

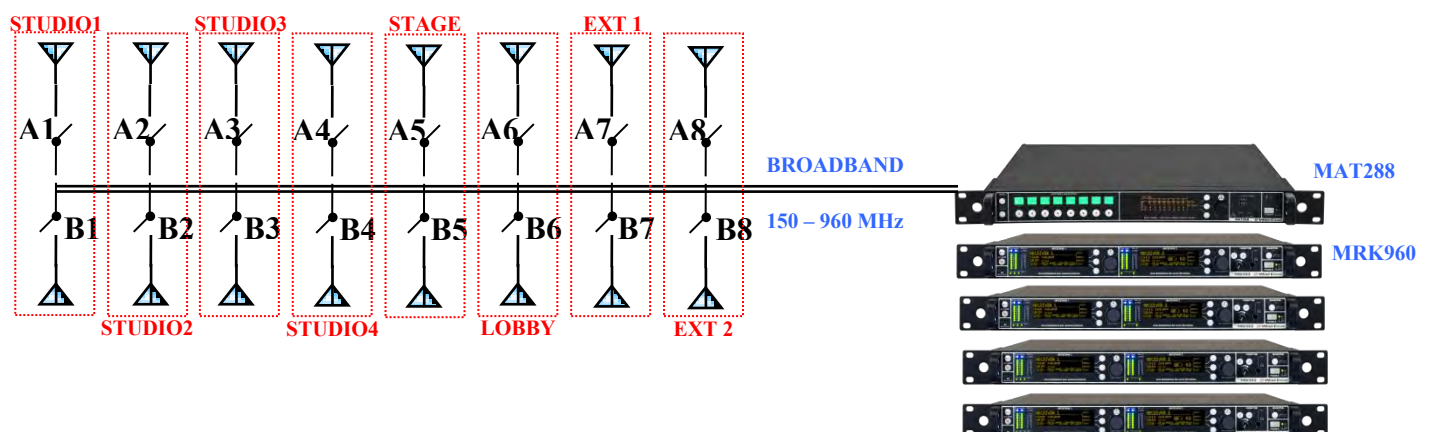
MAT288 is a programmable RF combiner, software configurable in:

- Diversity Combiner 8:1 with 6dB gain
- Diversity Combiner 8:4 with 0dB gain
- 2x Diversity Combiner 4:2

MAIN TECHNICAL FEATURES

- ✓ Diversity combiner **8:1** or **8:4** or **2 x 4:2** (sw configurable)
- ✓ Wide bandwidth **150-960 MHz** operation
- ✓ Redundant power supply, AC and DC powered
- ✓ Remote management and monitor of alarms thru Ethernet 10/100 base TX
- ✓ Antenna booster supply toggled on each input independently
- ✓ Voltage and current monitoring on each booster supply with alarm
- ✓ **Programmable attenuators** on each inputs
- ✓ Remote boost control (for gain/bandwidth) with a bidirectional data link thru coax (input BNCs)
- ✓ light window where the user can enter their own text to identify the 8 areas

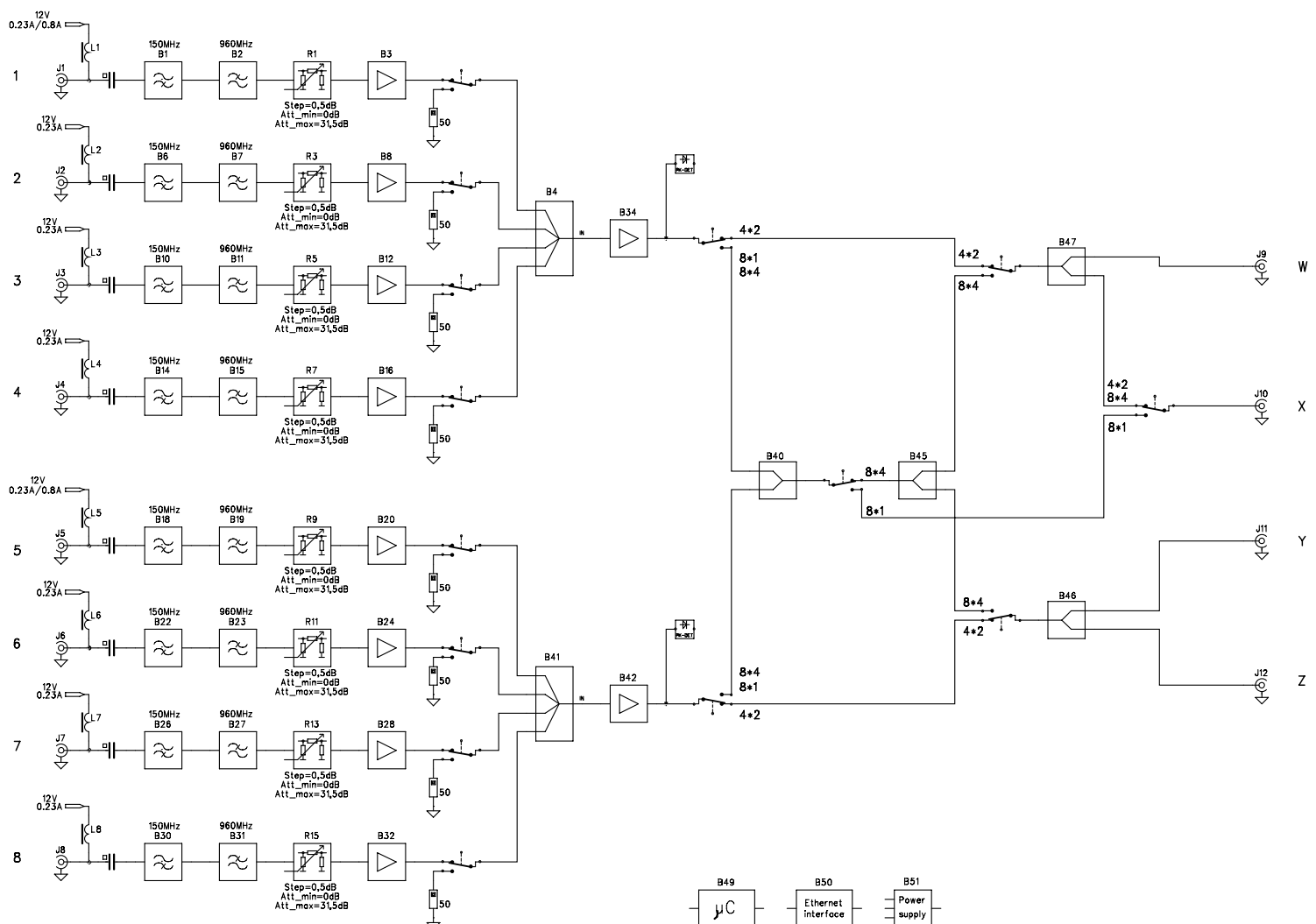
FUNCTIONAL DRAW (example):



TECHNICAL DATA:

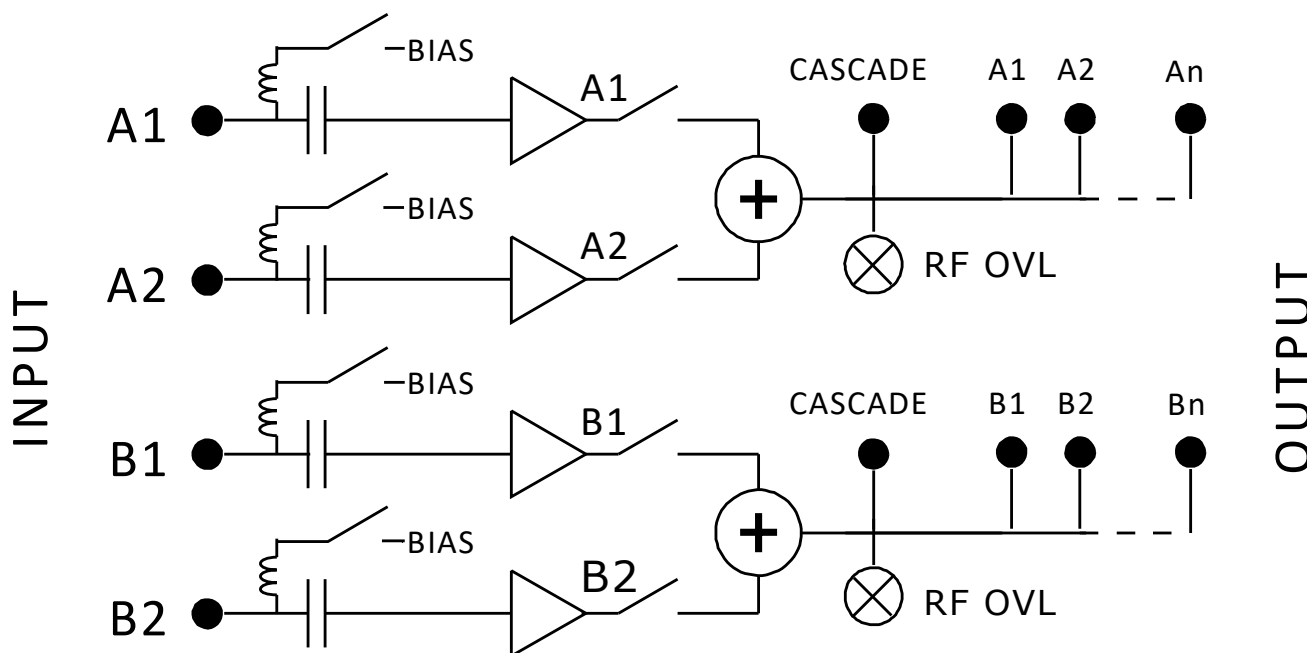
- Power supply : AC connector 90÷264Vac / T2A, 47÷63Hz
DC connector 10÷ 28 VDC (fuse protected) 12A max (optional)
Max power consumption 120W
- Working frequency : 150 ÷ 840 MHz (MAT288), 150 ÷ 960 MHz (**MAT288X**)
- Amplifier linearity : ± 1 dB (typical)
- "A" / "B" antenna input : 8+8 BNC type connector
- antenna output : 8 BNC type connector
- Impedance : 50 ohm
- Input/output Gain : 6 dB (Combiner 8:1), OIP3=30dBm typ.
0 dB (Combiner 8:4), OIP3=24dBm typ.
6 dB (2 Combiners 4:2), OIP3=30dBm typ.
- Noise Figure : 5.5dB (each channel)
- Antenna booster powering : +12Vcc / 800mA MAX.(ports 1A, 1B and 5A, 5B)
+12Vcc / 230mA MAX.(other ports)
- Configuration/monitor interfaces : 10/100 Base TX Ethernet port
- Display : 64 x 256 OLED (yellow)
- Dimension : Standard rack (aluminum) 19" / 1U.
- Weight : 4,4 Kg

BLOCK DIAGRAM





SPL2216/SPL2208 is an **active** combiner/splitter: **2 x 2 (diversity) input** are combined and then distributed in **16 x 2 diversity outputs** (for SPL2216) or **8 x 2 diversity outputs** (for SPL2208). It allows a basic matrix-selection between 2 diversity areas: *each input feed can be activated with a button on the front panel.*




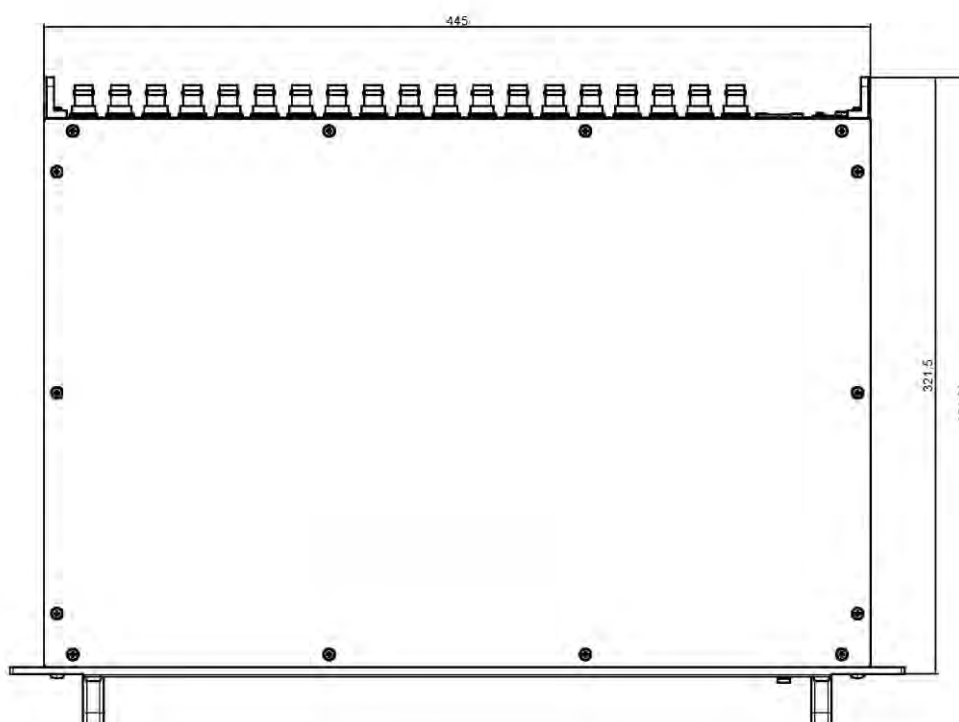
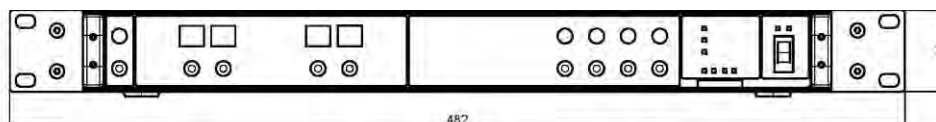
It provides antenna bias & diagnostic check and integrates the **Wisycom Remote Antenna Protocol**: using the same coaxial cable it creates a network to monitor and control remotely boosters (BFA) or antennas (LFA). Thanks to the ethernet interface all of these functionalities can be supported on the PC using the Wisycom Wireless Manager program.

MAIN FEATURES

- Wideband: 170-1260 MHz
- High Rf robustness and linearity: for high density/equally spaced frequencies operations (i.e. with MTP40s Linear)
- Able to feed 16 diversity receivers (for SPL216), 8 diversity receiver (for SPL2208)
- Combine/Select signal from 4 antenna inputs
- Redundant DC supply and antennas diagnostic features
- Wisycom Remote Antenna Protocol to control antennas/booster remotely thru coax
- Ethernet interface to access all of feature with a PC, making presets and real time monitoring
- Cascade output to connect another SPL2216/SPL2208 or monitor devices

Technical Data

Frequency ranges	170 ÷ 1260 MHz
Input/output gain	+5dB approx.
Input/cascade gain	+1.5dB approx.
Amplifier linearity	± 1 dB (typical)
Noise figure	7,5 dB
Antenna booster powering	+12Vcc / 500mA MAX (for each BNC-female input connector A & B)
Connector	input: 2+2 BNC-F output: 16+16 BNC-F (SPL2216) 8+8 BNC-F (SPL2208) cascade: 2 BNC-F
Impedance	50 Ω
Managing interface	10/100 Base TX Ethernet port and thru frontal tactile buttons
Power supply	10÷ 28 Vdc, 5A max, redundant DC Vdc1 and Vdc2 on XLR M-4pin
	 <div style="margin-left: 20px;"> 1: -Vdc1 2: +Vdc2 3: -Vdc2 4: +Vdc1 </div>
Power consumption	40W max
Temperature range	-25 ÷ +55 °C
Material	aluminum
Finishing	black varnish
Dimensions	44 x 483 x 351 mm (HxWxD)
Weight	3 kg





CSI16T is a passive wideband combiner designed to work up to 3W of power.

CSI16T communicates with Wisycom transmitter (i.e. **MTK952N**) through coaxial inputs and allows a smart power management: combiner loss are automatically compensate on Tx side!

FEATURES:

- ✓ RF combiner able to combine 16 inputs into 4/2/1 outputs
- ✓ Selectable combination thru a 3 positions selector on front panel

[16:1] or 2x [8:1] or 4x [4:1]
- ✓ Used with MTK952N permits to recover the combiner loss
- ✓ Wide band operation 470÷800MHz
- ✓ High input power up to 3W
- ✓ Selectable extra compensation in the [16:1] configuration: connected to another combiner CSA121T, it is able to recover up to 15dB of loss

Technical Data

Input Connectors: 16 BNC-F, 50 Ω of impedance

Output Connectors: 6 N-F, 50 Ω of impedance

Max input power: 3W (for each input connector)

Bandwidth: 470 ÷ 800MHz

Case: Aluminum, black varnish

Power supply : AC connector 90÷264Vac /47÷63Hz, (fuse protected) T2A-50W max
: DC connector 10÷ 28 VDC

Combiner loss:

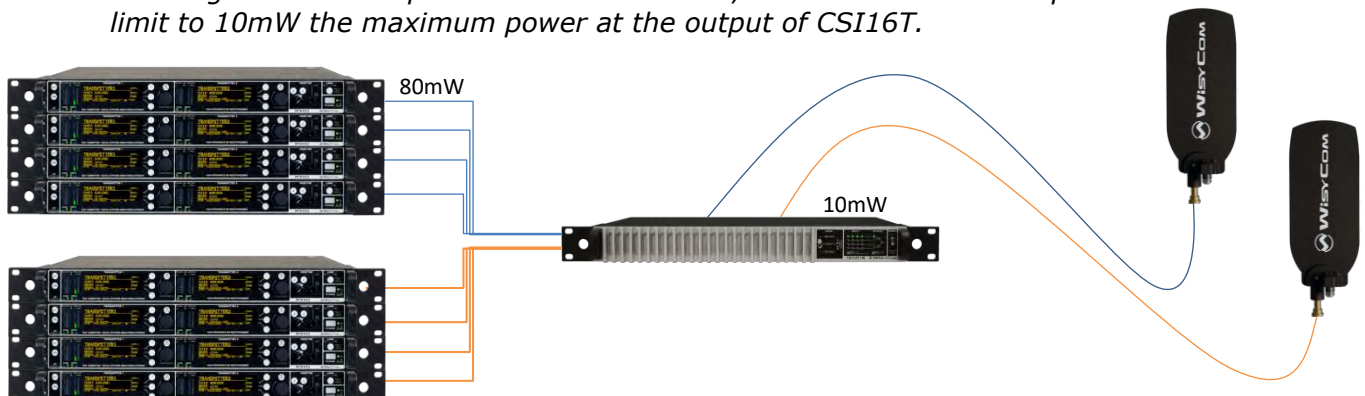
- approx. 6 dB for 4x [4:1]
- approx. 9 dB for 2x [8:1]
- approx. 12dB for [16:1]

Combiner loss can be automatically recovered from MTK952Ns connected to CSI16T:
MTK952Ns raise power accordingly to the loss, while keeping the limit on output port (country based).

Example: Combiner 2x [8:1] configuration with high power transmitters:

Country power limit: 10mW

Enabling external compensation on MTK952Ns, the transmitters raise power of 9dB in order to limit to 10mW the maximum power at the output of CSI16T.



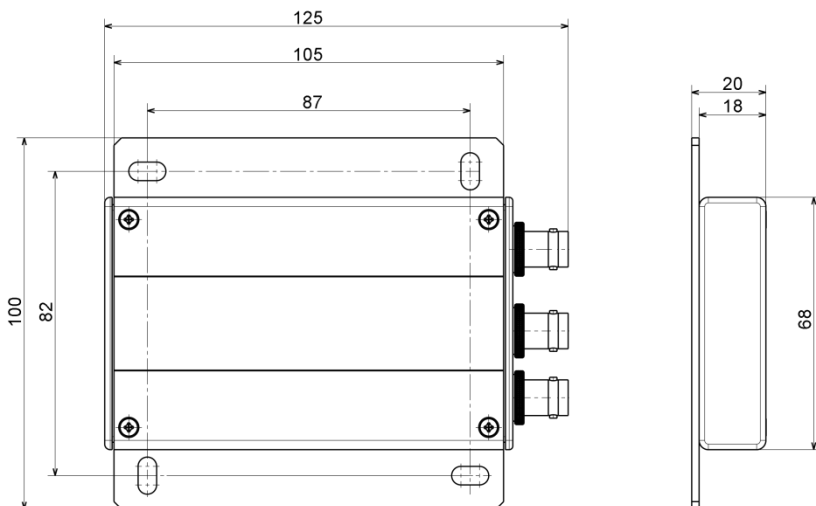
PASSIVE WIDEBAND COMBINER
PASSIVE WIDEBAND SPLITTER

→ 1 x 2:1
 → 1 x 1:2

CSA121T is a passive wideband splitter/combiner designed to work up to 3W of power. CSA121T becomes a smart combiner when used with Wisycom transmitter **MTK952N**: thanks to which the combiner loss is recovered.

FEATURES:

- ✓ Small and compact splitter/combiner, stripline construction
- ✓ Used with MTK952N, permits to recover the combiner loss
- ✓ Wide band operation
- ✓ High input power up to 3W



Instruction

Combining: Input are [1] & [2] → output [C] (combined signals)
 Splitter: Input is [C] → output [1] & [2] (split signals)

Technical Data

Connectors: 3 BNC-F, 50 Ω of impedance

Splitter/Combiner loss: 4 dB

Max input power: 3W (for each connector)

Bandwidth: 470 MHz – 870MHz

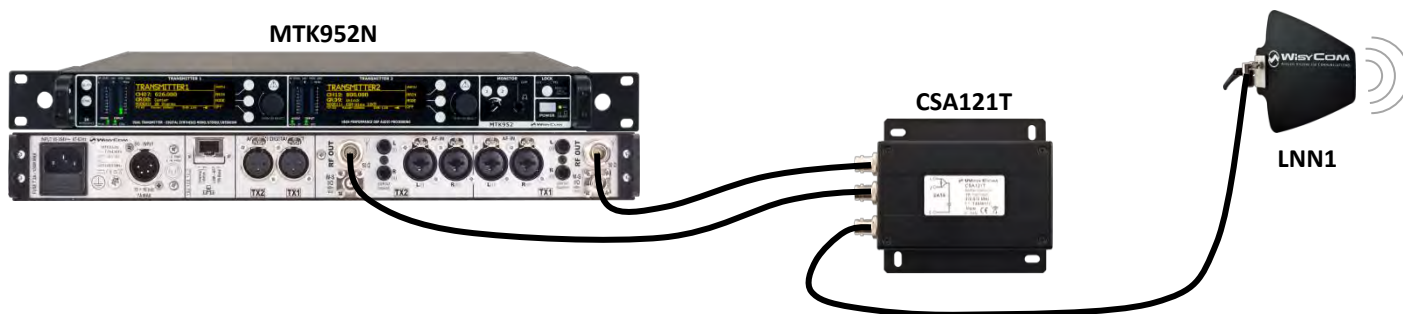
Case: Aluminum, black varnish

Weight: 235 g

WARNING: if used as splitter, the loss will not be recovered

WARNING: it is possible to use CSA121T as antenna splitter/combiner in reception but booster powering can't pass through ports.

Example: Combiner configuration with high power transmitters



Connecting CSA121T, MTK952N automatically recovers the combiner loss increasing the output power of the transmitter

PASSIVE WIDEBAND COMBINER
PASSIVE WIDEBAND SPLITTER

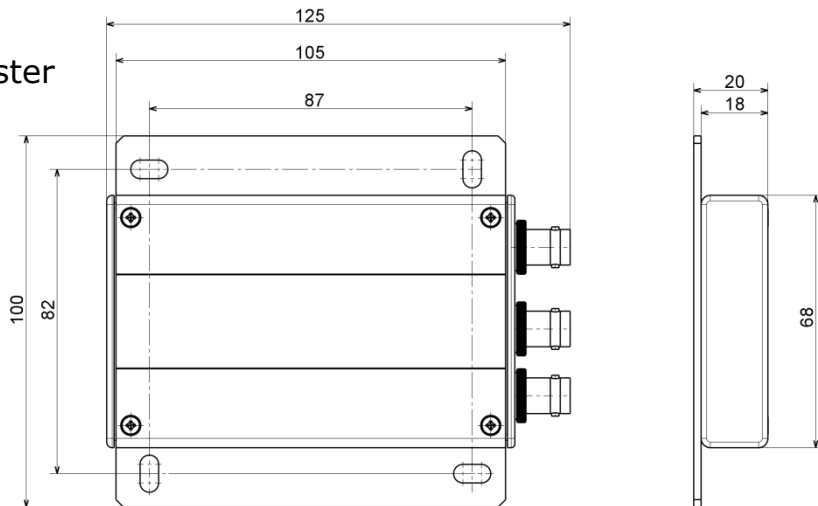
→ 1 x 2:1

→ 1 x 1:2

CSA121B is a passive wideband splitter/combiner designed to work up to 2W of power.

FEATURES:

- ✓ Small and compact splitter/combiner, stripline construction
- ✓ Wide band operation
- ✓ High input power up to 2W
- ✓ DC pass through for antenna booster



Instruction

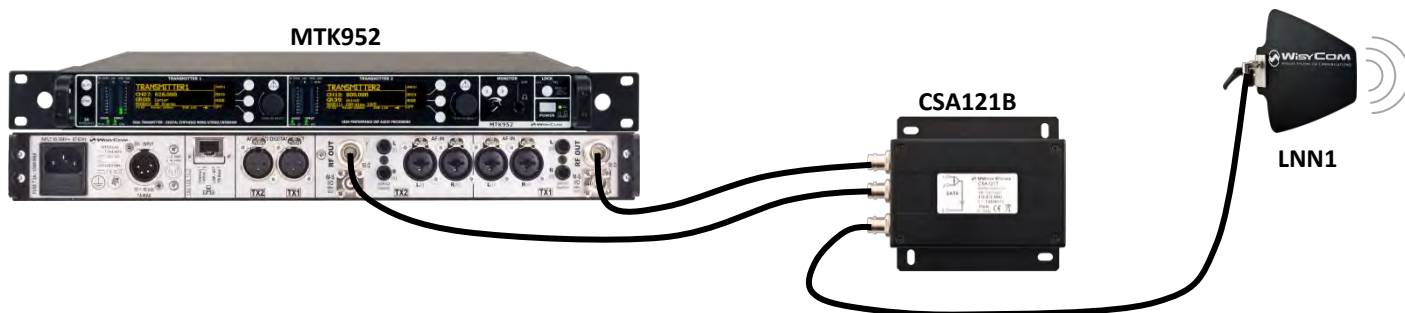
Combining: Input are [1] & [2] → output [C] (combined signals)
 Splitter: Input is [C] → output [1] & [2] (split signals)

Technical Data

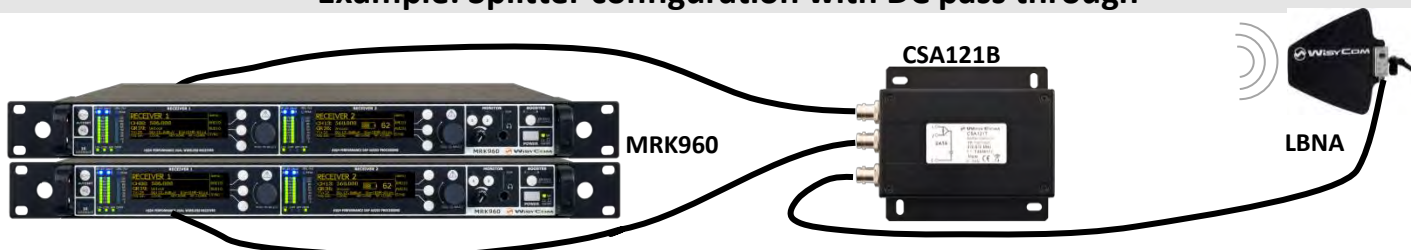
Connectors: 3 BNC-F, 50 Ω of impedance
 Splitter/Combiner loss: 4 dB
 Max input power: 2W (for each connector)

Bandwidth: 470 MHz – 870MHz
 Case: Aluminum, black varnish
 Weight: 220 g

Example: Combiner configuration with high power transmitters



Example: Splitter configuration with DC pass through



PASSIVE WIDEBAND COMBINER

PASSIVE WIDEBAND SPLITTER

→ 1 x 2:1

→ 1 x 1:2

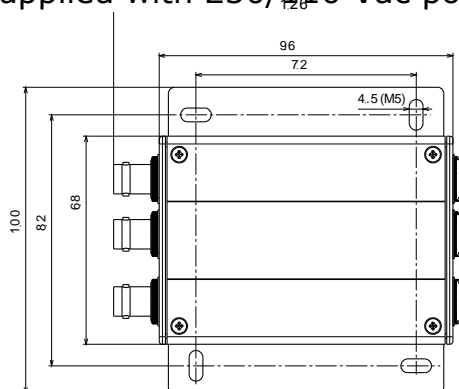
CSA121A is designed to combine different areas, covered by antennas in diversity configuration. CSA121A is DC-coupled for use with antenna booster: it can handle up to 1.5 Amp without saturation for high power booster (BAW) powering. Mounting plate hole M5.

It is supplied with a power supply for the booster voltage.

In case a booster voltage is not needed, use the CSA221 to have a double splitter combiner.

FEATURES:

- ✓ Small and compact splitter/combiner, stripline construction
- ✓ Wide band operation
- ✓ High current standing for high IP3 booster driving (i.e. Wisycom BAW)
- ✓ Supplied with 230/110 Vac power supply with locking connector


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18


Instruction

Combining:

Input are [1] & [2] →

output [C] (combined signals)

Splitter:

Input is [C] →

output [1] & [2] (split signals)

Variant

STD standard version
SPL splitter version
COM combiner version

combiner and splitter
 only splitter
 only combiner

Technical Data

Connectors: 3 Bnc-F

Splitter/Combiner loss: 4 dB

Max current thru port: 1.5 A

Max input power (CSA121A) : 125 mW

Bandwidth: 470 MHz – 870MHz

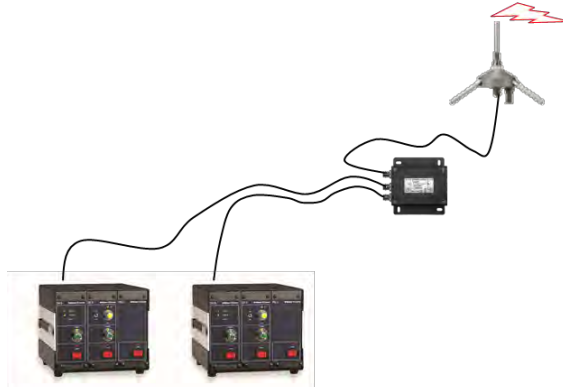
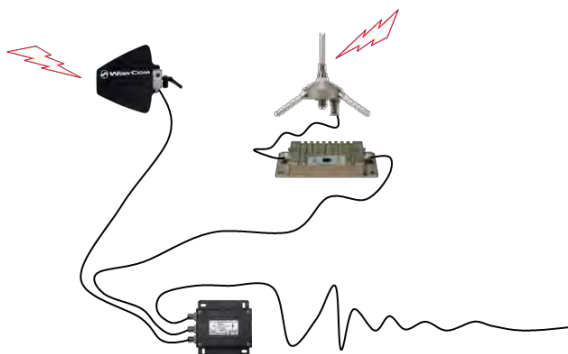
Case: Aluminum, black varnish

Weight: 170 g (without power supply)

Impedance: 50 Ω

COMBINER CONFIGURATION WITH HIGH CURRENT BOOSTER

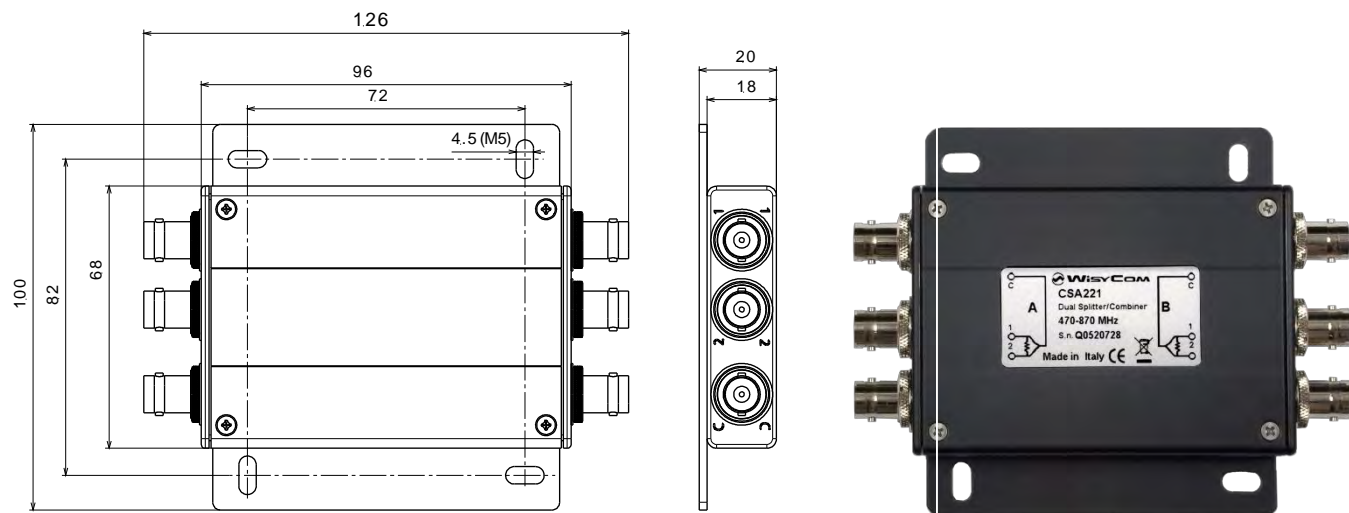
COMBINER CONFIGURATION WITH HIGH POWER TRANSMITTER



PASSIVE WIDEBAND COMBINER
PASSIVE WIDEBAND SPLITTER

→ 2 x 2:1
 → 2 x 1:2

CSA221 is designed to combine different areas, covered by antennas in diversity configuration. CSA221 is DC-coupled for use with antenna booster: it can handle up to 1.5 Amp without saturation for high power booster (BAW) powering. Mounting plate hole M5.



Instruction

Combining:

Input are **[1]** & **[2]**

→

output **[C]** (combined signal)

Splitter:

Input is **[C]**

→

output **[1]** & **[2]** (split signals)

Technical Data

Connectors: 6 Bnc-F

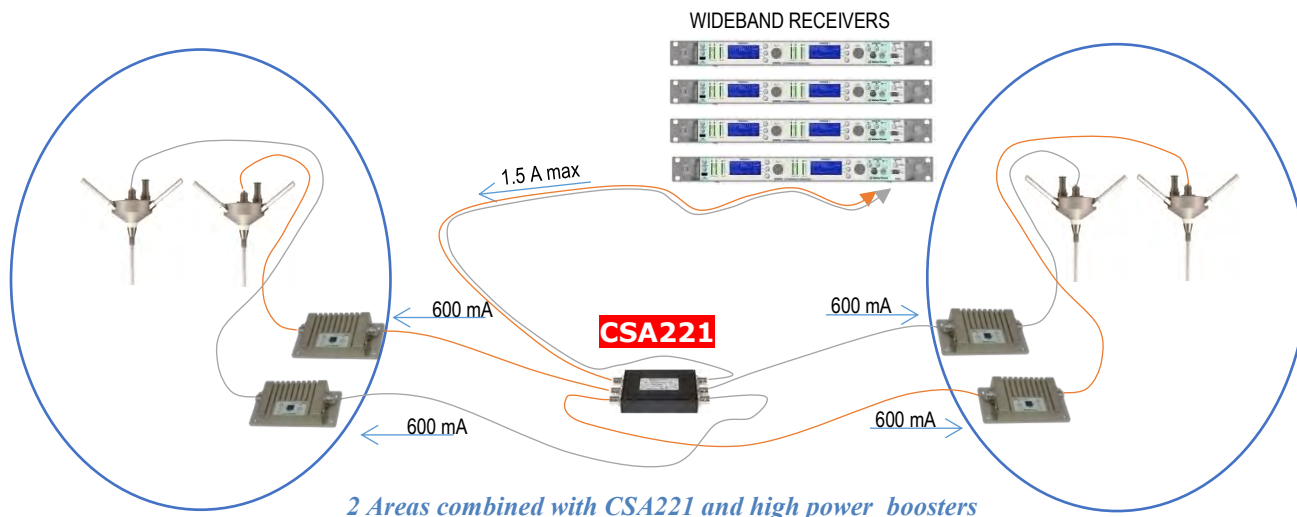
Splitter/Combiner loss: 4 dB

Max current thru port: 1.5 A

Bandwidth: 470 MHz – 870MHz

Case: Aluminum, black varnish

Weight: 220 g





PAW is wideband linear amplifier designed to boost 20dB an RF signal:

- PAW-V working in 170-230 MHz
- PAW-L working in 435-700 MHz
- PAW-H working in 566-800 MHz
- PAW-X working in up 960 MHz
- PAW-W working in up 1300 MHz

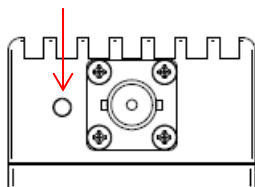
It is powered through the coaxial cable attached to its input connector (200 mA @ 12V).
PAW housing is in ruggedized aluminum, with waterproof, suitable for outdoor installations.
It supports wall installation thru 2 holes for wall-installation (M4 screw type).

TECHNICAL SPECIFICATIONS

- Frequency(*) : up 250 MHz (PAW-V), up 700 MHz (PAW-L), up 800 MHz (PAW-H)
up 960 MHz (PAW-X), up 1300 MHz (PAW-W)
- Max input power : 4 dBm
- Input/output impedance : 50 ohm (SWR = < 1:1.2).
- Connectors : BNC-female type or N-female type (**PAWN**)
- Gain (max) : 20 dB (typical)
- OIP3 : +42 dBm (Output 3rd order Intercept Point) typical @ 27dBm - 1dB compression point
- Powering : +12 V, 200 mA (thru input coax. cable)
- Size (L x H x P) : 120mm x 48mm x 29,5 mm
- Weight : 250 g approx.

(*) Note: that the PAW is using a full 1.3 GHz wideband amplifier, the band limitation is due to the low pass filter only (to avoid 2nd and higher harmonics generation).

Signalling LED, multicolour:



off : without power supply

orange : RF output power lower than 10mW

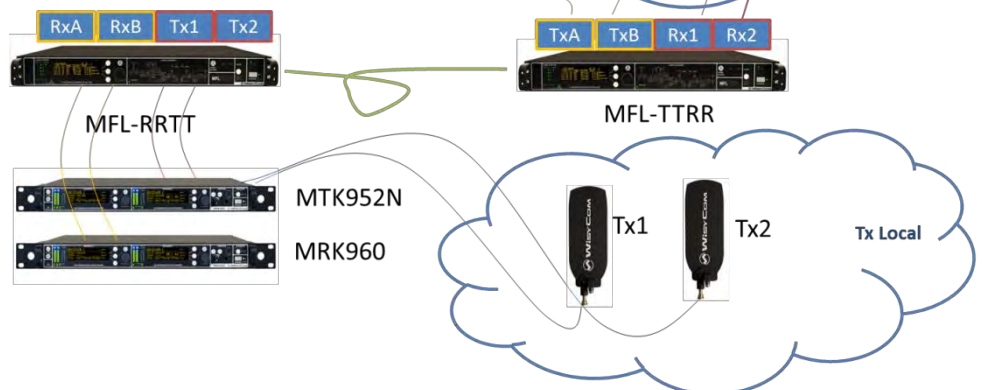
green : RF output power higher or equal to 10mW

TYPICAL APPLICATIONS

PAW powered by MFL, provides from 10mW to 200mW according to the MFL-RX module gain setting

Common setting:

PAW output power	MFL gain dB setting
10 mW	-10 dB
50 mW	-3 dB
100 mW	0 dB
200 mW	+3 dB



BFA integrates a unique bank of filters along with a low noise amplifier. Filters and gain can be easily setup locally thru a 4 key navigation buttons and a TFT display or remotely with a data connection on the same RF coaxial cable.

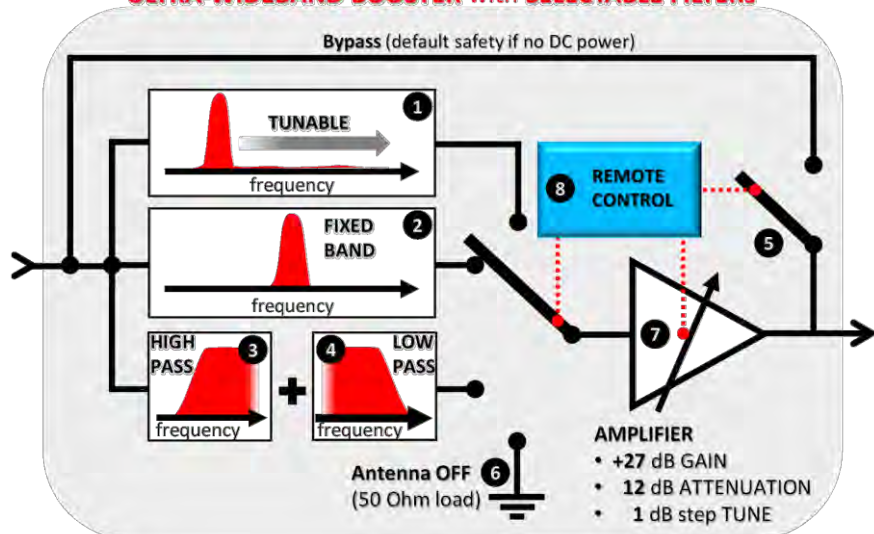
Using the latest Wisycom filter technology, BFA gives a full control of RF zones and allows to build flexible and remote controllable antenna systems.



Key Features

- ✓ Huge reception band: 410-1300 MHz
- ✓ RF gain from -12 to +27 dBu (1 dB step)
- ✓ Tunable filter for interference control
- ✓ Fixed band saw filter
- ✓ 3 High Pass & 3 Low Pass filters
- ✓ Remote controllable thru coax cable
- ✓ Easy configuration thru a TFT display
- ✓ Antenna off for RF zone disabling
- ✓ Pass thru DC selectable for device cascading
- ✓ Waterproof with gasket sealing

ULTRA-WIDEBAND BOOSTER with SELECTABLE FILTERS



- 1 Tunable filter 410-730 (40 MHz wide)
- 2 Fixed band saw filter: 940-960 MHz (Usa) or 1240-1260 (Japan)
- 3 High pass filter (410/470/510 MHz) and low pass filter (600/700/810 MHz) CASCADE (9 bandpass combinations)
- 5 Bypass line for full band reception (active mode if no DC power for safety)
- 6 Antenna off for zone control
- 7 Gain control from -12 dB to 27 dB
- 8 Remote control with a data link running on coaxial cable

SPECIFICATIONS

BOOSTER

- Control: display menu or remote thru coaxial cable
- Gain: $-12 \div 27$ dB typical (1 dB step selection)
- Gain flatness: ± 1 dB
- Powering: +12 Vdc / 100mA
- Full bandwidth Bypass (0.8dB attenuation) and RF OFF function

FILTER

- Tunable: $410 \div 730$ MHz (UHF), 40MHz of BW
- Fixed: $940 \div 960$ MHz or $1240 \div 1260$ MHz
- Selectable band pass filter: HP 410/470/510 MHz, LP 600/700/810 MHz (other see filter option)

MECHANICAL

- Connectors: BNC-F (BFA-B), N-F (BFA-N)
- Display: TFT – transfective (176 x 176 pixels, RGB)
- Weight: 250 g

VARIANTS

BFA-<Connector>-<FilterOption>

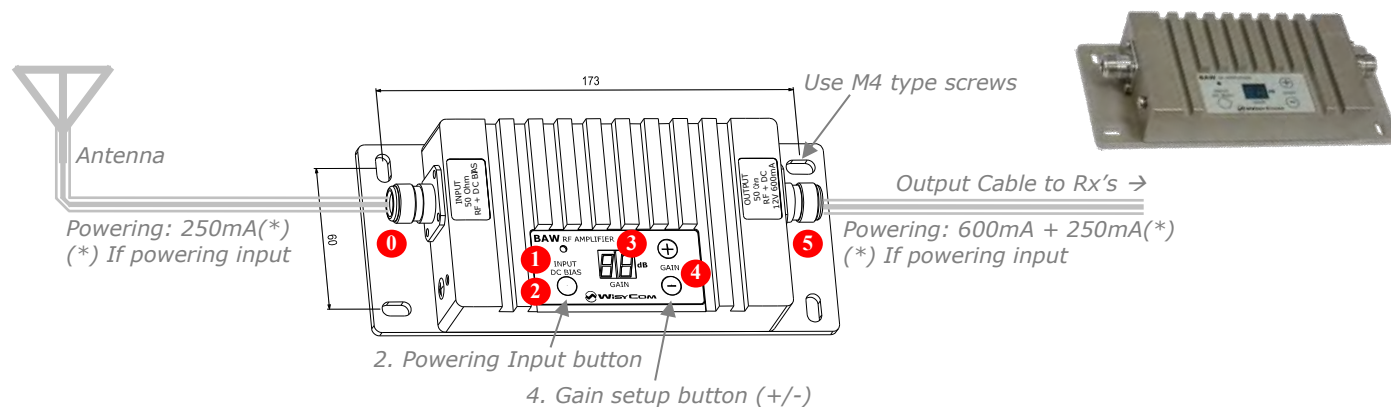
<Connector>

- B** BNC female connector
N N female connector

<FilterOption>: Selectable Filter • Fixed Filter:

- F1** TUN:410-730MHz • HP: 410/470/510 MHz + LP: 600/700/810 MHz • $940 \div 960$ MHz (Europe/Usa)
F2 TUN:410-730MHz • HP: 470/520/550 MHz + LP: 617/663/698 MHz • $940 \div 960$ MHz (Europe/Usa)
F3 TUN:410-730MHz • HP: 410/470/510 MHz + LP: 600/714/810 MHz • $1240 \div 1260$ MHz (for Japan)

BROADBAND HIGH POWER ANTENNA AMPLIFIER



BAW is wideband antenna booster especially designed to allow long cables wirings and full broadband wireless receiver systems. It comes in four versions:

- BAW-L working in 470-670 MHz
- BAW-H working in 630-870 MHz
- BAW-N working in 470-700 MHz
- BAW-X working in 470-800 MHz

Operation

The BAW is powered by the receiver system through the coaxial cable attached to its output connector, and accordingly the receiver system must have the antenna feeding function.

BEWARE: BAW needs 600mA @ 12V to operate and it can feed a further antenna booster up to 250mA @ 12V (in this case the overall current supplied must be at least 850mA).

BAW housing is in ruggedized aluminum (nickel plated), with waterproof sealing (suitable for outdoor installations):

- ⇒ 4 holes for wall-installation (M4 screw type) 173mm X 60mm.

Radiofrequency connector is N-Female type:

- ⇒ **Input connector** ①, powered through antenna. Pushing button ② it is possible to power up a remote booster (up to 250mA). When input power is active, "INPUT DC BIAS" led is on. If there is a fault on remote booster (i.e. a short circuit) then a L appears on the left digit of gain display ③.
- ⇒ **Output connector** ⑤, feeding a receiver system. BAW is powered thru this connector (600mA + 250mA if input powering), if there is a fault and there is not enough power to properly operate then a L appears on the right digit of gain display ③.

GAIN SETUP

BAW gain can be setup from 0 (relay bypass) to 22 dB (typical) using +/- buttons ④. With a long push (2 sec) + or - buttons, BAW enters in edit mode: display blinks and with short push it is possible to setup the desired gain. Once finished a long push either on + or - will exit the edit mode.

BEWARE: to avoid any overload of the receiver system even with very strong RF signals, you must carefully compensate the loss of the cable (see the chart below) with the gain of the BAW, without exceeding a total gain of max. 3 dB.

TECHNICAL SPECIFICATIONS

- Frequency : a window in one of following ranges:

BAW-L ⇒ UHF (470 ÷ 670 MHz)
BAW-H ⇒ UHF (630 ÷ 870 MHz)

BAW-N ⇒ UHF (470 ÷ 700 MHz)
BAW-X ⇒ UHF (470 ÷ 800 MHz)
- Input/output impedance : 50 ohm (SWR = < 1:1.5; typ. = 1:1.4).
- Connectors : N-female type.
- Gain (max) : 0 ÷ 22dB (typical), selectable in step of 1 dB (+/- button)
 → When 0 dB is selected then RF feed is by-passed (relay)
 → When BAW is not powered then RF feed is by-passed (relay)
- OIP3 : +47 dBm (Input 3° order Intercept Point) typical.
- Gain flatness : ± 1 dB, in the whole working window.
- Powering : +12 V, 600mA + up 250mA (*) (thru output coax. Cable)
 (*) if power input activated.
- Size (L x H x P) : 193mm x 80mm x 34mm (173mm x 60mm fasten holes).
- Weight : 650 g approx.

Typical attenuation of most used coax. cables (for length = 100 m):

Cable type	diameter mm	attenuation @ 400 MHz	attenuation @ 900 MHz
RG 58 C/U	4.95	32 dB	52 dB
RG 213 /U	10.3	13 dB	22 dB
RG 218 /U	22.1	7 dB	14 Db
Cellflex - ¼" foam dielectric	8.8	8.4 dB	12.8 Db

LFA is a directional antenna with a unique design to achieve an ultra-wideband of 410 -1300 MHz, a compact and rugged form factor and a reduce wind resistance.

LFA integrate a unique bank of filters along with a low noise amplifier. Filters and gain can be easily setup locally thru a 4 key navigation buttons and a TFT display or remotely with a data connection on the same RF coaxial cable.

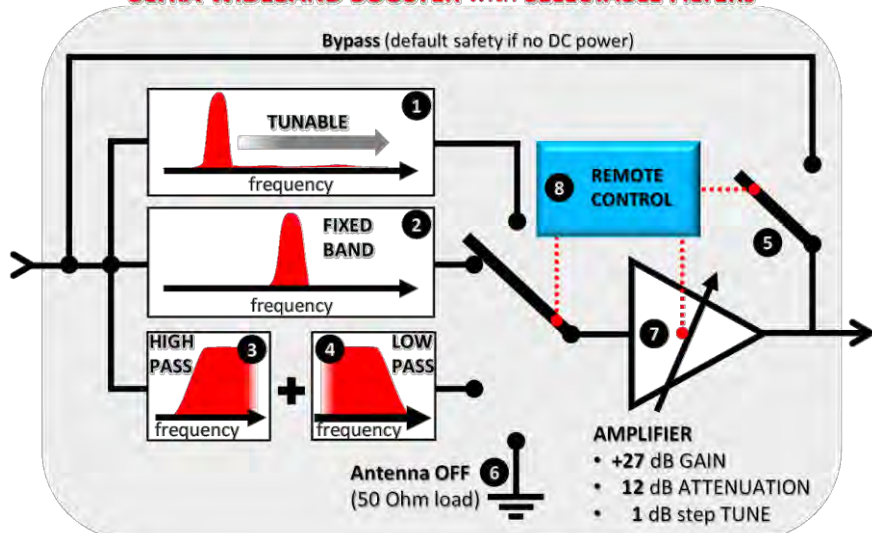
Using the latest Wisycom filter technology, LFA gives a full control of RF zones and allows to build flexible and remote controllable antenna systems.



Key Features

- ✓ Huge reception band: 410-1300 MHz
- ✓ RF gain from -12 to +27 dBu (1 dB step)
- ✓ Tunable filter for interference control
- ✓ Fixed band saw filter
- ✓ 3 High Pass & 3 Low Pass filters
- ✓ Remote controllable thru coax cable
- ✓ Easy configuration thru a TFT display
- ✓ Antenna off for RF zone disabling
- ✓ Skeletal design for low wind loading
- ✓ Waterproof with gasket sealing

ULTRA-WIDEBAND BOOSTER with SELECTABLE FILTERS



- 1 Tunable filter 410-730 (40 MHz wide)
- 2 Fixed band saw filter: 940-960 MHz (Usa) or 1240-1260 (Japan)
- 3 High pass filter (410/470/510 MHz) and low pass filter (600/700/810 MHz) CASCADE (9 bandpass combinations)
- 5 Bypass line for full band reception (active mode if no DC power for safety)
- 6 Antenna off for zone control
- 7 Gain control from -12 dB to 27 dB
- 8 Remote control with a data link running on coaxial cable

SPECIFICATIONS**Antenna**

- Gain: 7dBi typical
- 3-dB beam-width: horizontal plane 120° – vertical plane 90°
- Front to back ratio: 10dB @ 870MHz
- Bandwidth: 410÷1300 MHz
- Polarization: vertical

Booster1 • Control: display menu or remote thru coaxial cable

- Gain: -12÷27 dB typical (1 dB step selection)
- Gain flatness: +/-1 dB
- Powering: +12 Vdc / 100mA
- Full bandwidth Bypass (0.8dB attenuation) and RF OFF function

FILTER

- Tunable: 410 ÷ 730 MHz (UHF), 40MHz of BW
- Fixed: 940 ÷ 960 MHz or 1240 ÷ 1260MHz
- Selectable band pass filter: HP 410/470/510 MHz, LP 600/700/810 MHz (other see filter option)

Mechanical

- Connectors: BNC-F (LFA-B), N-F (LFA-N)
- Display: TFT – transfective (176 x 176 pixels, RGB)
- Body Material: Epoxy fiberglass with skeletal design
- Finishing: Black matte textured weather resistance coating
- Mounting: 5/4" & 3/8" thread (metal support and mounting base)
- Weight: 550 g
- Size: 335 mm(L) x 276 mm(H) x 61 mm(D)

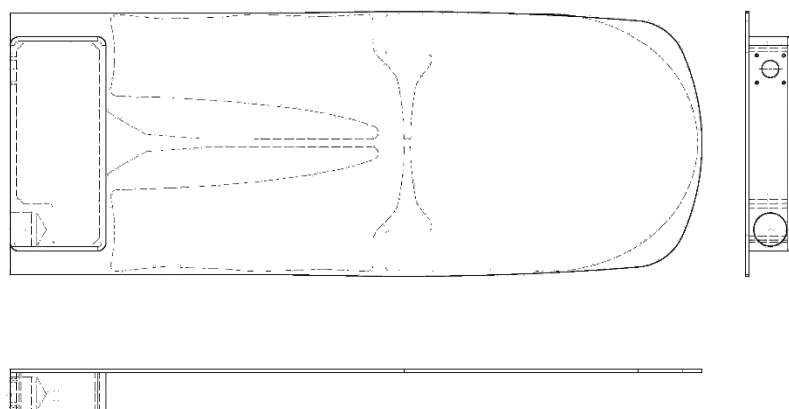
VARIANTS**LFA-<Connector>-<FilterOption>****<Connector>**

- B** BNC female connector
- N** N female connector

<FilterOption>: Selectable Filter • Fixed Filter:

- F1** TUN:410-730MHz • HP: 410/470/510 MHz + LP: 600/700/810 MH • 940 ÷ 960 MHz (Europe/Usa)
- F2** TUN:410-730MHz • HP: 470/520/550 MHz + LP: 617/663/698 MH • 940 ÷ 960 MHz (Europe/Usa)
- F3** TUN:410-730MHz • HP: 410/470/510 MHz + LP: 600/714/810 MH • 1240 ÷ 1260MHz (*for Japan*)

OMNIDIRECTIONAL WIDEBAND ANTENNA 400-930 MHz



AND/ADNA is a wideband UHF omnidirectional antenna. It enhances reception providing approx. 3.2 dBi gain. Booster version (ADNA) gains up to 18dB in 1 dB step.

Antenna Data

- Material: epoxy fiberglass (copper – clad)
- Finishing: black matte
- Mounting: 5/8" with worth or 3/8" with adapter
- Weight: 300g (ADNA), 235g (ADB), 285g (AND)

Specifications

- Frequency : ADNA (470 ÷ 800 MHz)*, ADN (400 ÷ 930 MHz)
- Input/output impedance : 50 ohm
- SWR : < 1:1.5 in the range 470 ÷ 800 MHz
: < 1:1.9 in the range 400 ÷ 930 MHz
- Connectors : N type (BNC adapter available)
- Booster Gain (max) : 0÷18 dB (typical), selectable in step of 1 dB (+/- button).
- OIP3 : **+43 dBm (Output 3° order Intercept Point) typical.**
- Booster Gain flatness : ± 1 dB, in the whole working window.
- Powering : +12 V, 100mA

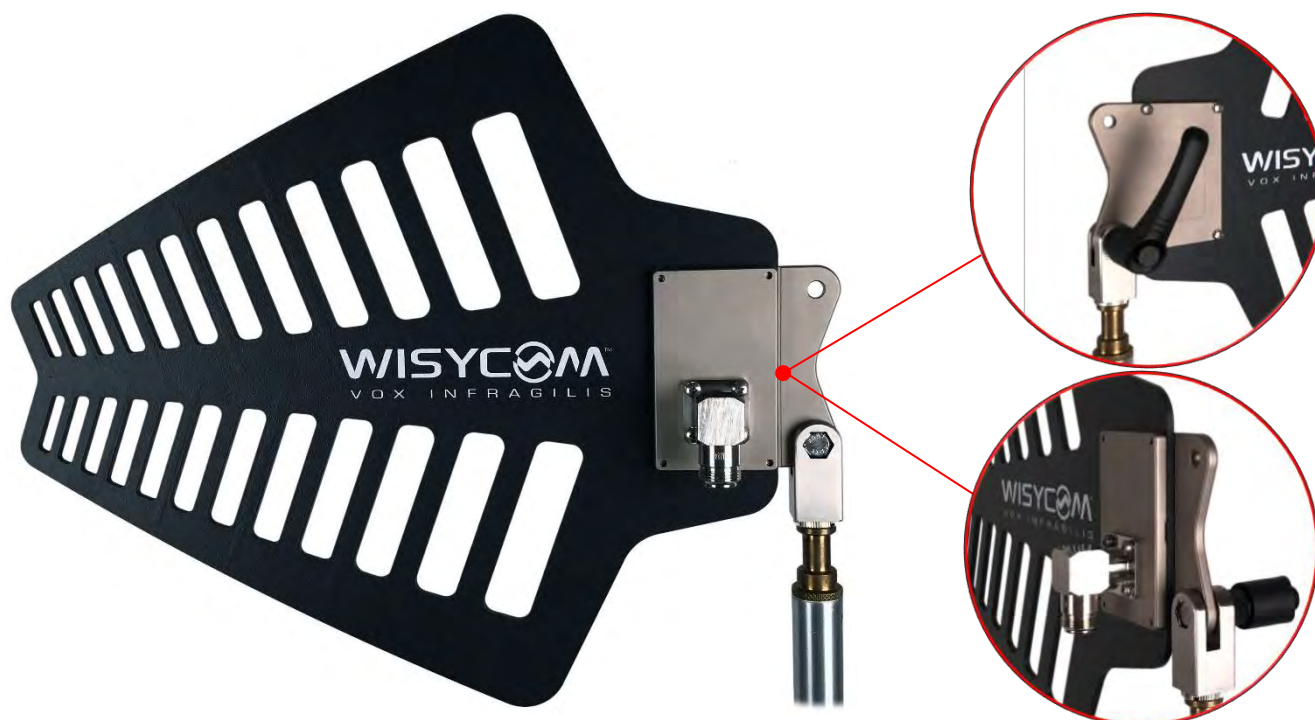
* NOTE: If you bypass the amplifier the range of the ADNA will increase to 400-930 MHz

Typical attenuation of most used coax. cables (for length = 100 m):

Cable type	Diameter (mm)	Attenuation @ 400 MHz	Attenuation @ 900 MHz
RG 58 C/U	4.95	32 dB	52 dB
RG 213 /U	10.3	13 dB	22 dB
RG 218 /U	22.1	7 dB	14 dB
Cellflex - 1/4" foam dielectric	8.8	8.4 dB	12.8 dB



UHF WIDEBAND ANTENNA 420-1300 MHz



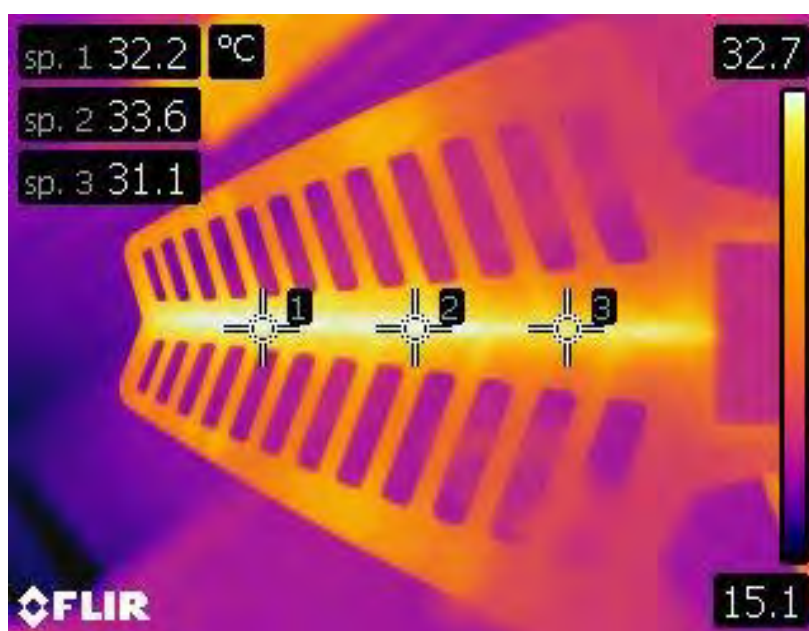
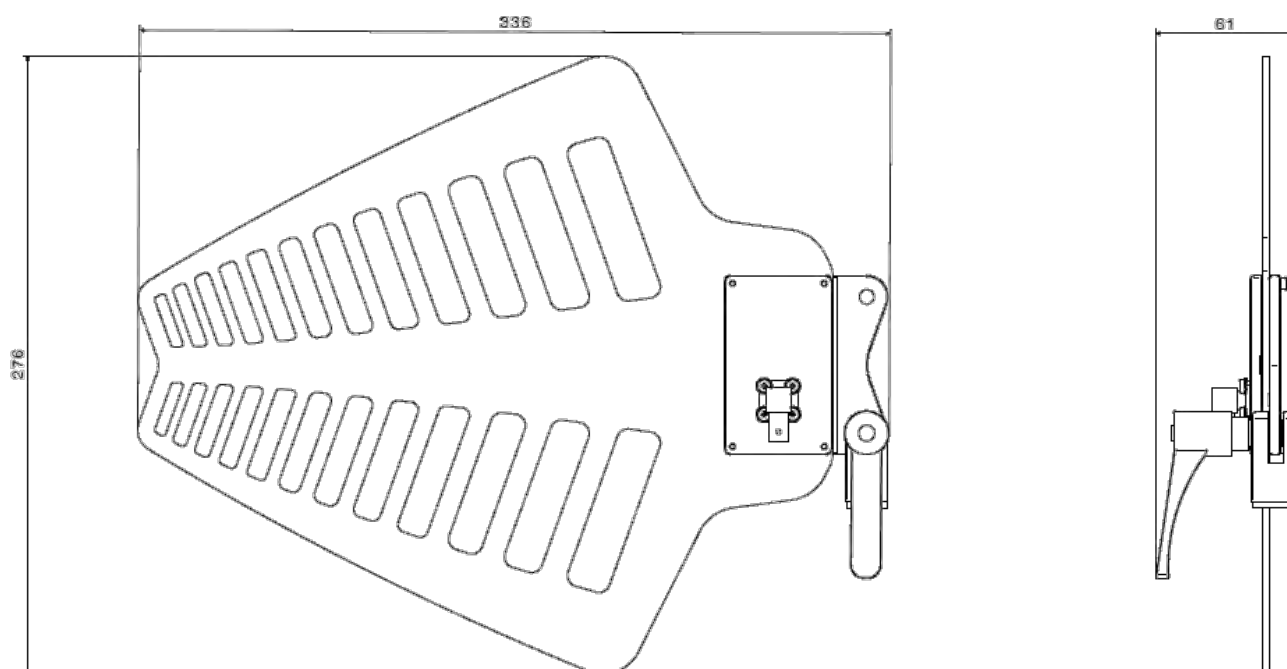
LBN2/LNN2 is a wideband UHF antenna LPDA (log periodic dipole Array). It enhances reception providing approx. 7 dBi gain with a typical beam-width of 140 degrees. LNN2 is provided with BNC connector (LBN2 version) or N connector (LNN2 version).

Key Features

- Skeletal Design for Minimal Wind Loading
- Bend elements for maximal directionality with minimum size (6 dBi gain)
- Future proof huge reception bandwidth → 420-1300 GHz to cover:
 - ✓ Intercom transmission (i.e. Motorola)
 - ✓ wireless microphone reception in 470-700 MHz
 - ✓ 4G duplex gaps
 - ✓ 940-960 MHz band
 - ✓ Future up-GigaHz bands (i.e. DME)
- Robust metal support with fine slope tuning
- Full metal support and mounting base (1/4" & 3/8")
- Textured Weather-Resistant Coating
- Waterproof with gasket sealing
- BNC or N connector available

Technical Data

- Frequency range: 420 - 1300 MHz
- Size: 336 mm L x 276 mm H x 61 mm D
- Material: Epoxy fiberglass (copper –clad)
- Connector: BNC type (for LBN2), N type (for LNN2)
- Finishing: Black matte
- Mounting: 5/8" With worth or 3/8" with adapter
- Weight: 500g (LBN2), 550g (LNN2)





MFL WIDEBAND OPTICAL LINK



MFL system is a modular 1RU chassis containing up to 4 channels of optical RF over fiber links, each containing multiple carrier capacity. An optional optical multiplexer (Mux) enables bi-directional communication of all laser channels over one single-mode fiber.

An MFL system is perfect for turnkey RF applications that require remote zoning of diversity wireless microphone receive antennas, and simultaneous transmit of IFB or IEM signals. Intended to overcome the limitations of coax, and create optimum RF signal integrity over extreme long distances. Highly configurable (see MFL System Configurations).

The key to successful RF Distribution is flexibility and control of RF level. The MFL system possesses the features required for ultimate flexibility and precise control to insure successful implementation of remote RF over fiber integration to Distributed Antenna Systems.

Features

Tunable RF Filters: The start of the signal chain offers multiple RF filtering options – both tunable and fixed – for complete control of the wireless microphone receive signal to obtain the desired RF receive signal window.

Variable gain RF amplifier and attenuators enable complete dynamic control of RF signal levels across all signal paths. Provides the optimum real-time agility necessary for any changing conditions.

RF Meter: Simple one touch RF Power meter to isolate and monitor RF power levels and real-time power levels of the individual optical links.

Dynamic range: Optimum dynamic range flexibility is the heart of precision RF over fiber implementation. To achieve this, the MFL offers two preset modes: Antenna mode for optimum receive levels, and IFB mode for optimum transmit levels of IFB (or IEM) to remote zones.

Optical AGC: Robust OPTICAL Automatic Gain Control (AGC) automatically compensates for changing conditions such as multiple fiber patch points on site that can attribute to possible undesirable signal losses.

High Dynamic Range Optical Lasers: Each laser transmitter is designed for optimal signal with the highest dynamic range for this application; combined with dual optical isolators create the cleanest possible optical links.

Customize system options: Many options from Tx and Rx laser module configurations, DC power input, optical multiplexer (Combine Tx, Rx and ethernet control over a single strand of fiber). Simple integration with Wisycocom's complete offering of RF Distribution products both transmit and receive.

Seamless integration with Wisycocom MTK952 Master/Slave for transmit distribution applications allowing plug and play of multiple zones of IFB or IEM coverage.

Remote Ethernet Control: Remotely monitor and control each zone from a single position. Optical levels, temperature, signal levels, filters, amplifiers all from the Wisycocom manager software.

Redundant Backup: For added security, the MFL was designed to accommodate complete equipment duplication for redundant failsafe backup system.

Subject to change without notice 



MORE FEATURES

- The MFL uses 4 CWDM laser channels to transmit and receive RF (Ch. 51, 53, 55, 57 ($\lambda = 1510/1530/1550/1570$ nm))
- Standard AC power and optional, redundant DC power (3 different DC Power Options)
- 12V bias per antenna input to support active antennas (controllable via front panel or Wisycocom Manager software)
- Built-in warning, alarm and fan indications designed to detect and diagnose system malfunctions.

MFL System Configurations

The MFL system is composed of 2 MFL BASE units, each with a combination of up to 4 Tx and Rx plug-in modules (factory installed). With installed Tx and Rx modules, the MFL has the following standard components and functions:

- Fiber I/O per Tx/Rx module (up to 4)
- Front panel control surface with OLED display
- Ethernet - for network control and monitoring via Wisycocom Manager Software
- Failsafe switch functionality - for redundant backup
- Realtime clock (with onboard RAM recording of system use and performance)
- AC Power - 110/230V

Additional Modules

Further functionality with can be obtained with factory-installed modules including:

External DC Options

- **DC** - XLR4M connector (10-28Vdc supply)**
- **N48** - Neutrik Optical Duo connector for Fiber and DC supply (15-48Vdc)
- **V48** - XLR4M connector (15-48Vdc)

Multiplexer Options (MUX)

- **OMX** - Mux 4:1 or Demux- 4 channels + AUX (camera or data*) over a single fiber.**
- **OMS** - Mux 6:1 or Demux- 4 channels + AUX* + Bi-directional data* over a single fiber.

Splitter Options - Duplicate signal to 2, 3 or 4 zones (optical)

- **SPL1:2** - 2 zones
- **SPL1:3** - 3 zones
- **SPL1:4** - 4 zones

Filter Options - all filters have 40 MHz Tunable Bandpass Filter (410-730MHz)

- **F41** - Selectable HPF (410/470/510MHz) and LPF (600/700/810MHz), Fixed (940-960MHz)
- **F42** - Selectable HPF (470/520/550MHz) and LPF (617/662/698MHz), Fixed (940-960MHz)**
- **F45** - Selectable HPF (410/470/510MHz) and LPF (600/700/810MHz), Fixed (806-810MHz)

*Data capabilities require external media converter.

**Standard feature on stock USA models.

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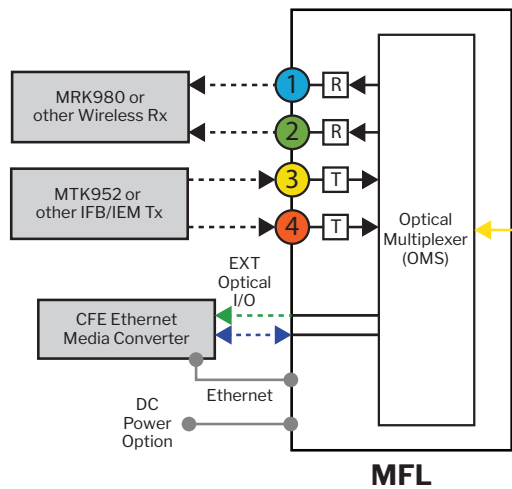
5228 Eisenhower Avenue
Alexandria, Virginia 22304
+1 (888) WISYCOM
+1 (888) 947-9266

WisycocomUSA.com
Sales@WisycocomUSA.com

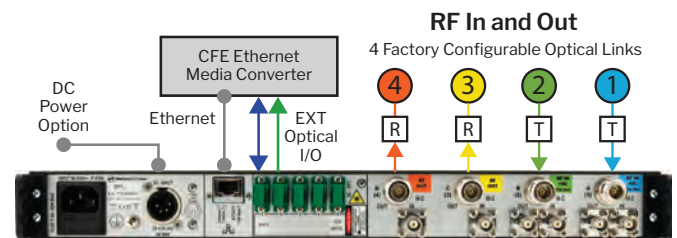
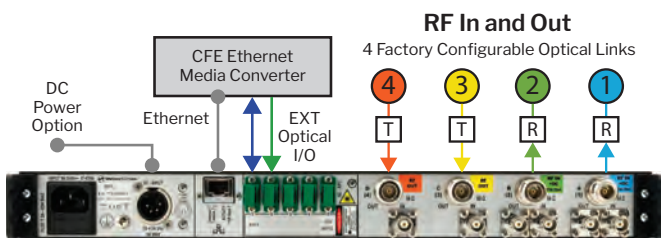
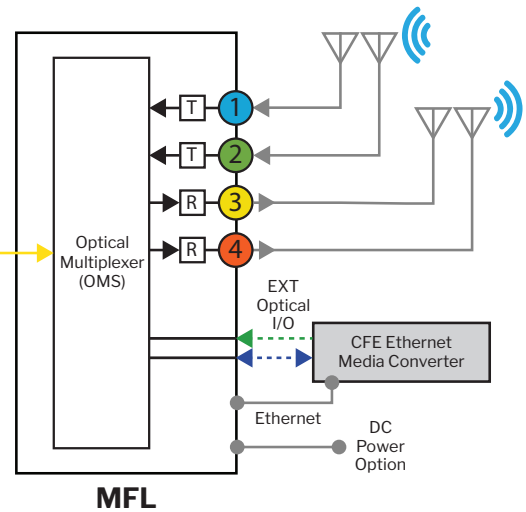
Wisycocom Srl

Via Tiepolo, 7/E
35019 Tombolo (PD) - Italy
+39 0424 382605
Fax. +39 0424 382733

LOCAL MFL SITE



REMOTE MFL SITE



MFL-RTT		2019 May 09 10:37			
OPT.CH	Φ	MODE	B.WIDTH	SETUP	
1RX.51	ON	IFB	150-960	0.0	dB MAIN
2RX.53	ON	IFB	150-960	0.0	dB RF BARS
3TX.55	ON	ANT	150-960	0.0	dB NAMES
4TX.57	ON	ANT	150-960	0.0	dB

LOCAL MFL DISPLAY

MFL-TTRR		2019 May 09 10:37			
OPT.CH	Φ	MODE	B.WIDTH	SETUP	
1TX.51	ON	IFB	150-960	0.0	dB MAIN
2TX.53	ON	IFB	150-960	0.0	dB RF BARS
3RX.55	ON	ANT	150-960	0.0	dB
4RX.57	ON	ANT	150-960	0.0	dB NAMES

REMOTE MFL DISPLAY

Application Examples	Local MFL - Module Configuration (ch. 51, 53, 55, 57)	Remote MFL - Module Configuration (ch. 51, 53, 55, 57)
Remote Diversity Zone w/ IFB(IEM) Return* (shown above)	RRTT	TTRR
Remote Diversity Zone w/ IFB (IEM) Send	RRRR	TTTT
Remote Diversity Zone (no IFB)	RR -	TT -
IFB Return only	TT -	RR -
IFB Return only (MTK952 w/ M/S Config.) <i>Expanded Example</i>	MTK952 Master » TT -	RR - » MTK952 Slave
IFB Return only (via local MTK952 Master) <i>Expanded Example</i>	MTK952 Master » TT -	RR - » 2 x PAW+Antennas
IFB (IEM) Return (4 IFB Mode) <i>Expanded Example</i>	4x MTK952 » TTTT (Mux)	R - - - » MPA4 + Antenna

Subject to change without notice 



MFL WIDEBAND OPTICAL LINK

Mainframe

RF to Optical modules (TX module)	1 to 4
Optical to RF modules (RX module) :	1 to 4
Maximum number of modules :	4
RF to fiber link working modes :	2 ("ANT" mode or "IFB" mode)
Rear optical connectors :	5 SC/APC, other type on request
Internal optical CWDM MUX/DEMUX :	2 max (option MFL-OMX)

'ANT' mode RF TX characteristics

Typical application	RF antenna remoting	- 25MHz BW tunable band-pass filter (opt*)
Frequency ranges	- 140 to 840 MHz (flat)	- 470 to 840 MHz
	25 MHz BW tunable band-pass filter center freq. from 404 to 788 MHz (opt*)	
(front panel selectable)	- External user band-pass filter	
External filter loss compensation	0 to 6dB	
TX Gain	0dB (user adjustable +6 to -20dB typ.)	
Input IP3	> 16 dBm typ.	
Noise figure	< 20dB typ. (*)	
SFDR	> 116 dB/Hz 2/3 typ.	
RF input connector	N female 50 Ω	
Antenna booster supply	12Vdc 200mA max	
External filter connectors	BNC female 50 Ω	

'ANT' mode RF RX characteristics

RX Gain	0dB (user adjustable ± 14dB typ.)
Failsafe option	yes, standard option
RF output connector	N female 50 Ω
Failsafe connector	BNC female 50 Ω

'IFB' mode RF TX characteristics

Typical application	"IFB" signal remoting (isofrequency systems)
Frequency range	140 to 840 MHz
RF input level	-6 to 10dBm
RF input level for 0dBm out (@ 0dB : gain)	from -3dBm to + 10dBm
RF input connector	N female 50 Ω

'IFB' mode RF RX characteristics

RX output level	0 dBm (user adjustable +6 to -20dB typ.)
Failsafe option	yes, standard option
RF output connector	N female 50 Ω
Failsafe connector	BNC female 50 Ω

Optical TX module (option MFL-TX module OTB001)

Optical power	3dBm (6dBm optional)
Wavelengths	1511 or 1531 or 1551 or 1571 nm
Laser	low noise, low distortion DFB laser

Optical RX module (option MFL-RX module ORB001)

Input optical power range	5dBm to 5dBm
Wavelengths	1490 to 1610 nm

Temperature

Operating temperature	20 to +55 °C
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Powering

AC mains	90 to 240 Vac, 60VA max
DC (option MFL-DC)	10-28Vdc 3A frame floating

Dimensions and weight

Dimensions	19"/1U, 430x44x370mm (Width x Height x Depth)
Weight	4,5 kg

(*) Measured with 'Ant' mode and 0 dB gain (standard 'factory preset') at 25 °C

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Wisycocom USA

5228 Eisenhower Avenue
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Wisycocom Srl

Via Tiepolo, 7/E
35019 Tombolo (PD) – Italy
+39 0424 382605
Fax. +39 0424 382733