

P25 Conventional MASTR[®] III Station VHF, UHF, 800 MHz

The MASTR III P25 digital Base Station provides

- Secure digital communications for mission-critical applications
- Capability for both conventional Project 25 digital communications and conventional analog communications
- Capability of delivering Internet Protocol (IP) data and voice to a Harris P25^{IP} network



The MASTR III P25 provides the flexibility to commission a base station that will meet critical communication needs today and into the future. Whether users are designing a conventional Project 25 system, a conventional VHF system, or an IP-based P25 network, the MASTR III P25 keeps pace with their needs.

Flexible, Efficient P25 Design

The MASTR III P25 incorporates P25 digital voice and data using a digital signal processor modem for maximum design flexibility. The station can be configured for P25 mode, and can communicate with the user's current analog dispatch network through a 4-wire audio port. The P25 digital voice is translated through an on-board voice encoder/decoder in the station to allow immediate access to P25 communications through the user's existing network.

The MASTR III P25 can also be configured for normal conventional analog operation at sites where P25 currently is not in use.

P25^{IP} Network

As network needs expand, the MASTR III P25 is ready to grow to meet the communication requirements of the 21st century. The MASTR III P25 and a SitePro Controller enable IP voice and data packets to be sent over a Harris P25^{IP} network and be received at the base station. This setup enables all of the advantages of IP:

- Seamless integration of off-the-shelf IP data applications.
- Easy interconnection of peripherals and ancillary equipment such as mobile data terminals, printers, scanners, and video devices for user organizations.

- Economical routing and backhaul of network data.
- Redundancy benefit of distributed IP architecture, one of the key requirements for most public safety users.

Programmable Flexibility

PC programmable options provide flexibility, simplified setup, and easy field upgrades. The fully synthesized design of the MASTR III P25 base station allows the user to make frequency changes quickly, easily, and affordably.

The modular design of the base station makes maintenance and servicing simple and fast.

Conventional Options and Accessories

Programmable Options

- Transmit Frequencies
- Receive Frequencies
- Channel Guard Digital and Tone
- Channel Guard Disable
- Repeater Disable
- Intercom Function
- DTMF Decode
- Morse Code ID
- Squelch Tail Elimination (STE)
- Carrier Control Timer
- Station Control
 - DC Control
 - Tone Control
 - Repeater
 - DC/Repeat
 - Tone/Repeat
- 4-Wire Audio
- Scan

Additional Options

- Service Microphone
- Antenna Multicoupler
- 230V Power Supply
- Duplexer
- Antenna Relay
- Combiner
- Isolator
- Squelch-Operated Relay
- Remote Controllers
- Battery Standby
- Battery Charger
- Gel Cell Battery
- Switchable Channel Spacing

Conventional Tone and DC Remote Controlled Stations

Audio (Line to Transmitter)

- Line Terminating Impedance: 600 Ω
- Line Level (Adjustable): -20 to +7 dBm
- Frequency Response: ± 3 dB @ 300-3000 Hz

Tone Control

- Function Tones: 650, 750, 850, and 950 for P25 only
1050, 1150, 1250, 1350, 1450, 1550,
1650, 1750, 1850, 1950, and 2050 Hz

Secur-it Tone and Transmit Tone:

- Tone: 2175 Hz
- Transmitted 2175 Hz Tone Level: 20 dB Below Voice
- Permissible Control Line Loss @ 2175 Hz: 30 dB

Audio (Receiver to Line)

- Audio Amplifier Input Impedance: 10 K Ω
- Input Level: 1 V RMS (for 5 kHz Deviation)
- Output Impedance to Line: 600 Ω
- Output Level to Line Voice (1 kHz ref): +7 dBm (Adjustable)
- Tone (1 kHz ref): +7 dBm (Reference 7 dBm)
- Frequency Response: +1 and -3 dB @ 300-3000 Hz
- Hum and Noise, Noise Squelch: -55 dB (Reference 7 dBm)
- Tone Squelch: -30 dB (Reference 7 dBm)

DC Control Control Currents:

- Line Loop Resistance (maximum): 11 K Ω (Includes 3K Termination)

Regulatory Data

Frequency Range (MHz)	Power Output (Adjustable) (W)	FCC Type Acceptance Number	Applicable FCC Rules	Industry Canada Certification Number	Applicable Industry Canada Rules	NTIA Certification Number
136-174	10-110	OWDTR-0032-E	22, 90	3636B-0017	RSS-119	JF-1208074
403-450	10-100	OWDTR-0038-E	90	3636B-0038	RSS-119	JF-1208074
450-512	10-100	OWDTR-0039-E	22, 74, 90	3636B-0039	RSS-119	JF-1208074
806-870	10-100	OWDTR-0036-E	90	3636B-0036	RSS-119	NA

General Specifications

CABINET	INDOOR CABINET (Floor Mount)	
	69 inches	83 inches
Size [in. (cm)]		
Height	69.1 (175)	83.0 (211)
Width	23.1 (59)	23.1 (59)
Depth	21.0 (53)	21.0 (53)
Weight (min) [(lb) (kg)]		
Continuous Duty	576 (261)	693 (315)
Packed, Domestic Shipping	606 (275)	729 (331)
Number of Rack Units	33	41
Max. Units w/Power Supply	4	5

NOTE: One rack unit equals 1.75 inches. Stations occupy 6 rack units of cabinet space.

Service Speaker:	1W @ 8Ω
Service Microphone:	Transistorized Dynamic
Duty Cycle (EIA) Continuous:	Transmit/Receive - 100%
Ambient Temperature (or full spec performance per EIA):	-22 to +140°F (-30 to +60°C)*
Humidity (EIA):	90% @ 122°F (50°C)
Input Power Source:	120 VAC (±20%), 47-63 Hz
Optional Input Power Source:	230 VAC (±15%), 47-63 Hz
Standby Battery Source:	26.4 VDC, 50 AH (min.)
Antenna Connections:	Type N
Length of AC Power Cable:	10 ft (3048 mm)
Metering:	Provided through Handset or TQ0619 Software
Altitude:	
Operable:	Up to 15,000 ft (4,570 m)
Shippable:	Up to 50,000 ft (15,250 m)

*Standard network equipment for P25[®] and EDACS IP configurations (0-40°C). Expanded temperature range equipment is available on request.

Source Power Drain	VHF Analog	VHF P25 Digital	UHF Analog	UHF P25 Digital	800 MHz Analog	800 MHz P25 Digital
Frequency Range (MHz)	136-174	136-174	380-512	380-512	851-870 TX, 806-825 RX	851-870 TX, 806-825 RX
AC Input Power	5A @ 120 VAC or 3A @ 230 VAC	5A @ 120 VAC or 3A @ 230 VAC	5A @ 120 VAC or 3A @ 230 VAC	5A @ 120 VAC or 3A @ 230 VAC	5A @ 120 VAC or 3A @ 230 VAC	5A @ 120 VAC or 3A @ 230 VAC
DC Input Power (A)	A	A	A	A	A	A
Tx (full/half) Power	13.8	2	2	2	2	2
Rx Power	13.8	2	2	2	2	2
Tx (full/half) Power	26.4	12/8	12/8	12/8	12/8	12/8
Rx Power	26.4	0.5	0.5	0.5	0.5	0.5

Transmitter (As applicable, analog specifications measured per TIA/EIA-603 Procedure and P25 digital per TIA-102.CAAA-A)

	VHF Analog	VHF P25 Digital	UHF Analog	UHF P25 Digital	800 MHz Analog	800 MHz P25 Digital
Frequency Range (MHz)	136-174	136-174	380-512	380-512	851-870	851-870
Rated Power Output (W)	110	110	100	100	100	100
RF Output Impedance (Ω)	50	50	50	50	50	50
Conducted Spurious and Harmonic Emission	-36 dBm	-70 dBc	-36 dBm	-70 dBc	-36 dBm	-70 dBc
Frequency Stability (ppm)	±1.0	±1.0	±1.0	±0.5 (CAAB 3.2.2) external frequency std	±1.0	±0.15 external frequency std
Modulation Deviation (kHz)						
Wideband	0 to ±5	NA	0 to ±5	NA	0 to ±5	NA
Narrowband	0 to ±2.5	2.83 kHz nominal per TIA 102 CAAB	0 to ±2.5	2.83 kHz nominal per TIA 102 CAAB	NA	2.83 kHz nominal per TIA 102 CAAB
NPSPAC	NA	NA	NA	NA	0 to ±4	2.83 kHz nominal per TIA 102 CAAB
FM Noise (dB)	-55	NA	-55	NA	-55	NA
Channel Spacing (kHz)	12.5/25/30	12.5	12.5/25	12.5	25, 12.5 NPSPAC	25
Synthesizer Step Size (kHz)	1.25	1.25	1.25	1.25	6.25	6.25
Frequency Spread Full Spec (MHz)	2	1.5	2	1.5	0.5	0.5
Audio Distortion (@ 1 kHz)	Less than 3%	Tx mask 47CFR90.210d	Less than 3%	Tx mask 47CFR90.210d	Less than 3%	Tx mask 47CFR90.210d
Audio Response (pre-emphasis)	Within +1/-3 dB of 6 dB/octave, 300 to 3000 Hz per EIA	Mod fidelity <5%	Within +1/-3 dB of 6 dB/octave, 300 to 3000 Hz per EIA	Mod fidelity <5%	Within +1/-3 dB of 6 dB/octave, 300 to 3000 Hz per EIA	Mod fidelity <5%
No. of Conventional Channels	Up to 12	Up to 12	Up to 12	Up to 12	Up to 12	Up to 12

NOTE: Rated power output is measured at the transmitter power amplifier output connector per FCC Type Acceptance filing information. Any customer-required optional items such as power measuring devices and/or duplexers will introduce loss between the transmitter output connector and the station cabinet output connector. This loss will reduce the available power at the station connector.

Receiver (As applicable, analog specifications measured per TIA/EIA-603 Procedure and P25 digital per TIA-102.CAAA-A)

	VHF Analog*	VHF P25 Digital	UHF Analog*	UHF P25 Digital	800 MHz Analog*	800 MHz P25 Digital
Frequency Range (MHz)	136-174	136-174	370-512	370-512	806-825	806-825
RF Input Impedance (Ω)	50	50	50	50	50	50
Channel Spacing (kHz)	12.5/25/30	12.5	12.5/25	12.5	25, 12.5 NPSPAC	25, 12.5 NPSPAC
Synthesizer Step Size (kHz)	1.25	1.25	1.25	1.25	6.25	6.25
Sensitivity (dBm) EIA (12 dB SINAD)	-116 (0.35 μV)	-116 (5% BER) (0.35 μV)	-116 (0.35 μV)	-116 (5% BER) static, -108 faded	-118 (0.28 μV)	-116 (5% BER) static, -108 faded
Threshold Squelch (dBm)	-119 (0.25 μV)	NA	-119 (0.25 μV)	NA	-121 (0.18 μV)	NA
Selectivity						
12.5 kHz	75 dB	60 dB Dig ACR	75 dB	60 dB Dig ACR	20 dB (NPSPAC)	60 dB Dig ACR
25 kHz	85 dB	NA	85 dB	NA	85 dB	NA
30 kHz	90 dB	NA	NA	NA	NA	NA
Frequency Stability (ppm)	±1.0	±1.0	±1.0	±0.5	±1.0	±0.15 (external freq. std)
Signal Displacement Bandwidth (kHz)	12.5: ±1, 25: ±2	12.5: ±1	12.5: ±1, 25: ±2	12.5: ±1	±2, NPSPAC: 1.6	12.5: ±1
Intermodulation Rejection (dB)						
12.5 kHz	75	80	75	80	NA	80
25 kHz	80	NA	80	NA	80	NA
30 kHz	80	NA	NA	NA	NA	NA
Spurious and Image Rejection (dB)	90	90	90	90	90	90
Frequency Spread						
Full Specs. (MHz)	2.0	2.0	2.0	2.0	0.5	0.5
Audio Output @ 1000 Hz, 25/30 kHz Channel (W)	1 @ <3% distortion	NA	1 @ <3% distortion	NA	1 @ <3% distortion	NA

*Audio Response (de-emphasis): Within +2/-8 dB of 6 dB/octave (@ Local Speaker), 300 to 3000 Hz per EIA
Within +1/-3 dB of 6 dB/octave (@ Line Output), 300 to 3000 Hz per EIA

