SAFE-COM WIRELESS

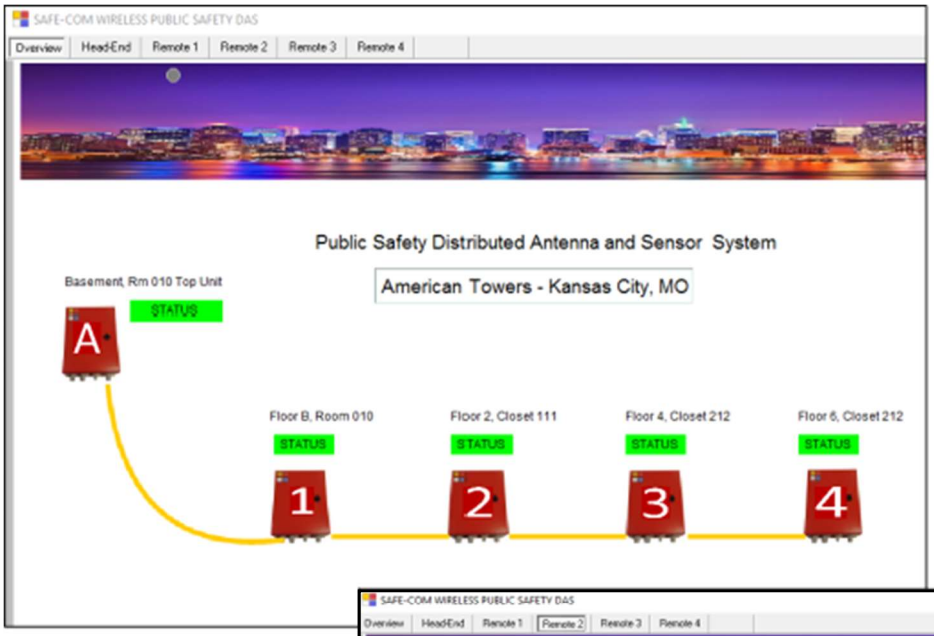
Safe-Com DASassure ™
Public Safety Distributed Antenna System
Off-Air Solution
VHF, UHF, 700, 800 & 900 MHz

- Class A Channelized Bi-Directional Amplifier (BDA)
- Supports All Five Public Safety + Federal Bands + FirstNet
- 1 and 2 Watt RF Outputs
- Upgradeable – add new channels, even new bands
- Small Size : 12 x 15 or 18 x 18 inch, NEMA 4
- Very Low Power Consumption
- Card Level Automatic Redundancy
- Lowest Spurious due to advanced filtering design
- Unique front-end design for interlaced & close-in pairs

Safe-Com's *DASAssureTM* is a patent-pending fiber Distributed Antenna System utilizes a new architecture that addresses the challenges of designing, deploying and maintaining a Public Safety DAS over its life-time. This innovative approach utilizes dedicated parallel channel processing assuring the lowest spurious and highest signal performance for clear mission-critical coverage enhancement. This modular hot-swap card system permits single channel expansion on ANY frequency or band thanks to it's distributed architecture. The design is the most compact fiber DAS available – fitting up to 5 bands in one enclosure. All this with the industry's lowest power consumption of 50 watts avg. and 65 watts peak. This also makes the battery backup system the smallest available with 12 - 24 hours packed into < 0.5 ft3. Safe-Com's high-quality manufacturing system and superior applications support assures your success and the public's safety.

Parameter	Value
Output Power, 1 watt nominal (Note 2) 2 watt nominal (Note 3)	UHF,7,8,9 : 20dBm at 8 channels, 18dBm min. VHF : 20dBm at 4 channels, 18 dBm min. 2 watt version: 3dB higher per channel
Input Power maximum UL / DL	-10dBm max input (off-air port)
Gain UL / DL	70 dB (off-air version)
Noise Figure	9 dB
Spurious	FCC Compliant – typically -60dBc
Rejection	-50 dBc at 50kHz typical (Class A Unit)
Gain Control (Note 4)	30dB
Optical Loss (SMF SC/APC)	5dBo
Power	40 watts avg. at 10 channels, 60 watts peak
Size	11.8 x 10.8 x 6.5 inches - 20lbs Head-end / Remote / Battery backup
Temperature	-10 to +50 deg C

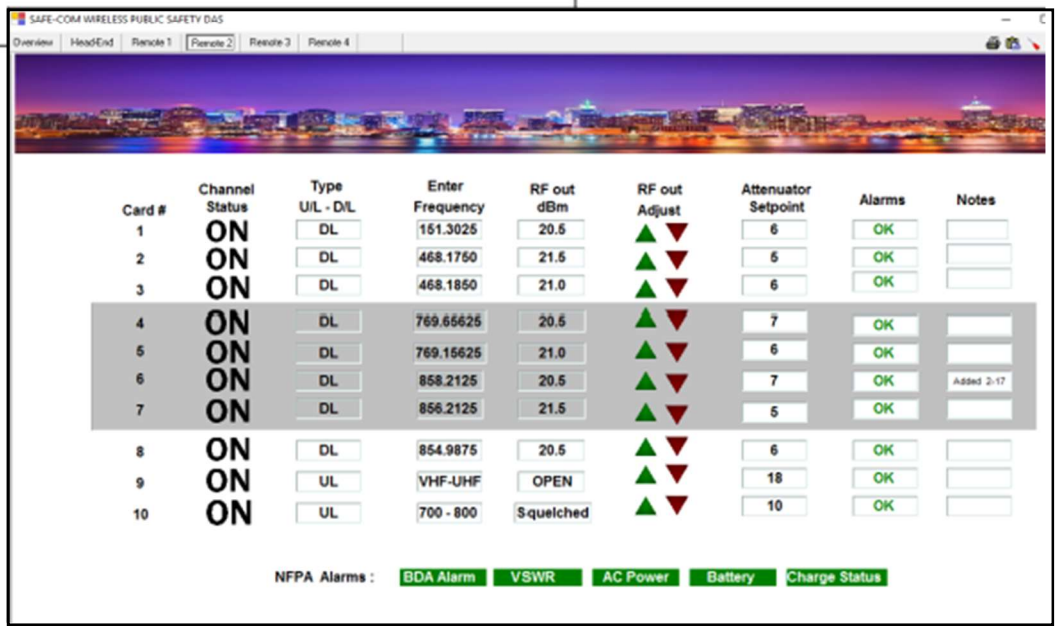
Note 1) Redundancy feature is an option; 2,3) Internal duplexer reduces output power by ~2dB; 3) 2 watts is supplied at 2 ports, 1 watt each. 4) Gain range is shared with Automatic Level Protection Control Circuit.

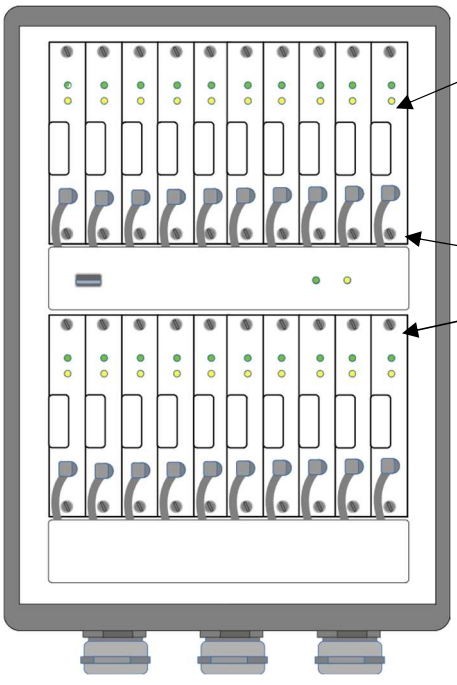


DASS*assure*^{TM} NMS

A full featured Network Management Systems assures you have control of your radio network.
Shown here is the top layer of the NMS displaying overall status of the fielded units.

You have full insight and remote control of each band, each channel and full independent uplink and downlink controls. Critical monitor values related to each fielded unit is displayed clearly and distinctly.
(Preliminary Graphic).





Channel Cards – Class A filtering

Single Frequency per card

Card Level Redundancy
- Automatic Switchover

Uplink – Channel Cards

Downlink – Channel Cards

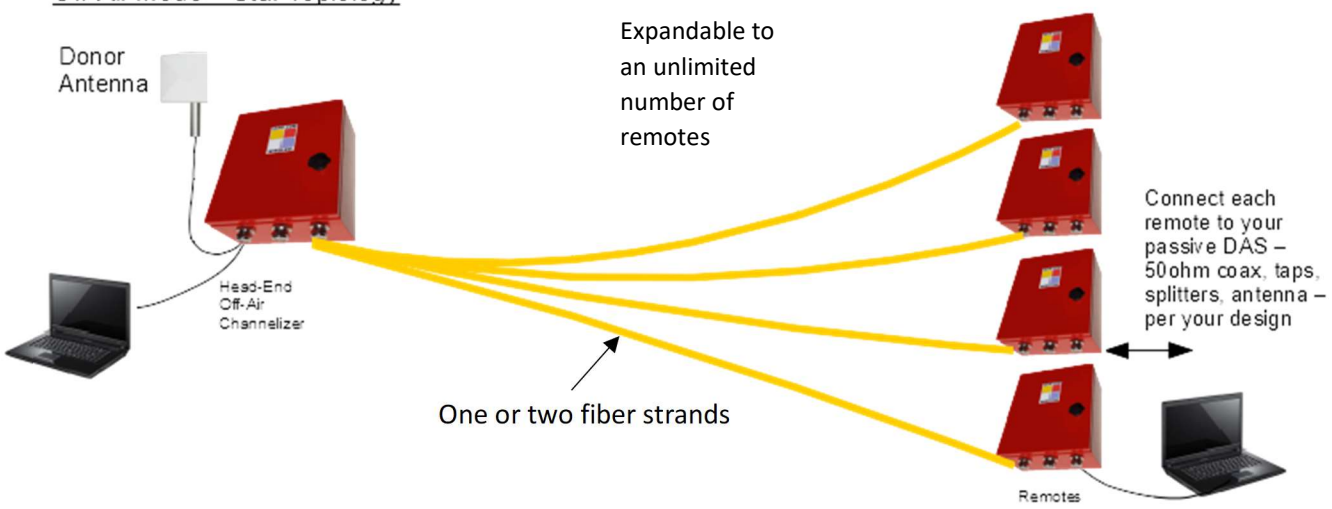
Upgradeable

- New frequency? plug-in a card

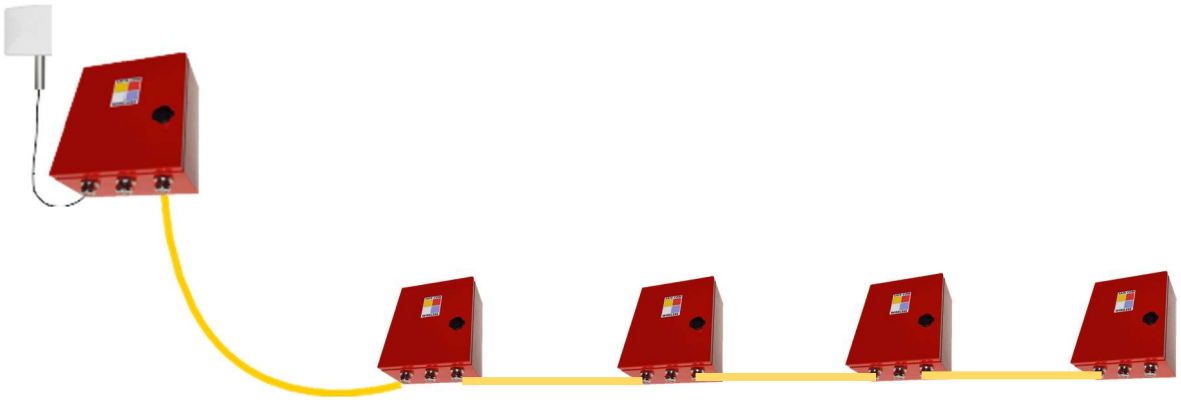
High reliability and ultimate flexibility is assured by design. The ground breaking architecture of the Safe-Com DAS solution guarantees it.

No major single point of failure points - as can be found in other first generation designs. Public safety requires reliability and Safe-Com delivers.

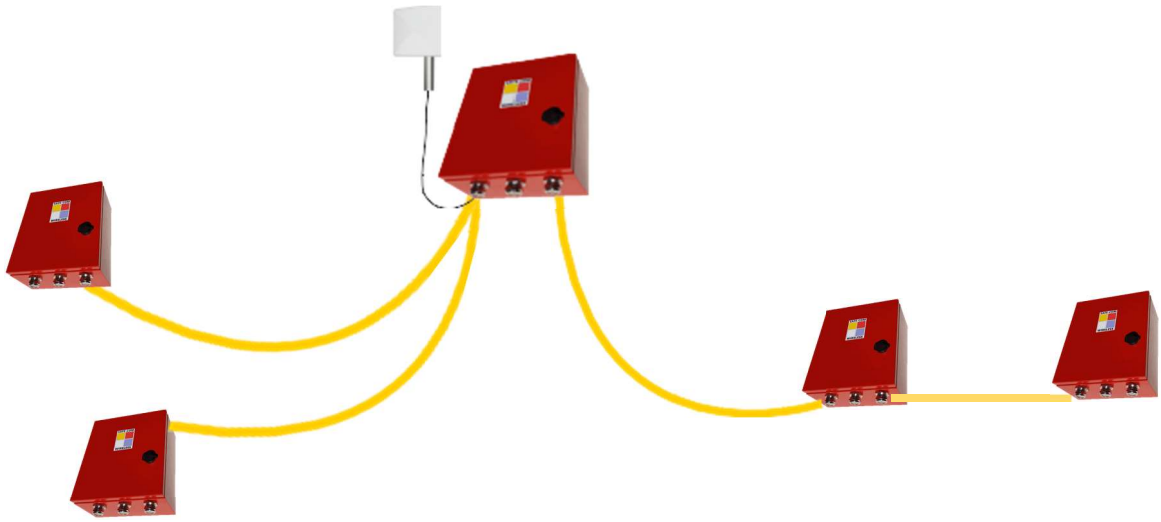
Off-Air Mode – Star Toplology



Off-Air Mode - Linear Topology



Off-Air Mode – Star / Linear Combination



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Product Ordering Information:

Series Model Number: SAFE-1000

Standard Features:
- NEMA 4 Enclosure
- NEMA Red Color
- Alarm outputs
- USB Computer Interface with Windows NMS Configuration Software
- 12VDC, (48VDC and 110 – 240VAC options)

Base Model Numbers:

SAFE-1010	: Head-end Fiber Unit – Direct Connect to Radio Base-Station
SAFE-1015	: Remote Fiber Unit – Used with SAFE_1010 or SAFE-1020 Fiber DAS
SAFE-1020	: Off-Air Channelized (Class A) Fiber DAS
SAFE-1030	: BDA Channelized (Class A)

Model Number Format: SAFE-1020: **A**V – **B**U – **C**7 – **D**8 – **E**9 - **F**F

A = Number of RF radio channel in VHF Band – Including Federal Bands 138 – 150MHz
B = Number of RF radio channel in UHF Band 450 – 512MHZ plus Federal Bands 380 – 420MHz
C = Number of RF radio channel in 700 MHz Band – narrow-band
D = Number of RF radio channel in 800 MHz Band
E = Number of RF radio channels in 900 MHz Band
F = Number of RF radio channels in the BB 700MHz First-Net, Band 14

Options:

P**X**	: Power options: X = 1 for 12V DC input (default, use Safe-Com external battery backup); 2 = -48VDC; 3=AC
B**Y**	: Battery options: Y = 12 or 24 for hours of Battery backup – external unit 10 x 12 x 6 in., (or 18 x 18in) with charger
T**Z**	: Topology options: Z = S for Star (default) or L for Linear or X for hybrid (define configuration with order)
RS	: Redundancy Switching at Card Level. Requires open plug-in slots available for backup card(s).
EN	: Ethernet NMS option for remote access, monitoring and SNMP, (future, check availability at time of order)
SA	: Integrated Spectrum Analyzer, Head-End (Remote access for spectrum analyzer available)

Example Order Model Number: SAFE-1020: 2U-27-4 Options: P1, B24, T2L/2S

Description: Off-Air Channelized Class A Fiber DAS (SAFE-1020)
with two UHF (2U), two 700 (27) and four 800 (48) MHz channels
Options included: B12 = 12 Hours Battery backup
TL2-S2 = two linear connected remotes and 2 star connected remotes

Frequencies and modulation required with order – example detail shown:
two UHF: 453.475 DL/458.475 UL (FM) / 500.8 DL/503.8 UL (FM)
two 700 : 769.68125 DL (+30MHz UL) / 769.95625 DL (+30MHz UL) P25
two 800 : 854.3125 DL (-45MHz UL) / 854.4375 DL (-45MHz UL) P25

Power / Mechanical

Power Supply	12VDC standard, (120-240 VAC & -48 VDC options) Back-up Battery Unit available
Power Consumption	65 watts maximum peak, 50 watts avg. (with 10 frequencies, lower power with fewer frequencies)
Size, weight	15 x 12 x 7 inches - 20 lbs. per unit (Type 1) or 18 x 18 x 7 inches - 30 lbs. (Type 2)
Enclosure, ports	NEMA 4, IP65, Heavy duty Nickle-plated brass water-proof cable feed-throughs
Alarms	NFPA alarm outputs, Form C relay contact closures
Battery Backup Option	12 or 24 hours – 10 x 12 or 18 x 18 in NEMA 4 (12 hour unit)
FCC / IC Identifier	FCC: 2AKSM-SAFE2; IC: 22303-SAFE2