**ASTRO® Digital Spectra®
Clean Cab
Railroad Radio**

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The ASTRO® Digital Spectra Clean Cab Railroad Radio is a multi-channel analog/digital mobile radio capable of operating on 255 independent TX and RX frequencies, including all wideband and narrowband frequencies specified by the American Association of Railroads (AAR). In addition, the radio supports DTMF signaling, PTT-ID, conventional ASTRO digital voice, 12.5kHz channel spacing, ASTRO packet data and 3600 baud digital trunking.

Programming – All ASTRO Clean Cabs come complete with the Association of American Railroads (AAR) Frequency Allocation Plan (FAP) (1-97) as well as the new 12.5kHz narrowband channels (107-197) and the seven NOAA weather channels (100-106). All radio features are programmable via either the ASTRO Mobile CPS or the ASTRO Clean Cab RSS/CPS software.

Narrowband Operation – The ASTRO Clean Cab is capable of 12.5kHz narrowband operation and has the new FAP narrowband channels (107-197) programmed in the factory.

Digital Migration – The ASTRO Clean Cab is designed to aid in the migration from the current analog voice infrastructure to an APCO/P25 digital infrastructure. An unique feature of this radio is the capability of the operator to switch transmit modes from analog to digital with the press of a button. A LED indicator on the control head lets the user know which mode is selected. The radio is designed to receive either analog or digital automatically. This allows rail corridors to be migrated without the need of reprogramming the ASTRO Clean Cab.
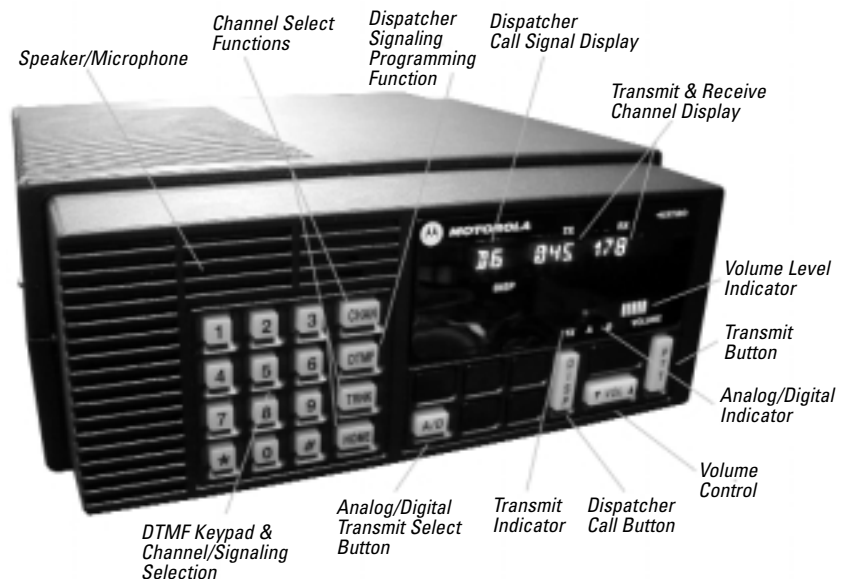
Intuitive User Ergonomics – The ASTRO Clean Cab control ergonomics were designed to be similar to the existing Spectra Clean Cab to aid the end users in training. Even though the radio is capable of 255 channels, the first 99 channels may be entered with only four digits (the leading zeros are automatically added). Channels 100-255 must be entered with all six digits.
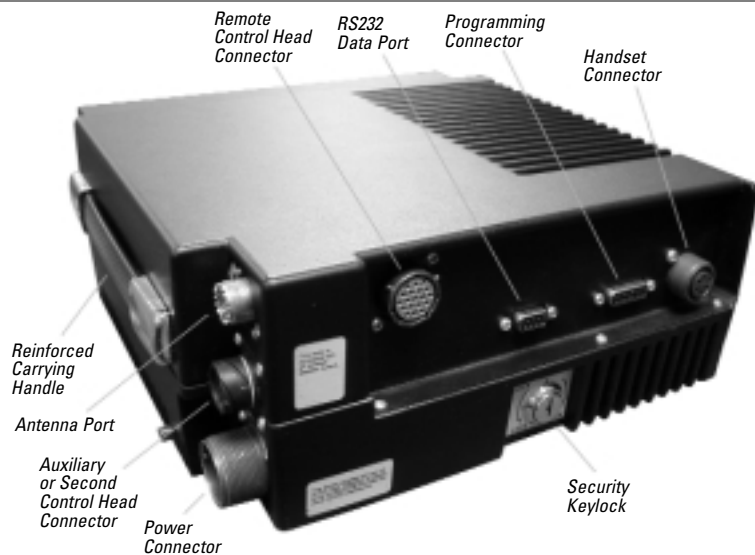
Data Operation – The ASTRO Clean Cab supports the APCO 9600 Baud Data protocol and has a dedicated RS232 port for routing customer data (work orders, track warrants, track bulletins, schedules, manifests, engine health, GPS, etc.) to and from the radio.

3600 Baud Digital Trunking – The ASTRO Clean Cab is capable of supporting 3600 baud digital trunking. A dedicated button on the control head allows for trunking modes to be accessed by the end user.

Home Mode Operation – The ASTRO Clean Cab is capable of supporting up to 99 home modes. These modes are programmed in the CPS and accessed via the control head by the end user.

Expanded Dispatch Call – The ASTRO Clean Cab is capable of 1, 2 or 3 digit dispatcher call sequences. These sequences are either programmed in CPS or may be programmed by the end user via the control head.

Speaker/Microphone · Channel Select Functions · Dispatcher Signaling Programming Function · Dispatcher Call Signal Display · Transmit & Receive Channel Display · Volume Level Indicator · Transmit Button · Analog/Digital Indicator · Volume Control · Dispatcher Call Button · Transmit Indicator · Analog/Digital Transmit Select Button · DTMF Keypad & Channel/Signaling Selection

Remote
Control Head
Connector

RS232
Data Port

Programming
Connector

Handset
Connector

Reinforced
Carrying
Handle

Antenna Port

Auxiliary
or Second
Control Head
Connector

Power
Connector

Security
Keylock

FLASHport® – The ASTRO Clean Cab ships standard with FLASH EE Prom which allows for feature and system upgrades.

PTT-ID – The ASTRO Clean Cab is capable of sending and receiving MDC PTT-IDs on an analog conventional channel and digital PTT-IDs while on a digital conventional channel or trunking system.

Signaling Tones – The ASTRO Clean Cab supports the 12 Dual Tone Multi Frequency (DTMF) tones. These tones may be accessed via the keypad and sent out either in a hot keypad or programmed as a dispatcher call.

Keypad Programmability – Function buttons and all DTMF characters such as 0-9, # and * can be selectively disabled via CPS.

DTMF Programmability – Tone duration and timing are programmable via CPS.

Freight or Transit – The ASTRO Clean Cab can be ordered for standard freight operation or with the rail transit option that gives the end user additional buttons for PA/Intercom control.

Operational Flexibility – The ASTRO Clean Cab comes standard with a integral control head and a remote control head connector. A second control head/cable can be purchased separately to allow dual control head operation. The radio may also be purchased with a remote control head(s) option that allows the radio to be installed in a remote location in the locomotive. The radio may be operated with the internal microphone, handset, palm-style microphone or from a remote panel via the auxiliary connector.

Alphanumeric Display – The vacuum fluorescent alphanumeric display is automatically adjusted to enhance readability in bright sunlight as well as at night or dark locations. The display provides standard numerical display currently in use on railroads as well as the ability to display home names and special messages.

Easy-to-See Viewing Angle – The control head has been designed for wide angle visibility of the display. Additionally, an automatic dimmer controls the intensity of the Vacuum Fluorescent Display.

Oversized, Backlit and Color-coded Control Push Buttons – Buttons are color coded to identify function and are backlit for operation in dark locations. Channel selection, home mode selection, DTMF operation, Analog/Digital operation and Dispatcher access are all accessed through the keypad buttons. All buttons are oversized for ease of use while wearing gloves.

Cord-Free Operation – ASTRO Clean Cab comes standard with an integral microphone and a 10 watt integral speaker.

Rugged and Reliable Design – Strong aluminum die-cast metal housings protect the ASTRO Clean Cab against harsh environments. The radio has been subjected to stringent mechanical and environmental testing to ensure ruggedness. The circuitry and radio construction has undergone extensive accelerated life testing.

Modular Construction – The major elements of the ASTRO Clean Cab are modular in design to simplify servicing. Additionally, all current Spectra cabling and control heads are compatible with the ASTRO Clean Cab for basic functionality. The new ASTRO Clean Cab control head also may be used on older Spectra Clean Cabs. This allows for both quick installations of the ASTRO Clean Cab and the ability to use existing control heads, radios and cables as emergency spares.

Primary Voltages – The ASTRO Clean Cab is capable of supporting 72VDC, 36VDC or 12VDC with modular power converters.

Improved Connector Configuration – Association of American Railroads (AAR) specified connectors have been recessed to provide protection for added durability and reliability.

Transceiver Security – Two lock mechanisms are externally located on the radio housing, an integral lock plus an optional padlock locking ear. Screws for disassembly are accessible only from the bottom of the chassis.

GENERAL SPECIFICATIONS

FCC Designator	AZ492FT3772

Temperature Range	
Operating	–30ºC to +60ºC
Storage	–40ºC to +85ºC

Power Supply	72Vdc, 36Vdc 12Vdc Negative Ground Only

Maximum Current Drain **13.8V operation**		
	Standby:	1.5A
	Receive at Rated Audio:	4.0A
	Transmit at 40 W:	15.0A
	Transmit at 30 W:	13.0A
72V operation	Standby:	0.8A
	Receive at Rated Audio:	1.0A
	Transmit at 40 W:	4.0A
	Transmit at 30 W:	3.5A

Dimensions (H x W x D)	4.54" x 11.25" x 12" (121mm x 285mm x 305mm)
Weight	18lb (8kg)

RECEIVER SPECIFICATIONS

Frequency Range	Range 1: 146-174 MHz
Channel Spacing	12.5kHz, 25 kHz
Input Impedance	50 Ohm
Frequency Separation	28 MHz

Sensitivity **(per EIA spec. RS204C)**	
20dB Quieting	(25/30 kHz Channel Spacing): 0.30 µV
12dB Quieting	(12.5 kHz Channel Spacing): 0.20 µV

Selectivity **(Measured in Analog Mode)** **(per EIA Specifications)**	25/30 kHz Channel Spacing: –80 dB
(pre-amp)	12.5 kHz Channel Spacing: –70 dB

Intermodulation **(Measured in Analog Mode)** **(per EIA Specifications)**	–70.0 dB
Spurious Rejection	–80.0 dB
Frequency Stability	±0.00025% (-30ºC to +60ºC, 25ºC Reference)

Audio Output **(Measured in Analog Mode)** **(per EIA Specifications)**	
Front Panel Speaker	10 watts @ less than 3% Distortion
Auxiliary Connector	5 watts @ less than 3% Distortion

TRANSMITTER SPECIFICATIONS

Frequency Range	Range 1: 146-174 MHz
Channel Spacing	12.5 kHz, 25 kHz
Channel Increment Step	2.5kHz
Output Impedance	50 Ohm
Frequency Separation	28 MHz

Rated Output Power	
USA	40 Watts
Canada	30 Watts

Frequency Stability	±0.00025% (–30ºC to +60ºC, 25ºC Reference)

Modulation Limiting **25 kHz/ 30 kHz**	
Channel Spacing	±5.0 kHz
12.5 kHz Channel Spacing	±2.5 kHz

FM Hum and Noise **(Measured in the** **Analog Mode)**	–45 dB

Emission **(Conducted and Radiated)**	–75 dB

Audio Sensitivity	0.08V ±3 dB (CH Mic) (For 60% Max. Deviation at 1 kHz)

Audio Response **(Measured in the** **Analog Mode)**	+1, –3 dB (6dB/Oct Pre-Emp 300 to 3000 Hz)

Emissions Designators	8K10F1E, 11K0F3E, 15K0F2D, 16K0F3E, 20K0F1E, 15K0F1D, 10K0F1D, 10K0F2D

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