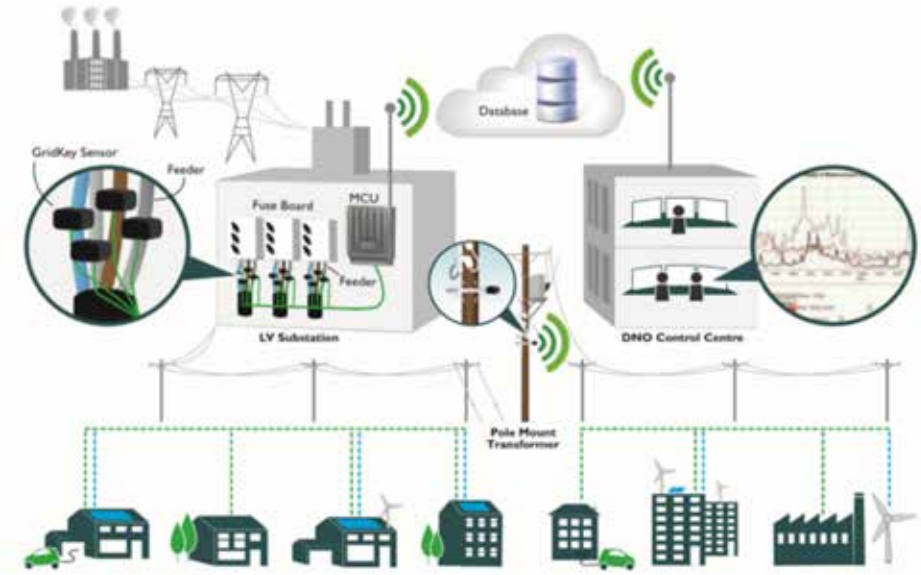
GridKey MCU520 low voltage network monitoring system

Remote wireless or radio MCU with built in modem, sensors etc



GridKey is a network monitoring system that can be retrofitted to the LV substation feeders without interrupting supply to customers.

It provides continuous remote monitoring and real time warnings, status and load information.

The GridKey system is quick and easy to install and configure, so it can be readily relocated to substations of seasonal or temporary interest.

By using GridKey, Distribution Network Operators (DNOs) can reduce maintenance costs and improve their knowledge of the state of the LV network.

Why choose GridKey?

GridKey is a purpose-designed, live-retrofit, compact, continuous LV monitoring solution for distribution substations. GridKey provides DNOs with information to drive LV network planning and decision-making for both Capex and Opex.

The system comprises up to 20 current sensors, a Metrology and Communications Unit (MCU520) and a simple browser-based user web portal for data visualisation and analysis.

The MCU includes an integrated GSM/GPRS radio that communicates data to a web site or any existing communications and data management system via a standard interface.

The information available from the data enables managers to make informed decisions about the network, planning maintenance, predicting and preventing failures and deferring capital costs.

Benefits for network managers

- Improved quality of customer service by real time identification and location of faults
- Reduced capital and operational costs by early warning of potential problems, such as phase imbalances
- Better information to protect assets, diagnose problems and drive the right decisions
- Future expansion for other monitoring needs (wirelessly upgradable)

Benefits for network engineers and operators

- Robust, durable MCU520 and sensors
- No calibration, no maintenance
- Installation set up can be checked simply on site using a smartphone
- Efficient interfaces with legacy systems
- Integration with current / future systems

Metrology and Comms Unit

The MCU520 provides a flexible interface to existing systems, is easy to set up, robust and weatherproof (IP65) so can be mounted externally. It connects to the sensors and 3P+N voltage connections. By default, the MCU520 reports measured and calculated parameters via the auxiliary port or GSM/GPRS communications network.

Two types of parameters can be reported: regular data and alerts. Regular data reports include, for example, average voltage, current and power over a reporting period. Alert data includes, for example, voltage or current excursions above or below user defined limits. Regular data reports transmit at user set intervals (which can be from minutes to hours), alerts transmit immediately

The MCU520 has significant built-in memory capacity to store raw measurement data as well as all data reports and alerts. This provides a buffer when required. Data can be retrieved locally via laptop or remotely via the data collection centre for analysis.

The MCU requires configuration to link it with the specific substation, identify the number of feeders, the sensors used, the reporting period and to set the alert levels. This can be done locally using a standard laptop PC and an optical interface puck or it can be done remotely if the relevant data is recorded manually.

GridHound Current Sensors

The GridHound GH600-D is a di/dt sensor for accurately measuring ac current. It has been designed to meet the growing demand for small, low-cost and accurate solutions that can be retrofitted in distribution substations and elsewhere on the LV network.

Installation of GridKey can be done live and without special tools. This significantly reduces installation time, cost, and disruption to power supplies.

GridHound current sensors are quick and simple to install and operate, consistent with a true “fit and forget” approach. The sensors have been designed for a long service life without the requirement for regular maintenance in their intended operating environments. They can remain in their original installed location until end-of-life when they should be returned to the manufacturer.

The innovative design of the GridHound sensor means it does not need to be centralised around the conductor, is accurate out-of-the-box and for the 20-year lifetime of the device with no onsite calibration.

GridKey Flexible Rogowski Current Sensor

Flexible Rogowski current sensors are available as an alternative to the GridHound sensor. These are less accurate but being flexible can be fitted in the few situations where the construction of the GridHound prevents it from being manoeuvred into place.

Secure web portal

Real time and historical data (for voltage, current and power, for each busbar or feeder) is presented in a simple, intuitive browser based GUI running on any PC, PDA or tablet, accessible via secure customer login on the GridKey website.

HAMER POWER ENGINEERING

Specifications: MCU520 Metrology and Communications Unit

Metrology		
Measurement Standards	Class 1	EN 62053-21 for active energy
	Class 2	EN 62053-23 for reactive energy
Electrical Safety Standards	Compliant	EN 61010-1: 2010 with corrigendum May 2011
		EN 61010-2-032: 2012
Overvoltage	300 Vrms Category IV, Pollution Degree 3	
Current measurement range	Up to 720 A ac per feeder phase	
Operating voltage and measurement range	230 V ac +15%, -20% rms Phase to Neutral	
Line frequency	50 Hz (nominal)	

Protection & Environmental		
Surge protection	6 kV	EN 61000
Operating Temperature Range	-20˚C to 55˚C (< 93% RH, non-condensing)	
Storage Temperature Range	-25˚C to 70˚C	
Altitude	Up to 2000m	

Mechanical		
Size	H 458 x W 285 x D 109 (with anti-tamper cover fitted)	
Weight	3.25 kg	
IP Category	IP65 (with cover fitted and current sensor blanking caps)	EN 60529
Impact	IK06 (tested at 1J Energy level iaw)	EN 62262
	Eha at -20˚C	EN 60068-2-75: 1997 method
Design Life	15 years from date of manufacture	

Power		
Power Consumption	9W typical, 15W maximum	

Specification: GridHound GH600-D Current Sensors

Metrology		
Electrical Safety Standards	-	EN 61010-1: 2001
		EN 61010-2-032: 2002
Sensor type	Type B, Category IV, Pollution degree 3	EN 61010-2-032:2002
Accuracy class	Class 1	IEC 60044-8
Rated current	600 A ac	
Current measurement range	4 A to 720 A ac	
Output signal	150 mV ac at rated current	
Operating voltage	230 V ac +10%, -6% rms (216.2 - 253 V) rms Phase to Neutral	
Line frequency	50 Hz (nominal)	

Protection & Environmental		
Surge protection	8 kV	IEC 61000
Operating Temperature Range	-20˚C to 55˚C (< 93% RH, non-condensing)	
Storage Temperature Range	-25˚C to 70˚C	
Altitude	Up to 2000m	

Mechanical		
Aperture	23.9 mm x 32.4 mm (for insulated 300 mm2 sector cable)	
Minimum clearance between conductors	16 mm	
Weight	0.23 kg	
Cable tail length	1.5, 3 or 5 m	
IP Category	IP65	IEC 60529
Design Life	20 years from date of manufacture	

Specification: GridKey Flexible Rogowski Current Sensors

Metrology		
Electrical Safety Standards	-	EN 61010-1: 2001 EN 61010-2-032: 2002 EN 61010-2-032:2002
Overvoltage	Category IV, 600 Vrms, Pollution Degree 2	IEC 60044-8
Rated current	1000 A ac	
Current measurement range	Up to 3000 A ac	
Output signal	85 mV ac at rated current	
Accuracy	±0.5% of reading	
Linearity	±0.2% of reading	
Phase error	±1%	
Position sensitivity	±2% of reading	
External field sensitivity	±0.25% of range	
Operating voltage	230 V ac +10%, -6% rms (216.2 - 253 V) rms	
Working voltage	up to 1000 V ac rms	
Line frequency	50 Hz (nominal)	

Protection & Environmental		
Surge protection	8 kV	IEC 61000
Operating Temperature Range	-20˚C to 55˚C (< 93% RH, non-condensing)	
Storage Temperature Range	-25˚C to 70˚C	
Altitude	Up to 2000m	

Mechanical		
Aperture	143 mm	
Minimum clearance between conductors	9.9 mm	
Weight	0.22 kg	
Cable tail length	3 or 5 m	
IP Category	IP65	IEC 60529

Product selection tables

Complete sets					
Hamer code	MCU	Sensor type	Sensor quantity	Lead length	Other
GKS50054GH3	520	GridHound	20 (5x 4 harnesses)	3m	Including set of 4 fused voltage leads and clamps
GKS50044GH3			16 (4 x 4 harnesses)		
GKS50034GH3			12 (3 x 4 harnesses)		
GKS50024GH3			8 (2 x 4 harnesses)		
GKS50014GH3			4 (1 x 4 harnesses)		

Components	
Hamer code	Description
GKMCU520	Metrology and comms unit (5-feeder)
GKMCU520COVER	Replacement cover for metrology and comms unit
GKGH1	GridHound current sensor (1m lead)
GKGH3	GridHound current sensor (3m lead)
GKGH5	GridHound current sensor (5m lead)
GKRC1	Flexible Rogowski coil current sensor (1m lead)
GKRC3	Flexible Rogowski coil current sensor (3m lead)
GKRC5	Flexible Rogowski coil current sensor (5m lead)
GK4VLC	Set of four fused voltage leads and busbar clamps
GK4VL	Set of four fused voltage leads
GK4C	Set of four busbar clamps

Current sensor harnesses	
Hamer code	Description
GK4GH3	3 m harness of 4 GridHound current sensors
GK4RC3	3 m harness of 4 Flexible Rogowski coil current sensors
GK4GH5	5 m harness of 4 GridHound current sensors
GK4RC5	5 m harness of 4 Flexible Rogowski coil current sensors

Other literature available on request

Technical reports, type test certificates, drawings, user manual, FAQs

For more information contact your Hamer representative

Hamer Limited reserve the right to amend product details without notice.

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