DAX View iX10 User Manual

6 NOV 2020

Contents

1. System Description and Scope of Work

1.1 Overview of EMS System

DAXView iX10 is an advanced facility monitoring and fault detection system. IoT Cloud ready to scale from a small number of in building nodes, to a large number of distributed nodes across multiple facilities. DAXView iX10 is expandable to support an extensive range of monitoring endpoints.

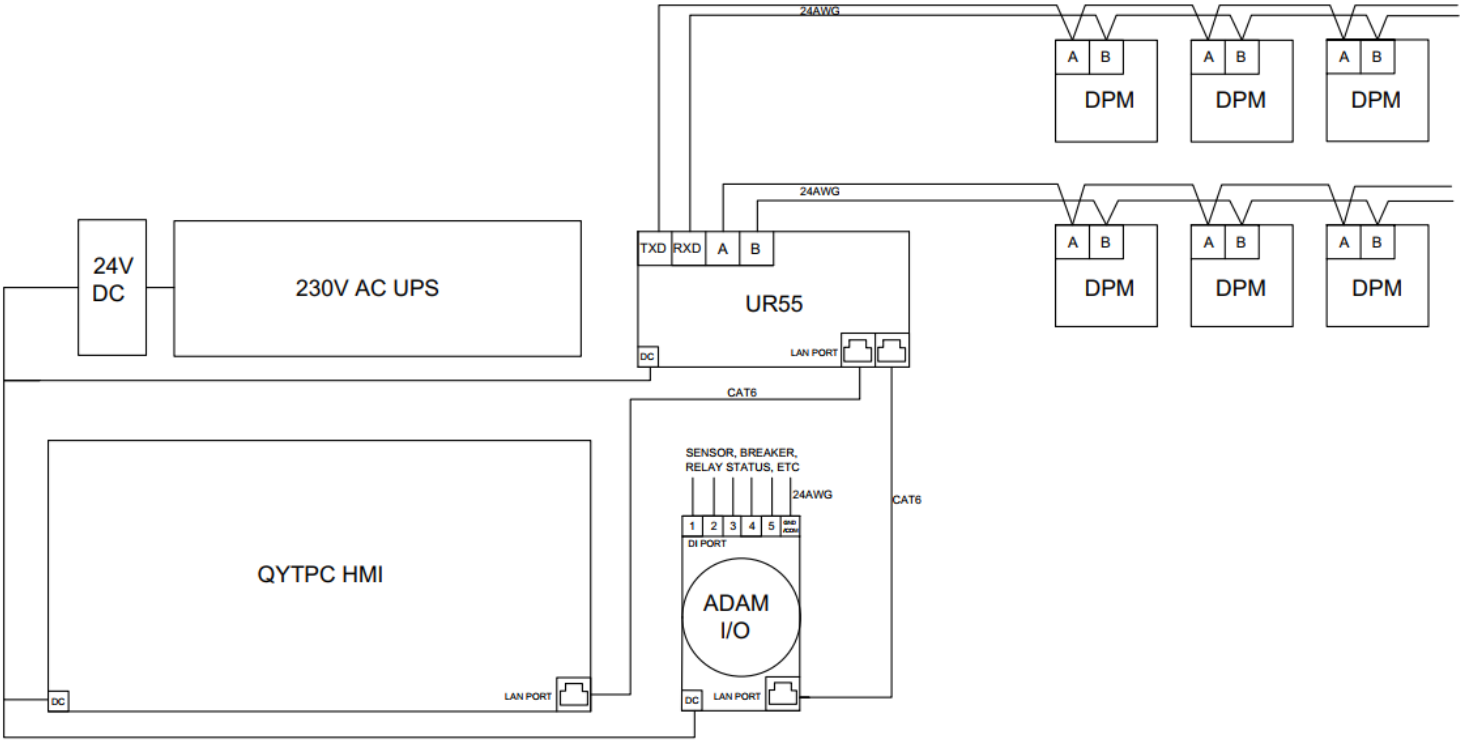
Intelligent FMS

- Real time event notification
- Equipment operation trend logging
- Anomaly pattern pre-fault detection
- IoT Cloud ready
- MH Protection Relay integrated

Timely notification of equipment fault is the key in managing facility KPI to prevent unplanned service downtime. The DAXView iX10 is designed to be easily integrated to electrical and environmental monitoring infrastructure and provide advanced remote monitoring functions in a compact package size.

Equipment faults are unpredictable and a proactive resolution can be applied before a problem strikes. The iX10 provides continuous data collection from power meters, water meters, protection relay and environment sensors to build a long-term energy & behavioural profile of the facility. Fault incident, tripping of circuit breaker, abnormal sensor level is detected immediately by iX10, which sends SMS and Email alerts to the operation team. Events are logged into memory and allow user to review at a later time.

1.2 System Diagram

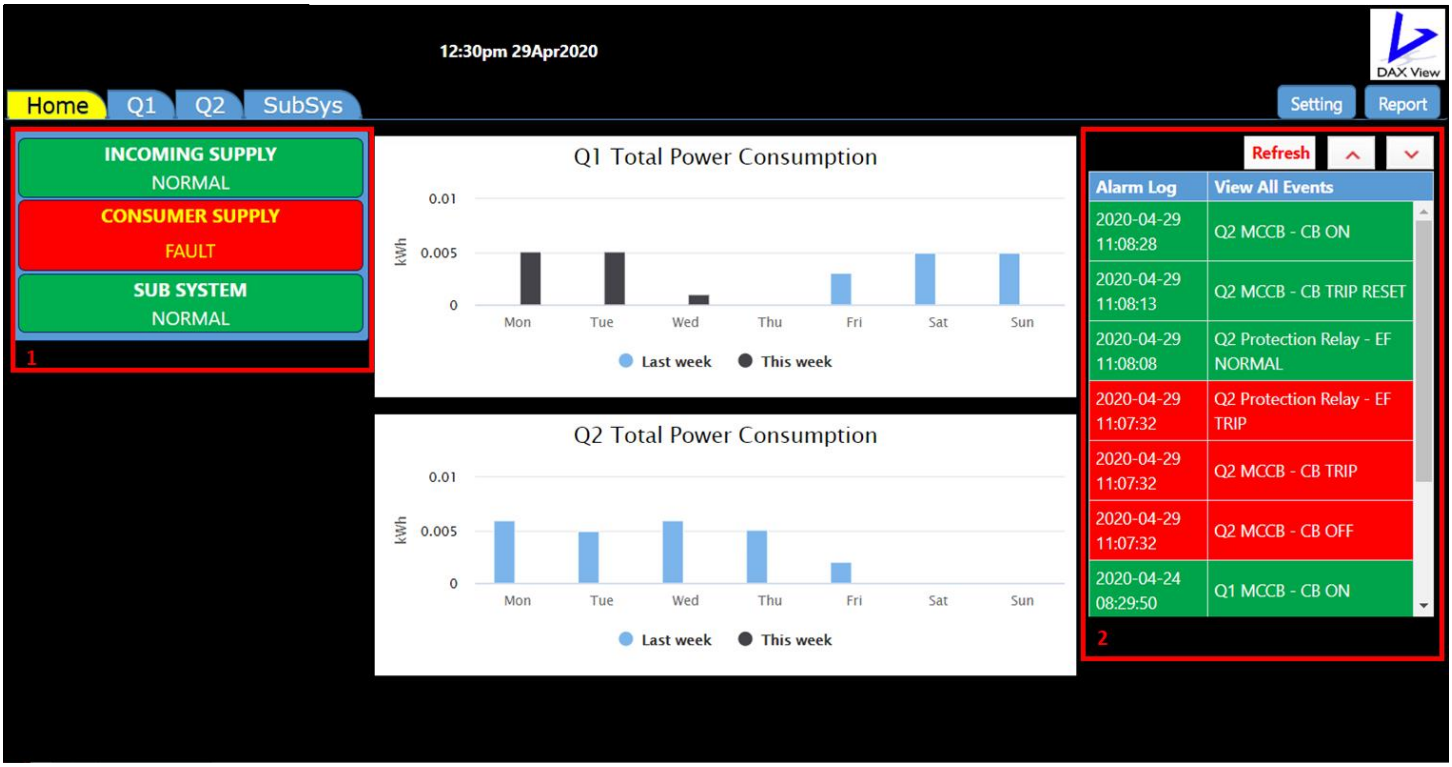


1.3 Material List

	Equipment/Component	Description	Model
1	I/O Data Acquisition Module	16Channels DI	ADAM-6251
2	Uninterrupted Power Supply	230V AC UPS	APC
3	4G Router c/w antenna	Router	UR55
4	Industrial Grade Touch Panel PC	11.6” Colour Display	PPC-P116BW
5	DC Power Supply	24V DC Supply	HDR-60-24

2. Operation Manual

2.1 Homepage



If iX10 is integrated with any energy monitoring device, such as digital power meter, the total power consumption bar chart overview will be displayed at the center.

1. Grouping status: indicate red alert when any device or connection in the group fails;
2. Alarm and operation log: display the recent alarm and the action normalizing the system.

2.2 Sub-page

1. Tab for sub pages;
2. Selection for detailed information related to this block;
3. Block for each connection (main incoming, feeders, etc) or device (water leakage sensors, temperature sensors).

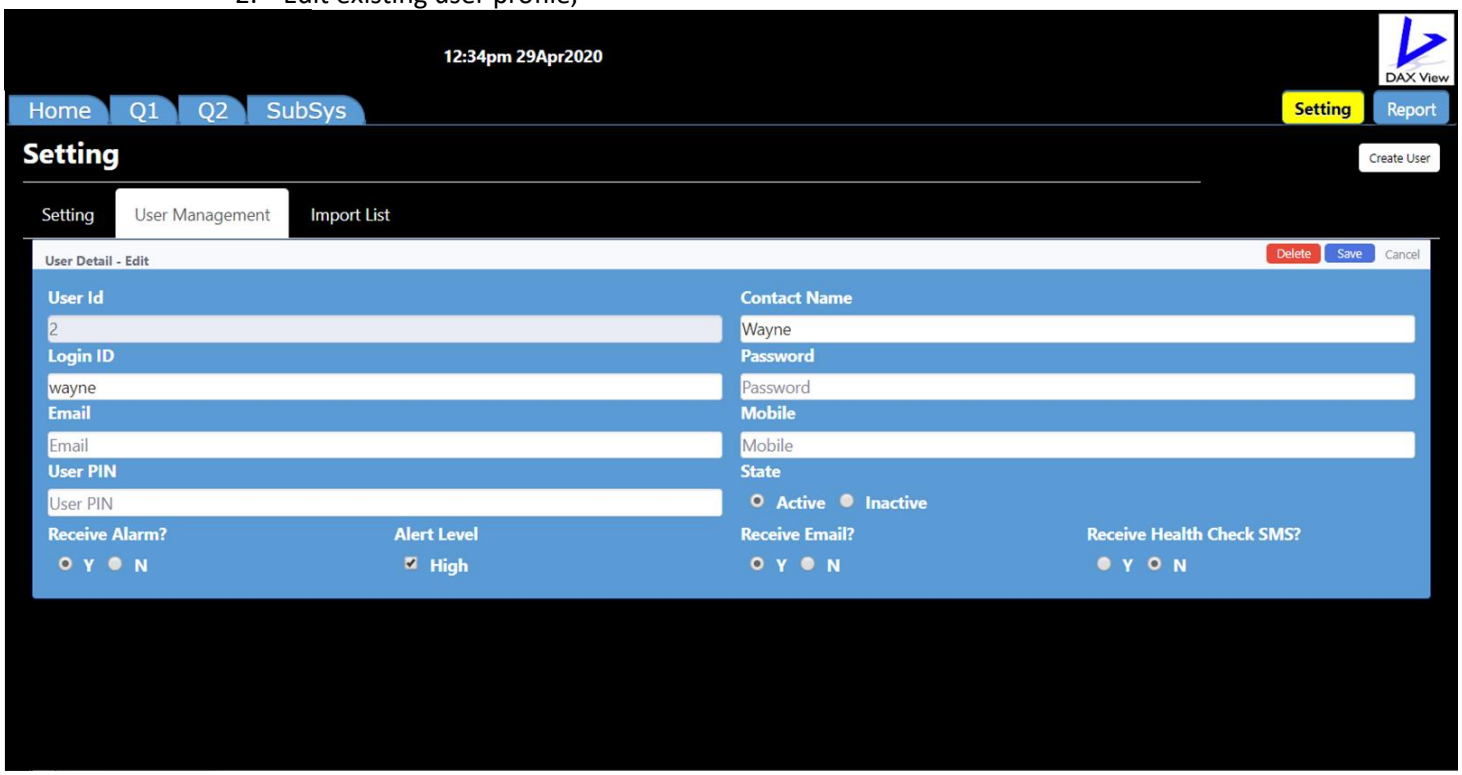
2.3 Detailed page

1. Selection of each device's or connection's individual alarm log;
2. Display of the recent alarm and the action normalizing the system;
3. Selection of showing alarm and operation in certain date range. When USB device is inserted to iX10, 'Save' button can save the current screenshot to it.

2.4 Setting – User management

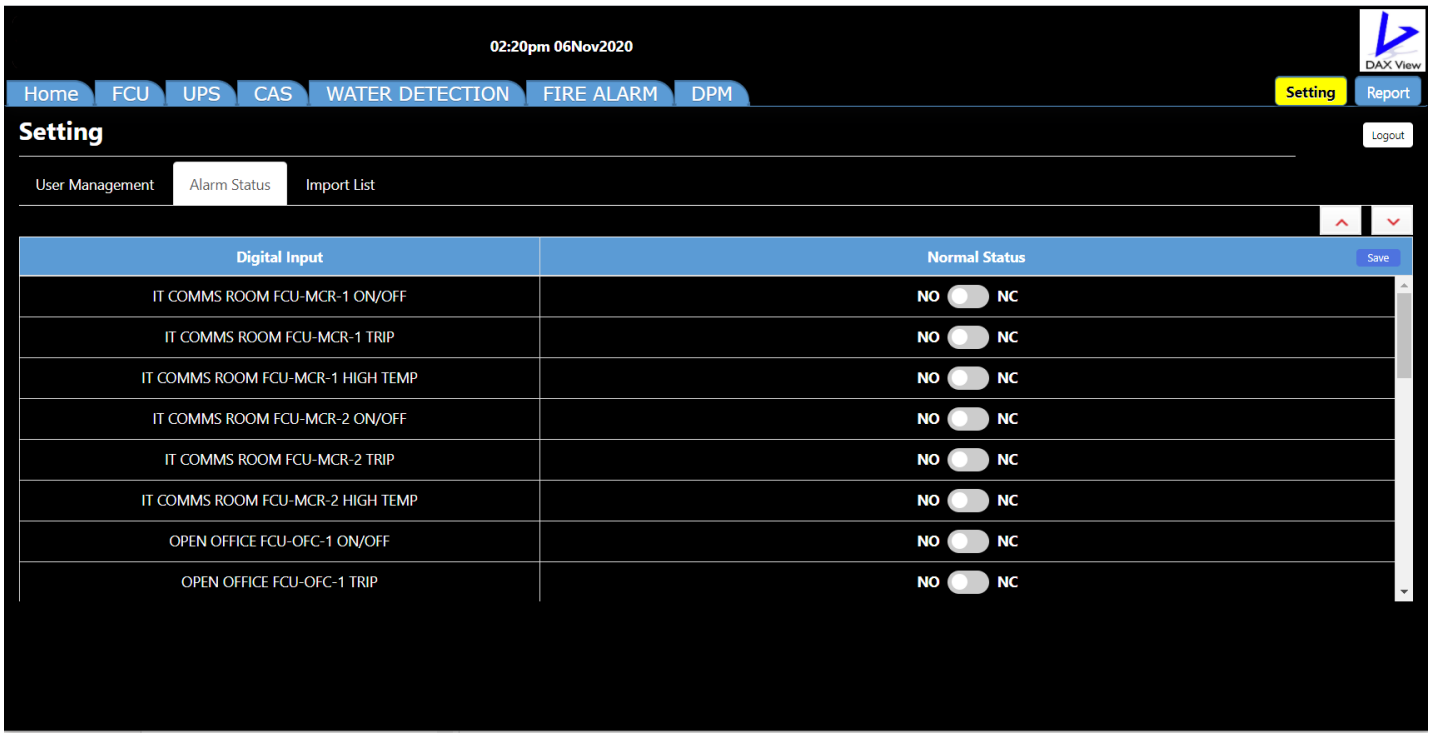
In “Setting” section:

1. Create new user profile;
2. Edit existing user profile;



- Type in personal information at corresponding column.
- Select the desired ‘Alert Level’ for receiving certain level of alarm notification SMS.
- ‘State: Inactive’ temporarily disable the user function without deleting profile.
- ‘Receive Email’ let users to receive daily report of the system.
- ‘Receive Health Check SMS’ let users to receive system health check every morning.

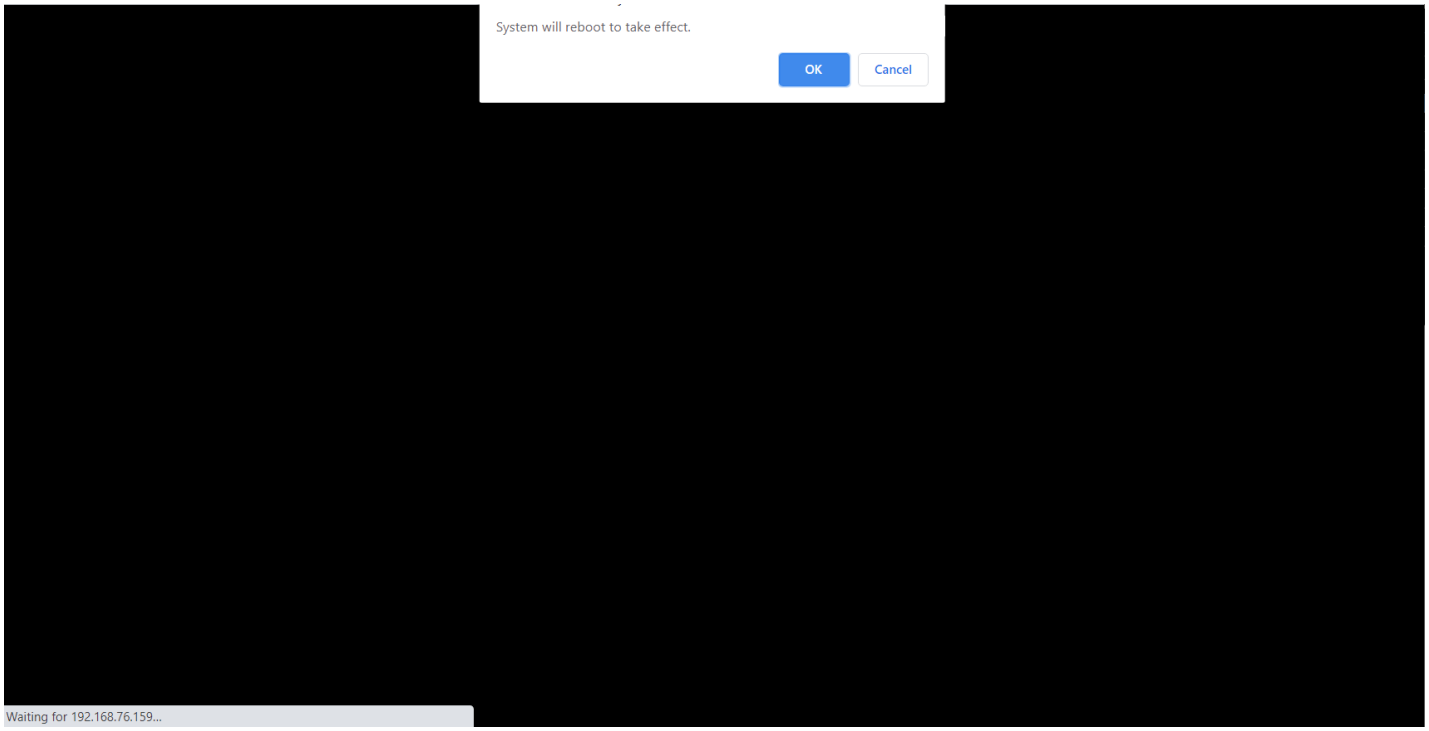
2.5 Setting – Alarm Status



In “Alarm Status” section, user is able to change the contact status for each monitoring point:

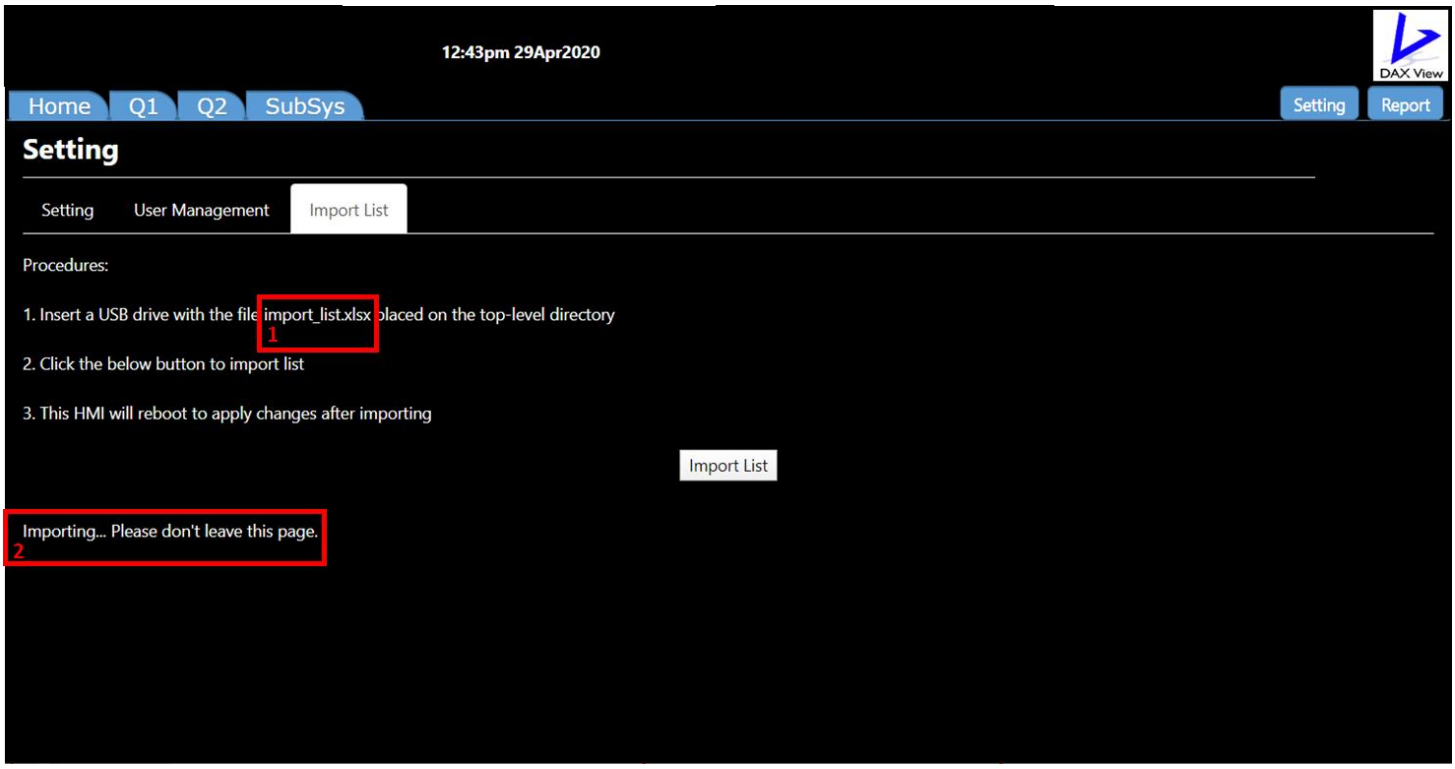
“NO” stands for “Normal Open”

“NC” stands for “Normal Close”



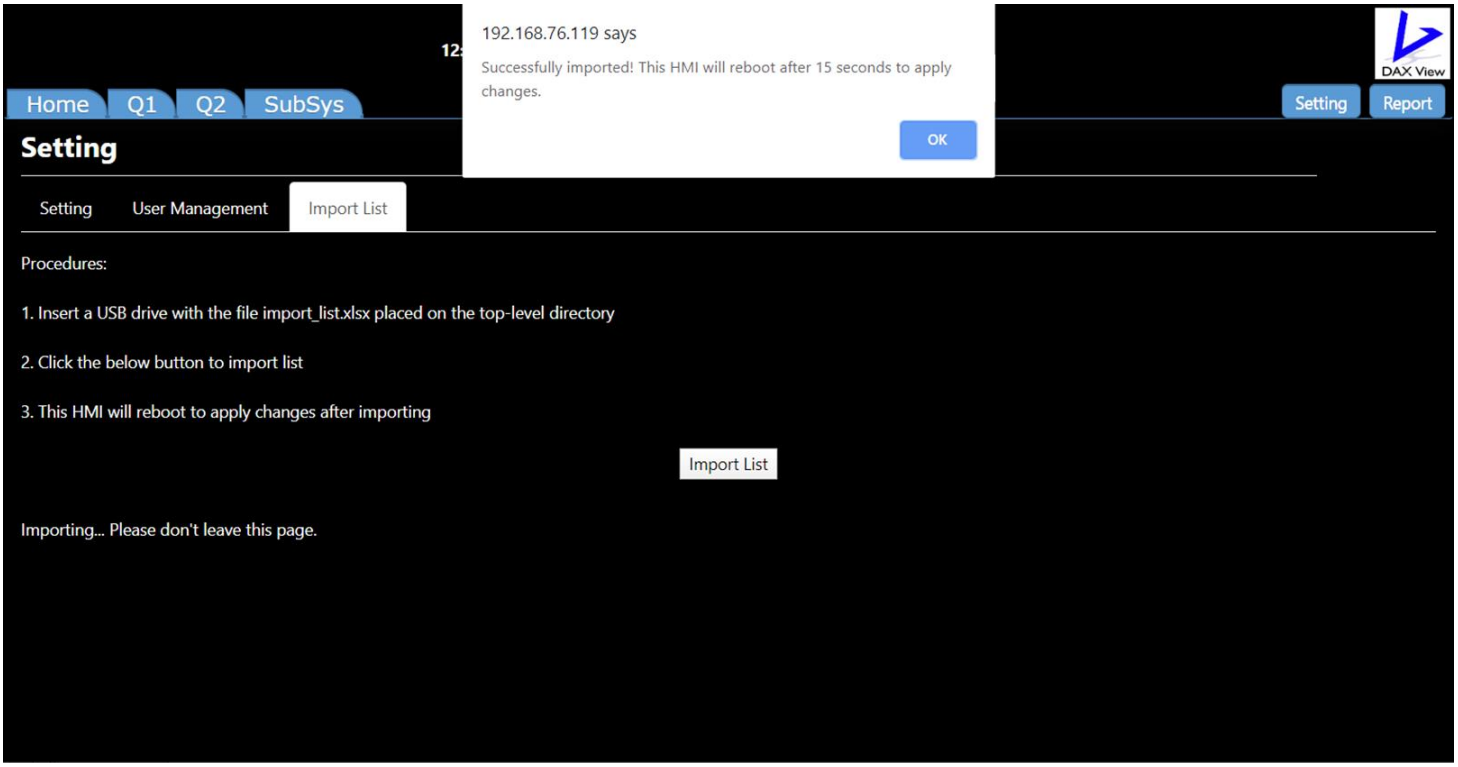
System will reboot after clicking “Save” to take effect for the changes.

2.6 Setting – Import List

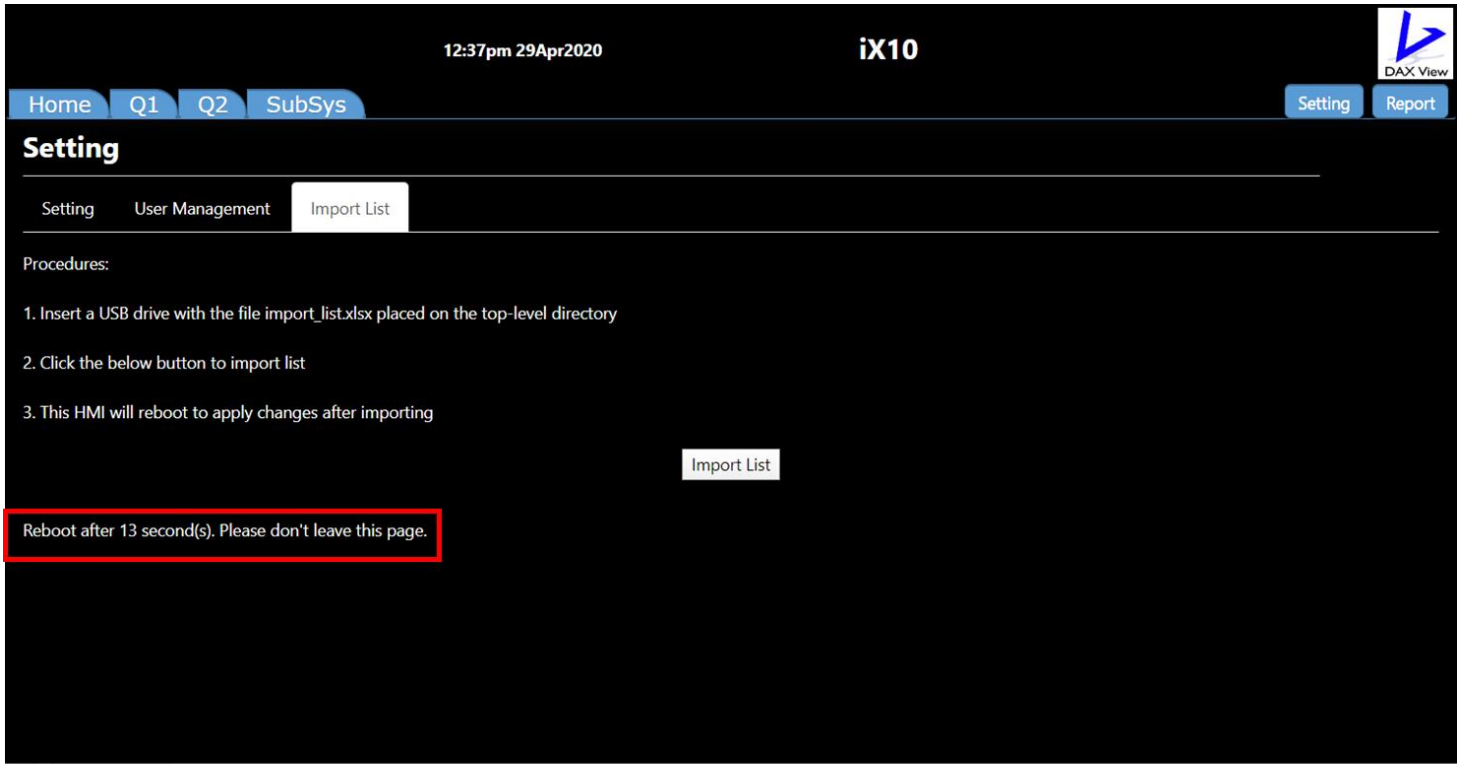


In this page, users can import the mapping list to fully customize the system layout by following the procedures.

1. The mapping list file need to strictly follow this name and format (.xlsx).
2. When importing mapping list, users shall not leave this page.

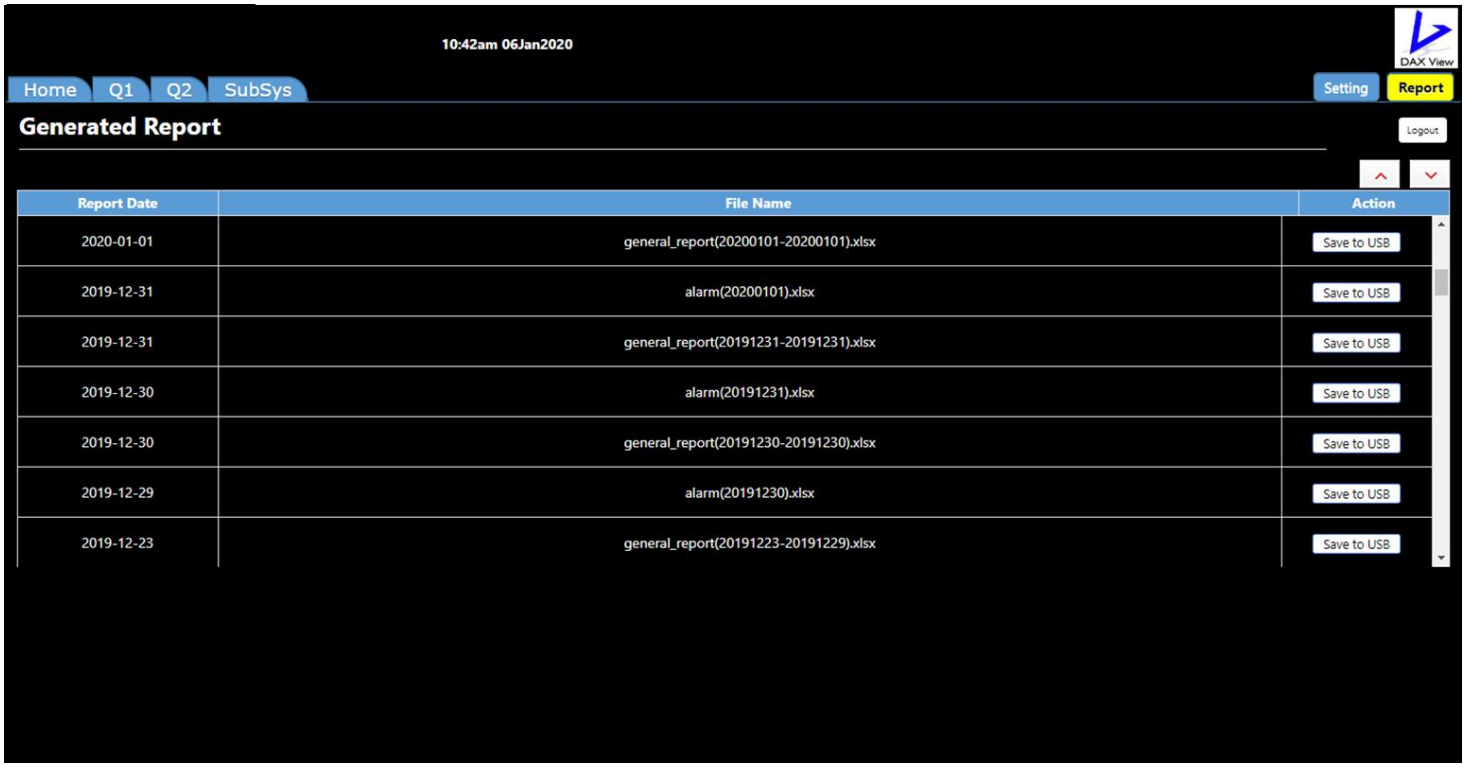


System will notify users when import completes.



Users need to stay at this page to wait for the system reboot. After reboot, the change will take effect.

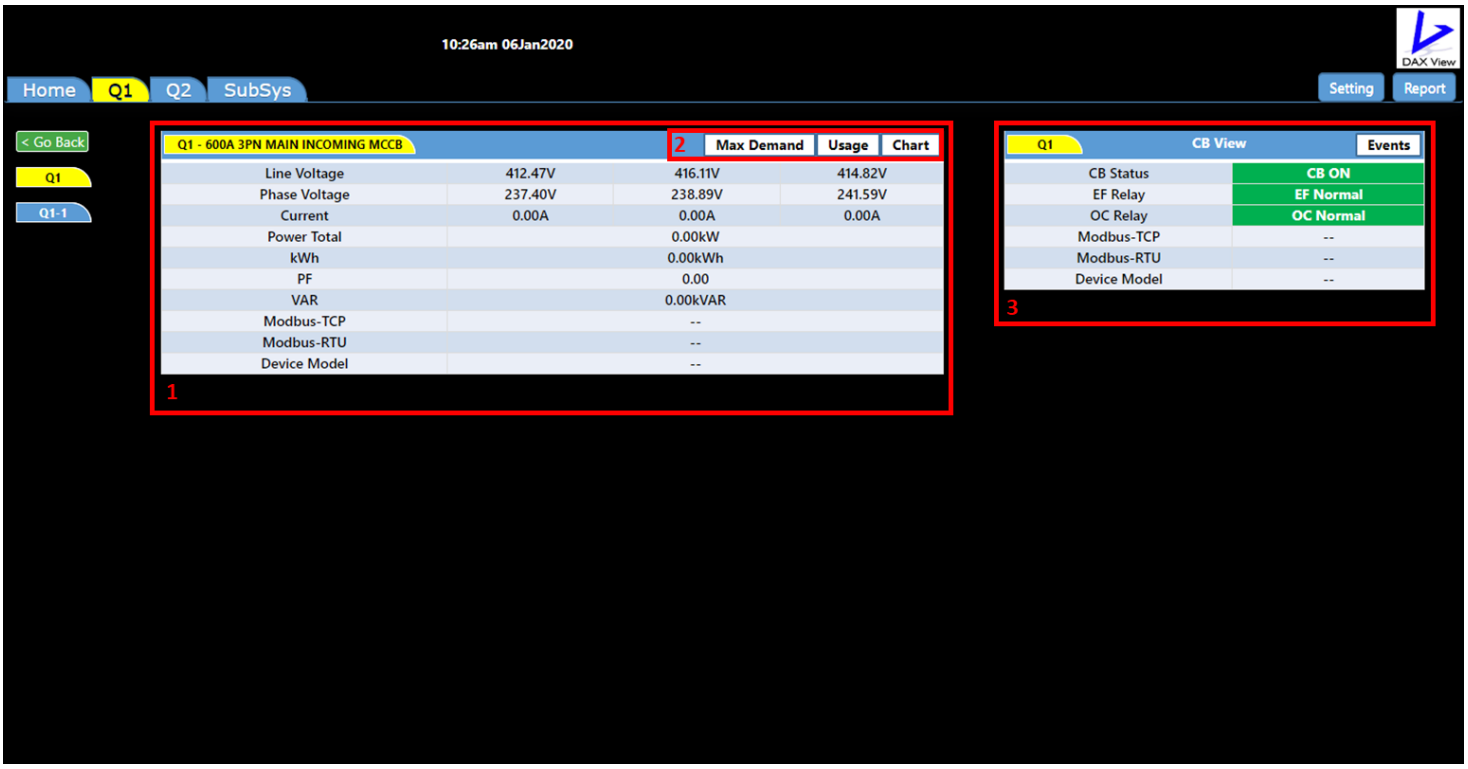
2.7 Report



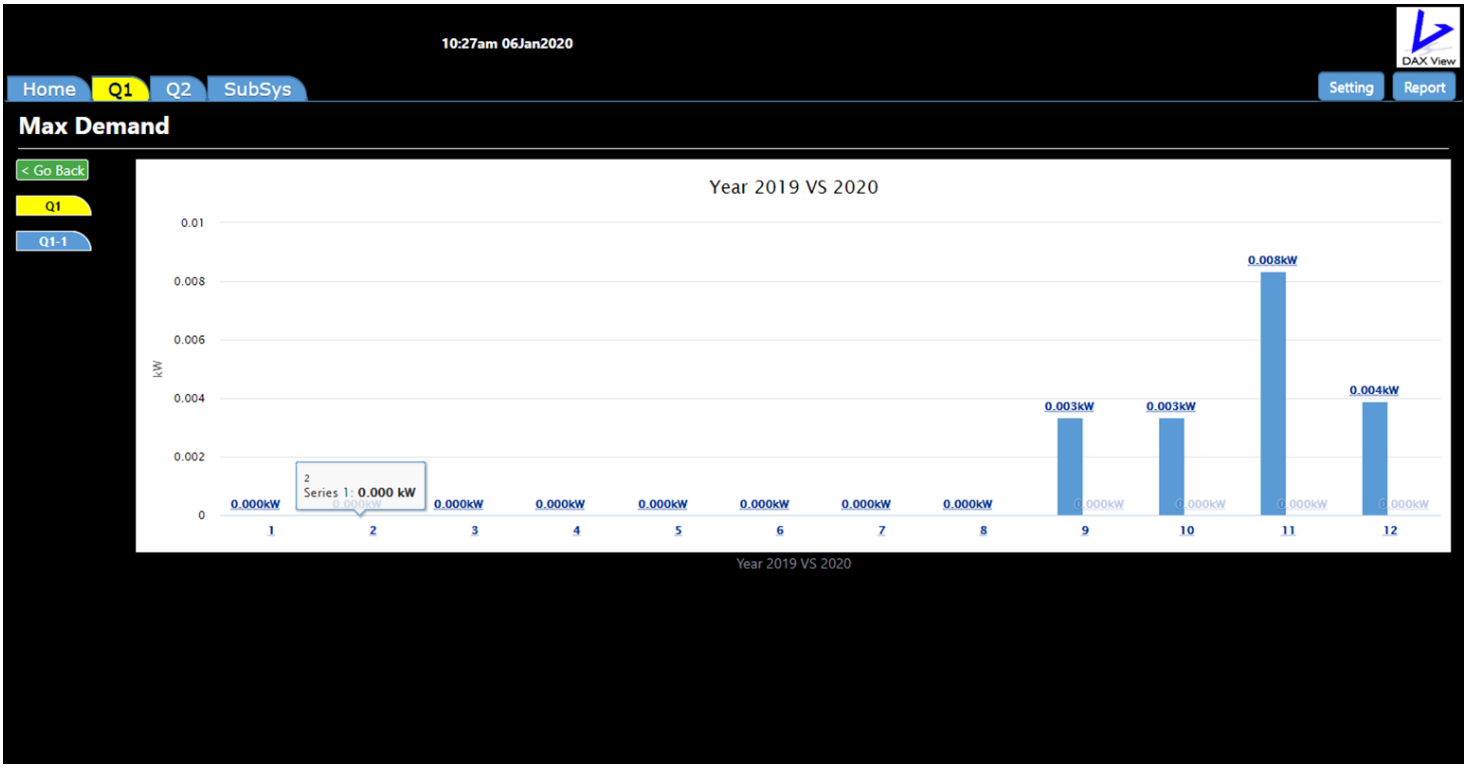
Plug in USB device to export the daily report. System will generate two reports each day, general report for power meter historical readings (if system is integrated with energy monitoring device) and alarm report for the whole alarm log.

2.7 Power Meter Detailed Page

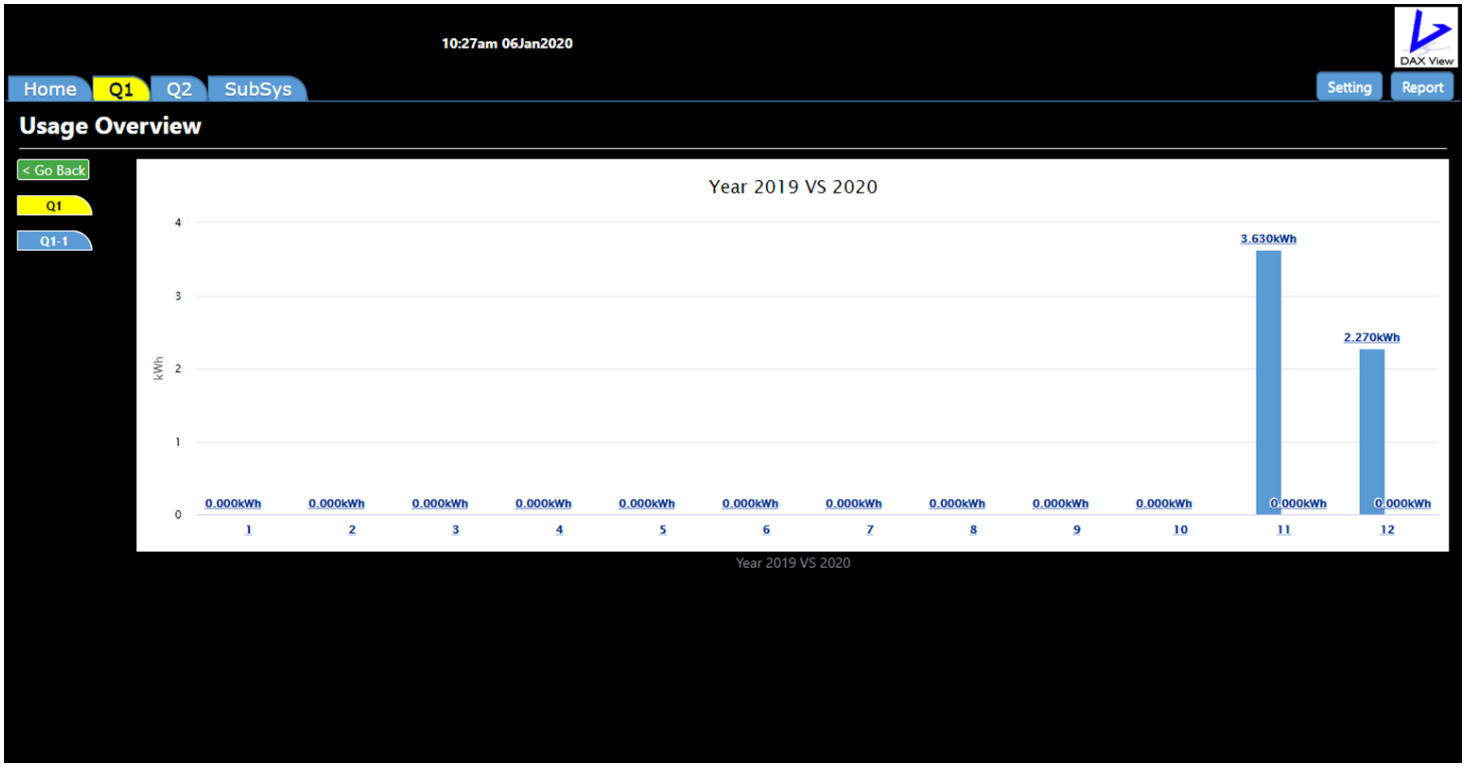
If iX10 is integrated with energy monitoring device, users can see following pages in 'detailed information' under each block:



1. Live reading of energy monitoring device;
2. Barchart of 'Max Demand' and 'Usage', and Line chart of live reading;
3. Live circuit breaker and relay status.



Max Demand: bars can be clicked to go to daily and hourly reading.



Usage: bars can be clicked to go to daily and hourly reading.

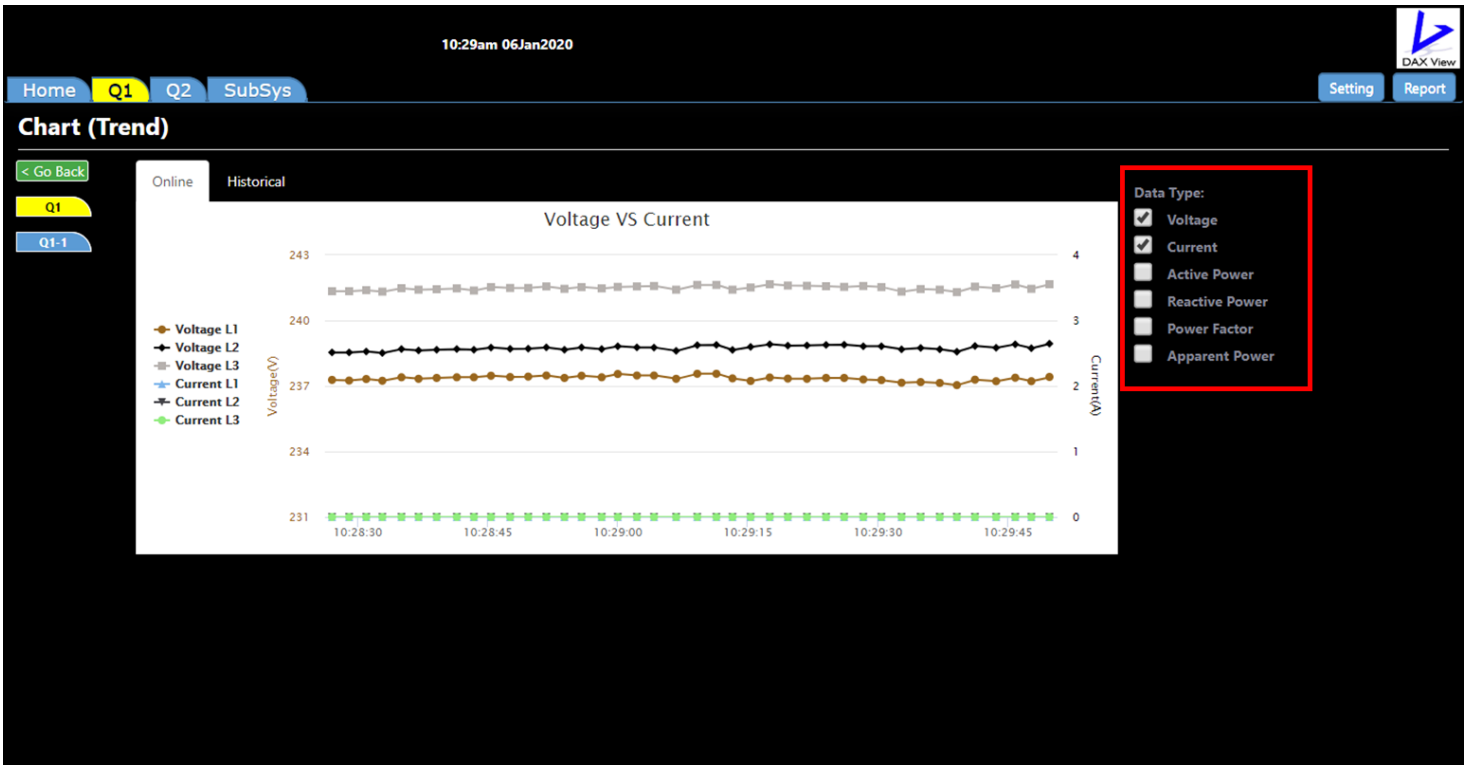
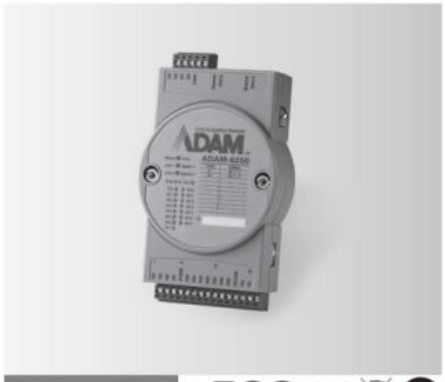


Chart: live line chart of energy monitoring device's reading. Two data types can be selected at one time to observe.

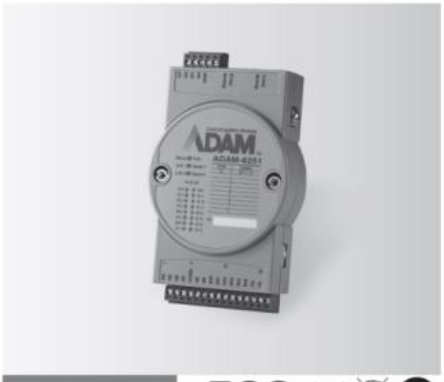
1. Selection of showing historical readings in certain date range.
2. Two data types can be selected at one time to observe.

Appendix. Components Catalogue

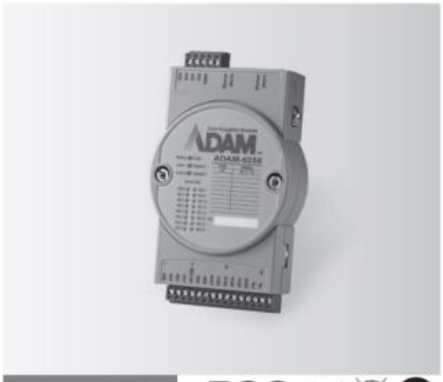
iX10
I/O Module



ADAM-6250



ADAM-6251



ADAM-6256

Specifications

Digital Input

- **Channels** — ADAM-6250: 8
ADAM-6251: 16
- **Dry Contact** — Logic 0: Open
Logic 1: Closed to DGND
- **Wet Contact** — Logic 0: 0 ~ 3 V_{DC} or 0 ~ -3 V_{DC}
Logic 1: 10 ~ 30 V_{DC} or -10 ~ -30 V_{DC}
(Dry/Wet Contact decided by Switch)
- **Input Impedance** — 5.2 kΩ (Wet Contact)
- **Transition Time** — 0.2 ms
- **Frequency Input Range** — 0.1 ~ 3kHz
- **Counter Input** — 3kHz (32 bit + 1 bit overflow)
- **Keep/Discard Counter Value when power off**
- **Supports Inverted DI Status**

Digital Output

- **Channels** — ADAM-6250: 7 (Sink Type)
ADAM-6256: 16 (Sink Type)
- **Output Voltage Range** — 10 ~ 30 V_{DC}
- **Normal Output Current** — 100 mA (per channel)
- **Pulse Output** — Up to 5kHz
- **Delay Output** — High-to-Low and Low-to-High

Ordering Information

- **ADAM-6250** — 15-ch Isolated Digital I/O Modbus TCP Module
- **ADAM-6251** — 16-ch Isolated Digital Input Modbus TCP Module
- **ADAM-6256** — 16-ch Isolated Digital Output Modbus TCP Module

Common Specifications

General

- **Ethernet** — 2-port 10/100 Base-TX (for Daisy Chain)
- **LED Indication** — ADAM-6250: 8 DI + 7 DO
ADAM-6251: 16 DI
ADAM-6256: 16 DO
- **Protocol** — Modbus/TCP, TCP/IP, UDP, HTTP, DHCP, MQTT, SNMP
- **Connector** — Plug-in 5P/15P screw terminal blocks
- **Power Input** — 10 - 30 V_{DC} (24 V_{DC} standard)
- **Watchdog Timer** — System (1.6 seconds)
Communication (Programmable)
- **Dimensions** — 70 x 122 x 27 mm
- **Protection** — Built-in TVS/ESD protection
Power Reversal protection
Over Voltage protection: +/- 35V_{DC}
Isolation protection: 2500 V_{DC}
- **Power Consumption** — ADAM-6250: 3 W @ 24 V_{DC}
ADAM-6251: 2.7 W @ 24 V_{DC}
ADAM-6256: 3.2 W @ 24 V_{DC}

Features

- Daisy chain connection with auto-bypass protection
- Remote monitoring and control with smart phone/pad
- Group configuration capability for multiple module setup
- DI/O LED Indication
- Flexible user-defined Modbus address.
- Intelligent control ability by Peer-to-Peer and GCL function
- Multiple protocol support: Modbus/TCP, TCP/IP, UDP, HTTP, DHCP, MQTT, SNMP
- Web language support: XML, HTML 5, Java Script
- System configuration backup
- User Access Control

Environment

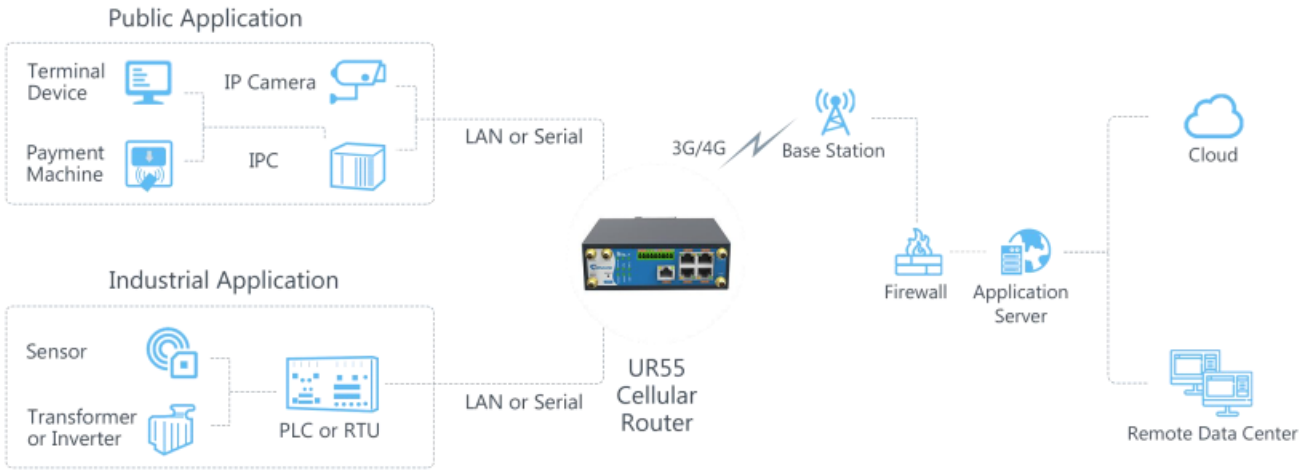
- **Operating Temperature** — -10 ~ 70°C (14 ~ 158°F)
-40 ~ 70°C (-40~158°F) (B version)
- **Storage Temperature** — -20 ~ 80°C (-4 ~ 176°F)
-40 ~ 80°C (-40~176°F) (B version)
- **Operating Humidity** — 20 ~ 95% RH (non-condensing)
- **Storage Humidity** — 0 ~ 95% RH (non-condensing)

Back-UPS 625 Specifications	
Model Number	BX625CI-MS
Output	
Output Capacity	625 VA / 325 Watts
Output Voltage / Frequency (On utility)	230V / 45-65 Hz
Output Voltage / Frequency (On battery)	230V +/-8%, 50 or 60 Hz +/-1 Hz (auto-sensing)
Output Connections	3 “Asia universal” outlets (all with battery backup and surge protection)
Waveform Type	Stepped Approximation to Sine Wave
Input	
Input Voltage / Frequency	230V / 45-65 Hz
Input Connection	1 x 1.2M power cable with NEMA 5-15P plug
Surge Protection	
AC Power Surge Protection	All outlets
Physical	
Unit Dimensions (H x W x D)	278.5 x 160 x 88.5 mm
Unit Weight	4.8 kg
Shipping Dimensions (H x W x D)	399 x 215 x 128 mm
Shipping Weight	5.2 kg
Color	Black
UPC Code	731304308171
Battery	
Battery Type	Maintenance-free, sealed lead-acid battery, leak proof
Battery Size	12 volt, 7.0 Ah
Management	
Alarms	Visual (LED) and audible alarms
Adjustable Sensitivity and Transfer Voltage	Low, Medium (default), High

iX10

4G Modem

Application Example



Specifications

Cellular Interfaces	
Connectors	2 × 50 Ω SMA (Center PIN: SMA Female)
SIM Slots	2
Wi-Fi Interface (Optional)	
Connectors	2 × 50 Ω SMA (Center PIN: SMA Female)
Standards	IEEE 802.11b/g/n (optional: IEEE 802.11ac)
Tx Power	802.11b: 16 dBm +/-1.5 dBm (11 Mbps) 802.11g: 15 dBm +/-1.5 dBm (54 Mbps) 802.11n@2.4 GHz: 14 dBm +/-1.5 dBm (HT20 MCS7) 802.11ac@5 GHz: 10 dBm +/-2 dBm (HT80 MCS9)
Rx Sensitivity	802.11b: <= -75 dBm (11 Mbps) 802.11g: <= -68 dBm (54 Mbps) 802.11n@2.4 GHz: <= -67 dBm (HT20 MCS7) 802.11n@2.4 GHz: <= -64 dBm (HT40 MCS7) 802.11ac@5 GHz: <= -64 dBm (HT20 MCS8) 802.11ac@5 GHz: <= -55 dBm (HT40 MCS9) 802.11ac@5 GHz: <= -64 dBm (HT80 MCS9)
Modes	Support for multiple SSID, AP and Client mode
Security	WPA/WPA2 authentication, WEP/TKIP/AES encryption

iX10

4G Modem

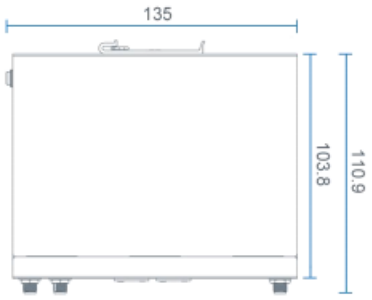
Hardware System	
CPU	528 MHz, ARM Cortex A7
Memory	128 MB Flash, 128 MB DDR3 RAM
Storage	1 × Micro SD
Ethernet Interface	
Ports	5 × RJ-45
Property	1 × WAN + 4 × LAN or 2 × WAN + 3 × LAN
Physical Layer	10/100 Base-T (IEEE 802.3)
Data Rate	10/100 Mbps (Auto-Sensing)
Interface	Auto MDI/MDIX
Mode	Full or half duplex (Auto-Sensing)
Serial Interface (Optional)	
Ports	1 × RS232 + 1 × RS485 or 2 × RS232 or 2 × RS485
Connector	Terminal block
Baud Rate	300bps to 230400bps
IO (Optional)	
Connector	(4) pin screw down terminal block
Digital	2 × DI + 2 × DO
GPS (Optional)	
Connectors	1 × 50 Ω SMA (Center PIN: SMA Female)
Sensitivity	-167dBm@Tracking, -149dBm@Acquisition, -161dBm@Re-acquisition
Position Accuracy	<2.5m CEP
Protocols	NMEA 0183, PMTK
Software	
Network Protocols	PPP, PPPoE, SNMP v1/v2c/v3, TCP, UDP, DHCP, RIPv1/v2, OSPF, DDNS, VRRP, HTTP, HTTPS, DNS, ARP, QOS, SNTP, Telnet, VLAN, SSH, etc.
VPN Tunnel	DMVPN/IPsec/OpenVPN/PPTP/L2TP/GRE
Access Authentication	CHAP/PAP/MS-CHAP/MS-CHAPV2
Firewall	ACL/DMZ/Port Mapping/MAC Binding
Management	Web, CLI, SMS, On-demand dial up
AAA	Radius, TACACS+, LDAP, Local Authentication
Multilevel Authority	Multiple Levels of User Authority
Reliability	VRRP, WAN Failover, Dual SIM Backup
Serial Port	Transparent (TCP Client/Server, UDP), Modbus Gateway (Modbus RTU to Modbus TCP)

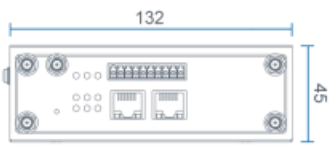
iX10

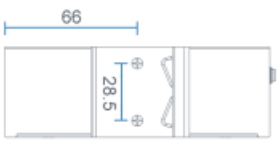
4G Modem

Power Supply and Consumption	
Connector	2-pin with 5.08 mm terminal block
Input Voltage	9-48 VDC
Power Consumption	Typical 2.8 W (Max 5.0 W)
Physical Characteristics	
Ingress Protection	IP30
Housing & Weight	Metal
Dimensions	132 x 103.8 x 45 mm (5.20 x 4.09 x 1.77 in)
Mounting	Desktop, Wall or DIN Rail Mounting
Others	
Reset Button	1 × RESET
LED Indicators	1 × POWER, 1 × WLAN, 1 × STATUS, 1 × VPN, 1 × SIM1, 1 × SIM2, 3 × Signal Strength
Built-in	Watchdog, RTC
Certifications	RoHS, CE, FCC
EMC	IEC 61000-4-2 Level 3 IEC 61000-4-3 Level 4 IEC 61000-4-4 Level 3 IEC 61000-4-5 Level 4 IEC 61000-4-6 Level 3 IEC 61000-4-8 Level 4
Environmental	
Operating Temperature	-40°C to +70°C (-40℉ to +158℉) Reduced Cellular Performance Above 60°C
Storage Temperature	-40°C to +85°C (-40℉ to +185℉)
Ethernet Isolation	1.5 kV RMS
Relative Humidity	0% to 95% (non-condensing) at 25°C/77℉

Product Images/Dimensions (mm)







iX10
DC Power Supply

SPECIFICATION

MODEL		HDR-60-5	HDR-60-12	HDR-60-15	HDR-60-24	HDR-60-48
OUTPUT	DC VOLTAGE	5V	12V	15V	24V	48V
	RATED CURRENT	6.5A	4.5A	4A	2.5A	1.25A
	CURRENT RANGE	0 ~ 6.5A	0 ~ 4.5A	0 ~ 4A	0 ~ 2.5A	0 ~ 1.25A
	RATED POWER	32.5W	54W	60W	60W	60W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	120mVp-p	120mVp-p	150mVp-p	240mVp-p
	VOLTAGE ADJ. RANGE	5.0 ~ 5.5V	10.8 ~ 13.8V	13.5 ~ 18V	21.6 ~ 29V	43.2 ~ 55.2V
	VOLTAGE TOLERANCE Note.3	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LOAD REGULATION	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE TIME	500ms, 50ms/230VAC 500ms, 50ms/115VAC at full load				
	HOLD UP TIME (Typ.)	30ms/230VAC 12ms/115VAC at full load				
INPUT	VOLTAGE RANGE	85 ~ 264VAC (277VAC operational) 120 ~ 370VDC (390VDC operational)				
	FREQUENCY RANGE	47 ~ 63Hz				
	EFFICIENCY (Typ.)	85%	88%	89%	90%	91%
	AC CURRENT (Typ.)	1.2A/115VAC 0.8A/230VAC				
	INRUSH CURRENT (Typ.)	COLD START 30A/115VAC 60A/230VAC				
PROTECTION	OVERLOAD	105 ~ 160% rated output power				
		Hiccup mode when output voltage <50%, recovers automatically after fault condition is removed Constant current limiting within 50% ~100% rated output voltage, recovers automatically after fault condition is removed				
	OVER VOLTAGE	5.75 ~ 6.75V	14.2 ~ 16.2V	18.8 ~ 22.5V	30 ~ 36V	56.5 ~ 64.8V
		Protection type : Shut down o/p voltage, re-power on to recover				
ENVIRONMENT	WORKING TEMP.	-30 ~ +70℃ (Refer to "Derating Curve")				
	WORKING HUMIDITY	20 ~ 90% RH non-condensing				
	STORAGE TEMP., HUMIDITY	-40 ~ +85℃, 10 ~ 95% RH non-condensing				
	TEMP. COEFFICIENT	±0.03%/℃ (0 ~ 50℃) RH non-condensing				
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes; Mounting: Compliance to IEC60068-2-6				
	OPERATING ALTITUDE	2000 meters				
	OVER VOLTAGE CATEGORY	Ⅲ ; According to EN61558, EN50178,EN60664-1, EN62477-1 ; altitude up to 2000 meters				
SAFETY & EMC (Note 4)	SAFETY STANDARDS	UL62368-1, UL508, TUV EN61558-2-16, IEC62368-1, EAC TP TC 004, BSMI CNS14336-1 approved; Design refer to TUV EN62368-1				
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC				
	ISOLATION RESISTANCE	I/P-O/P:100M Ohms / 500VDC / 25℃/ 70% RH				
	EMC EMISSION	**Parameter**	**Standard**	**Test Level / Note**		
		Conducted	EN55032(CISPR32), CNS13438	Class B		
		Radiated	EN55032(CISPR32), CNS13438	Class B		
		Harmonic Current	EN61000-3-2	Class A		
		Voltage Flicker	EN61000-3-3	-------		
	EMC IMMUNITY	EN55024, EN55035, EN61000-6-2, EN61204-3				
		Parameter	**Standard**	**Test Level /Note**		
		ESD	EN61000-4-2	Level 3, 8KV air; Level 2, 4KV contact, criteria A		
		Radiated Susceptibility	EN61000-4-3	Level 3, criteria A		
		EFT/Burest	EN61000-4-4	Level 3, criteria A		
		Surge	EN61000-4-5	Level 4,2KV/L-N, criteria A		
		Conducted	EN61000-4-6	Level 3, criteria A		
		Magnetic Field	EN61000-4-8	Level 4, criteria A		
		Voltage Dips and interruptions	EN61000-4-11	＞95% dip 0. 5 periods, 30% dip 25 periods, ＞95% interruptions 250 periods		
OTHERS	MTBF	927.6K hrs min. MIL-HDBK-217F (25℃)				
	DIMENSION	52.5*90*54.5mm (W*H*D)				
	PACKING	190g;60pcs/12.4Kg/0.97CUFT				
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature. 2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1μf & 47μf parallel capacitor. 3. Tolerance : includes set up tolerance, line regulation and load regulation. 4. The power supply is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies." (as available on http://www.meanwell.com) 5. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).					

iX10
Industrial Touch Panel PC

Industrial grade touch screen HMI computer designed for automation control, energy management, security system and robotic system application. The product utilizes energy efficient processor, high reliability fanless design, rugged metal alloy casing that double as the system heatsink.

Features

- Intel J1900 CPU: 2.0GHz, Bay-Trail chipset
- 4GB DDR3 RAM
- 64GB Solid-state Drive SSD
- Intel HD GPU
- 11.6" TFT LCD, resolution 1366*768, 4-wire resistive touch input
- Fanless passive cooling
- Aluminium alloy frame and case, front waterproof

I/O Ports

- 2xRJ45 Ethernet Intel 82583V dual network port
- 1xVGA
- 1xHDMI
- 2xUSB 2.0
- 2xRS232
- RTL ALC662 Audio port

Operation & Installation

- DC24V Input 20W Consumption
- Operating temperature 0-60°C
- Operating humidity 10-95%RH @40° C non-condensing
- Environment protection IP65 (front panel mounted with rubber gasket seal)
- Dimension 308mm x195mm x58mm
- Weight 2.5kg
- Mounting Panel mounting with rear fastening bolt
- Operating system Linux Ubuntu v18 LTE