



## **QUANTAR** STATION / REPEATER

VHF, UHF, 800 MHz

### **QUANTAR™** Station / Repeater available in:

- Conventional: Local and Wide Area
- Trunking: SMARTNET™ and SmartZone™
- ASTRO™ Digital/ Analog Operation
- SECURENET™ Voice Encryption Transparent
- 12.5 kHz and 25 / 30 kHz Operation

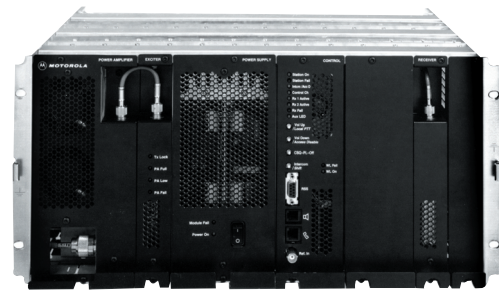
 **ASTRO**  
DIGITAL SOLUTIONS

 **FLASHport™**

# QUANTAR

Motorola's QUANTAR sets the industry standard for base station design and performance. No other base station, regardless of price, provides higher levels of absolute reliability, design excellence, environmental robustness, nor total systems capability.

The world's premier base station designed to provide the 'heart' of your digital, analog or SECURENET two way radio system, supports conventional, local area or wide area trunking configurations and when your system needs a change, you can now upgrade the base station remotely in a 'beat' from the comfort of your office.



### ***The QUANTAR....***

Motorola's QUANTAR base station provides you with true, full-functioning digital technology in either 12.5 or 25 kHz channels. This result is exceptional performance and a vast array of features that include:

- Digital audio quality comparable to analog audio
- Improved consistency in voice quality across your coverage area
- Error correction for improved system performance
- Enhanced embedded signaling with voice
- Smooth migration from existing conventional systems
- An integrated digital modem, saving critical site space

### **The QUANTAR station provides you with cutting edge**

**technology:** ASTRO digital communications. The QUANTAR can be configured as analog only, analog / SECURENET or analog / ASTRO. This capability allows the station to detect whether the received call is digital or analog and repeat it in the appropriate mode. As your systems requirement change the QUANTAR can be programmed to meet your configuration needs.

#### ***Pioneering Technology***

- New hardware architecture utilising state-of-the-art digital signal processors (DSP)
- Advanced software design to provide flexible interoperability
- Software-driven approach optimises current system applications and accommodates modification for future system enhancements.

The QUANTAR station provides the ultimate in system capability. The software driven approach means a more cost effective and upgradeable station solutions.

The QUANTAR offers unprecedented "system-flexible" station control.

#### ***FLASHport Flexibility***

The QUANTAR station's innovative and reliable, microprocessor-based design allows expansion and upgrade of both conventional and trunked systems via FLASHport. The days of total infrastructure replacement are virtually eliminated. Now FLASHport upgrades can even be performed remotely via telephone lines.

### ***Conventional, SMARTNET or SmartZone Trunking***

The QUANTAR can be configured as a conventional base station or repeater to meet your system needs.

QUANTAR stations can operate in a SMARTNET system as trunked repeaters for single site networks or in Motorola's most advanced wide area trunking system: SmartZone.

Utilising Motorola's FLASHport technology the QUANTAR can be upgraded via FLASHport from a conventional station to trunking easily and quickly. The QUANTAR station can adapt to meet your changing communication needs to extend the useful of today's base station equipment in an extremely cost-effective manner.

#### ***IntelliRepeater™ Wide Area Operation***

##### **Site Control**

A QUANTAR IntelliRepeater now eliminates the need for a local site controller as a QUANTAR IntelliRepeater can simply operate both as a SmartZone remote voice channel or perform call processing control channel activities at a SmartZone remote site.

##### **Full-Featured Fault Tolerance**

The QUANTAR IntelliRepeater has the capability to transfer call processing capability to another IntelliRepeater at the site without disruption in active calls and minimal change in system access time. IntelliRepeater operation provides continuous trunking communications and retains all important features at an individual site in the event of link failures.

#### ***Over the Wireline Upgrades***

Upgrade your system now in minutes rather than hours or days traveling to your transmission sites for local upgrading, saving you valuable time and money.

QUANTAR's wireline FLASHport flexibility sets a new standard in radio infrastructure systems capabilities.

As communication requirements evolve and diversify, FLASHport capability keeps infrastructure upgrade costs to a minimum for smooth migration transitions. The QUANTAR station is designed to meet today's demanding communications requirements and provides a bridge to tomorrow's expanding system needs.

# **QUANTAR:**

## *The "Heart" of the World 's Best Radio Systems*

### **Enhanced Reliability and Flexibility**

#### **State-of-the Art Digital Receiver**

The QUANTAR station's receiver modular has been designed to provide flexible system approach with easy installation and adjustment.

- The receiver is functionally independent from the transmitter allowing implementation of crossband conventional operation.
- User-programmable channel spacing to 12.5 kHz operation simplifies station migration to narrow band channelisation plans.
- To reduce station installation and alignment time, only the conveniently front-mounted preselector on VHF and UHF stations requires tuning.
- Synthesise frequency generation allows for economical and easy-to-implement frequency changes.
- Truly wide-band receiver – 4 MHz bandwidth on VHF/UHF stations and 19 MHz in the 800 MHz band, allows for a greater range of frequencies with options for even wider bandwidth.

#### **Advanced Transmitter Design**

The QUANTAR station's transmitter design not only meets but exceeds major global intermodulation specifications for stations placed at crowded antenna sites. Electronic adjustment of deviation and power improves performance and lowers cost by reducing manual tuning adjustments at installation. Modulation sensitivity and power output are adjusted on a per channel basis to provide improved performance in a variety of system configurations. The station's transmitter is equipped with an internal wattmeter for ease in measuring transmit output power.

#### **Continuous Duty Operation**

The station is designed for continuous duty operation and may be operated at full-rated power and it still exceeds all regulatory specifications. Reliability is increased for the demanding communications systems.

#### **Built-in Single Circular**

The QUANTAR station has a single circulator included in every station to improve reliability by protecting against antenna mismatches and to aid in the reduction of interference caused by equipment at crowded sites.

#### **Truly Compact Station**

The entire QUANTAR station fits in a 5 rack-unit-high card cage weighing only 25 kg. Motorola's state-of-the-art technology allows efficient use of site space since additional equipment can be installed in the same area, giving reduced site rental costs and improved system aesthetics.

#### **Modular Mechanical Design**

The QUANTAR station's card cage modules are easily removed and replaced for station upgrades or servicing. These Field Replaceable Units (FRUs) provide prompt communications recovery. System upgrades are easily performed by replacing a system-specific functional modules or usually by simply loading new software. Both short term and long term cost saving are realised in installation, system maintenance, and upgrades.

#### **Switching AC Power Supply**

Improvements in power supply technology yield a reliable, lightweight, switching power supply. The power supply can operate over a wide range of main voltages (90-280 VAC) and frequencies (47-63 Hz) anywhere in the world without modifications. Voltages are adjusted automatically to eliminate the chance of failure due to improper installation.

### **Simplified Service and Installation**

#### **Convenient Connection Access**

Routine service ports are located at the front of the station. All primary installation connectors are located on a single back-plane accessed through the rear of the station. Installation and maintenance can be performed quickly, minimising set-up time and maintenance costs.

#### **Programming**

The QUANTAR station is based upon a flexible software design that allows programming and alignment through a personal computer and appropriate software. The user-friendly software simplifies the process of adjusting station characteristics, thereby minimising station downtime.

#### **Self-Test Diagnostics**

On power-up and during operation, the QUANTAR station automatically initiates self-tests without interfering with communications. The station conditions can be readily determined by viewing the light emitting diodes (LEDs) on the module front panels providing quick and easy visual appraisal of station status. Station alarm messages and self-designed test results are logged and accessed through the Radio Service Software. Maintenance information is at your fingertips.

## QUANTAR SPECIFICATIONS

GENERAL						
Application		Power/Band Option	RF Output Power			
Conventional Astro 6809 Astro Trunking 6809 SmartZone Astro Trunking SmartZone IntelliRepeater		X530 (132-154/150-174 MHz)	125-25 Watts		No. of Synthesised Frequencies: 1 Standard on Trunked Stations 16 Standard on Conventional Stations	
		X640 (403-433/438-470/470-494)	110-25 Watts	Channel Spacing: 2.5 kHz/12.5 kHz FM Modulation		
				Temperature Range: -30°C to +60°C		
All models support Astro Digital, SECURENET and Analog operation		X640 (494-520 MHz)	100-25 Watts		RF Imped. / Antenna Connectors: 50 Ohms / Type "N" female, Tx and Rx	
		X750 (Rx 806-825/Tx 851-870)	100-20 Watts	Input Voltage AC: 90-264 VAC, 47-6.3 Hz		
				Optional DC/DC Converter: Negative or Positive Ground Source 24 VDC Optional Battery Revert: 24 VDC/Output power can be programmed up to half of the maximum rated power		
INPUT POWER IN WATTS (VARIES WITH OPTIONS)			VHF/UHF/800		VHF/UHF/800	
Model	Dimensions (H x W x D)	Weight	Operation State	AC Line	Battery Revert 24 VDC (X30 option)	DC/DC Converter (Pos. or Neg. Gnd.) 24 VDC (X112 option)
Base/Repeater	8.75 x 19 x 17 in. <sup>†</sup> (221 x 483 x 432 mm)	55 lbs. <sup>†</sup> (25 kg)	Standby Transmit	70/55/55 460/515/400	55/45/45 385/435/335	75/58/60 505/570/440
Satellite Receiver	8.75 x 19 x 17 in. <sup>†</sup> (221 x 483 x 432 mm)	44 lbs. <sup>†</sup> (22 kg)	Receive	70/55/55	(12VDC) 55/45/45	(12VDC) 75/58/60
<sup>†</sup> Applies to station with option X87 Omit Cabinet without circulator option.						

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TRANSMITTER			
	VHF	UHF	800MHz
Electronic Bandwidth: (Transmit Bandwidth)	Full Sub-band (reduced with the addition of a duplexer option)		
Frequency Stability:	±0.0001%/External Ref. (optional)	±0.0001%/External Ref. (optional)	±0.0001%/External Ref. (optional)
Intermodulation Attenuation:	50 dB	50 dB	50 dB
(For ref. isolation):	20 dB	20 dB	20 dB
Maximum Deviation:			
Clear 25 kHz:	±5 kHz	±5 kHz	±5 kHz
SECURENET Coded:	±4 kHz	±4 kHz	±4 kHz
ASTRO/Clear 12.5 kHz:	±2.5 kHz	±2.5 kHz	±2.5 kHz
Audio Sensitivity:	-3.5 dBm to 0 dBm variable	-3.5 dBm to 0 dBm variable	-3.5 dBm to 0 dBm variable
Spurious and Harmonic Emissions Attenuation:	90 dB	90 dB	80 dB
FM Hum and Noise (750 µs de-emphasis): 12.5 kHz/25 kHz:	300 to 3000 Hz bandwidth, 60 % RSD 45 dB nominal/50 dB nominal	300 to 3000 Hz bandwidth, 60 % RSD 45 dB nominal/50 dB nominal	300 to 3000 Hz bandwidth, 60 % RSD 45 dB nominal/50 dB nominal
Audio Response (clear mode):	+1, -3 dB from 6 dB per octave pre-emphasis; 300-3000 Hz referenced to 1000 Hz at line input		
Audio Distortions (clear mode):	≤2% 1000 Hz @ 60% RSD	≤2% 1000 Hz @ 60% RSD	≤2% 1000 Hz @ 60% RSD

RECEIVER			
	VHF	UHF	800 MHz
IF Frequencies (1st, 2nd) (Frequency):	21.45 MHz/450 kHz	73.35 MHz/450 kHz	73.35 MHz/450 kHz
Adjacent Channel Rejection: (12.5/25 kHz) (Selectivity):	80 dB/85 dB	75 dB/85 dB	75 dB/85 dB
Preselector Bandwidth: (Receiver Bandwidth):	4.0 MHz	4.0 MHz	19 MHz
Sensitivity 12 dB SINAD:	0.25µV	0.35µV	0.30µV
Sensitivity 20 dBQ:	0.35µV	0.5µV	0.42µV
Static Bit Error (BER) 5%:	0.25µV	0.35µV	0.30µV
Signal Displacement Bandwidth: (Off Channel Acceptance) (12.5/25 kHz)	≥1 kHz/2 kHz	≥1 kHz/2 kHz	≥1 kHz/2 kHz
Frequency Sensitivity:	±0.0001%/External Ref. (optional)	±0.0001%/External Ref. (optional)	±0.0001%/External Ref. (optional)
Intermodulation Rejection (Intermodulation):	85 dB	85 dB	85 dB
Spurious and Image Response Rejection:	100 dB	100 dB	100 dB
Audio Response: (clear mode)	+1, -3 dB from 6 dB per octave de-emphasis from 300 Hz to 3000 Hz reference to 1000 Hz		
Audio Distortions (clear mode) (12.5/25 kHz)	1000 Hz @ 60% RSD ≤5%/3%	1000 Hz @ 60% RSD ≤5%/3%	1000 Hz @ 60% RSD ≤5%/3%
Line Output:	-20 dBm to 0 dBm @ 60% RSD, 1 kHz	-20 dBm to 0 dBm @ 60% RSD, 1 kHz	-20 dBm to 0 dBm @ 60% RSD, 1 kHz
FM Hum and Noise (750 µs de-emphasis): 12.5 kHz/25 kHz:	1000 Hz tone @ 60% RSD 45 dB nominal/50 dB nominal	1000 Hz tone @ 60% RSD 45 dB nominal/50 dB nominal	1000 Hz tone @ 60% RSD 45 dB nominal/50 dB nominal



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AN4-02-005