

Specification Sheet

STR 3000 **Pre-packaged Digital** **Base Radio Sub-System**



The STR 3000 provides the transmit/receive operation within the ASTRO 25 sub-system.

Its components include 1 to 6 base radios, multicoupler(s), combiner, isolator and cabling in a single cabinet.

The STR 3000 is easily configured to meet your needs for improved productivity, flexibility and value.

ASTRO®25

The STR 3000 is compatible with Project 25 700 MHz and 800 MHz trunking systems.

COMPACT MODULAR DESIGN

The base radio incorporates a modular construction with separate modules for –48VDC Input Power Supply, Exciter, Power Amplifier, Receiver and Base Radio Controller. This simplifies repair by allowing modules to be removed and serviced without having to dismantle the entire cabinet. The base radios and Radio Frequency Distribution System (RFDS) are pre-packaged in a single cabinet and are integrated in the factory. This reduces overall time and effort by simplifying site planning and installation.

ADDED FLEXIBILITY

Several configurations are available. The STR 3000 supports a total of 6 base radios in a cabinet. Up to 24 base radios can be supported on one RX antenna and up to 12 base radios on one TX antenna. Each site can have five STR 3000 sub-systems for a total of 30 base radios in a site. Customers can add expansion racks and additional base radios for site expandability.

ADVANCED FEATURES

The Simulcast and Site Repeater Base Radios are FLASHport® capable. With FLASHport capability, customers can upgrade the Base Radio software utilizing the site software download utility provided by the Software Download manager. This procedure eliminates the need to upgrade each radio individually. The 700 MHz Conventional Base Radios are FLASHport capable as well. With FLASHport capability, customers can upgrade the Base Radio software utilizing the software download utility to a single station provided by the Software Download manager.

Operational and diagnostic site information can be accessed from a remote location.

The STR 3000 supports encrypted radio communications.



*Above: A six-channel
800 MHz STR 3000
sub-system*

800 MHz STR 3000 Specifications

GENERAL PERFORMANCE

Supermodel Number	SQM02SUM0011A	
Number of Channels	1-6	
Number of Cabinets*	1	
Cabinet Height	43 RU, 83 in. (210 cm)	
Footprint* (W x D)	24 x 24 in. (60 x 60 cm)	
System Weight*	795 lbs (361 kg)	
Power Requirements	-48 VDC (43-60 VDC)	
Temperature Range**	0° to 50° C (+32° to 122° F)	
Power Consumption*	Typical	Maximum
	2700W	3200W est.
Antenna Connectors		
Transmit	7/16 Female	
Receive	N-Female	

TRANSMITTER

Frequency Range	851-869 MHz
Average Power Output (6 Channel Cavity Combiner)	
150 kHz	8 W-24 W per carrier
250 kHz	10 W-31 W per carrier
Occupied Bandwidth	8.7 kHz
RF Output Impedance	50 Ohm
Frequency Stability	External Reference
Modulation Fidelity	10% maximum error
Spurious and Harmonic Emissions Attenuation	85 dB
Symbol Rate Accuracy	10 PPM
Emissions Designators	8K70D1W

RECEIVER

Frequency range	806-824 MHz
Sensitivity Static Bit Error Rate (BER) 5%	-121 dBm***
Intermodulation Rejection (Per TIA methods of measurement)	80 dB
Adjacent Channel Rejection Digital Reference	60 dB
Spurious and Image Response Rejection	100 dB****
Preselector Bandwidth	18 MHz
Bit Error Rate Floor	0.01%
Signal Displacement Bandwidth	1 kHz
Frequency Stability	External Reference Required
Intermediate Frequency	
1st	73.35 MHz
2nd	450 kHz
RF Input Impedance	50 Ohm

SIMULCAST BASE RADIO

Dimensions	8.75 x 19 x 16.5 in. (222 x 483 x 419 mm)	
Weight	73 lbs (33 kg)	
Power Requirements	-48 VDC (41-60 VDC)	
Number of Frequencies	1	
Frequency Generation	Synthesized	
Digital Channel Spacing	12.5 kHz	
Mode of Operation	Duplex	
Digital Modulation		
Transmit	Linear Simulcast Modulation	
Receive	C4FM	
Antenna Connectors		
Transmit	SMA Female	
Receive	SMA Female	

RADIO FREQUENCY DISTRIBUTION SYSTEM (RFDS)

TRANSMITTER COMBINER

Frequency Range	851-869 MHz	
Insertion Loss	Typical	Maximum
2 Port 150 kHz Cavity Transmitter Combiner	3.6 dB	4.1 dB
3 Port 150 kHz Cavity Transmitter Combiner	4.2 dB	4.7 dB
4 Port 150 kHz Cavity Transmitter Combiner	4.3 dB	4.8 dB
6 Port 150 kHz Cavity Transmitter Combiner	4.6 dB	5.1 dB
2 Port 250 kHz Cavity Transmitter Combiner	2.6 dB	3.1 dB
3 Port 250 kHz Cavity Transmitter Combiner	2.9 dB	3.4 dB
4 Port 250 kHz Cavity Transmitter Combiner	3.0 dB	3.5 dB
6 Port 250 kHz Cavity Transmitter Combiner	3.2 dB	3.7 dB
RF Connector Type		
Input	N-Female	
Output	7/16 Female	
Tx-Tx Isolation	14 dB	

RECEIVER MULTICOUPLER

Frequency Range	806-824 MHz	
Noise Figure	Typical	Maximum
	3.5 dB	4.9 dB
Gain	Typical	Minimum
	11 dB	8 dB
3rd Order Input Intercept	Typical	Minimum
	14 dBm	13 dBm
Output RF Connector Type	BNC Female	

* NOTE: The number of cabinets, footprint and system weights are stated for a 6 channel system including the RFDS without options. Some STR 3000 features require the use of additional equipment.

** This specification is not to Project 25 TSB102.caab standard.

*** With multicoupler installed.

**** 90 dB at ±2.1 MHz

FCC TYPE ACCEPTANCE

FCC Designation	Frequency Range	Type	Power Output	Type Acceptance Number
	851-869 MHz	Transmitter	100 watts	ABZ89FC5795
	806-824 MHz	Receiver	N/A	ABZ89FR5796

700 MHz STR 3000 Specifications

GENERAL PERFORMANCE

Supermodel Number	SQM02SUM0011A	
Number of Channels	1-6	
Number of Cabinets*	1	
Cabinet Height	43 RU, 83 in. (210 cm)	
Footprint* (W x D)	24 x 24 in. (60 x 60 cm)	
System Weight*	795 lbs (361 kg)	
Power Requirements	-48 VDC (43-60 VDC)	
Temperature Range	-30° to +60° C (-22°F to 140°F)	
Power Consumption*	Typical	Maximum
	3180 W	3840 W est.
Antenna Connectors		
Transmit	7/16 Female	
Receive	N-Female	

TRANSMITTER

Frequency Range	764-776 MHz
Average Power Output (6 Channel Cavity Combiner)	
150 kHz	8 W-24 W per carrier
250 kHz	10 W-31 W per carrier
Occupied Bandwidth	8.7 kHz
RF Output Impedance	50 Ohm
Frequency Stability	External Reference
Modulation Fidelity	10% maximum error
Spurious and Harmonic Emissions Attenuation	85 dB
Symbol Rate Accuracy	10 PPM
Emissions Designators	LSM: 8K70D1W C4FM: 8K70F1E

RECEIVER

Frequency range	794-806 MHz
Sensitivity Static Bit Error Rate (BER) 5%	-121 dBm**
Intermodulation Rejection (Per TIA methods of measurement)	80 dB
Adjacent Channel Rejection Digital Reference	60 dB
Spurious and Image Response Rejection	100 dB***
Preselector Bandwidth	30 MHz
Bit Error Rate Floor	0.01%
Signal Displacement Bandwidth	1 kHz
Frequency Stability	External Reference Required
Intermediate Frequency	
1st	73.35 MHz
2nd	450 kHz
RF Input Impedance	50 Ohm

BASE RADIO

Dimensions	8.75 x 19 x 16.5 in. (222 x 483 x 419 mm)
Weight	73 lbs (33 kg)
Power Requirements	-48 VDC (41-60 VDC)
Number of Frequencies	1
Frequency Generation	Synthesized
Digital Channel Spacing	12.5 kHz
Mode of Operation	Duplex
Digital Modulation	
Transmit	Linear Simulcast Modulation
Receive	C4FM or Linear Simulcast Modulation
Antenna Connectors	
Transmit	SMA Female
Receive	SMA Female

RADIO FREQUENCY DISTRIBUTION SYSTEM (RFDS)

TRANSMITTER COMBINER

Frequency Range	764-776 MHz	
Insertion Loss	Typical	Maximum
2 port Cavity Combiner @ 150 kHz	2.9 dB	5.1 dB
2 port Cavity Combiner @ 250 kHz	2.5 dB	3.6 dB
4 port Cavity Combiner @ 150 kHz	3.5 dB	5.2 dB
4 port Cavity Combiner @ 250 kHz	3.2 dB	4.4 dB
6 port Cavity Combiner @ 150 kHz	4.2 dB	5.3 dB
6 port Cavity Combiner @ 250 kHz	3.5 dB	4.5 dB
RF Connector Type		
Input	N-Female	
Output	7/16 Female	
Tx-Tx Isolation	32 dB	

Notes: (1) on 700 MHz STR 3000 TX filter or diplexer is required. (0.6 dB I.L. max.)
(2) If a phasing harness is used, an additional loss of 0.9-1.2 dB should be added.

RECEIVER MULTICOUPLER

Frequency Range	794-824 MHz	
Noise Figure	Typical	Maximum
	3.5 dB	4.9 dB
Gain	Typical	Minimum
	11 dB	8 dB
3rd Order Input Intercept	Typical	Minimum
	14 dBm	13 dBm
Output RF Connector Type	BNC Female	

* NOTE: The number of cabinets, footprint and system weights are stated for a 6 channel system including the RFDS without options. Some STR 3000 features require the use of additional equipment.

** With multicoupler installed.

*** 100 dB applies at greater than 1 MHz offset, 90 dB at ±2.1 MHz

FCC TYPE ACCEPTANCE

FCC Designation	Frequency Range	Type	Power Output	Type Acceptance Number
	762-776 MHz	Transmitter	5-55 Watts*	ABZ89FC5805
	776-806 MHz	Receiver	N/A	ABZ89FR5806

* FCC Type Acceptance at the cabinet level



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Specifications subject to change without notice.

Product Data Sheet for AO7806-24T0

Super Stationmaster™ Omni Fiberglass Antenna

This antenna has been designed for 700 MHz mobile radio systems typically used by public safety organizations like local police and fire departments. This center-fed collinear antenna provides consistent gain and impedance across the operating frequency band designed to meet various omni-directional antenna requirements. Capable of handling 500 Watts of power, this antenna is suited to both receive and transmit applications.

Product Specifications	
Frequency Band	700 MHz (746-806 MHz)
Horizontal Pattern	Omnidirectional
Antenna Type	Fiberglass Omni
Electrical Down Tilt Option	Fixed
Gain, dBi (dBd)	8.1 (6.0)
Frequency Range, MHz	764-806
Connector Type	N Female
Connector Location	Bottom
Mount Type	Fixed
Electrical Downtilt, deg	0
Orientation	Upright
Mounting Hardware	46 Clamp set
Rated Wind Speed, km/h (mph)	160 (100)
Gain (Omni), dBi (dBd)	8.1 (6.0)
VSWR	< 1.5:1
Vertical Beamwidth, deg	12
Polarization	Vertical
Maximum Power Input, W	500
Lightning protection	Direct Ground
Overall Length, m (ft)	2.62 (8.6)
Element Housing Length, m (ft)	1.95 (6.41)
Support Pipe Diameter, m (in)	0.07 (2.75)
Support Pipe Length, m (ft)	0.61 (2)
Weight, kg (lb)	7.3 (16)
Radiating Element Material	Copper
Element Housing Material	Fiberglass

RADIO FREQUENCY SYSTEMS



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Product Data Sheet for AO7806-24T0 (Cont.)

Super Stationmaster™ Omni Fiberglass Antenna

Support Pipe Material	6061-T6 Aluminum
Max Wind Loading Area, m² (ft²)	.079 (0.85)
Bend Mom @ Rated Wind 1" Below Top of Mt Pipe, N m (ft lbf)	150.8 (111.2)
Side Thrust @ Rated Wind, N (lbf)	150.5 (33.8)
Shipping Weight, kg (lb)	13.6 (30)
Packing Dimensions - HxWxD, m (ft)	3.3 x 0.1 x 0.1 (11.2 x 0.33 x 0.33)
Shipping Dimensions of Accessory - HxWxD, m (ft)	0.55 x 0.1 x 0.1 (1.8 x 0.33 x 0.33)
Shipping Mode	Common Carrier
Survival Wind Speed, km/h (mph)	200 (125)

Features/Benefits

- Triple-wrapped heavy duty fiberglass construction assures less tip deflection – much stronger than pultruded radomes used by competitors.
- Center-fed design eliminates beamswing across the band.

RADIO FREQUENCY SYSTEMS



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Super Stationmaster™ Omni Fiberglass Antenna

These center-fed collinear antennas ensure consistent gain and impedance across the operating frequency band and are specifically designed to meet various omnidirectional requirements for mobile radio services in the 806-960 MHz bands. Copper alloy radiating elements are encased in a weatherproof fiberglass low loss housing and permanently attached to a 6061-T6 aluminum support pipe. Contact Applications Engineering for specific pattern requirements.



Product Specifications	
Frequency Band	Trunking/SMR (806-824, 851-869 MHz)
Horizontal Pattern	Omnidirectional
Antenna Type	Fiberglass Omni
Electrical Down Tilt Option	Fixed
Gain, dBi (dBd)	8.14 (6)
Frequency Range, MHz	806-869
Connector Type	N Female
Connector Location	Bottom
Mount Type	Fixed
Electrical Downtilt, deg	0
Orientation	Upright
Mounting Hardware	46 Clamp set
Rated Wind Speed, km/h (mph)	160 (100)
Gain (Omni), dBi (dBd)	8.14 (6)
VSWR	< 1.5:1
Vertical Beamwidth, deg	12
Polarization	Vertical
Maximum Power Input, W	500
Lightning protection	Direct Ground

RADIO FREQUENCY SYSTEMS



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Product Data Sheet for 1108-1 (Cont.)

Super Stationmaster™ Omni Fiberglass Antenna

Flexible Extensions	Optional
Overall Length, m (ft)	2.47 (8.09)
Element Housing Length, m (ft)	1.86 (6.09)
Support Pipe Diameter, m (in)	0.07 (2.75)
Support Pipe Length, m (ft)	0.61 (2)
Weight, kg (lb)	7 (15)
Radiating Element Material	Copper
Element Housing Material	Fiberglass
Support Pipe Material	Aluminum Alloy
Max Wind Loading Area, m² (ft²)	0.104 (1.12)
Bend Mom @ Rated Wind 1" Below Top of Mt Pipe, N m (ft lbf)	190 (140.1)
Side Thrust @ Rated Wind, N (lbf)	199 (44.8)
Shipping Weight, kg (lb)	13.6 (30)
Packing Dimensions - HxWxD, m (ft)	3.26 x 0.1 x 0.1 (10.7 x 0.33 x 0.33)
Shipping Dimensions of Accessory - HxWxD, m (ft)	0.55 x 0.10 x 0.10 (1.8 x 0.33 x 0.33)
Shipping Mode	UPS
Survival Wind Speed, km/h (mph)	200 (125)

Features/Benefits

- Fiberglass construction protects radiating elements in hostile environments.
- Copper radiating elements minimize possible generation of intermod products.
- Center-fed design eliminates beamswing across the band.

RADIO FREQUENCY SYSTEMS

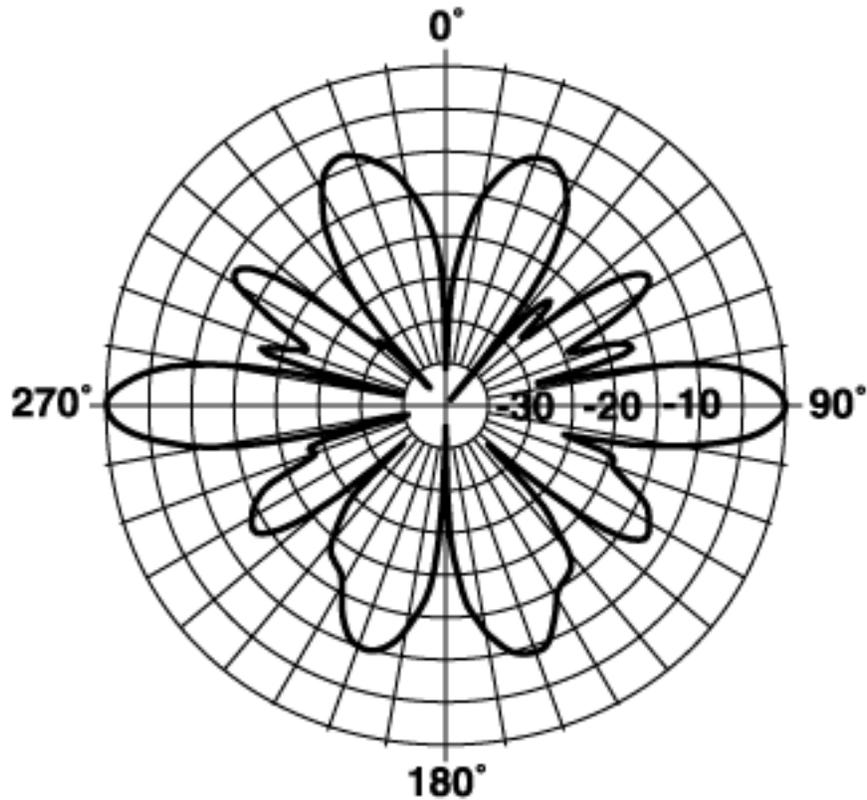


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Super Stationmaster™ Omni Fiberglass Antenna

Vertical Pattern

(This is a general representation of the antenna family pattern. For the latest detailed pattern contact Applications Engineering. You may also download the CELplot(TM) pattern reader and antenna pattern data fields from our website.)



RADIO FREQUENCY SYSTEMS

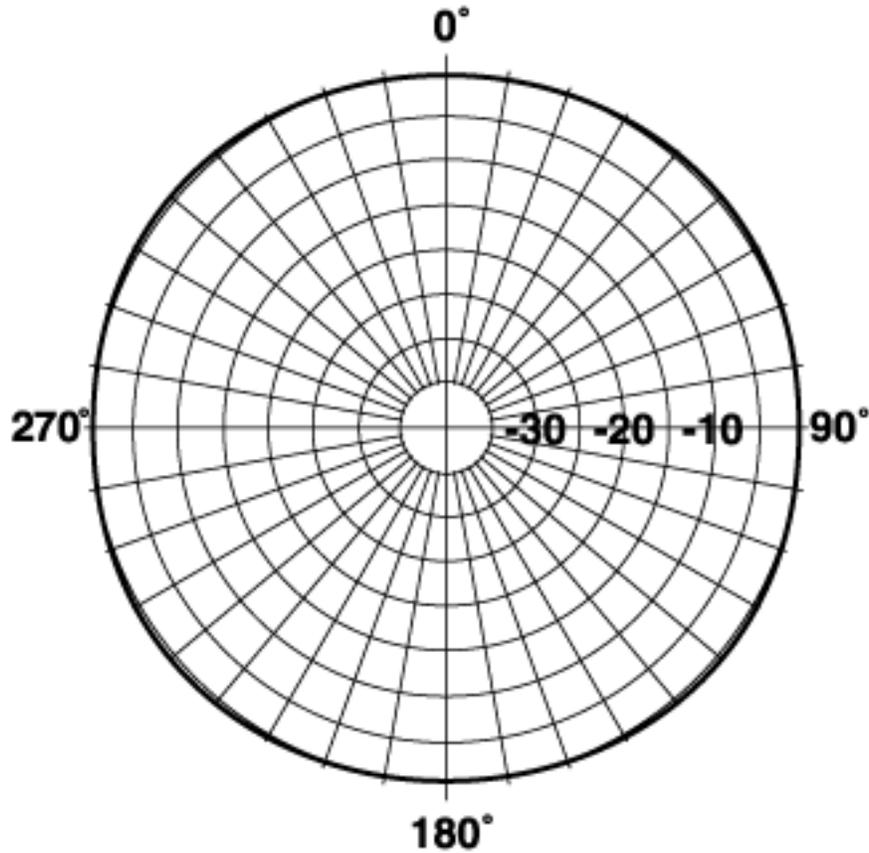


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Super Stationmaster™ Omni Fiberglass Antenna

Horizontal Pattern

(This is a general representation of the antenna family pattern. For the latest detailed pattern contact Applications Engineering. You may also download the CELplot(TM) pattern reader and antenna pattern data fields from our website.)



RADIO FREQUENCY SYSTEMS



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Specifications

ST-211 Land Mobile

General

COMMUNICATION MODES

Voice	Full Duplex Digital Voice at 6400 bps
NetRadio/Dispatch (option)	Half Duplex Digital Voice at 6400 bps
Data (option)	1200 bps / 2400 bps / 4800 bps
Fax (option)	Group III Facsimile Function (via data port)

SYSTEM SPECIFICATIONS

Transmit Frequencies	1626.5-1660.5 MHz
Receive Frequencies	1525.0-1559.0 MHz
G/T	-16 dB/K from 15° to 60° elevation
EIRP	12.5-16.5 dBW
Turning Rate	60°/sec max.
Turning Acceleration	20°/sec ² max.
Power	
Primary DC Voltage	12V DC nominal (11.5 to 15.6V range)
Transmit Current	3.6A

DATA PORT

Mechanical Interface	DB-25 Female
Electrical Interface	RS-232C
Synchronization	Start-Stop Systems (Asynchronous)
Flow Control	None
Functionality	"AT" Commands

Environmental

	Antenna Units	Common Transceiver Unit
Temperature		
Operating	-22°F to +109°F -30°C to +43°C	-22°F to +131°F -30°C to +55°C
Storage	-67°F to +185°F -55°C to +85°C	-67°F to +185°F -55°C to +85°C
Wind		
Operating	120 mph (194 Km/hr)	N/A
Storage	163 mph (262 Km/hr)	N/A
Rain	2"/hr (50 mm/hr)	N/A
Solar Radiation	120W/m ²	N/A
Shock (Survival)	1/2 sin, 20g, 11 ms	1/2 sin, 20g, 11 ms