



# sherlock



## A Test Unit for the 21st Century

Porta Systems has been manufacturing telephony-related test products for three decades. By working closely with the major service providers around the globe, Porta Systems has become the market leader in this specialised field. In response to the changing requirements of the telecommunications industry, we are constantly developing new products that meet the needs of the service providers worldwide. The *Sherlock* Remote Test Unit (RTU) is the latest development in the Porta Systems line of automatic telephony test equipment.

### The 6th Generation Test Unit

As the finest PC-based remote test unit available today, *Sherlock* delivers world-class performance at a competitive price. A PC-based unit means fast, accurate results in virtually any network environment without being locked into an inflexible design. As new technology and needs arise, *Sherlock* provides an expandable, upgradeable solution for tomorrow's line test needs. The culmination of nearly three decades of experience worldwide, *Sherlock* is designed to be an integral part of a complete line test solution. Combined with Porta Systems' Line Test System LTS 2000 it ensures a complete integrated line test and xDSL qualification solution.

### Confidence for New and Existing Users

This state-of-the-art *Sherlock* offers the new user confidence that they've purchased a quality system with proven performance. And existing users know that their upgrade route will be seamless and easy. Compatible with both analogue and digital switches, *Sherlock* allows for add-on hardware and software modules as technology or your company's needs change. Additionally, it is the first test unit with an open architecture designed to adapt to future network testing requirements.

### Versatile Testing Capabilities

*Sherlock* capabilities allow for extremely reliable, end-to-end testing of a copper cable pair from the switch right into a customer's equipment. Its compact size and low cost make it a cost-effective, highly reliable part of your complete line test system for testing all aspects of service from routine voice conditions to xDSL line qualification. This unique combination of size, quality, and reliability makes *Sherlock* ideal for almost every application, from the largest central office to the smallest of remote concentrators.

### Testing Unbundled lines

Now available with an integral test access matrix the *Sherlock-S96* and *Sherlock-S256* test units can access 96 and 256 unbundled loops respectively. These products are highly

cost effective for testing 2-wire circuits carrying DSL and telephony services in low line count situations. Each metallic matrix path is designed to provide total transparency to narrowband and broadband signals and a through connection in the idle or powered down state. Additionally these RTUs automatically perform non-intrusive tests to identify line conditions before splitting the line under test or applying signals that might interfere with Voice or DSL services.

### DSP Measurement Technology

The heart of *Sherlock* is its state-of-the-art measurement head, which controls and monitors all of the tests performed by the unit. A comprehensive range of tests can be performed automatically or on demand. Individual subscriber lines can be tested in just a few seconds, with test results available immediately.

### Accurate and Reliable

The quality of any test results can only be as good as the accuracy of the measurement head itself. *Sherlock* responds to this challenge by running its own self-test and calibration routines before and during every test session.

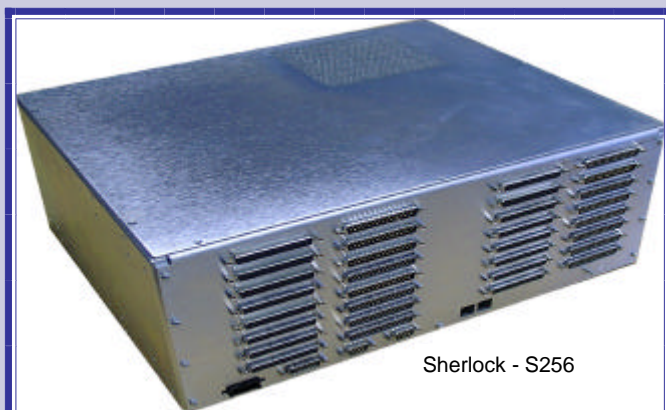
### Remotely Managed

With its unique download interface, *Sherlock* allows for full remote maintenance and software enhancements for maximum flexibility and lower cost of ownership. Configuration information such as test trunk interface and set-up data is stored centrally and downloaded to each RTU, allowing the same standard unit to be fitted in any switch type. Software updates for new features and facilities are downloaded to the unit remotely, making updates easy and quick to install. In addition, the *Sherlock* can be remotely monitored to reveal the unit's software level and status.

### Proactive Network Maintenance

*Sherlock* provides unprecedented performance and is the ideal tool for proactive network maintenance. It provides an economic solution for large-scale network testing every day of the week.

As part of the Porta Systems' suite of applications, the *Sherlock* Remote Test Unit is helping companies worldwide better manage their service delivery and service assurance infrastructure. For nearly three decades, Porta Systems has been delivering leading edge line testing tools. The *Sherlock* Remote Test Unit is the state-of-the-art line test solution for today's increasingly complex world.



## Features

- Digital and analogue switch compatibility
- Dial tests (Pulse and DTMF)
- Fully automatic test mode
- Hazardous line condition protection
- Manual 'on-demand' test mode
- Ringing tests
- Camp on test mode
- Dial tone tests
- Line-in, line-out and bridged test options
- Subscriber's metering tests
- Configurable test parameters
- PBX line tests
- Multiple test scripts
- Timed break recall tests
- AC voltage measurements
- Howler
- DC voltage measurements
- Pair location tone oscillator
- Resistance measurements
- Transmission test tone generator
- Capacitance measurements
- Forced line release
- AC current measurement
- Make-before break Line access
- DC current measurement
- Failsafe Line release
- Signal detection tests
- Switchable line reversal
- Frequency measurement
- Remote RTU reset
- Level measurements
- Powered by CO battery
- Automatic terminator type detection
- Security protection
- Voice communication to subscriber
- Self calibration and monitoring
- Speech monitor with switchable scrambling
- Single Ended Line Qualification (SELQ)
- Enhanced noise & balance Measurements
- DLC/Pair gain identification
- Line length determination
- Insertion loss & attenuation analysis
- User-configurable filters & thresholds
- Supports "Traffic Light" user display
- Overnight/On-Demand Accessible
- Test/No-Test Trunk Compatible

## Future Feature Enhancements

- Wideband test facilities
- Load Coil Detection & Count

## Specifications

### Voltage tests

DC Range: - 500 to + 500 volts  
AC Range: 0 to 350 volts RMS  
AC Frequency: 20 Hz to 1 kHz  
Accuracy:  $\pm 2\%$   
Resolution: 1 volt  
Tests performed: B-leg / Earth, A-leg / Earth  
B-leg / A-leg

### AC/DC current tests

Range: 0 to 99mA  
Accuracy:  $\pm 5\%$   
Resolution: 1mA  
Tests performed: Foreign current B-leg / Earth  
Foreign current A-leg / Earth  
Foreign current B-leg / A-leg  
DC loop current: B-leg / A-leg

### Resistance tests

Range:  $0\Omega$  to  $50M\Omega$   
Accuracy:  $\pm 2\%$  0 -  $100k\Omega$   
 $\pm 5\%$   $100k$  -  $1M\Omega$   
 $\pm 10\%$  1 -  $10M\Omega$ ,  
 $\pm 20\%$  10 -  $50M\Omega$   
Resolution: 1 $\Omega$  or 3 significant digits  
Tests performed: A-leg / Earth, B-leg / Earth  
B-leg / A-leg, A-leg / B-leg  
A-Battery, B-Battery

### Capacitance tests

Range:  $0\mu F$  to  $10\mu F$   
Accuracy:  $\pm 1nF$  0 -  $5nF$   
 $\pm 2\%$   $5nF$  -  $5\mu F$   
 $\pm 5\%$   $5\mu F$  -  $10\mu F$   
Resolution: 1nF or 3 significant digits  
Tests performed: B-leg / Earth, A-leg / Earth  
B-leg / A-leg

### Dial tests

Pulse rate: 8 to 20 pps  
Accuracy:  $\pm 1$  pps  
Duty cycle: 80/20 to 20/80  
DTMF: BS6305 and CCITT compliant  
parametric tone measurements

### Level and Frequency tests

Range: 200 Hz to 80 kHz  
Frequency Accuracy:  $\pm 12$  Hz  
Level Accuracy:  $\pm 1$  dB ( $600\Omega$  termination)

### Ringing tests

Frequency range: 10 Hz to 100 Hz  
Voltage: Up to 90 volts RMS  
On/off cadence: 1 or 2, programmable  
Line feed: Normal, Reverse, Reverse while ringing

### Operating environment

Temperature range: 0 C to 45 C  
Humidity range: 5% to 80% non-condensing

### Subscriber metering tests

Pulse frequency: 10 kHz to 20 kHz  
Signal Frequency: Programmable  
Voltage Level: 25 volts

### Tones generated

Transmission test tone: 300 Hz to 10 kHz  
Level: - 40 dB to 0 dB  
Accuracy:  $\pm 1$  dB  
Pair identification tone: 300 Hz to 3.4 kHz  
Intrusion tone: 1.4 kHz  
Howler: Gradual increasing amplitude multi-frequency tone avoiding acoustic shock

### Termination type auto detect

Customer premises line termination  
Off-hook telephone  
Telephone

### Security

Programmable security code

### Supply voltage

DC supply (S96 & S256): 36 to 72 volts

### Power consumption

DC Power (S96 & S256): < 50W

### Test Controller Communication

Interface: V24 with modem control  
Maximum speed: 38400 Baud  
Ethernet: 10 base T (optional)

### Reliability

MTBF: Greater than 10 years

### Product approvals and standards

CE approved: Electromagnetic emissions  
Safety standards: IEC, EN60950

### Dimensions

Both models are 19" and 23" rack compatible.  
S96 (HxWxD): 80.5 x 426 x 344.5 millimetres  
(3.17 x 16.77 x 13.56 inches)  
S256 (HxWxD): 167 x 425 x 351 millimetres  
(6.63 x 16.69 x 13.75 inches)

### Weight

Sherlock S96 (fully equipped): 7 kg (15 lbs)  
Sherlock S259 (fully equipped): 13 kg (29 lbs)

### Connections

V.24 with modem  
CO battery connections  
Multiple 2-wire or 4-wire test pairs (optional)  
Test Train Interface (optional)  
Voice and Data Modems (optional)  
Ethernet 10 base T (optional)

#### Note:

The information contained in this document has been confirmed using specific tests and line conditions defined in the associated Porta System's Acceptance Test Specifications and is correct at the time of publishing.

## OPTIONS

**Test Train Interface** - provides the capability of interfacing to an analogue Switch Test Access. A maximum of two Test Train Interfaces can be fitted into a *Sherlock*-S96. A pre-defined plug-in Configuration Card is used to configure the relays and analogue inputs to the test access interface.

**Enhanced Test Bus Switching Interface** - provides the ability to switch to 16 x 4-wire or 32 x 2-wire test buses. The S256 provides the capability to switch up to 256 x 4-wire test buses.

**Voice Facilities** - provides support for an incoming analogue voice line and the status of the voice connection to be monitored. Incoming calls to the RTU are automatically answered under the control of the host CPU. A dial-back facility, which can be scrambled, is also included. This provides a talk and monitor facility which permits interactive testing.

**Test Access Matrix** - provides up to 96 or 256 ports in modules of 16 ports. Each port is a through-connected 2-wire metallic circuit compatible with broadband and DSL technologies. This option provides access to unbundled circuits.

For further information contact...

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