



**TRIO**  
DATACOM

# D Series

## Hot Standby Base Station

### DH900 - Digital Base



*Trio DataCom's Hot Standby Full Duplex Digital Base Stations is a member of the D Series of digital radio modems and include all of their proven functionality. In addition, DH900 includes independent automatic changeover to duplicated devices.*

The DH900 Hot Standby Base Station is available in various configurations designed for a single or separate transmit and receive antennas, providing hot standby operation right through to the antenna system.

#### Features:

- ❖ Fully duplicated full duplex digital radio base station
- ❖ Automatic changeover validation on both RF and digital parameters
- ❖ High reliability static gate array control logic
- ❖ Automatic, manual or remote selection of on-line base station
- ❖ Graphical bar LED panel displays
- ❖ Member of the **D Series** family of Data Radio Modems - providing all of the same features
- ❖ Over voltage and reverse polarity protection
- ❖ Operates from dual independent power supplies
- ❖ 5 Watt full duplex operation
- ❖ Software selectable configuration parameters
- ❖ Housed in a rugged aluminium 19" enclosure
- ❖ Range of ancillary equipment - half/full duplex remote radios and base stations

#### Radio and Modem

The **D Series** Hot Standby Base Station radios have been designed to meet worldwide regulatory guidelines, including FCC. This fully synthesised radio is programmable in 6.25/7.5 kHz increments to accommodate various worldwide channel spacings.

The in-built modem includes a custom DSP developed for data communications over narrow band radio systems. This system offers minimum occupied bandwidth and optimal data integrity.

#### Operation and Construction

Trio DataComs Hot Standby Base Stations provide the basis for a high reliability data radio modem installation. They are purpose designed to minimise common component failures.

The DR900 data radios form the basis of the **D Series** Base Stations, thus providing all the features and specification of these high performance radio modems. The use of this common radio platform ensures complete system integration.

Microstrip hybrid combining networks, rather than relays, are used to ensure maximum reliability of radio frequency changeover circuits. This ensures a 'soft fail' operation.

The RF power amplifier module is constructed from a pair of high reliability linear power modules. The two amplifiers are combined using microwave hybrid coupling techniques with no active or

moving components and are hence permanently connected to the antenna. Both modules run from separate regulated and over-voltage protected supplies.

The low noise receiver pre-amplifier uses the same techniques as the transmitter power amplifier. No active circuits or mechanical RF changeover devices are employed and the output of the LNA is fed to both radio receivers.

A display panel mounted behind the front panel houses LED array indicator units showing all vital signs of the unit. The display module also contains the power supply pre-conditioning components and self healing short circuit protection.

The hot changeover logic is contained on a single circuit board employing highly reliable static gate array technology which constantly monitors both RF characteristics and data integrity. This PCB also contains solid state opto coupled RS232 changeover circuits running from dual gated and fused power rails.

The dual redundant base stations can be configured with or without inbuilt diplexers and receiver preselectors, accommodating for individual TX / Rx combining antennas, separate combining Tx and Rx antennas, or a single combining Tx / Rx antenna

Housed in a rugged 19" rack mountable module, the **D Series** dual redundant base stations offer excellent performance and reliability.

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### Configuration

Configuration of the dual redundant base station with Trio's **D Series** programming software (DRProg) is completely Windows® based for all parameters, such as; frequency, transmitter power, digital mute level, PTT timer, system configurations, port settings.

### Network Management & Diagnostic (Optional)

A large distributed network, or even a simple point-to-point link, requires comprehensive fault reporting and diagnostics to ensure a high level of availability. Trio **D Series** products offer sophisticated in-built diagnostics using the optional **TView™** software. This capability allows the customer to remotely monitor and maintain their system, minimising the likelihood of failures, by pointing out component degradation and decreasing the time to diagnose and repair. There is no necessity to visit the master station or interfere with the host data integrity, other than additional data transfer. For further details, consult the **TView** data sheet.

### Specifications:

RADIO	
Frequency Range**	853-929 MHz +/- 5MHz
Channel Selection	Fully programmable
Frequency Splits	76MHz Tx/Rx frequency splits available
Frequency Stability	±1ppm (-10 to 60°C ambient, opt. -30 to 70°C) Higher frequency stability options are available due to intelligent processor controlled temperature compensation
Aging	<= 1ppm/annum
Full Duplex	Continuous duty cycle
Data Rate (rf)	4800 / 9600 bps
Configuration	All configuration via Windows software

  

TRANSMITTER	
Tx Power	5 Watt (+37 dBm) at antenna diplexer port standard
Modulation	Narrow band digital filtering binary GMSK
Occupied Bandwidth	Meets various international regulatory guidelines for point-to-point and point-to-multipoint
Tx Attach Time	< 1 mSecond
Timeout Timer	Disabled or Programmable 1-60 seconds
Tx Spurious	<= -65 dBc

  

RECEIVER	
Sensitivity	-118 dBm for 12 dB SINAB
Blocking	> 90 dB (EIA)
Intermodulation	<= 70 dB (EIA)
Spurious Response	<= 70 dB (EIA)
Select. and Desense	65 dB (EIA)
AFC Tracking	±4 kHz tracking @ -90 dBm/attack time <10 mS
Mute	Programmable digital mute

\*\* Various sub-frequency bands available.

### Collision Avoidance

A unique fully integrated, yet independent, low speed supervisory data channel embedded within the primary bit-stream provides collision avoidance facilities which are transparent to the user. The use of this feature makes this product ideally suited for reliable, error free data transmissions between stations in high density point-to-multipoint data networks.

The benefits include:

- Multiple asynchronous applications operating on the one radio channel.
- Enhanced performance of report-by-exception networks.

### Related Products

- ❖ Data Radio Modems (DR900)
- ❖ Base Station (DB900)
- ❖ 9 Port Stream Router Multiplexer (MSR)
- ❖ Network Management and Diagnostic Software (TView™)
- ❖ D Series Programming Software (DRProg™)

CONNECTIONS	
User Data Port	2 x DB9 RS232 female ports
Antenna	Type N female bulkhead (50 ohms nominal)
Power	6 pin locking. Mating connector supplied
Audio Handset	6 pin modular jack

  

MODEM	
Data Serial Port #1	Full duplex, DB9 RS232, DCE (modem), 300-19,200 bps asynchronous, hardware/software handshaking
Data Serial Port #2	Full duplex, DB9 RS232, 300-9600 bps asynchronous, software handshaking
Data Storage	On-board RAM
Channel Data Rate	4800 / 9600 bps, full duplex
Bit Error Rate	< 1x10 <sup>-6</sup> @ -109 dBm (4800 bps) < 1x10 <sup>-6</sup> @ -106 dBm (9600 bps)
Collision Avoidance	Trio DataCom's unique supervisory channel C/DSMA collision avoidance system
MultiStream™	Trio DataCom's unique simultaneous delivery of multiple data streams (protocols)

  

GENERAL	
Power Supply	13.8 Vdc nominal (11-16 Vdc)
Transmit Current	4200 mA max. @ 5 Watt Plus 500 mA (max) when panel display is on
Receive Current	1700 mA
Dimensions	19" rack mount, 4RU, 485 x 180 x 460 mm
Weight	12 kg

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Local regulatory conditions may determine the suitability of individual versions in different countries. It is the responsibility of the buyer to confirm these regulatory conditions.

Performance data indicates typical values related to the described unit. Information subject to change without notice.

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