



Energy Division

Bowthorpe EMP SC14 Intelligent Surge Counter System

Bowthorpe EMP SC14 Intelligent Surge Monitor System



SC14 intelligent Surge Counter

- Date and time stamp of surge(s)
- Low power consumption
- Surge classification report
- Alarm alerts
- Measures Surge Amplitude and Width



PAC-G (Programmable Access Controller - Gateway)

- Functions as the master node within the network to handle communications with the individual surge arresters
- Contains a Zigbee antenna (SC14 communications), Wi-Fi antenna (PDA communications) and GPRS modem/antenna (server communications)
- Commissioned via PDA device
- Automatic upload of surge data from PAC-G to a server if GPRS link is available
- If GPRS link is not utilised data can be downloaded to PDA using Wi-Fi
- Remote updates from desktop PC



PDA Device

- PDA device running either Windows Mobile 2003 or Windows Mobile 5.0, 6.0
- If GPRS enabled it can synchronise with remote server
- Can also be synchronized locally with PDA cradle

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The Bowthorpe EMP range of Surge Counters are fully tested and are compatible with other manufacturers surge arresters. The Bowthorpe EMP SC12 is a Surge Counter only, whilst the Bowthorpe EMP SC13 provides the additional measurement of total leakage current.

The Bowthorpe EMP SC14 is a next generation Surge Counter, being intelligent, it transmits data from the surge counter to a receiving device (PAC-G 'Programmable Access Controller - Gateway'). It utilises leading edge technologies in terms of reliability, accuracy and ease of use.

Some benefits of the SC14 are listed below:

- Measures & Records Pulse Amplitude
- Measures & Records Pulse duration
- Automatic upload to remote server
- Time Stamping of surge activity
- Alarm thresholds set by customer
- Ease of installation
- Remote communications via Web Server or PDA
- Access to reports, history and status of individual or grouped counters over internet.
- User definable reports.
- Instantaneous SMS and/or Email alerts in the event of an alarm condition.

The Bowthorpe EMP SC14 system consists of 2 main hardware components.

- The SC14 itself which directly monitors Surge activity on an individual arrester.
- The PAC-G is a gateway device that receives data from individual SC14s. The PAC-G has a wireless internet connection (GPRS) to upload data to the web-server periodically or whenever it detects an alarm condition.

The following software components are supplied with the system.

- SurgeManager is a software application that will run on any handheld device with a Windows CE/Mobile operating system. This application allows the user/installer to commission the network of devices and also to monitor its status/health.
- The Web-Server based service handles all the related surge data from the various installations. The data on this is securely stored and is accessible only to selected personnel, with varying degrees of access. This incorporates a powerful report generating facility on the web-server which allows for the quick creation of user defined reports.

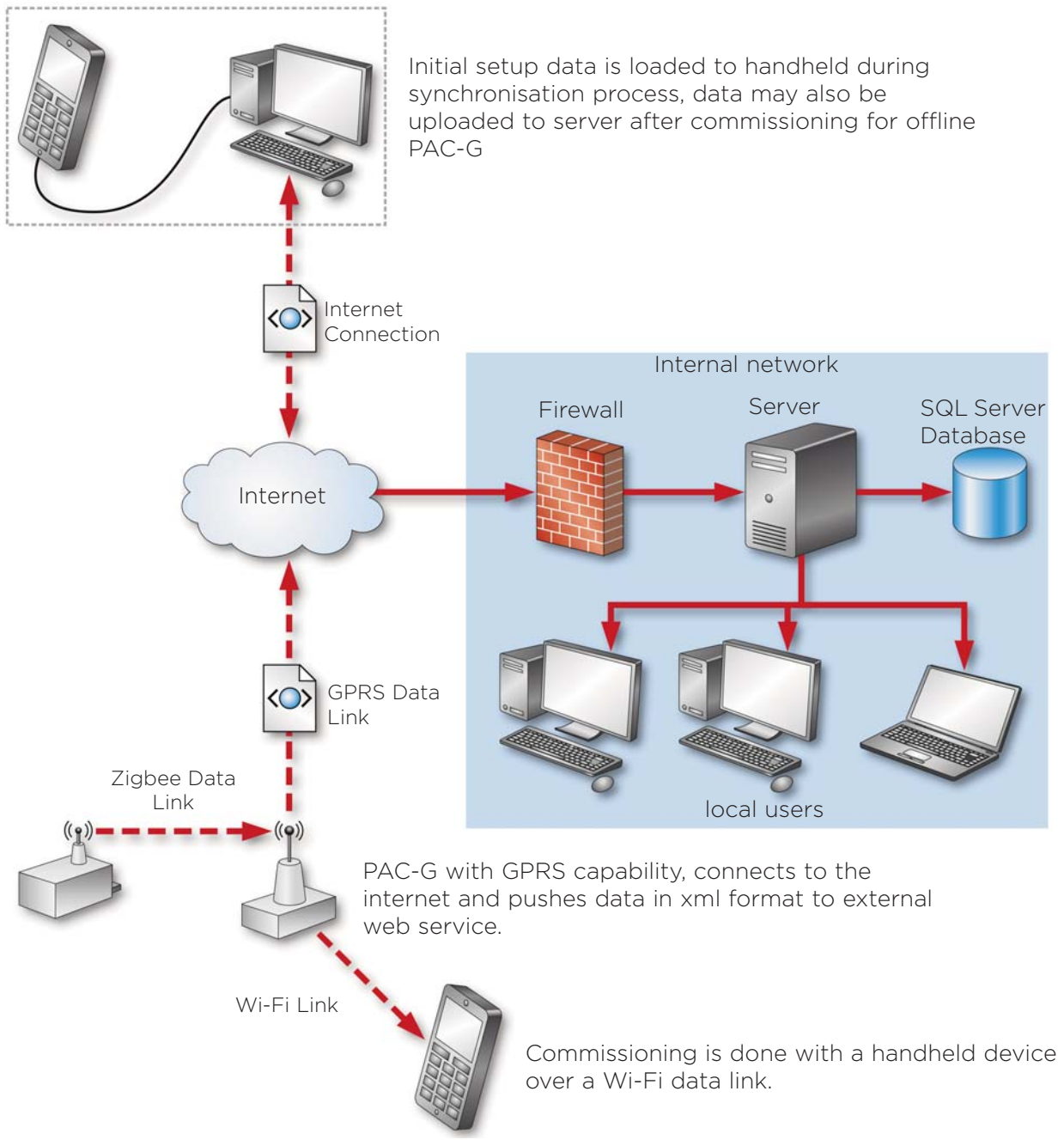
Note: The PDA is not included, but is required to commission the SC14 intelligent Surge Monitoring System

Bowthorpe EMP SC14 Intelligent Surge Monitor System

The Bowthorpe EMP SC14 uses patented Planar Magnetic Current Sensing technology to accurately and reliably detect and measure current impulses. This technology is exclusive to Tyco Electronics.

When the SC14 detects an impulse it immediately transmits the data wirelessly to the PAC-G. If the impulse has exceeded the alarm thresholds then the PAC-G immediately uploads the data to the web-server and an alarm is raised, an SMS and/or Email is then sent to all relevant personnel giving Time, Date, Location and Surge data information.

If the impulse is below the specified alarm threshold then the PAC-G will store the data and only upload it during its regular periodic connection to the web-server. The frequency of this is typically once per 24 hours, but can be specified by the user via the web interface.



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Technical Data

Surge Measurement

Minimum Surge Amplitude (30/60 μ s)	125 A
Maximum Surge Amplitude (4/10 μ s)	120 kA
Surge Measurement Accuracy	<10 %
Time Stamp Resolution	1 s

Wireless Communications

SC14 Communications Protocol	IEEE 802.15.4-2006 (Zigbee)
SC14 Transmission range	300m Line of Sight
SC14 Antenna	Stub 2.4GHz Antenna
PAC-G Communications	IEEE 802.15.4-2006 (Zigbee), GPRS*, 802.11b/g (WiFi)
PAC-G Antenna	2.4GHz Dipole x 2 (Zigbee & Wifi), Quad-Band GPRS Antenna

Power Requirements

SC14 Power	Custom Long Life Battery [†]
PAC-G Power	85-264 VAC, 47-63 Hz [‡]

Environmental Specifications

SC14 Operating Temperature Range	-40°C to +70°C
PAC-G Operating Temperature Range	-40°C to +70°C
SC14	IP67
PAC-G	IP67

SC14 Installation and Network Commissioning Instructions	BOW-EPP-1652-2/09
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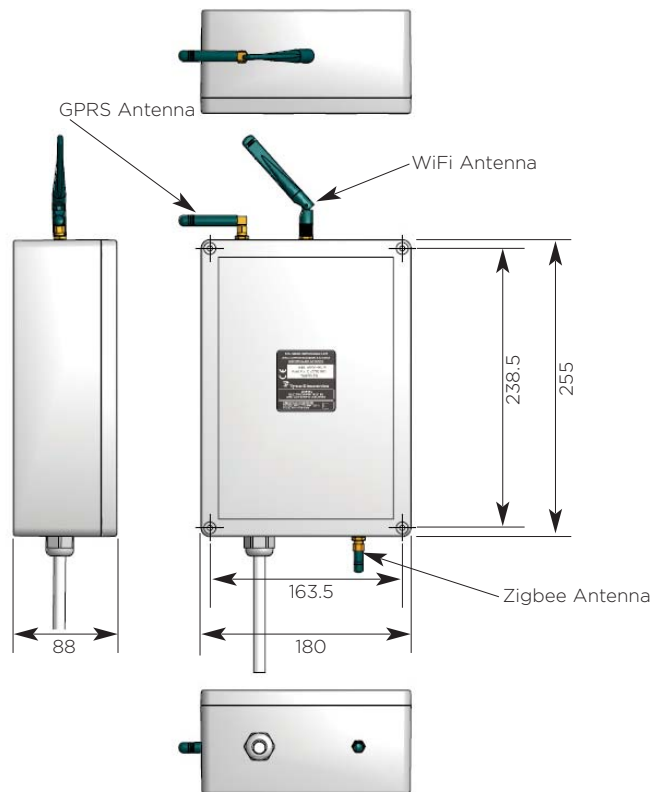
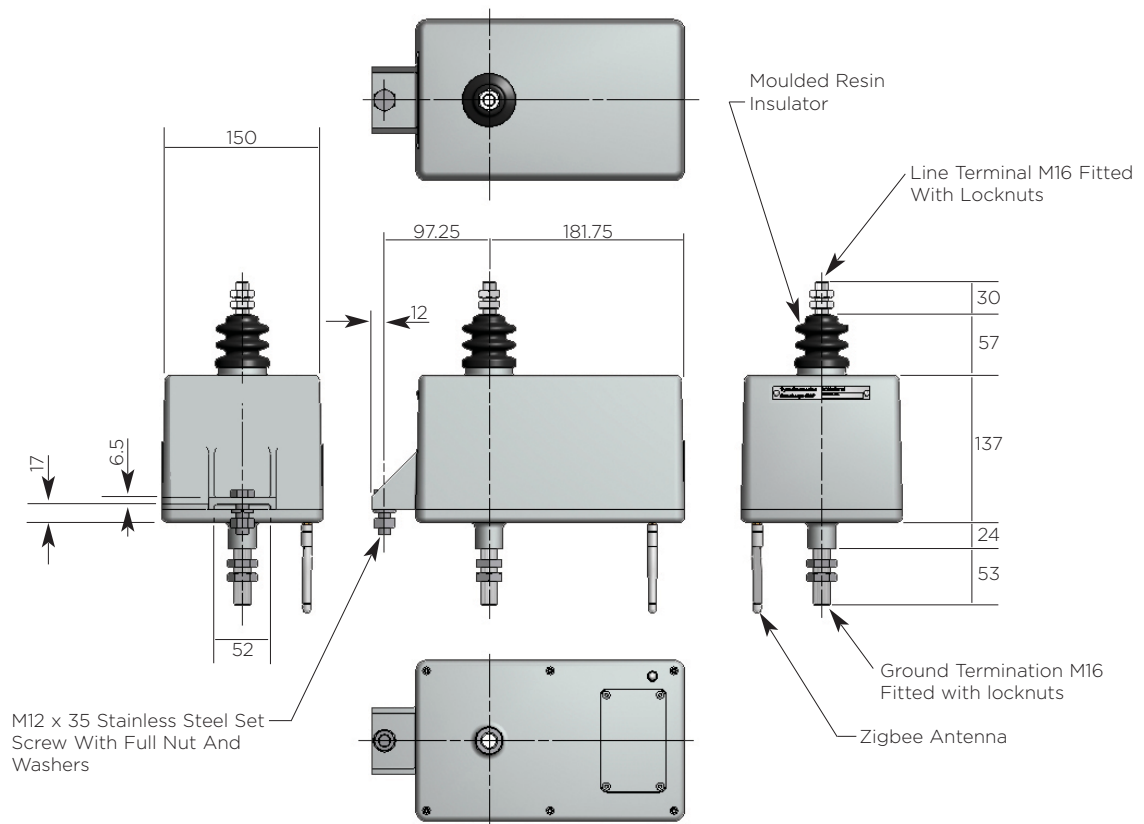
* Discuss GPRS requirements with sales representative prior to order. Geographic factors may require further clarification. If GPRS coverage is not available in your area, please contact Sales rep for alternative options.

[†] Please consult sales representative for replacement batteries, or for further information on specification.

[‡] Please consult the sales representative to specify power supply needs for individual installations.

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SC14 and PAC-G dimensions



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Data Access and Reporting System

- Data reports for surge activity at a summary level or detailed level are available
- Data can be easily exported to packages such as Microsoft Excel
- Users can easily build their own custom reports

Detailed History												
From 07/01/2008 to 06/02/2008												
Area SOUTH WEST												
Sub Station HV1 - 440KV												
Reading Date	Reading Time	Ampl kA	Width uS	Surge Type	Location / Phase	Serial No	Manufacturer	Model	Year Manuf	Class	Material	Commissioned Date (S.A.)
11/01/2008	11:39:20.0	49.89	0.77	Fast front	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	11:39:56.0	11.00	10.76	Lightning Strike	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	11:41:56.0	102.00	0.21	Fast front	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	11:42:06.0	0.50	70.22	Switching Surge	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	11:42:07.0	0.60	50.69	Switching Surge	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	11:42:11.0	0.70	50.10	Switching Surge	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	11:42:12.0	15.00	5.02	Lightning Strike	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	11:53:28.0	5.00	5.91	Lightning Strike	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008
11/01/2008	12:01:22.0	35.00	15.65	Lightning Strike	NORTH Line 384KV : T	G9647	bowthorpe	pca3-2	1996	4	Porcelain	11/01/2008

The above report shows a detailed history of surge activity.

Surge Grouping												
From 01/01/2008 to 06/02/2008												
Executed 06/02/2008 11:47:54												
Area	Sub-Station	Location/Phase	SA Installed Date	< 1 kA	1-5 kA	5-10 kA	10-20 kA	20-40 kA	40-70 kA	70-100 kA	> 100 kA	Total Surge Count
SOUTH WEST												
	HV1 - 440KV											
		NORTH Line 384KV - R	19/12/2007	0	0	0	0	0	0	0	2	2
		NORTH Line 384KV - S	19/12/2007	0	0	0	0	0	0	0	0	0
		NORTH Line 384KV - T	19/12/2007	2	34	2	1	1	2	1	1	44
		EAST Line 440KV - R	11/01/2008	0	0	0	0	0	0	0	0	0
		EAST Line 440KV - S	11/01/2008	5	11	1	0	1	3	1	0	22
		EAST Line 440KV - T	11/01/2008	1	2	0	0	0	0	0	0	3

The above report shows a summary of surge amplitude.



Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.



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Please note - Product designs and specifications are subject to change without notice. The user is responsible for determining the suitability of this product.