ENERGY
SAVINGS PLUS

ENISCOPE®

IoT Energy Management & Control Platform for Multi-Site Estates

Document detailing the full range of benefits and features Eniscope delivers to energy saving projects across the world.

[SWITCH ON TO EFFICIENCY]

Energy Savings Plus

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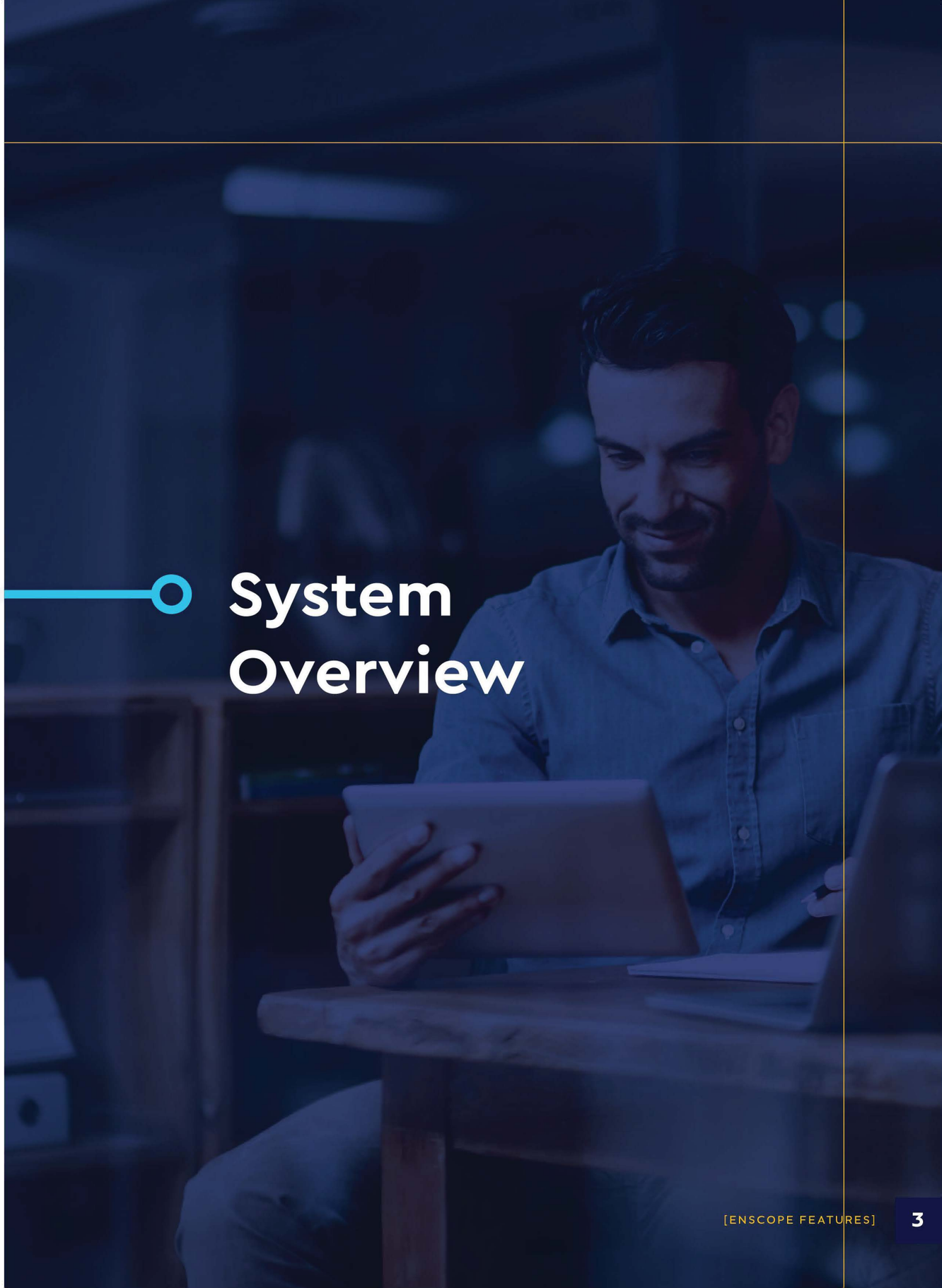


System Overview

0 System Overview

Eniscope is so much more than just a meter

Measurement & Verification (M&V) is at the core of what it does, but the platform has evolved into something far more versatile, effective and capable. It is an end-to-end, real time energy management platform - with hardware, software and IoT capabilities all rolled into one compact, easy to install product.

An Energy Management Ecosystem

The contents of this document cover the many features and capabilities delivered, or able to be delivered, by the Eniscope system in projects all across the world.

On the hardware side, we offer a system that takes up less space than its competitors, that is easier and faster to install than its competitors and which outperforms its competitors in almost all critical categories - from Communication Protocols (including MQTT) to real-time metering parameters, expandable on-board storage to wireless sensor and control functionality.

We offer a product that is future-proof; configurable and updatable from the cloud, and evolved in real time with the latest advances from our R&D department.

On the software side, our product has been certified by IBM as 'Watson Ready' and is trusted by their team in an increasing number of projects globally. It is compatible with almost any BMS system with no SW development required, and provides all of its monitoring, analytical and reporting functionality as standard within its own proprietary cloud-interface - with no reliance on third-party BMS systems. That includes alarms, mobile analytics and scheduling functionality.

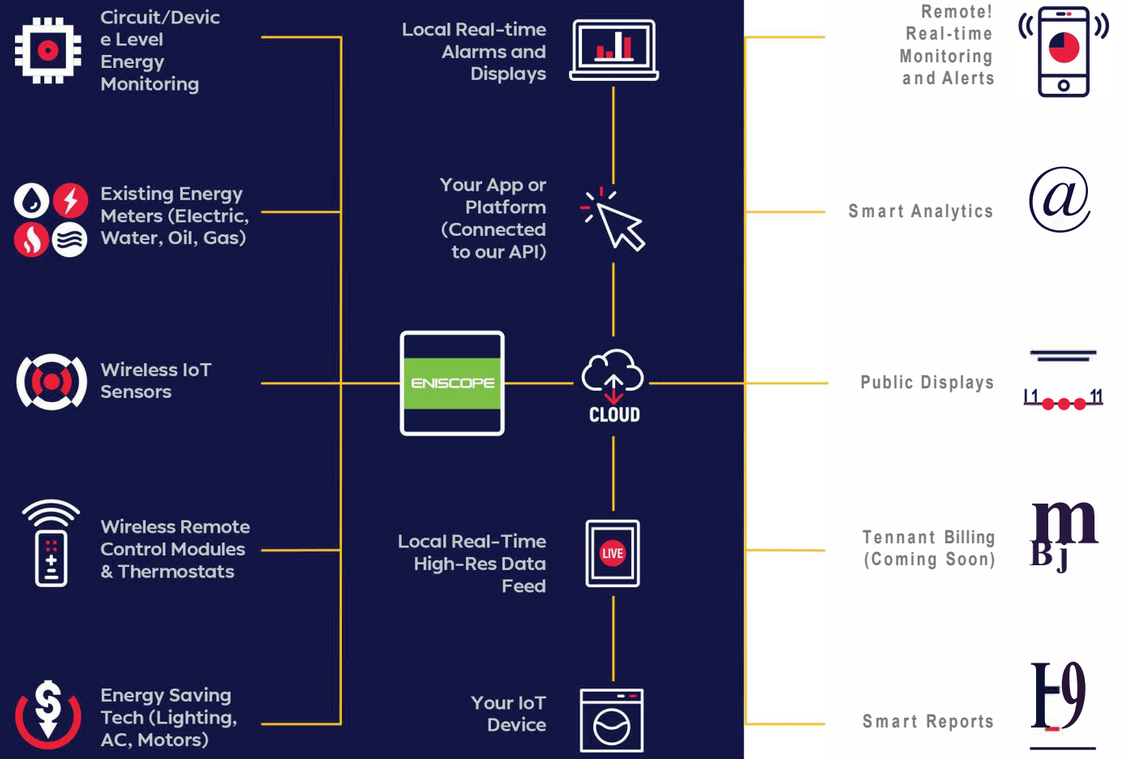
And with recent product developments, Eniscope now offers wireless sensors and on/off control as part of its wider suite of supporting products.

"With Eniscope, we have brought together in harmony all the features and functionality that add the greatest value to energy saving projects around the world. It's the culmination of over a decade of constant R&D, and the result is a product that is installed in over 30 countries, in thousands of facilities, with huge brands like KFC, 7-Eleven, Telefonica and IBM. It is the heart of the world's largest energy efficiency project - worth over $500m right now."

TROY WRIGLEY,
CEO & FOUNDER

System Overview Diagram

*Eniscope Hybrid provides the on-board metering, data acquisition, edge computing and internet gateway capabilities that sit at the heart of this ecosystem



Future-Ready

As a manufacturer and innovator, it is Best.Energy's mission to create an all-encompassing solution suite for energy management projects, with Eniscope at its core. It is that mission which has led us to create five new products in a suite of 'Eniscope Air' solutions, each integrating with Eniscope to expand its capabilities deeper into IoT.

Through these products, we will very soon provide global energy saving projects with an advanced new multiple-sensor solution (temperature, humidity, occupancy, lux), as well as both digital and analogue device controls (on/off) led by automated intelligence within the Eniscope system itself.

Capterra
User Reviews

We are proud to have maintained a perfect 5* record on software-review platform Capterra.

[ENSCOPE FEATURES]

Hardware

Eniscope Hardware

Best.Energy is a pioneer in the field of energy management and IoT; launching its first IoT enabled energy meter for the UK market in 2007.

Best.Energy's proprietary metering hardware was born out of the frustration and cost it encountered in bringing together high-density metering, multi-source data acquisition, edge-computing and gateway capabilities from multiple vendors. So, in 2012, Best.Energy committed millions of dollars of investment to creating a new solution that would slash the cost of obtaining accurate, real-time, disaggregated energy data from multi-site estates. The result was Eniscope Hybrid; Hybrid because it combines the four key elements of energy management hardware into one, super-compact, easy-to-install, easy-to-use, infinitely scalable solution at an unbeatable price-point.

Best.Energy know of no other hardware solution on today's world market that offers the standard feature set of an Eniscope Hybrid out of the box, but Eniscope is also a product for tomorrow...

Thanks to its upgradable operating system, Best.Energy can deploy free, over-the air-upgrades to legacy equipment. For example, in the Summer of 2019, Best.Energy will launch it's Eniscope Air protocol, facilitating a direct, long-range wireless integration between existing Eniscope Hybrids and five new IoT sensor and control solutions (detailed later in this document).

These solutions will unlock millions of dollars of additional savings for energy saving projects across the world and there will be no need to upgrade any of the existing Eniscope hardware to make them work.

For a long-term project, this future-proofing represents a significant advantage with which no other 'metering' company can compete.

"As you know we have **been** *advocates* **of** *the Best.Energy hardware for* **a number of** *years now and it remains the product we rely on when engaging with new clients in the Energy* **Performance** *Contracting market. Having had experience with* **a** *wide range* **of** *hardware solutions in the past I can say with confidence that Eniscope is the* **most** *innovative. The advances already made in designing* **a** *small, powerful and very easy* **to** *install product puts you at the forefront* **of** *the market."*

CHRIS COATH,
HEAD OF ENERGY
NG BAILEY

0 General Specifications

Adaptable Upload Frequency	Yes	–
Communication Protocols	MQTT, HTTP, FTP, Modbus, One-Wire, 2 x USB, Radio metering infrastructure. Avoids unnecessary replacement costs.	Flexible integration allowing you to work with incumbent
Input Power V	100-240AC	–
Internal Clock	Yes	Not reliant on an internet connection.
Current Transducers	333mV	Safe to install without switching electrical circuits *off* (live).
Pulse Inputs	2	–
Metering Phases	24 x single, 8 x 3 Phase	Smaller footprint - doing the job of 8 individual meters in a single box.
USB	2	Internationally recognised connection standard.
Hardware Alerts	Yes	–
Network Configurable	Yes	No direct access required for configuration.
On Board Storage	8 GB SD Card	Up to 90 days of on-board storage, avoiding loss of data in case of network outage.
Expandable Storage	Yes	–
Real Time Measurement HW	Yes troubleshooting and analysis.	Facilitates on-site
1-Wire Temp inputs	8	–
Can include other sensors?	Yes	–
Sensor Types	Temperature, Humidity, Occupance, Light	Facilitates data normalisation, ensuring consistently accurate, reliable and legitimate savings calculations.
Control Equipment	Wireless Switches and Wireless Control	Maximises energy saving potential, including automated intelligence driven decision making.
Remote Firmware Upgrades	Over The Air	Future-proof solution, updateable remotely with the latest feature enhancements.
Additional Functionalities	Eniscope: Periodic firmware updates	–
Time of Use (TOU) Tariffs	Cloud Based	–
Certifications	UL, cUL, CE	Globally compliant technology.
Warranty	2-years standard (extendable on application)	–
Product Robustness	British Engineered	Eniscope offers a very low (less than 0.5%) failure rate.

0 Installation

Smaller, safer and faster to install - Eniscope does the work of eight meters in one easy package.

Size (W x L x D) mm	156 x 200 x 60	–
Circuits Density (cm2 per three-phase)	39cm2	Less than half the footprint of typical competitors (e.g. Schneider PM5510 is 92 cm2 per three-phase)
8 x Three Phase (24 x Single Phase) Metering Point Footprint cm2	312 cm2	Class-leading high-density metering footprint, which also includes data acquisition, edge computing and gateway (62% smaller than Schneider PM5510 and EGX300)
Live Installation	Yes	Low voltage split-core CT's allow for non-intrusive, live installation (local regulations permitting)
Plug & Play	Yes	Custom push-fit RJ12 connectors and cable extenders enable rapid cabling of multiple circuits. Cloud data available within 15 minutes of commissioning
Installation Time	1 - 4 hours	Up to X4 quicker to install than competitors (e.g. Schneider PM5510 and EGX300)

"Eniscope was quick to install and provided fast return on investment - around 19 months"

J L - REITAN CONVENIENCE/ 7-ELEVEN DENMARK

Electric Parameters:	V, U, I, P, Q, S, PH, E, Ex, RE, REx, AE, Phase Angle 1-2, 1-3	Deeper analysis, allowing insights otherwise invisible across whole estates.
Harmonics:	Yes (not displayed as standard to reduce volume of data transfer)	–
Metering Accuracy:	1%	–
Frequency:	50-60 hz	–
Metering Precision Voltage	1%	–
Metering Precision Energy	1%	–
CT Type	Split Core Current Transducer	No disconnection required to the electrical circuits to carry out an installation.
CT Output	0.333 mV	No danger of electric shock to installers.
Maximum Current	6000A	Allowing monitoring of every possible circuit on whole sites.
Maximum Voltage	346V L-N / 600V L-L	–

Network

RJ45	Yes	–
Firmware OTA (Over the Air)	Yes	–
Local IP Access	Yes	–
Manufacturer Cloud	Yes	–
Polling Period	1 minute	Allows real time data acquisition.
Bandwidth of Data per Day	1 MB per day per circuit	–

Data Acquisition

Data may be acquired from multiple sources either directly to the Eniscope Cloud Services or via the data acquisition and collation facilities on the Eniscope Hardware. At all stages, steps are taken to ensure data integrity both within the Eniscope Hardware and the Eniscope Cloud. Other data acquisition systems can easily be integrated into the Eniscope System, permitting a very wide range of data sources to be supported.

If the internet connection is lost, Eniscope Hybrid will store high-resolution energy data locally for up to 90 days. Locally stored data is uploaded to the Eniscope Cloud servers as soon as a reliable connection is re-established, ensuring a seamless, uncompromised data view.

Data Source (h/w)	4 quadrant, 3 phase metering Modbus/tcp Modbus/rtu Pulse Temperature Mbus BACnet MQTT Eniscope Air IoT Sensors
IoTSensors	Temperature Humidity Lux PIR Control User configurable inputs and outputs
Data Sources (cloud)	Smart thermostat Eniscope Hardware uploads FTP MQTT Web post
Data Integrity (h/w)	Checksum SDcard backups Retransmission of failed uploads
Data Integrity (cloud)	Multiple redundant servers Network load-balancer Data redundancy Multiple backups
Data Sources Scalability	Unlimited
Data Storage (cloud)	Indefinite
Data Storage (h/w)	Up to 90 days

Edge Computing

A key feature of the Eniscope Hardware is the ability to perform a variety of computational activities on the hardware, close to the source of the data. This can significantly reduce the amount (and hence cost) of data transmission to and from the Eniscope Cloud.

Functions include data consolidation, real-time alarming and alerts, local response control, and even AI and alternative data forwarding services.

Alternate Uploads	Open tcp socket MQTT Web post Customizable functions and formats
Data Aggregation	Mean, min, max, last value
Alerts and Alarms	Real-time level testing and reporting
Local Display	Display data in realtime
Advanced Features	AI Local decision making Programmable control

"We needed a quick to deploy solution and of course we went to Best.Energy. Our team of two electrical engineers installed 16 Eniscopes, capturing 114 metering points. They did that in just five days. With just one building alone in the first few weeks we've identified £25,000 worth of savings."

CHRIS COATH,
HEAD OF ENERGY,
NG BAILEY

Software

Software

Unlike many competitive products, Eniscope offers both hardware and software in a single solution.
With one intuitive, cloud-based platform, energy managers can access real-time data from dozens of sites in a single location. That data can be displayed in a variety of chart types and analysed at granularity levels as fine as 1-minute intervals, including on our proprietary Android and iOS smartphone apps.

Time periods can be compared, data exported, alarms set and a range of end products created - including automated reports and tenant billing. And with full integration into a custom version of Microsoft Power BI, Eniscope offers customisable visual dashboards and reports.

Behaviour change is key to effective energy management, and with our customised public displays this is made easier than ever. League tables, real-world comparison figures (eg. energy saved = trees planted) and daily statistics help motivate and engage stakeholders, turning them from part of the problem into a key component of the solution.

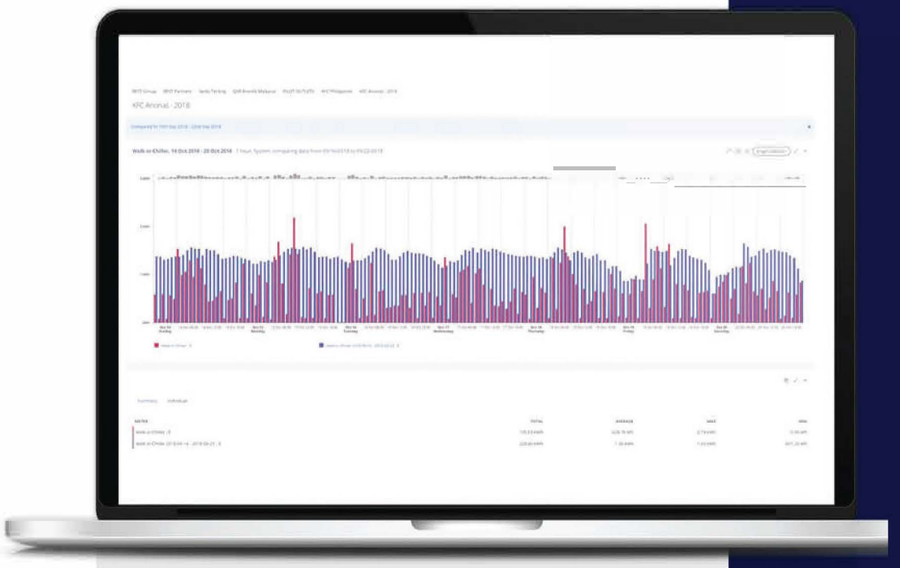
"What we like the most is the ease of use of the Software, that it can be used from experienced energy managers all the way to administrative staff and extract insight from the data easily.

The software is constantly evolving to enhance its functionalities based on feedback from clients, which allows us to constantly push our offering even further as updates roll out. Having worked with many different EMS softwares ranging from BMS systems to all cloud services, we find Best.Energy Analytics to be the most user friendly and price I Value. The AP/ makes the Database easy to manage into different client systems."

0 Analytics

With a huge range of selectable fields and data available at minute by minute granularity, refreshed every 60 seconds, Eniscope offers unrivalled data accuracy and energy visibility.

And with a combination of Power BI custom dashboards built specifically for particular installations and our standard, easy-to-use graphical systems - it's easy to manipulate and assess data streams, even from hundreds of sites.



Screenshot showing data comparison before and after an energy saving intervention

"The analytics are very powerful. The software can be **used for** asset, energy. and service **management** initiatives and the delivery of significant **cost** savings...

PAUL POIRIER,
DIRECTOR - ABATE,
ENERGY MANAGEMENT
PROVIDERS TO
TELEFONICA, COLOMBIA.

Selectable field and parameters	Energy Export Energy Reactive Export Energy Reactive Energy Apparent Energy Carbon Cost BTU Power Reactive Power Apparent Power Current Amp Hour Voltage Line to Line Voltage Power Factor Flow Temperature Return Temperature Volume Flow Volume Temperature 1/2 Phase Angle 1/3 Phase Angle	Designed so that energy managers can analyse energy waste as thoroughly as possible and identify savings opportunity
Selectable resolution	Auto 1 minute 15 minutes 30 minutes 1 hour 1 day	From 1min to 1day, allowing the user to avoid congested data and quickly identify trends - as well as providing the option for intricate, high-resolution data when deeper analysis is required.
Graphing Format	Line, Bar, Pie Charts	Multiple output options for analysis and reporting.
Graph Zooming	Click,drag and scroll	Intuitive functionality.
Summary Table of key data	Total, Avg, Max, Min	Allowing the user to quickly focus in on key site-specific information.
Single / 3 Phase Option	Select between system average and 3-phase	–
Data Comparison	Compare data to other time periods	Compare data to multiple user defined periods.
Language Selectable	English, Spanish, Russian, Brazilian Portuguese, Greek, Arabic	Supports non-English language options.
Data Download options	CSV, SVG, JPEG	Allowing even deeper analysis off-platform.
Meter status	Last upload time, Name & Mac Address	Check to see if meters are uploading data.
Share via URL	Yes	Charts can be shared by unique URL
Customisable Themes	Currently Light / Dark	Enhancing the user experience

Time Zone	Supports local timezone
Graphing Refresh	Chart Auto Refreshes every 60 seconds
Show/ Hide spikes	Yes
Show / Hide Gaps	Yes
Data shown in hierarchial format	Yes
Supports Trendlines	Yes
Events	Create Events and markers on the graphing charts
Data Scaling	Dynamic Scaling of Data option
Data Source	Multi Source Data, Gas, Water, temperature, Pulse, Eniscope Air, Monnit

Multiple features for ease of identifying energy abusing equipment.

Real Time Displays

Provides instant, second-by-second feedback, enabling faster identification of energy-wasting issues. This real-time verification of the decisions stakeholders make in the building, in conjunction with our public display functionality (explored below), is what drives behaviour change - crucial to a sustainable energy saving strategy.

A very public, branded display of progress also enhances a company's CSR record and helps engage their own stakeholders.

Access	Access via any Web browser, Safari, IE, Firefox, edge, Opera
Location	Local Area Network
Real time Parameters	V, I, kW, kVAR, kVA, PF, Hz, CO2, $/£/€, Pulse, Temp
Displays	Real-Time & Renewable
Viewing Format	HTML5
Real Time Trending Graph	P, I, kVA
Real Time Dial	kW, V, PF
Language	English, Spanish, Danish, Greek, Russian
Display Title	Editable
Time Zone	User definable
Alarm Notification	Instant alarm Max / Min alerts
Alarm Parameters	P, V, I, PF
Alarm	All 3 Phase or Single Phase
Alarm Recovery	Alarm Recovery Alert - time definable
Custom Messaging	User Editable Custom Messaging & Title
Messaging	Message frequency definable 1, 5, 10min
Branding	Logo upload facility
Real Time Renewable Display Messaging	Messaging with custom energy field inputs

Customisable Public Displays

The Eniscope Public Display module allows you to build a custom slideshow that pulls live data from any device connected to the platform. This tool is designed to engage non-technical users and inspire positive behaviour change. It's also ideal for showcasing green credentials.

Access	Access via any Web browser, Safari, IE, Firefox, edge, Opera	–
Location	Cloud Based	–
Design	Choice of Templates	Choose from various predesigned colour schemes and themes to suit your audience.
Page Transitions	Customisablel	11 Options, from 10 seconds to 3 minutes.
Slide Builder	Drag and Drop	Easy to quickly configure new bespoke displays.
Modules	9 Interactive Module Options: Leaderboard Position Target against performance Comparison against time Custom Message Conversion Energy In an Easy to Understand Format Organisation Comparison Renewable V's Consumption Energy BAr Charts Energy Pie Charts Totals	Build displays according to corporate strategy requirements i.e league tables, green power, carbon footprint, targets etc.

Automated Reporting

Eniscope offers a system of automated report delivery.

It's easy to build bespoke reports using 11 different drag and drop modules that pull live data from any device connected to the platform. Reports can be scheduled for delivery via email, with a customisable message to any number of recipients at any time of day and at a selectable frequency.

Customisable Delivery	Yes	Adjust frequency of report delivery, i.e. weekly, monthly, daily
Access	Access via any Web browser, Safari, IE, Firefox, edge, Opera; Individual or company log-in	Accessible to all relevant employees, no matter what browser they prefer.
Location	Cloud Based	–
Language Options	English, Spanish	–
Schedule Frequency	Daily, Weekly, Monthly (Choose day and time)	Fully customisable, as per each site's individual preferences.
Report Modules	Cover page, text, charts (bar, pie and line), comparisons (target, meter, organisation), equivalence (comparison, target), usage (breakdown, totals, header, forecast), exceptions, events, renewable, leaderboard, images.	Modular system allows for quick, intuitive report building. Easily customise reports based on different department and project requirements - for example finance reporting, senior leadership presentations, board meetings etc.
View	Preview, schedule, history	Ensure the finished report is fit for purpose before issuing with our preview function. Automatically update reports with the latest data with our schedule function, and use report history to find a similar report created previously

Display Resolution	Auto, 1 minute, 15 minutes, 30 minutes, 1 hour, 1 day	–
Chart Measurements	Energy Export Energy Reactive Export Energy Reactive Energy Apparent Energy Carbon Cost BTU Power Reactive Power Apparent Power Current Amp Hour Voltage Line to Line Voltage Power Factor Flow Temperature Return Temperature Volume Flow Volume Temperature 1/2 Phase Angle 1/3 Phase Angle	Designed so that energy managers can thoroughly analyse energy waste and identify savings opportunities.

Tenant Billing

The Tenant Billing system gives you the ability to generate invoices derived from Eniscope data readings. It is built from the ground up to be multi-tenanted, so that you can manage a large site and generate bills for each tenant and email them directly to them.

Location	Cloud-Based	Ability to access the system from anywhere in the world.
Tariffs	Multiple user-defined tariffs	Ability to set separate tariffs for each tenant.
Invoice/Bill Delivery	Onscreen, PDF, HTML, CSV batch download, Upload to remote billing system	Multi-invoice delivery options and integration with third-party billing systems.
Tenant Management	Ability to move tenants in and out of the outlets, generating a bill of charges to date	Enforcing proper processes when the tenant moves out.
User Interface	Responsive layout to fit tablets and mobile devices. User permissions enabling you to control what each individual user sees in the system.	Access the billing system on any device size.
Metadata	User-defined fields, such as floor area, contracted power supplied outlets.	Ability to define custom fields for tenants, tenancies and
Localisation	Language translations and currency formats	Can be used in multiple countries and markets.
Integration	Integration directly with the Eniscope Core system	Links to Analytics for analysis of the energy data.
Batch Billing	Bills are generated in batches for the time-period you specify.	Allowing you to view all bills generated this month before they are sent to the customer.
Invoice Templates	Ability to have multiple templates	Templates customised for each account/organisation.
Data Transferability	CSV downloads	Download data for analysis in Excel or Power BI etc.

Cloud Based Setup -Admin

The Eniscope Cloud Administration area has been designed to facilitate the easy management of devices and data streams across multiple sites. This area allows various levels of access and permissions for different user profiles (e.g. clients, staff and operators).

One key differentiator is the ability to abstract data streams from their hardware capture points and create bespoke data views for advanced analysis (e.g. benchmarking the performance of similar assets, like air-conditioning in classrooms, across an entire estate).

Access	Access via any Web browser, Safari, IE, Firefox, edge, Opera
Location	Cloud Based
Structure	User defined Hierarchical view/setup
Structure level	Unlimited
Structure View	Location, building, Floor Level, department… etc
Eniscope Setup	Equipment Activation & Setup
Energy Tariff	Cloud Based & Editable
Alarms	Cloud Based & Editable

Mobile App

Enabling on-the-go analysis, our mobile app is available for both Android and iOS smartphones. A real-time dial system gives a clear, graphical representation of energy consumption and kWh comparison charts allow you to benchmark this data immediately.

And with automated alarm alerts, our app helps energy managers immediately address energy abusing equipment.

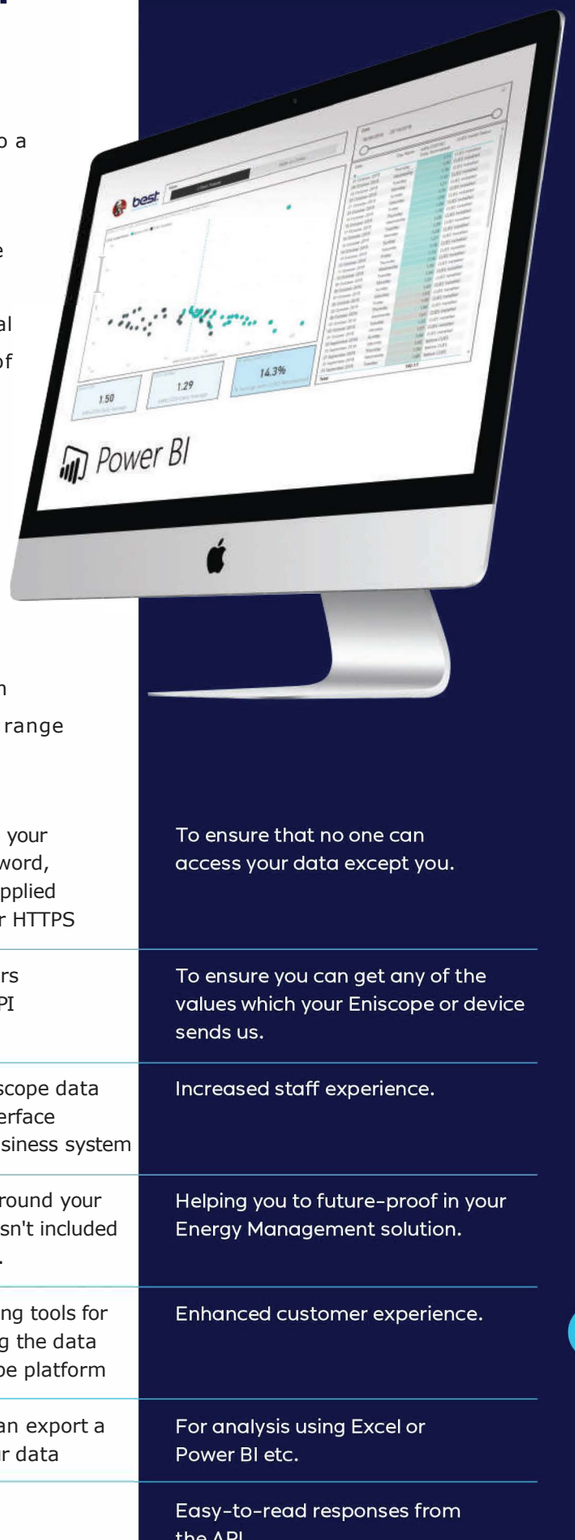
Energy management in your pocket!

Operating Systems	Android & iOS	On-the-go analysis on your smartphone.
LAN	Instant Energy Data	–
Energy Data	kW, CO_2, Cost	Multiple data types for quick, but thorough analysis.
Location Selectable	Multi-location user selectable	Compare locations within the portfolio at a glance.
Channel Access	Channels Are User Selectable	Toggle between metering points to quickly compare and contrast.
Graphical Interface	Real time dial	Intuitive data display, with clear green/ red colour scheme.

Customised Power Bi Dashboards

The Eniscope system has been fully integrated into a custom version of Microsoft Power BI.

This automatic link between Power Bi and Enicope Cloud platform enables automatic data updates and refreshes, allowing for fully customisable visual dashboards and reports that show a huge range of data types - all automatically updated with the latest available information.



API

The Eniscope Core API is a powerful tool to allow you to integrate your Eniscope data into your own systems. Through a RESTful API structure, you can extract data for any Eniscope channel in the data range and resolution you require.

Security	Authenticated using your username and password, along with an API supplied by us. Accessed over HTTPS	To ensure that no one can access your data except you.
Energy Parameters	All energy parameters accessible via the API	To ensure you can get any of the values which your Eniscope or device sends us.
Integration with your custom business systems	You can display Eniscope data in the same user interface such as a CRM or business system	Increased staff experience.
Build new functionality	Build functionality around your energy data, which isn't included in our Core offerings.	Helping you to future-proof in your Energy Management solution.
Build reporting tools	Build custom reporting tools for your customers using the data stored in the Eniscope platform	Enhanced customer experience.
Data Export	Using our API, you can export a subset (or all) of your data	For analysis using Excel or Power BI etc.
Data Format	JSON	Easy-to-read responses from the API.

Data Export

The Data Export Tool helps you to export your data from the Eniscope platform. It enables you to use your data for integration with third-party systems and is also a useful tool for backing up your data.

Location	Cloud based	–
Energy Parameters	Ability to select which of your parameters you wish to export	–
Delivery	FTP upload, Email or Download	A variety of delivery methods to ensure that your data gets to the correct place.
Automation	Setup automated exports to happen daily	–
Data Format	CSV	Industry standard format for data exports.

IBM Watson Certified

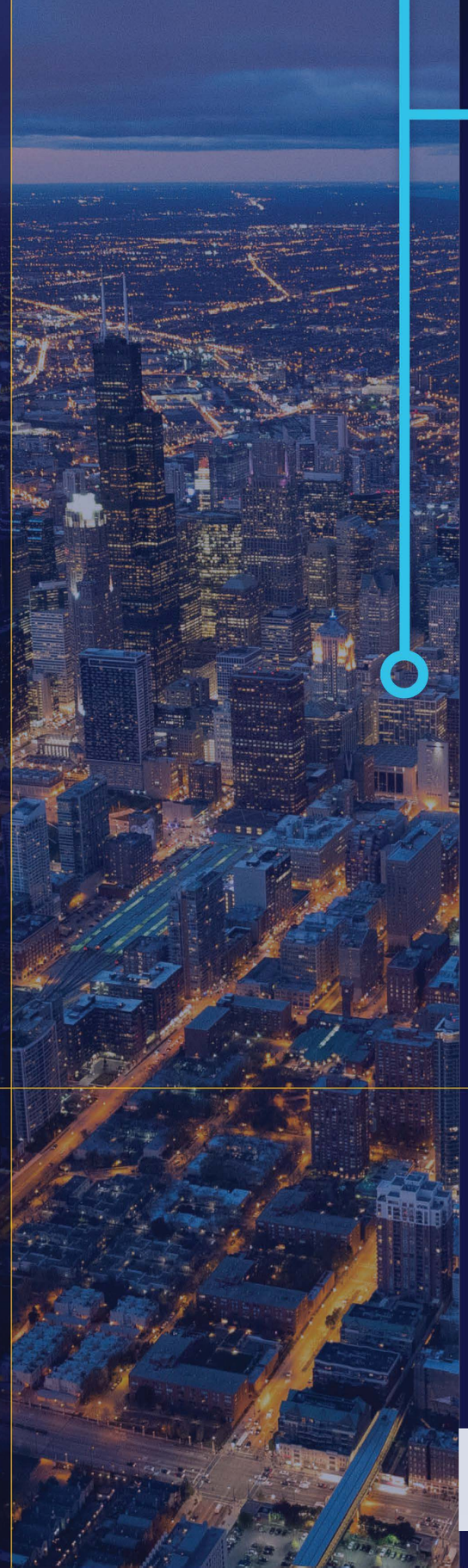
The Eniscope has achieved “IOT Ready for Watson” status with IBM.

This means that Eniscope has been approved as being fully compatible with IBM and its “Watson” range of products and services.

Business Partner IBM

Ready for
IBM Watson IoT

Ancillaries



Ancillaries

A range of supporting products, which help Eniscope seamlessly integrate into the incumbent electrical systems at any given site scenario. Our ancillary products ensure speedy, safe installation and that efficient methods of adaptation are available for unusual site requirements.

Current Transducers (CT)	333mV range from 5A – 6000A	No danger of electric shock to installers.
Current Transducer (CT) Connection cable	RJ12 Extension cable 1m 600V/Zero Halogen	Speedy installation.
CT Extenders	RJ12 Extension cable 2 / 6m 600V/Zero Halogen	Efficiently adapt to on-site requirements.
1-Wire Temperature Probes	3m cable, -55C/+125C temp range, extendable up to 100m, Bus system allows up to 8 temp probes per connection	Ultra-reliable, wide-range, hard-wired temp sensors for robust, accurate, real-time temperature readings
IoT Sensor Integration	Eniscope Air product line	See below.