

## BAC GLOBAL SURVEYOR Mk 10

### 3.1.1

Conventional pipe to soil potential measurements at existing test posts do not provide an indication of the true pipe to soil potential even a few metres away from the test post.

To enable a complete pipe to soil potential profile over the entire length of the pipeline a close interval survey is required with pipe to soil potentials recorded at approximately 1 to 2 metres.

Advances in technology have made it practical to carry out close interval surveys on buried structures.

It is, however not so easy to do them correctly, with maximum effectiveness, accuracy, and unambiguous data presentation.



The **BAC Global Surveyor System** has been purpose built by cathodic protection engineers who understand the requirements for effective field work and cathodic protection data accuracy.

The Surveyor System forms a complete package comprising:

- Datalogger synchronized to the current interrupters.
- Synchronised switchers to an accuracy of +/- 4 milliseconds/day
- Cable dispenser with automatic distance incrementing
- Special high insulation resistance lightweight cable (re-usable)
- Specialist data handling software. The surveyor Datalogger has the very highest specification available for field instruments.

### BAC GLOBAL SURVEYOR Mk 10 Continued.....

### 3.1.1

- Input impedance switchable between 10 and 1000 megohms
- Common mode rejection: better than +/- 1mV for any dc input (operating range): better than 100 dB at 50-60 Hz for 10V ac input
- Normal mode rejection: better than 60 dB at 50-60 Hz for 10V ac input
- Voltage accuracy 0.1% FS



- Automatic optimum range selection for best voltage accuracy
- Four independent channels all synchronous (4 potential)
- All channels balanced input (No earth leakage problems)
- Automatically calibrates between each measurement
- Unique synchronization with switchers to +/- 4 milliseconds/day
- Unique adjustable delay before readings are measured in each switching period
- Adjustable length of sample period
- Adjustable sample frequency
- Distance is measured and recorded automatically as data is logged
- Operator code entry for features and geographic data
- Current measurement facility
- Memory equivalent to 750 Kb computer storage
- Full QWERTY keyboard

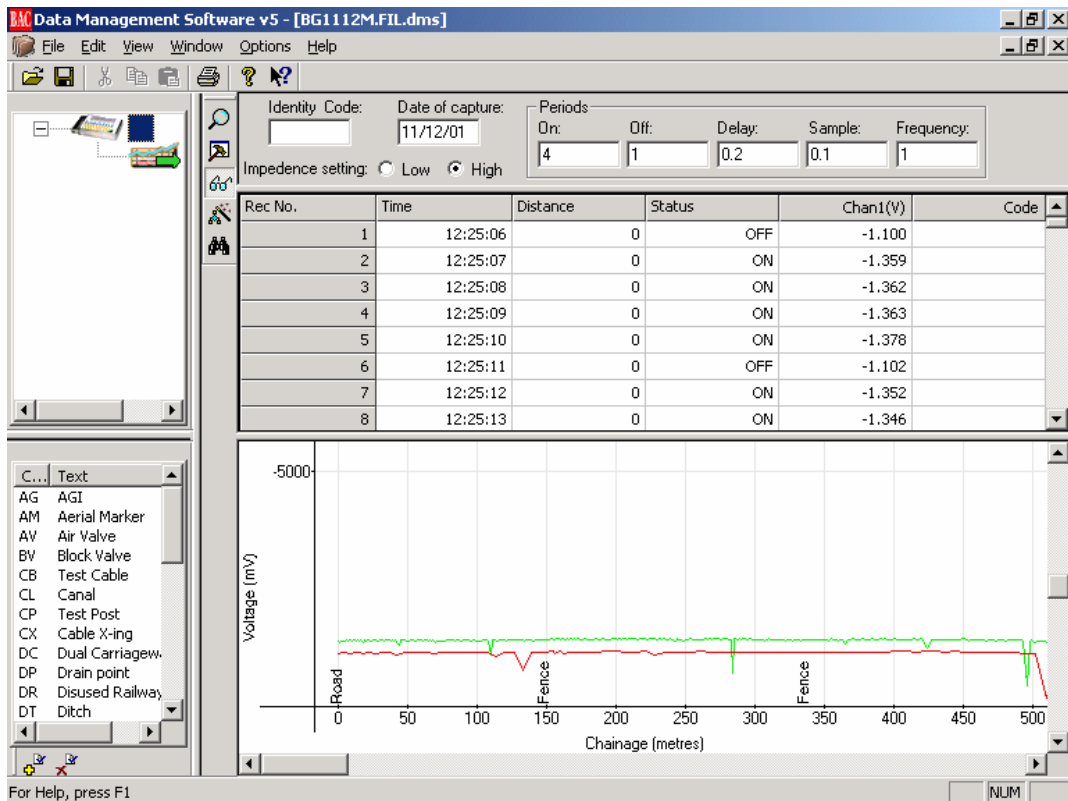
Part Number	Description
110 001 0022	Mk 10 Data Logger
1100060006	Dump Cable
145 001 0014	Mk 10 Data Logger Manual

# GLOBAL SURVEYOR SYSTEM

# 3.1.2

## DATA MANAGEMENT SOFTWARE VERSION 5

MS Windows<sup>®</sup> based data management software for all BAC *Global Surveyor* Close Interval/DCVG Survey equipment



► Simple to use

► MS Windows<sup>®</sup> Compatible

► Printer Friendly

### DATA MANAGEMENT SOFTWARE VERSION 5 Continued..... 3.1.2

Specially designed software to be compatible with the full range of *Global Surveyor* equipment enabling downloading, editing, saving and printing of data collected from close interval potential (CIP) and D.C. voltage gradient (DCVG) surveys.

The software is compatible with MS Windows<sup>®</sup> 95, 98, NT, 2000 and XP operating systems and requires a minimum computer specification of 300 MHz processor with 32MB of RAM.

Being MS Windows<sup>®</sup> based the software will print directly to any suitable printer (colour or black and white) negating the need for costly dedicated plotters.



For a **FREE** 30 day trial copy of the software call or email us.

Part Number	Description
110 001 0021	Data Management Software V5
145 001 0013	Manual

## SURVEYOR POWER MODULES

### 3.1.3



The Mk X Surveyor is powered by interchangeable Power Modules. A low battery warning is provided which allows the operator to replace the module in the field. The power module is recharged using the BAC Surveyor Multi-Purpose Charger. The batteries can be recharged while the Surveyor is in use, or when the Module is disconnected. The Power Module also contains the interface between a computer or printer and the Surveyor, and provides connections for the Distance

Measurement Unit and for synchronisation signals.

The Mark IX Power Modules are also compatible with the Mark VII Surveyor and are interchangeable with the Mark VII Power Modules.

<b>Part Number</b>	<b>Description</b>
1100010026	Power Module
1100050005	Battery Charger

## BAC GLOBAL SURVEYOR BACPAC AND DISTANCE MEASURING UNIT

### 3.1.4



The carry frame comprising of the Surveyor Bac-Pac, Distance Measurement and Cable Dispenser System, has been specially designed to integrate with the Surveyor Data Logger to provide a comprehensive Data Input and Instrument Interface, thus enabling one man operation.

The frame provides a carrier for the Power Module, the Cable Dispense and Distance Measuring Unit together with power cable looms to the Surveyor Data Logger and parallel leads to Copper/Copper Sulphate Reference Cells on extension poles.

All data is collected and stored by the Surveyor and processed by computer using BAC Data Management program to provide numerical, graphical and analysis presentation.

The BAC Global Surveyor System has been developed as a dedicated Cathodic Protection service. The System is accurate, rapid and of high integrity and compliments existing Cathodic Protection procedures and practices.

### **BAC ENGINEERING SERVICES**

If required, Survey Teams comprising a Cathodic Protection Specialist are available in order to provide a total survey service to clients.

<b>Part Number</b>	<b>Description</b>
1100020009*	BacPac with Distance Measuring Unit

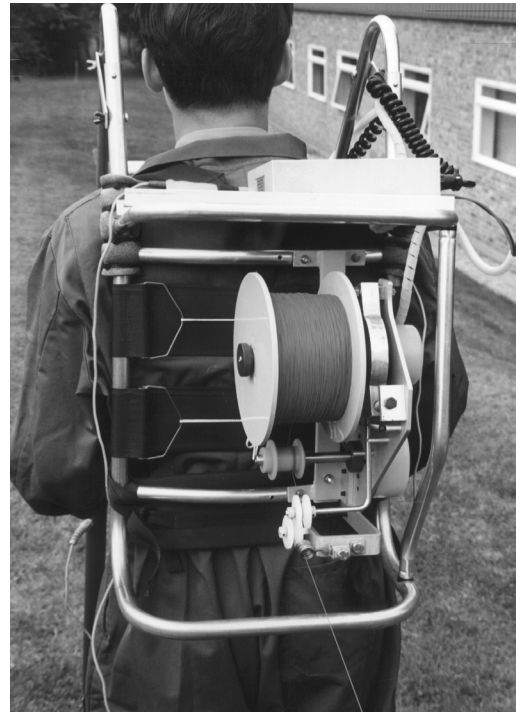
## BAC SURVEY WIRE AND REEL

### 3.1.5

Close interval potential surveys are conducted using the **BAC Surveyor** and **BacPac** system. To provide a reliable connection to the pipeline a single core, seven strand stainless steel wire is used. The wire is coated with high density polyethylene which provides a high level of insulation between the **BAC Surveyor** measuring circuit and the ground. A kit is available to allow field repairs to be made to the insulation if required.

For normal operational use, 2km of wire is supplied on a single reel. The wire is connected to a 4mm socket in the reel which connects to a 4mm pin on the **Cable Dispense System** of the **BAC BacPac**. Reels can be connected together via a 4mm plug to conduct surveys over 2km in length.

The reels and wire are robust and re-usable and when used with the **BAC Rewind System** provide a simple and cost effective cable recovery system.



Part Number	Description
1100070008	2Km wire c/w Reel

## REFERENCE ELECTRODE SURVEY POLES 3.1.6

Specifically designed for rugged environments the **BAC Surveyor** copper/copper sulphate reference electrodes are fitted with ceramic plugs for superior wetting characteristics and improved contact. The ceramic plugs are available separately, in pointed or flat versions.

The reference electrodes are fitted to UPVC poles with ergonomic handles. All test cables are routed inside the poles to minimise tangling and damage



Part Number	Description
1100040008	Surveyor Poles complete with reference electrodes



## SURVEY WIRE REWINDER

## 3.1.7



To facilitate efficient recovery and recycling of the BAC Surveyor wire the unique BAC Rewind System is available. Sturdily built, the rewriter allows the wire to be collected rapidly in the field and so be reused immediately.

The rewriter is fitted with a comfortable and durable leather pad, with adjustable straps which allow continued use by the operator.

<b>Part Number</b>	<b>Description</b>
1100030001	Rewriter Complete with Harness

## GCU Range of DC Current Interrupters

### 3.1.8

The **BAC GCU Range** are solid state current interrupters rated between 10A and 200A DC and are designed for switching from very low to high cathodic protection current allowing testing to be carried out. The controlled output has been specifically designed for use with both low output sacrificial anode systems to higher output impressed current systems. The precision timers have 100 predetermined switching ranges stored in the unit, of which 50 are factory set to the customers requirement, whilst the remaining 50 can be set by the user at site and stored for future use. Up to 60 units maybe synchronised simultaneously from a single BAC Global

Surveyor Data Logger. The units maybe used as “stand alone” or as a Slave unit to another switcher effectively working in tandem. The system uses software controlled frequency synchronisation using crystal oscillators to synchronise the switching cycle of the data loggers and current interrupters.

The unit utilises state of the art electronics housed in a rugged IP65 sealed enclosure built to withstand a wide range of field conditions. The new GCU range is also compatible with earlier GCU/R3 models.



### Technical specification

Switching current:	GCU10/R1 – 10A max. GCU15/R4 – 15A max. GCU25/R1 – 25A max. GCU50/R1 – 50A max. GCU100/R1 – 100A max.
Accuracy:	10mS over 24 hours
Battery life:	80 hours in stand by mode down to 26 hours switching at 0.1 s On/Off cycle
Operating Temperature Range:	10 to + 65° C
!00 Switching ranges:	(50 preset, 50 user programmable)
Power:	6 Volt Nickel Metal Hydride battery



**CORROSION CONTROL**

***PRODUCTS***

19 September 2003

Charging:

9 to 12 Volts at nominal current 30mA

**GCU Range Continued.....****3.1.8**

<b>Part Number</b>	<b>Description</b>
1100010032	GCU 10/R1
1100010007	GCU 15/R4
1100010010	GCU 25/R1
1100010019	GCU 50/R1
1100060020	GCU 100/R1
1100060021	GCU 200/R1
1100060003	Synchronisation Cable
1100050001	Battery Charger
1450010011	Operation Manual

Typical electrical schematic:

