SAFE-COM WIRELESS

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

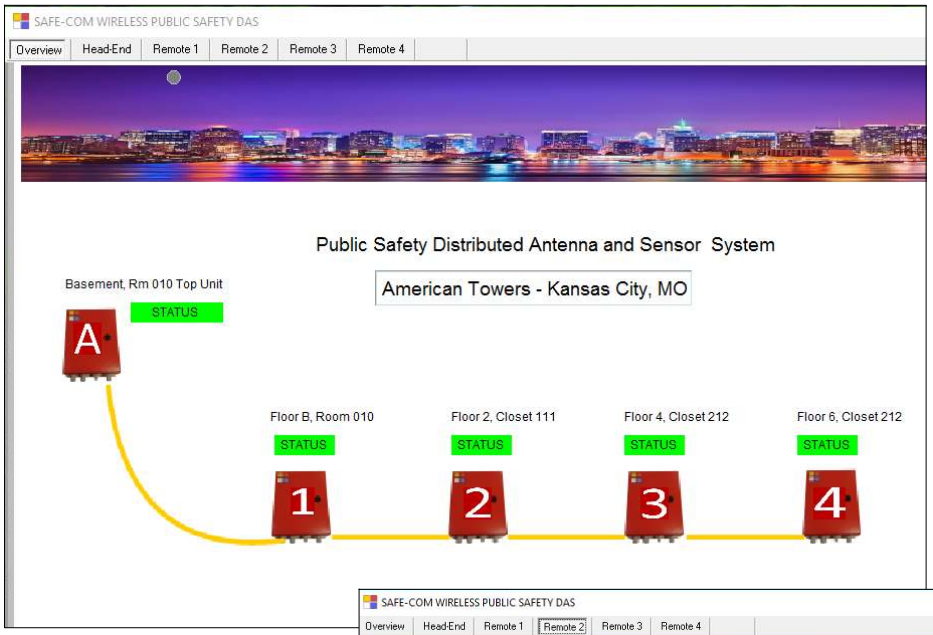
- Highest Integration Level: 5 Bands in one Unit
- Smallest footprint: 10 X 12 in.
- Lowest Power consumption on market: 50 watts avg.
- 1 watt per band- up to 5 bands[1]
- Individual channel control
- Lowest Spurious Performance
  - using Opto-Channelized ™ technology *
- Fiber WDM distributed – 1 or 2 fibers per Remote
  - Linear or Star fiber topology
- FCC, NFPA Certified, First-Net Ready
- 806-824 – 851-869MHz; 763-775 – 796-806MHz
- 450-512 MHz; 150-175 MHz, 929-941-MHz
- N to 1 redundancy for maximum up-time[1]
- SDR Spectrum Analyzer (Head-end)
- Integrated Distributed Sensor System *

**patent pending; 1: Option*

Safe-Com's *DASAssure™* is a patent-pending fiber Distributed Antenna System utilizing an 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 interference and highest signal performance for the clear mission-critical coverage enhancement. This modular hot-swap card system permits single channel expansion on ANY frequency thanks to it's micro-power amp design architecture. The design is the most compact fiber DAS available – easily fitting up to 5 bands into a ~12x10x6inch NEMA 4 unit. All this with the industries lowest power consumption of 50 watts avg. and 65 watts peak. Also this makes the battery backup system the smallest available with 24 hours packed into < 0.5 ft^3. 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 [2]	UHF,7,8,9 : 23dBm at 4 channels, 21 dBm min. VHF : 20dBm at 4 channels, 18 dBm min.
Input Power UL / DL	-10dBm max input (off-air port) 2 watts max downlink (direct connect)
Gain UL / DL	80 dB (off-air)
Noise Figure	9 dB
Spurious	FCC Compliant
Rejection	-50 dBc (Class A Unit)
Gain Control [3]	30dB
Optical Loss (SMF SC/APC)	5dBo
Power	50 watts avg. at 10 channels, 65 watts peak
Size	11.8 x 10.8 x 6.5 inches - 20lbs Head-end / Remote / 24 hours battery
Temperature	-10 to +50 deg C

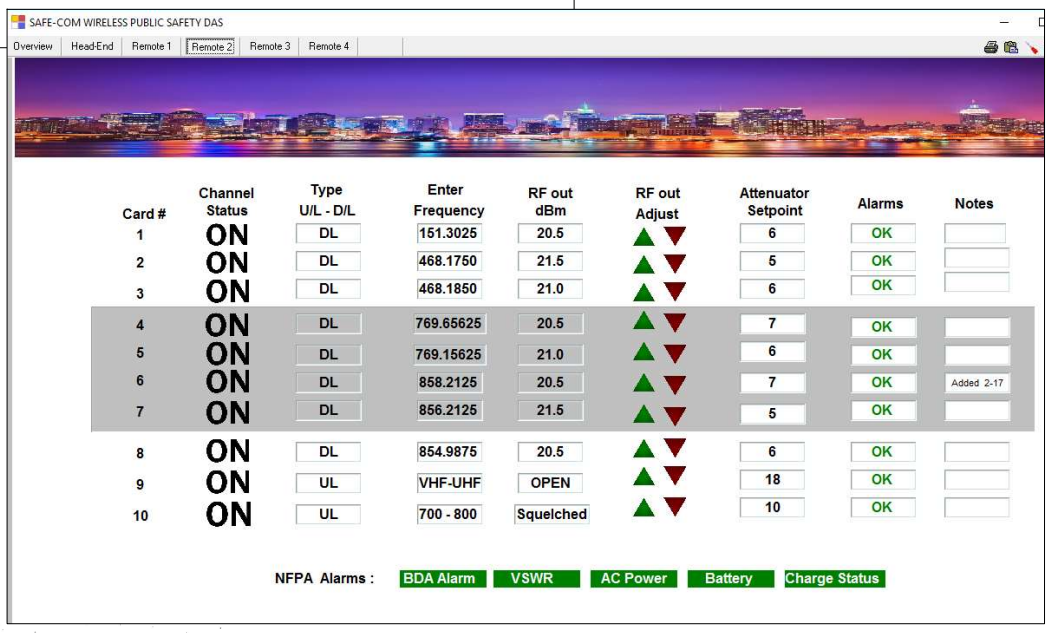
2. add duplexer loss, 3. Shared with AGC, Preliminary , Rev 10-10-17



DASS*assure*™ 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).



Card #	Channel Status	Type U/L - D/L	Enter Frequency	RF out dBm	RF out Adjust	Attenuator Setpoint	Alarms	Notes
1	ON	DL	151.3025	20.5		6	OK	
2	ON	DL	468.1750	21.5		5	OK	
3	ON	DL	468.1850	21.0		6	OK	
4	ON	DL	769.65625	20.5		7	OK	
5	ON	DL	769.15625	21.0		6	OK	
6	ON	DL	858.2125	20.5		7	OK	Added 2-17
7	ON	DL	856.2125	21.5		5	OK	
8	ON	DL	854.9875	20.5		6	OK	
9	ON	UL	VHF-UHF	OPEN		18	OK	
10	ON	UL	700 - 800	Squelched		10	OK	

Opto-Channelized ™ cards
1 frequency per card,
any band, individual channel control

n to 1 channel card redundancy built-in.
No single multi-carrier power amp to fail
And disable your system, high redundancy

Built-in SDR
Spectrum Analyzer

Advanced single
fiber WDM, star or
Linear fiber topology

NFPA Alarm outputs

NEMA 4 protection

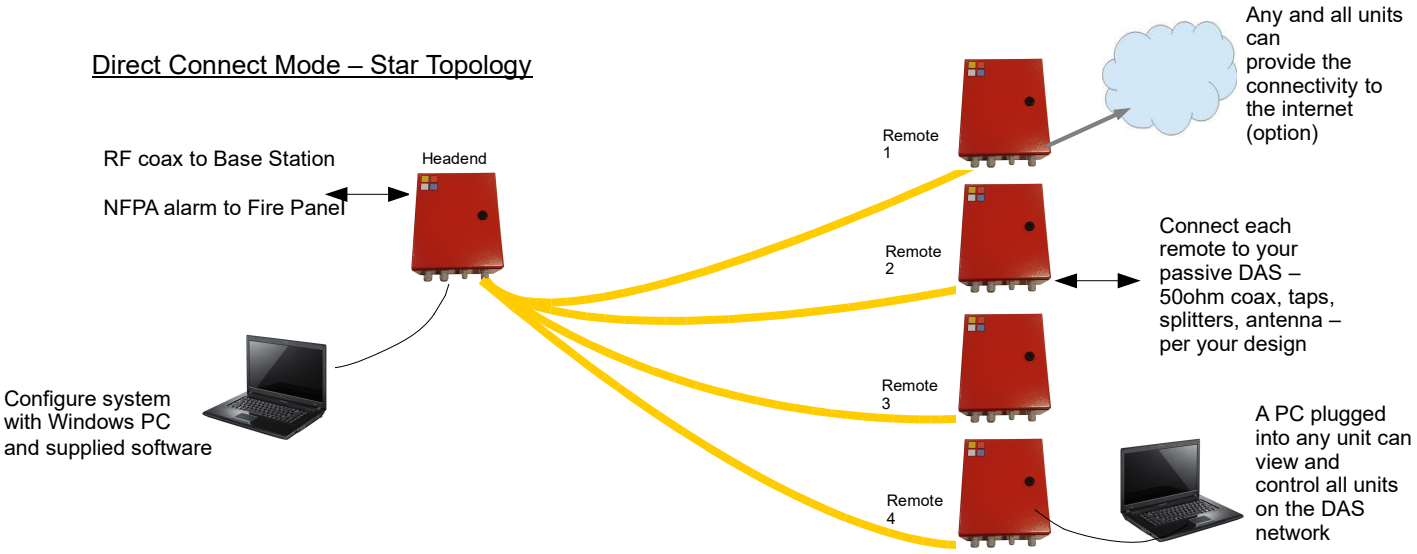
Water-proof cable glands

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 failures as can be found in other inferior designs. Public safety requires reliability and Safe-Com delivers.

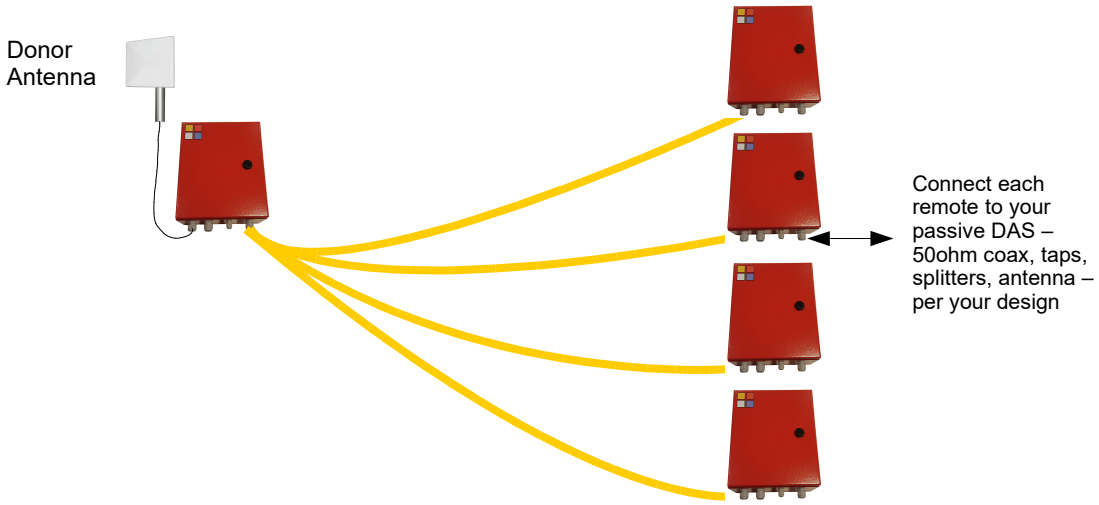
System Deployment Options

Direct Connect Mode – Star Topology

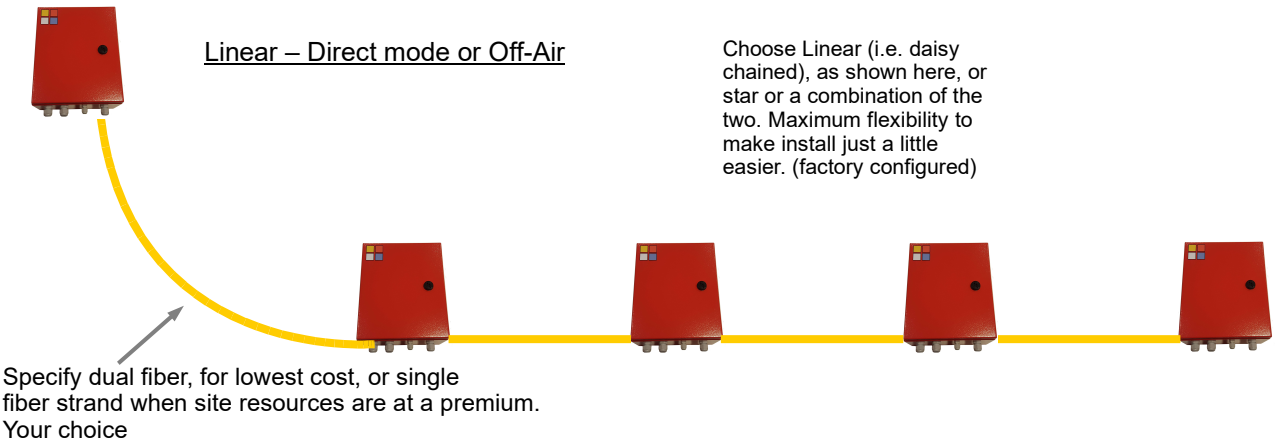


Unlimited expandability to a large number of remotes as required by adding Head-End units.

Off-Air Mode – Star Toplology



Linear – Direct mode or Off-Air



Choose Linear (i.e. daisy chained), as shown here, or star or a combination of the two. Maximum flexibility to make install just a little easier. (factory configured)

Specify dual fiber, for lowest cost, or single fiber strand when site resources are at a premium. Your choice

SAFE-COM DASAssure™
Public Safety Distributed Antenna System
VHF, UHF, 700, 800 MHz

Product Ordering Information:

Series Model Number: SAFE-1000 Standard Features:

- NEMA 4 Enclosure
- NEMA Red Color
- Five NEMA Alarm outputs
- USB Computer Interface with Windows NMS Configuration Software
- 110 – 240VAC Power Supply

Base Model Numbers:

SAFE-1010 : Head-end Fiber Unit – Direct Connect to Radio Base-Station or Off-Air SAFE-1020
SAFE-1015 : Remote Fiber Unit
SAFE-1020 : Off-Air Unit – Connects to Donor antenna and SAFE-1010 Head-End Fiber Unit

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Model Number Format: SAFE-1010: **A**V – **B**U – **C**7 – **D**8 – **E**9

A = Number of RF radio channel in VHF Band
B = Number of RF radio channel in UHF Band
C = Number of RF radio channel in 700 MHz Band
D = Number of RF radio channel in 800 MHz Band
E = Number of RF radio channels in 900 MHz Band

Options:

P**X** : Power options: X = 1 or 2 for number of AC power supplies. 1 is default, 2 requires external enclosure
B**Y** : Battery options: Y = 12 or 24 for hours of Battery backup – external unit 10 x 12 x 6inches, 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

Example Order Model Number: SAFE-1010: 2U-27-48 Options: B24, T2L/2S

Description: Direct Connect Headend (SAFE-1010)
with two UHF (2U), two 700 (27) and four 800 (48) MHz channels

Options included: B24 = 24 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	85-240 VAC (24 VDC, -48 VDC option) Note: Depending on configuration, power supply may be external unit
Power Consumption	65 watts maximum peak, 50 watts avg. (with 10 frequencies, lower power with fewer frequencies)
Size	11.8 x 10.8 x 6.5 inches - 300 x 275mm x 165mm
Enclosure	NEMA 4, IP65
Alarms	Five NFPA alarm outputs, optically isolated contact closures
Ports	Heavy duty Nickle-plated brass gland feed-throughs
Battery Backup Option	12 or 24 hours – 300 x 275 x 165mm NEMA4
FCC Identifier	2AKSM-SAFE1

The information enclosed is believed to be accurate. Changes may be made to improve the availability or the performance of the product.

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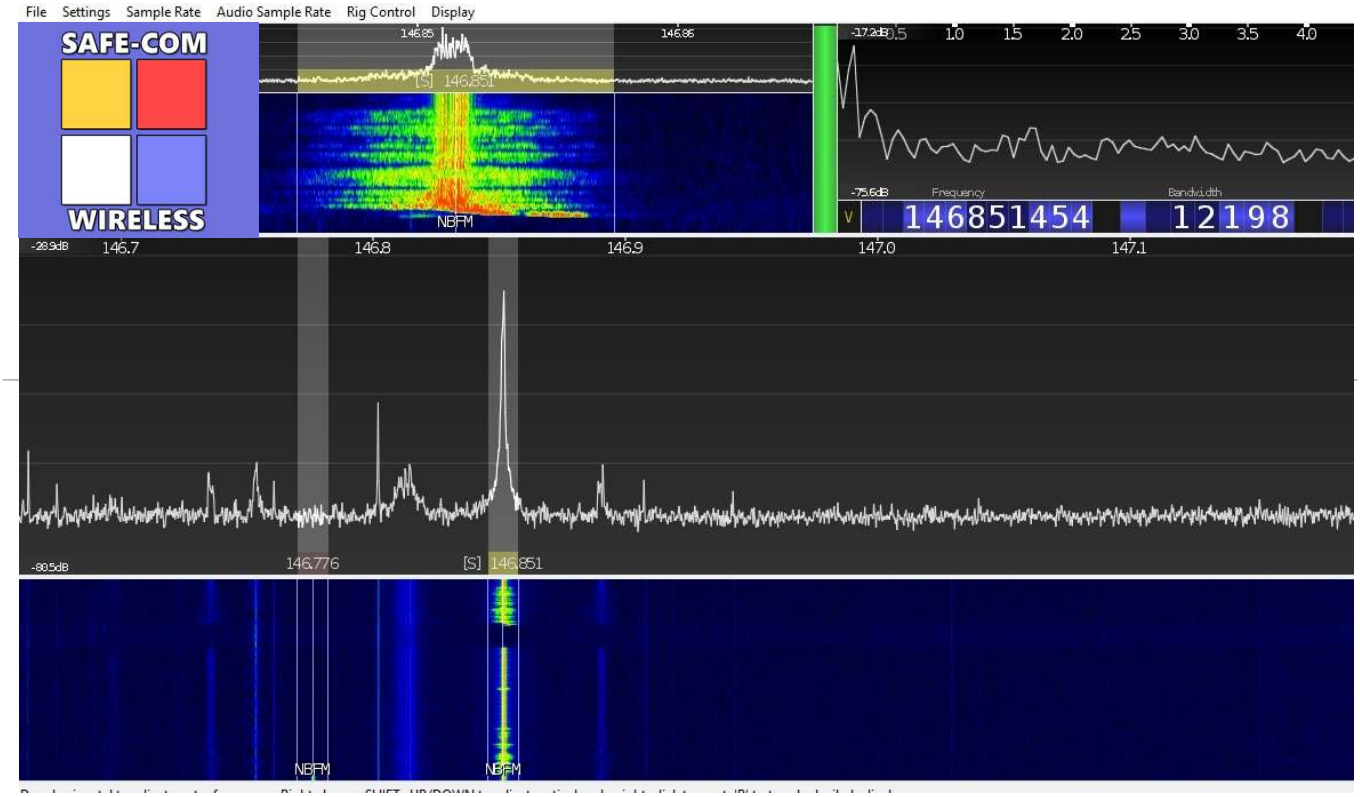
SDR Spectrum Analyzer



Software Define Radio based Digital Spectrum Analyzer
Included in each Head-end unit.(Remotes optional)
View Uplink and Downlink
Broadband spectrum view (limited by bandwidth of filter stages)
Demodulates Audio for easy DAQ testing (Delivered Audio Quality)
- FM available today, digital standards coming soon .
Download free software from www.safe-comwireless.com

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