



**MOTOROLA**

Paging Systems

**NETWORK  
TRANSMITTERS & RECEIVERS**



# Nucleus® II

300 WATT 900 MHz PAGING STATION



As a result of Motorola's continuous commitment to product enhancements, we are proud to present Nucleus® II, the next generation of the Nucleus product line. Nucleus II offers enhancements to the power amplifier, power supply, controller and airflow design to make it the most robust and efficient paging station in the worst environmental conditions.

Nucleus II embodies *Best-In-Class* solutions to crucial system issues – including site costs, power sources, reliability, and ease of installation and services. But its key advantage is that it offers the highest reliability rate in the industry.

## FEATURES/ADVANTAGES

The Nucleus II boasts a list of unique product features: small station size, FLEX™ compatibility, design based on the modular Field Replaceable Unit (FRU) – and the highest reliability rate in the industry. These features are sure to give your paging system a competitive edge today and far into the future.

## MINIMAL STATION SIZE/WEIGHT

Its uniquely compact size and volume offers reductions of up to 80% compared to previous station sizes. The 300 Watt, 900 MHz model is 14 inches tall and weighs 105 lbs. in a rack-mount configuration.

## FLEX CAPABILITY

By increasing paging speed, the unit allows you to serve more subscribers per channel. Utilizing FLEX, you can seamlessly employ more paging signaling schemes of up to 6400 bps with 4-level modulation or process 2-level modulation to service POCSAG pagers.

## I20 INTERFACE

I20 is a paging infrastructure standard interface between the transmitter and the base station controller. The I20 interface protocol gives you even more flexibility within your system by allowing your Nucleus stations to interface with I20 compliant controllers from other manufacturers.

## FLEXIBILITY

Nucleus I20 offers you freedom of choice. As you expand your paging network or replace obsolete transmitters, there's no worry about paging system interoperability. And, the migration to I20 capability for existing Nucleus stations is fast and painless, simply swap a matched pair and add a cable connection from the base station controller to the Nucleus, and you are on the air.

## EASY UPGRADING TO ReFLEX™

The Nucleus' unique design includes extensive DSP signal-generation processes which give it the ability to process FLEX messages. This feature also allows a field-deployed Nucleus to be upgraded to support ReFLEX™ two-way data messaging simply by downloading licensable software.

For more information, call:  
In North America 1-800-520-7243  
Outside North America 817-245-4663  
Or, visit our website at:

<http://www.pagingsystems.com>

# Nucleus® II

## 300 WATT 900 MHz PAGING STATION

### AVAILABLE MODELS

Model Number	Frequency (MHz)	Power Output (with Standard Single Circulator)	Station Dimensions (Rack Mount) (H x W x D)	Station Weight (w/o Cabinet)	FCC Type Acceptance	Power Consumption (varies with option)	
						Operating State	AC/DC Power
PT1104	929-941	300 W* Note 1 265 W* Note 2	14 x 19 x 20 in 36 x 48 x 51 cm	105 lbs 48kg	ABZ89FC5765	Transmit Standby	1700 W (AC) 150 W (AC) 120V 60 Hz
PT1105 Internal Triple Circulator	929-941	250 W* Note 3	14 x 19 x 20 in 36 x 48 x 51 cm	105 lbs 48kg	ABZ89FC5765	Transmit Standby	1700 W (AC) 150 W (AC) 120V 60 Hz
PT1173 (42-72 V DC) PT1174 (23-34 V DC)	929-941	300 W* Note 1 265 W* Note 2	14 x 19 x 20 in 36 x 48 x 51 cm	105 lbs 48kg	ABZ89FC5765	Transmit Standby	1200 W (DC) 170 W (DC)

### GENERAL INFORMATION

#### INPUT POWER

Power Supply Type	Switching
AC Power	
Voltage	90-280 V AC line-sensing
Frequency	47-63 Hz, line-sensing
Battery Revert	24 V DC (control only)
DC Power	
Voltage	42-72 V DC, line-sensing 21-34 V DC, line-sensing

#### TX FREQUENCY (TRANSMIT BANDWIDTH VARIES BY MODEL)

Frequency Generation	Synthesized - No multiplier stages
Channel Spacing	25 kHz standard
Multiple Channel Capability	8
Conducted Spurious and Harmonic Emissions	Better than -80 dBc
Adjacent Channel Noise	Better than -70 dBc
Frequency Deviation (2-level)	±5000 Hz, programmable in 1 Hz steps
Frequency Deviation (4-level)	Per FLEX™ specifications
Frequency Offsets	±5000 Hz, programmable in 1 Hz steps
Frequency Stability	
Ultra High Stability Oscillator	±5 ppb -30°C to +60°C ambient; ±30 ppb/yr long-term aging
High Stability Oscillator	±30 ppb -30°C to +60°C ambient; ±300 ppb/yr long-term aging
Non-Simulcast Oscillator	±1 ppm -30°C to +60°C ambient; ±1.1 ppm/yr long-term aging
C-NET™ Frequency Reference	±15 ppb -30°C to +60°C ambient; ±100 ppb/yr long-term aging, after 90 days of off time
External Reference	Consult System Engineering
FM Hum and Noise	900MHz: -45 dB (300-3000Hz Bandwidth)
Isolation PT1104	20 dB (Standard Single Circulator)
Isolation PT1105	60 dB (Standard Triple Circulator)

#### TX MODULATION

Pager Signaling	Analog, 2/4-level binary FSK-NRZ including GSC, POCSAG, & FLEX™ codes. *Note 5
Modulator	DSP based
Maximum Paging Data Rates	2-level: 2400 or 3200 bps; 4-level: 6400 bps
Modulation Rise Time	2-level: 88/140/250 µs selectable 4-level and (2-level 3200 bps FLEX™): 88 µs fixed
FCC Emissions Designators	16KOF1D

#### TX OUTPUT POWER

Power Output	Continuous duty and selectable by front panel on a per-channel basis.
Antenna Connector	Type "N" (50 ohms output impedance)

#### CONTROL

Remote System Control	C-NET, ASC, RF-C!™, I20
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#### ENVIRONMENTAL

Operating Temperature	-30°C to +45°C (Full Power) +45°C to +60°C (1 dB Reduced)
Operating Humidity	0 to 95% relative @ 50°C

### INTERNAL LINK AND MONITOR RECEIVERS

	MB	VHF	UHF	900 Mhz
Frequency (MHz)			403-433	
	72-76	132-154 150-174	438-470 470-494 494-520	922-941 941-960
Link Option	X209	X333	X334	X336
Monitor Option				X630
Channel Spacing	20 kHz	25 kHz	25 kHz	12.5/25 kHz
Frequency Stability	Same as transmitter			
Signal Displacement Bandwidth	±2 kHz minimum			
Sensitivity (12 dB SINAD)	0.35 µV	0.25 µV	0.35 µV	0.35 µV
Sensitivity (20 dB quieting)	0.50 µV	.035 µV	0.50 µV	0.50 µV
Adjacent Channel Rejection	80 dB	85 dB	85 dB	70/75 dB
Intermodulation	85 dB	85 dB	85 dB	80 dB
Spurious & Image Rejection	95 dB	95 dB	95 dB	95 dB
Audio De-emphasis	Front panel switchable: Flat or IIA De-emphasis			
Flat Audio Response	DC - 3000Hz ±1 dB *Note 4			
Link Audio Out Level	-5 dBm (±2 dB) single-ended *Note 4			
Line Audio Level	Adjustable -30 to +11 dBm @ 600 ohms (with optional wireline module)			
FM Hum and Noise	-50 dB	-50 dB	-50 dB	-45/-50 dB

### CABINET OPTIONS

OPTION	CABINET DIMENSIONS (H x W x D)	CABINET WEIGHT	MAXIMUM NUMBER OF STATIONS
X92	25 x 22 x 21.25 in 64 x 56 x 54 cm	59 lbs 27 kg	One
X308	46 x 22 x 21.25 in 117 x 56 x 54 cm	125 lbs 57 kg	Two
C307 (indoor)	70 x 23.8 x 21.5 in 178 x 60 x 55 cm	200 lbs 91 kg	Three

\*NOTE 1: 300 Watts measured at output of PA

\*NOTE 2: 265 Watts measured at output of 70" Cabinet

\*NOTE 3: 250 Watts measured at output of Power Amp.

\*NOTE 4: Measured at signal "Linx Rx Audio" or "Monitor Rx Audio" referenced to 1 kHz

\*NOTE 5: Signaling is controller dependent. Please contact Product Marketing Group for information.

All specifications conform to relevant TIA/EIA standards and are guaranteed at 25°C.

Specifications are subject to change without notice.



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