	S#3 - A2 Acceleration	70	40175	MODBUS	60	Not Set		g
18	S#3 - A3 Acceleration	70	40177	MODBUS	60	Not Set		g
19	S#3 - A1 Velocity	70	40179	MODBUS	60	Not Set		ips
20	S#3 - A2 Velocity	70	40181	MODBUS	60	Not Set		ips
21	S#3 - A3 Velocity	70	40183	MODBUS	60	Not Set		ips
22	DO #1	1	1	DO	60	Not Set		
23	DO #2	1	2	DO	60	Not Set		
24	S#1 - Revision	64	40001	MODBUS	60	Not Set		
25	S#2 - Revision	67	40001	MODBUS	60	Not Set		
26	S#3 - Revision	70	40001	MODBUS	60	Not Set		

Log Tag(s) at aligned time period

Not connected

A mixture of devices

Connected to each other via MODBUS or HTTP/HTTPS

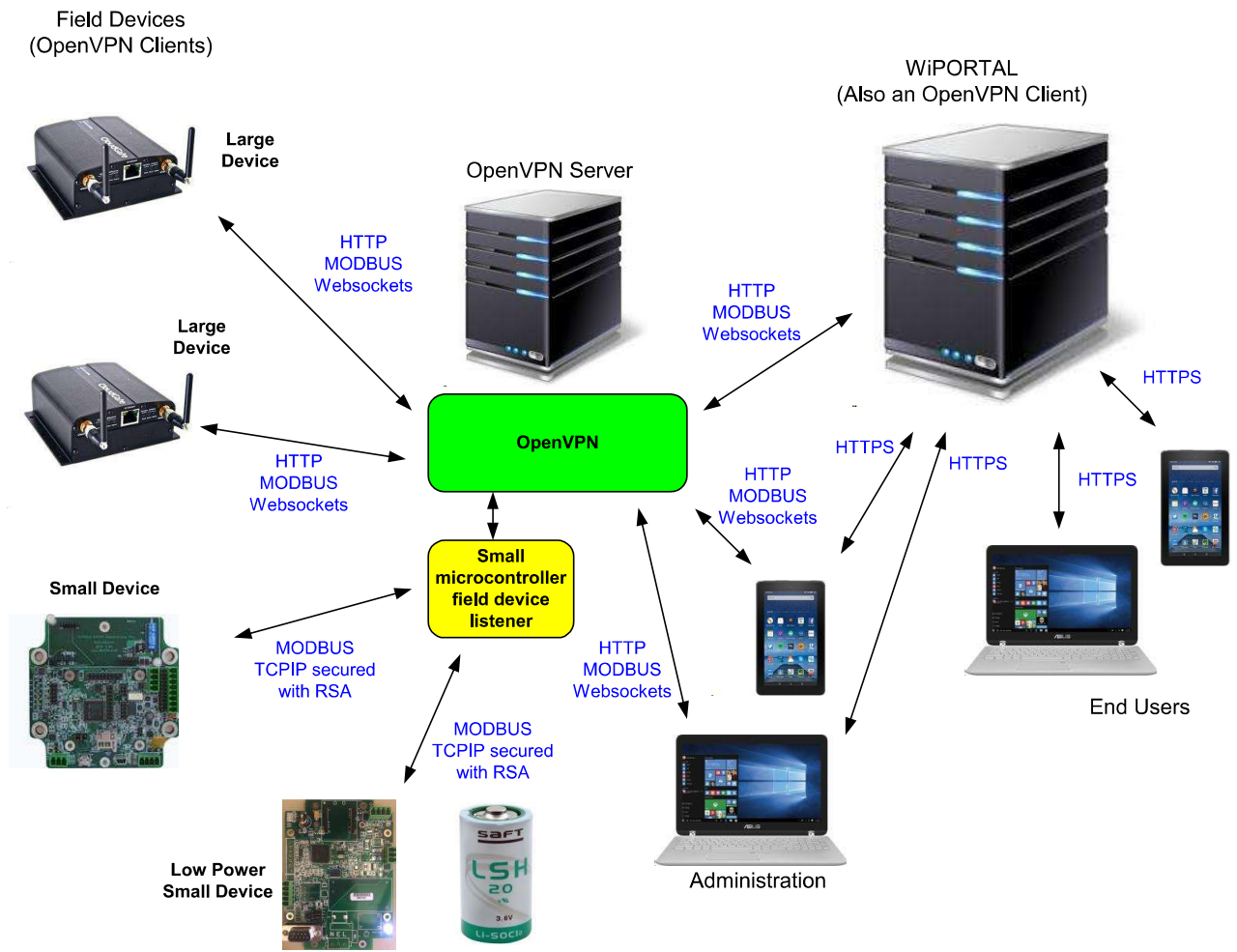
WiPOM running on some or all devices.

Some devices may have low power modes.

Security achieved through OpenVPN.

Remote firmware upgrade with bootloader on sensors and end devices.

### How does it work ?





## WiPOM Overview

POSIX  
Compliant

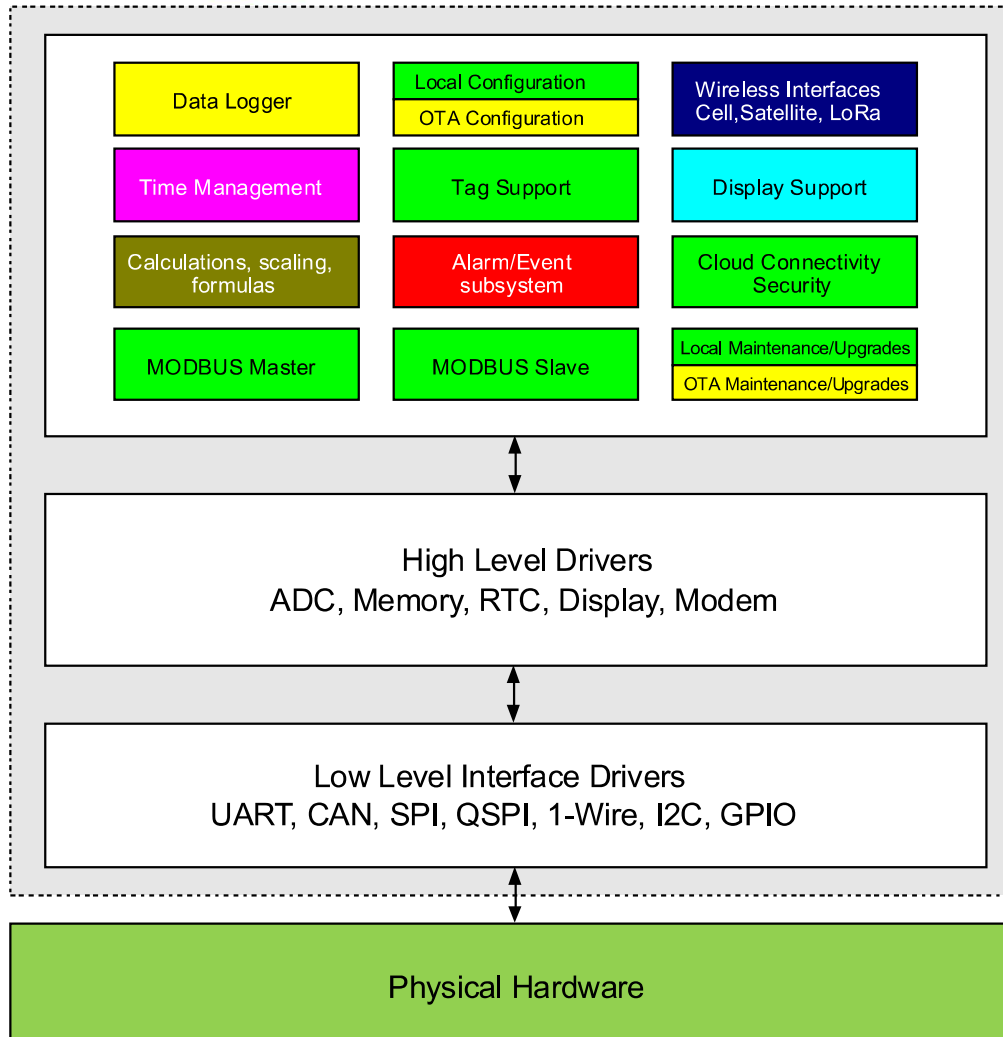
Written in C

LINUX

FreeRTOS

Mbed OS

Windows



WiPOM Client

OpenVPN for security

MODBUS Master (Client)

MODBUS Simulator (Server)

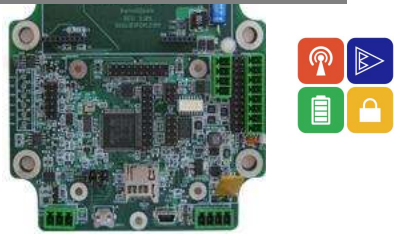
Connection Manager

# SUPPORTED HARDWARE

WiPOM on Peripheral Board



WiPOM on Cortex-M Embedded Board



WiPOM on Cortex-A Embedded Board



WiPOM on Cellular Board



WiPOM on Cellular Gateway



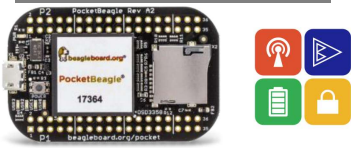
WiPOM on Cellular Modem



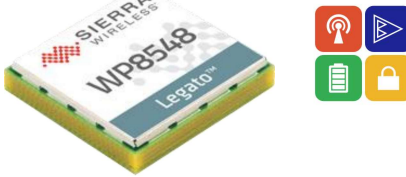
WiPOM on Embedded PC (Windows, Linux)



WiPOM on a Cortex Module



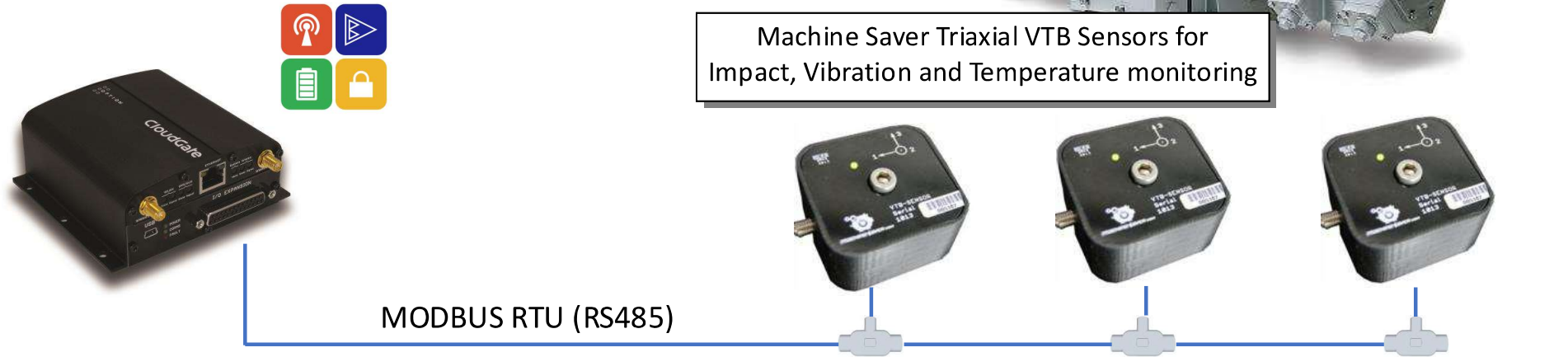
WiPOM on Cellular Module



WiPOM on a Cortex Chip



## Example Application: Vibration Monitoring



# 1

**Create application specific tags:**

- Acceleration
- Velocity
- Temperature
- Battery Level

# 2

**Configure Alarms and Actions on the tags:**

If acceleration too high, push an alarm, send SMS/email, shut down machine

# 3

**Download configuration to WiPOM device and see it run**



File Tools Help

System Communications General Peripherals **Tags** Actions Contacts Logged data Software Log

#	Name	Scan	RTU	Address	Type	Log Period (s...)	Alarms	Holding Register	Realtime Va...	Units
1	DO #1	Enabled	1	1	DO	Disabled	Not Set			
2	DO #2	Enabled	1	2	DO	Disabled	Not Set			
3	S#79 - Temperature	Enabled	79	40032	MB RTU	60	Not Set		173	F
4	S#79 - A1 Acceleration	Enabled	79	40173	MB RTU	60	Not Set		0.001	g
5	S#79 - A2 Acceleration	Enabled	79	40175	MB RTU	60	Not Set		0.001	g
6	S#79 - A3 Acceleration	Enabled	79	40177	MB RTU	60	Not Set		0.001	g
7	S#79 - A1 Velocity	Enabled	79	40179	MB RTU	60	Not Set		0	ips
8	S#79 - A2 Velocity	Enabled	79	40181	MB RTU	60	Not Set		0	ips
9	S#79 - A3 Velocity	Enabled	79	40183	MB RTU	60	Not Set		0	ips
10	S#80 - Temperature	Enabled	80	40032	MB RTU	60	Not Set		82	F
11	S#80 - A1 Acceleration	Enabled	80	40173	MB RTU	60	Not Set		0.003	g
12	S#80 - A2 Acceleration	Enabled	80	40175	MB RTU	60	Not Set		0.003	g
13	S#80 - A3 Acceleration	Enabled	80	40177	MB RTU	60	Not Set		0.003	g
14	S#80 - A1 Velocity	Enabled	80	40179	MB RTU	60	Not Set		0	ips
15	S#80 - A2 Velocity	Enabled	80	40181	MB RTU	60	Not Set		0	ips
16	S#80 - A3 Velocity	Enabled	80	40183	MB RTU	60	Not Set		0	ips
17	S#82 - Temperature	Enabled	80	40032	MB RTU	60	Not Set		79	F
18	S#82 - A1 Acceleration	Enabled	80	40173	MB RTU	60	Not Set		0.001	g
19	S#82 - A2 Acceleration	Enabled	80	40175	MB RTU	60	Not Set		0.001	g
20	S#82 - A3 Acceleration	Enabled	80	40177	MB RTU	60	Not Set		0.001	g
21	S#82 - A1 Velocity	Enabled	80	40179	MB RTU	60	Not Set		0	ips
22	S#82 - A2 Velocity	Enabled	80	40181	MB RTU	60	Not Set		0	ips
23	S#82 - A3 Velocity	Enabled	80	40183	MB RTU	60	Not Set		0	ips

Tags for temperature, acceleration and velocity

Edit Tag ✕

General Values Map Bit Map Calculations & Scaling Alarms

**General Info**

Name: S#80 - A1 Acceleration

Type: Modbus RS485 [MB RTU]

Address: [Greyed out]

Virtual Address: 46004

Units: g

Enable Logging      Log Period: 60 sec.

Enable Scan

**Extra Options**

Measurement Type: Maximum

**RS485 Modbus Slave Parameters**

RTU Number: 80

Register Type: Holding Register [40001..49999]

Modbus Register: 40173

Value Type: 32bit (float)

Byte Order: No Swap

**MODBUS Tag on a Slave Device  
(Vibration Sensor)**

Edit Tag

General Values Map Bit Map Calculations & Scaling Alarms

**Alarm Info**

Type: Limit

Timeout: 5 sec.

Deadband: 0.000

Low-Low: 0.000

Low: 0.000

Normal:

High: 0.500

High-High: 0.000

**Alarm Condition**

High (MC)

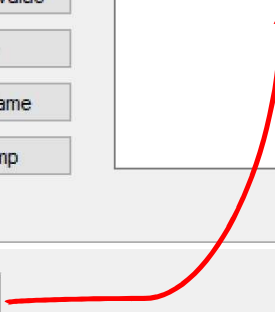
Set Message... Clear Message Set Contacts...

**Message for HIGH alarm**

Insert to Message: Tag Name Raw Value Converted Value Units Device Name Timestamp

Message: Machine Vibration too high on {TN}. Acceleration is {CV}{U}. Reported from {DN} at {TS}.

OK Cancel



WIPOM Client ver.3.46 [VTB-RS485 8 Sensors\* : OFFLINE] - ADMIN

File Tools Help

System Communications General Peripherals Tags Actions Contacts Logged data Software Log

**Common**  
 Enable RS485 Modbus Forwarding  
Modbus Interpacket Delay  ms

**Cell Settings**  
 Allow Cell Communications  
APN   
User Name   
Password

**SMS/Email Settings**  
SMS/Email Retry Time Limit  minute(s)

**SMTP Settings**  
Server    
Port   
Login   
Password   
From Email   
Email Subject

**RS232 Port**  
Baudrate  Stop Bits   
Parity  Data Bits

**RS485 Port**  
Baudrate  Stop Bits   
Parity  Data Bits   
Read Timeout  ms

**Data Pushing Settings**  
 Enable data Pushing  
Protocol  Port   
Address   
Period   
Offset  minutes (in range 0..59)  
Format   
Account  
Login   
Password

Not connected

**Push to any Cloud portal**

Add New Action

**Enabled**

**General Settings**

Name: Shutdown

Event Trigger: Tag Alarm

Action Delay: 30 seconds

**Work Hours**

Start Time: 00:00:00

End Time: 23:59:59

**Tag Alarm Action Settings**

Source Tag: S#80 - A1 Acceleration

Source Alarm: High High

**Timer Action Settings**

Action Time: 00:00:00

Repeat Interval: 0 min

**Action Target**

Device RTU: 1

Address: 455

Value: 1

OK

Cancel

**Action target can be any MODBUS device and tag !!!**

# WiPOM

- **WiPOM Software Features:**
- Connect over cellular, RS232, RS485, ethernet or USB
- Read device configuration, including tag configuration
- Configure device, date/time, calibration, RS485 port
- Check hardware status and health information
- Add/edit/delete tags
- Configure alarm conditions individually for each tag
- Configure SMS and email for each tag
- Manage contact list for SMS and email support
- Configure conversion parameters for tag value
- Engineering Unit support
- Alarm on limits, value changed, exact value
- Scaling and calculations
- Bit map and values map definitions
- Start / stop logger
- System Diagnostics
- Upgrade firmware
- Read collected data, events and alarms
- Export data, events and alarms in Excel format
- Analog and digital I/O support
- I2C and RS485 MODBUS peripheral support
- Secure cloud connectivity using HTTPS data push
- OpenVPN support
- Over the air or local connection for configuration

Alias (name)	Register Ad...	Value
<b>Axis #1</b>		
<input checked="" type="checkbox"/> Accel	40173	
<input checked="" type="checkbox"/> Accel S1A1	40191	
<input checked="" type="checkbox"/> Accel S2A1	40209	
<input checked="" type="checkbox"/> Velocity	40179	
<input checked="" type="checkbox"/> Velocity S1A1	40197	
<input checked="" type="checkbox"/> Velocity S2A1	40215	
<b>Axis #2</b>		
<input checked="" type="checkbox"/> Accel	40175	
<input checked="" type="checkbox"/> Velocity	40181	
<input checked="" type="checkbox"/> Accel S1A2	40193	
<input checked="" type="checkbox"/> Accel S2A2	40211	
<input checked="" type="checkbox"/> Velocity S1A2	40199	
<input checked="" type="checkbox"/> Velocity S2A2	40217	
<b>Axis #3</b>		
<input checked="" type="checkbox"/> Accel	40177	
<input checked="" type="checkbox"/> Velocity	40183	
<input checked="" type="checkbox"/> Accel S1A3	40195	
<input checked="" type="checkbox"/> Accel S2A3	40213	
<input checked="" type="checkbox"/> Velocity S1A3	40201	

**MODBUS  
Client**

MB Simulator v. 1.12

File Help

COM Serial Port Settings

COM Port: [ ] Baud Rate: 9600 Parity: None Data Bits: 8

Handshakes: None Stop Bits: 1

Only Send Exception Exception Code: 1

MB Simulator Options

**Devices:** RTU111

**Device Configuration:**

Register Number	Value
#40001	1
#40002	2
#40003	3
#40004	4
#40005	5
#40006	6
#40007	7
#40008	8
#40009	9

Buttons: Add, Delete,  Show All Registers,  Show Hex

Messages: [ ]

**MODBUS  
Simulator**

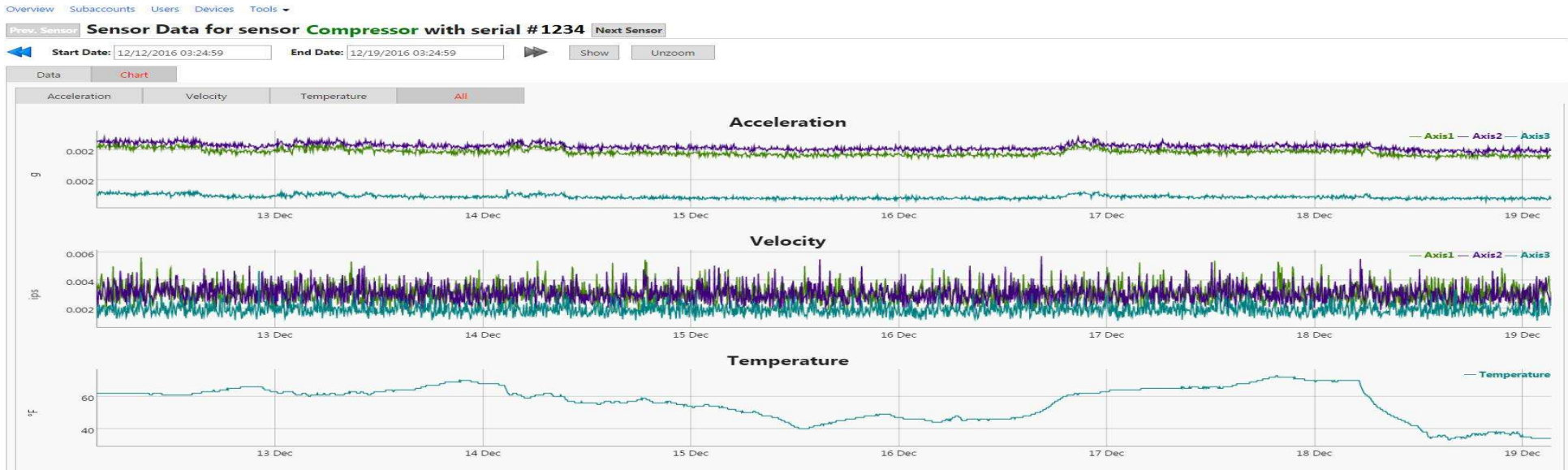
### BiPOM Web Portal - WiPORTAL

For customers who do not have an extensive IT Department yet need real-time remote data reporting and critical "Alerts", BiPOM now offers WiPORTAL. It is a simplified, low-cost, cloud server that provides timely and critical information 24/7.

This service has been in operation for over 6 years with many customers. It is effective, reliable, low-cost and yet provides easy, password protected access, real-time data and immediate alerts with customer selected thresholds. Custom formats and alerts are provided to fit individual customer needs. If you use WiPOM, this is immediately available. Please contact [sales@bipom.com](mailto:sales@bipom.com) for signing up.

- MODES:**
- Cellular
  - Satellite
  - Radio
  - Wi-Fi
  - Bluetooth
  - ZigBee
  - DigiMesh™
  - Monnit™
  - GPS

- Applications**
- Oil & Gas
  - Irrigation
  - Metering
  - Energy
  - Machine Protection
  - Factory Automation





Questions ?