

**Tiesse**

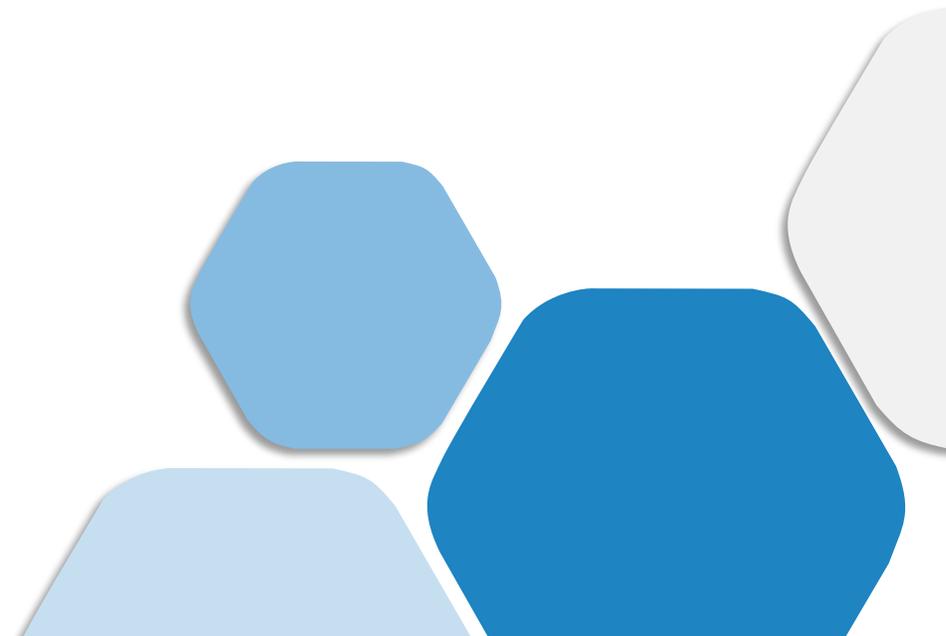
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# Routers and switches catalogue

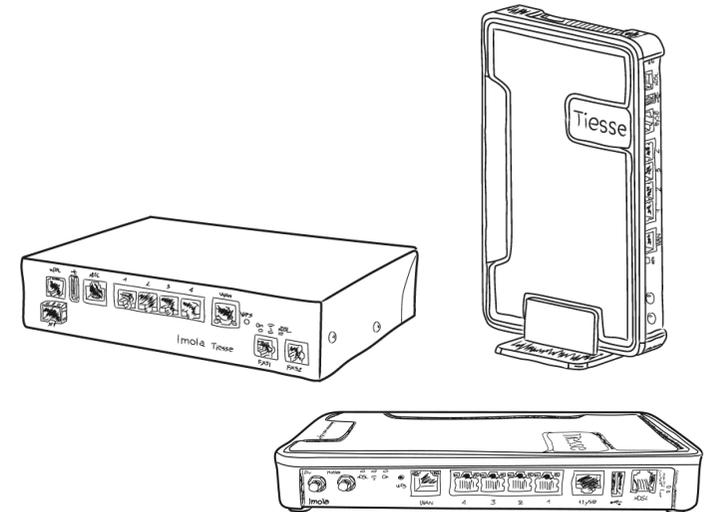
## IMOLA, LIPARI, ELBA series

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# Imola LX series



# Imola LX 0272-IKW-V

## VDSL2 only



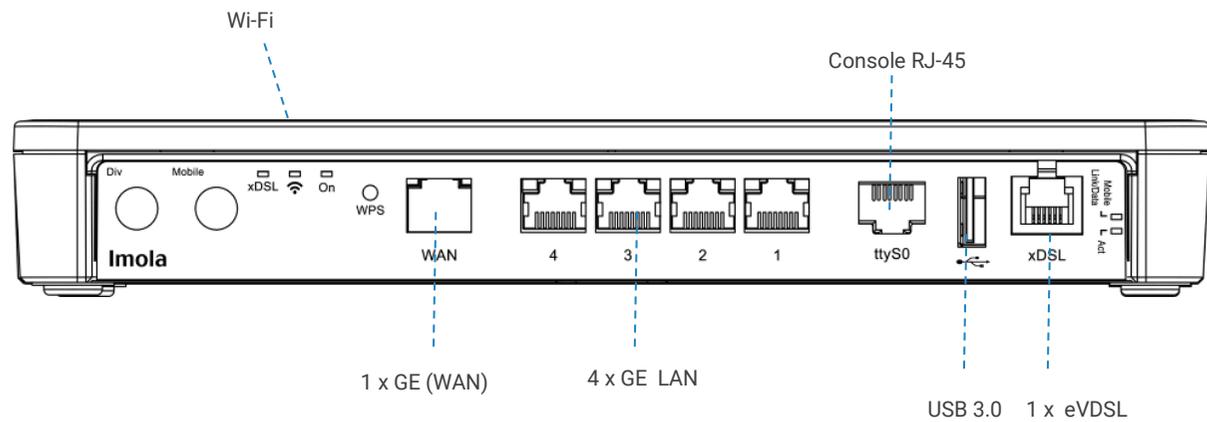
### Broadband & Cellular Routers



#### Imola LX 0272-IKW-V model

The **Imola LX series** routers are part of the evolution of the IMOLA line, which are certified routers used in the networks of the main telecommunications operators.

Thanks to the **ADSL2 / VDSL2** and WAN Giga Ethernet connectivity, they are particularly suitable for business applications where **security, business continuity** and **network performance** are of primary importance.



#### PORTS FEATURES

LAN	GE	– 4 x 10/100/1000 Mbps ports - RJ45 connectors
	Wi-Fi	– 1 x 802.11 b/g/n port (2.4 GHz) 2x2
	GE-WAN	– 1 x 10/100/1000 port Mbps - RJ45 connector (label WAN)
WAN	ADSL 2/2+	– Full rate ADSL2/2+ / VDSL2 – ADSL2/2+: downstream data rate up to 24 Mbps – upstream data rate up to 3.5 Mbps
	VDSL	– VDSL2: support for all VDSL2 profiles: 8 MHz to 30 MHz ITU-T G993.2 – RJ11 connector
	CONSOLE	– 1 x RJ45 connector
USB	3.0	– 1 x 3.0 USB port

# Broadband & Cellular Routers - Imola LX 0272-IKW-V

## VDSL only

### SYSTEM FEATURES

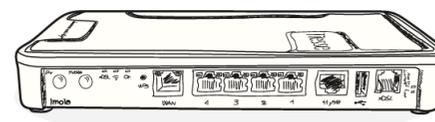
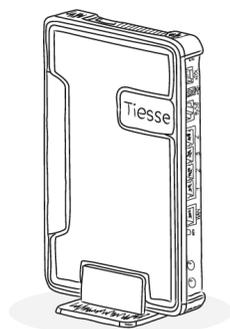
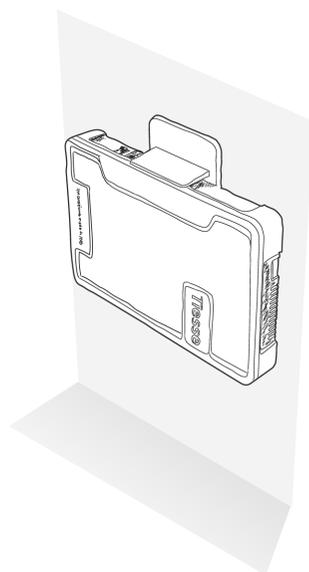
<b>POWER</b>	Power supply	12 V AC/DC Adapter
	Consumption	< = 12W (Full configuration)
<b>ENVIRONMENT</b>	Operating temperature	-5° C / +50° C
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
<b>PROCESSOR</b>		RISC Network processor
<b>MEMORY</b>	DRAM	256 MB - DDR3
	Flash memory	256 MB

### EXTERNAL HARDWARE FEATURES

	Material	Plastic - Black color
<b>HOUSING</b>	Dimensions (W x H x D)	Plastic model: 142,4 x 29,7 x 225,4 mm
	Weight	Plastic model: 520 gr ±10%
<b>ANTENNAS</b>	Radio	Plastic model: internal antennas
		Metal chassis variant: 2 x external and removable antennas, with SMA male connector
<b>MOUNTING</b>	Default	Desktop / horizontal plane
	Optional	Plastic model: vertical positioning and wall mounting (kit included) - not rack mountable
<b>LED</b>	Status LED	1 x power / operational status
	xDSL	1 x connection status
	Radio	1 x radio signal activity
	Ethernet	2 x operational status (for each port)

### Multiple positioning option

This router can be placed on a horizontal surface, such as a desk, but thanks to the supplied bracket, it can be placed vertically on a flat surface, or fixed to a vertical surface such as a wall.



# eVDSL - FTTH (copper) - LTE series



## Broadband & Cellular Routers



### Imola LX x272 series - EVDSL, FTTH (copper), LTE routers

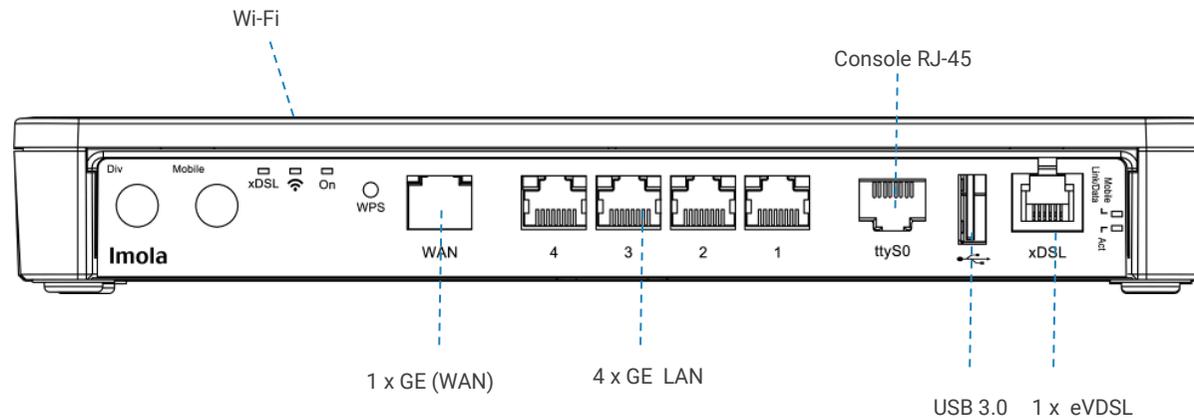
The Imola LX x272 series is part of the Imola product line, which is composed by certified routers, used in the networks of the domestic telecommunication operators.

All models have **eVDSL fixed connectivity**, **GE ports**, the WAN port supports **FTTH (copper wire)** connection.

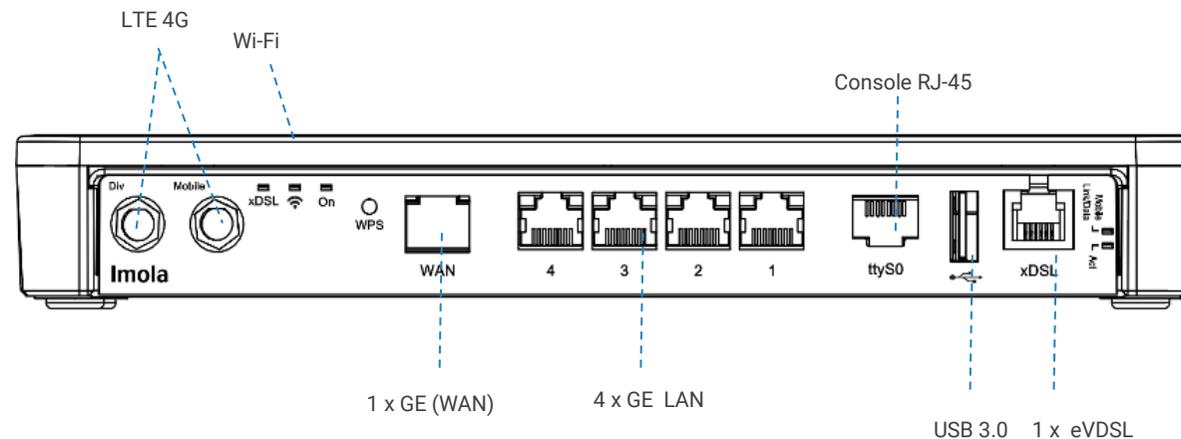
The IKW models have b/g/n Wi-Fi, while the IK2W models have dual Wi-Fi, 2.4 and 5 GHz, which can be used simultaneously.

The 5272 models have an integrated **4G cellular** connectivity.

All Imola LX x272 are integrated with the **TNA suite** (Tiesse Network Automation).



Imola LX 0272-IKW  
Imola LX 0272-IK2W



Imola LX 5272-IKW  
Imola LX 5272-IK2W

# Broadband & Cellular Routers - Imola LX x272

## eVDSL - FTTH (copper) - LTE series

- Imola LX 0272-IKW
- Imola LX 0272-IK2W
- Imola LX 5272-IKW
- Imola LX 5272-IK2W

Hardware FEATURES			LX 0272-IKW	LX 0272-IK2W	LX 5272-IKW	LX 5272-IK2W
LAN	GE	10/100/1000 Mbps ports, RJ45 connectors	4	4	4	4
	Wi-Fi	802.11 b/g/n port (2.4 GHz) 2x2	1	-	1	-
		802.11 b/g/n port (2.4 GHz) 2x2 + 802.11 ac port (5.4 GHz) 3x3	-	1	-	1
	GE-WAN	1 x 10/100/1000 port Mbps - RJ45 connector (label WAN)	1	1	1	1
WAN	ADSL 2/2+ VDSL eVDSL	Full rate ADSL2/2+ / VDSL2, RJ11 connector ADSL2/2+: downstream data rate up to 24 Mbps – upstream data rate up to 3.5 Mbps VDSL2: support for profiles VDSL2: 8 MHz to 30 MHz eVDSL: support for 35 MHz ITU-T G993.2 Annex Q (35b or Vplus) profile with aggregate rates up to 400 Mbps	1	1	1	1
RADIO CELLULAR	GSM / GPRS / EDGE	Frequency band: 900/1800/1900 MHz GPRS multislots 10, EDGE multislots 12	•	•	•	•
	UMTS / HSDPA / HSUPA / HSPA+	Frequency band: 900/2100 Mhz HSDPA data rates up to category 20 - HSUPA data rates up to category 6	•	•	•	•
	DC-HSPA+	DC-HSPA+ (42 Mbps in DL)	•	•	•	•
	LTE	Frequency band: 800 / 900 / 1800 / 2100 / 2600 Mhz Data rates (category 4, MIMO)* - Peak data rates 150 Mbps DL, 50 Mbps UL WCDMA 900/2100	•	•	•	•
CONSOLE		RJ45 connector	1	1	1	1
USB		USB 3.0 port	1	1	1	1

### SYSTEM FEATURES

POWER	Power supply	12 V AC/DC Adapter
	Consumption	< = 12W (Full configuration)
ENVIRONMENT	Operating temperature	Plastic model: -5° C / +50° C
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
PROCESSOR		RISC Network processor
MEMORY	DRAM	256 MB - DDR3
	Flash memory	256 MB

### EXTERNAL HARDWARE FEATURES

HOUSING	Material	Plastic: color black
	Dimensions (W x H x D)	142,4 x 29,7 x 225,4 mm
	Weight	0272 models: 520 gr ±10% - 5272 models: 620 gr ±10%
ANTENNAS	Radio WLAN	Plastic model: internal antennas
	Radio cellular	2 x 4G removable antennas, SMA male connector
MOUNTING	Default	Desktop / horizontal plane
	Optional	See next page
LED	Status LED	1 x power / operational status
	Ethernet	2 x operational status (for each port)
	xDSL	1 x connection status
	Radio cellular	1 x radio signal activity

\* category 6 and 12 available on request

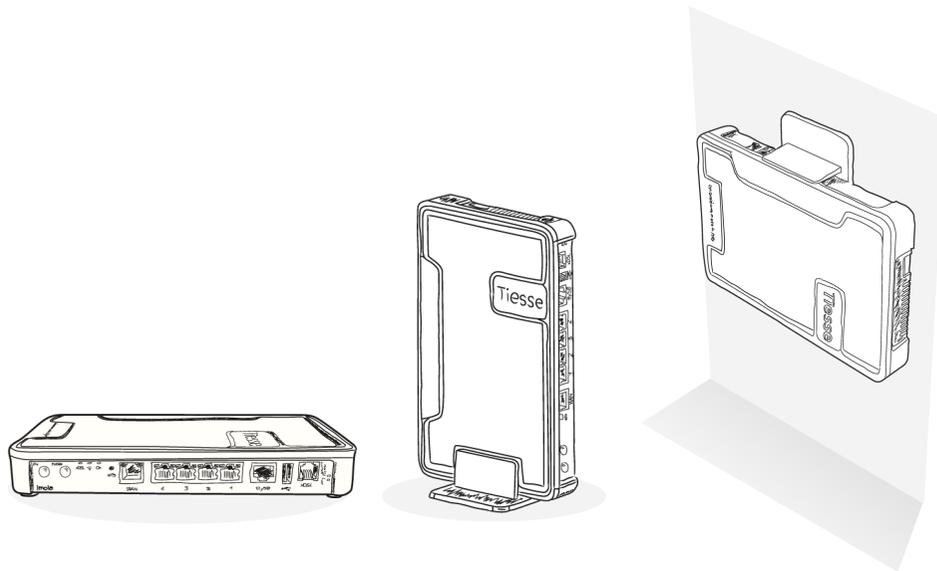
# Broadband & Cellular Routers - Imola LX x272

## eVDSL - FTTH (copper) - LTE series

- Imola LX 0272-IKW
- Imola LX 0272-IK2W
- Imola LX 5272-IKW
- Imola LX 5272-IK2W

### Multiple positioning option

This router can be placed on a horizontal surface, such as a desk, but thanks to the supplied kit, it can be placed vertically on a flat surface, or fixed to a vertical surface such as a wall.



### Metal Chassis and Rugged Variant

Metal chassis variant is available on request for mass production or industrial projects: it has an extended operating temperature range going from -25° C to +70° C.

The metal chassis variant is available for Imola LX x272-IKW only.

It is rack-mountable thanks to the specific rack mount kit, which is optional and not included in the package.

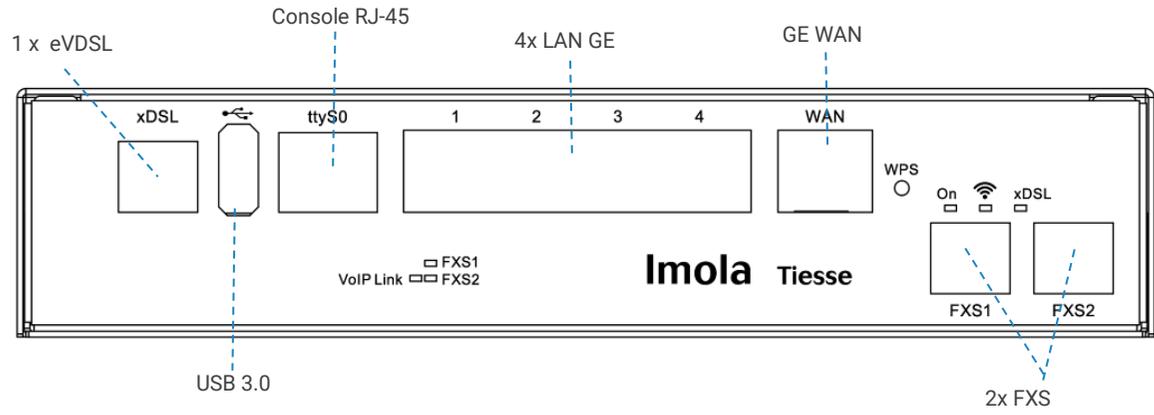


# Imola LX 0272-20

## Voice series



### Broadband & Cellular Routers



### Imola LX - Voice series

The Imola LX Voice series is part of the Imola product line, which is composed by certified routers, used in the networks of the main telecommunication operators.

All models have **eVDSL fixed connectivity**, **GE ports**, **FXS analogic voice ports** (the quantity depends on models) and are integrated with the **TNA suite** (Tiesse Network Automation).

#### PORTS FEATURES

<b>LAN</b>	<b>GE</b>	– 4 x 10/100/1000 Mbps ports - RJ45 connectors
	<b>GE-WAN</b>	– 1 x 10/100/1000 port Mbps - RJ45 connector (label WAN)
<b>WAN</b>	<b>ADSL 2/2+</b>	– Full rate ADSL2/2+ / VDSL2, RJ11 connector
	<b>VDSL</b>	– ADSL2/2+: downstream data rate up to 24 Mbps – upstream data rate up to 3.5 Mbps
	<b>eVDSL</b>	– VDSL2: support for profiles VDSL2: 8 MHz to 30 MHz – eVDSL: support for 35 MHz ITU-T G993.2 Annex Q (35b or Vplus) profile with aggregate rates up to 400 Mbps – RJ11 connector
<b>VOICE</b>	<b>FSX</b>	– 2 x FXS ports - RJ11 connectors
<b>CONSOLE</b>		– 1 x RJ45 connector
<b>USB</b>	<b>3.0</b>	– 1 x 3.0 USB port

# Broadband & Cellular Routers - Imola LX 0272-20

## Voice series

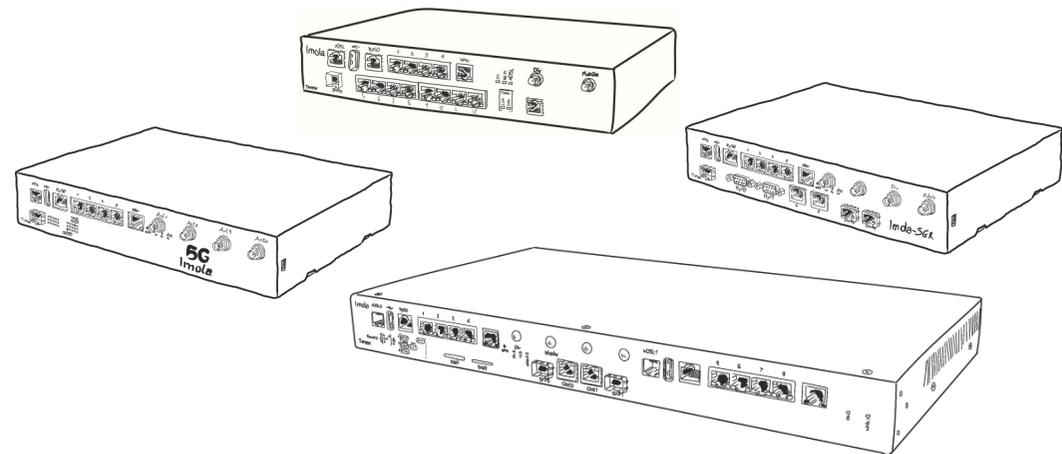
### SYSTEM FEATURES

<b>POWER</b>	Power supply	12V AC/DC adapter - Power Switch ON/OFF
	Consumption	< = 12W (Full configuration)
<b>ENVIRONMENT</b>	Operating temperature	-5° C / +50° C
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
<b>PROCESSOR</b>		RISC Network processor
<b>MEMORY</b>	DRAM	256 MB - DDR3
	Flash memory	256 MB

### EXTERNAL HARDWARE FEATURES

	Material	Plastic - Black color
<b>HOUSING</b>	Dimensions (W x H x D)	Plastic model: 142,4 x 29,7 x 225,4 mm
	Weight	Plastic model: 520 gr ±10%
<b>ANTENNAS</b>	Radio	Plastic model: internal antennas
		Metal chassis variant: 2 x external and removable antennas, with SMA male connector
<b>MOUNTING</b>	Default	Desktop / horizontal plane
	Optional	Plastic model: vertical positioning and wall mounting (kit included) - not rack mountable
<b>LED</b>	Status LED	1 x power / operational status
	xDSL	1 x connection status
	Voice	2 x analogic voice port status
	VoIP	1 x VoIP connection status
	Ethernet	2 x operational status (for each port)

# Imola series



# eVDSL - GbE - Fiber series



## Broadband & Cellular Routers



### Imola x872 routers - eVDSL, GbE and Fiber

The **Imola x872 series** is an innovative line of routers with VDSL Enhanced ultra broadband and fiber connectivity, with 14 Ethernet ports (5 Gigabit and 9 Fast Ethernet) and Wi-Fi.

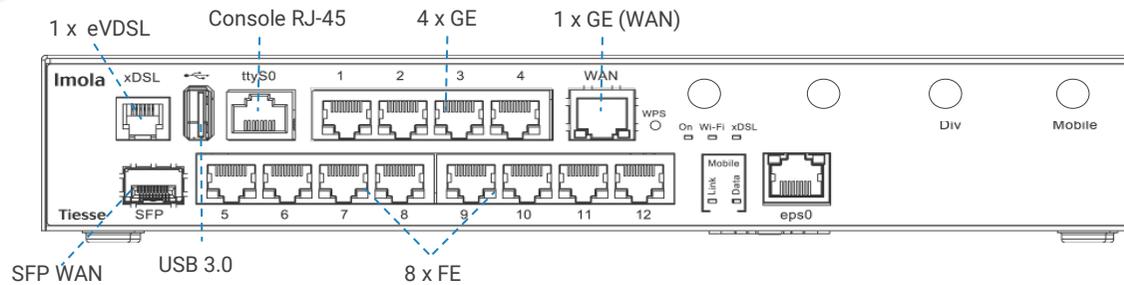
The routers are certified and used in the networks of the main telecommunications operators: they are particularly suitable to be used in business applications where safety, business continuity and network performance are of primary importance.

Imola x872 series support fixed and mobile broadband connectivity in a single **all-in-one device**, integrating routing, switching and modem functionality.

The **IKW models** have b/g/n Wi-Fi, while the **IK2W models** have dual Wi-Fi, 2.4 and 5 GHz.

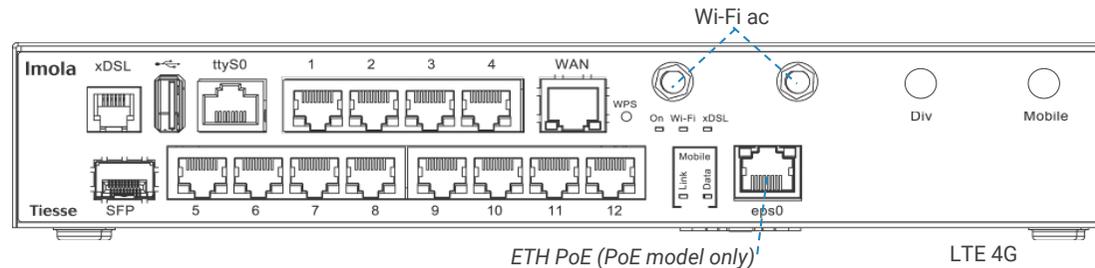
The **5872 models** have an integrated **4G cellular** connectivity.

All Imola x872 are integrated with the **TNA suite** (Tiesse Network Automation).

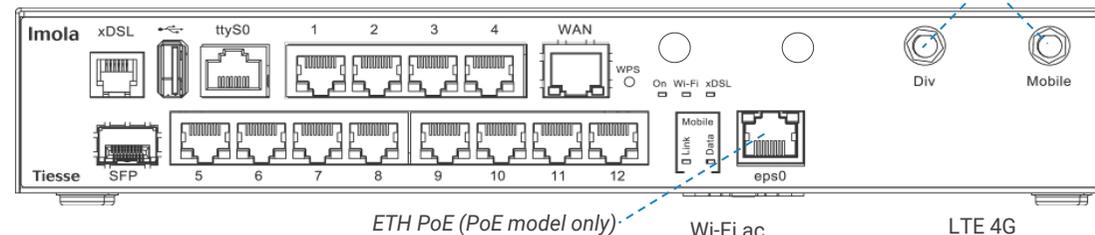


Imola 0872-IKF-IKW

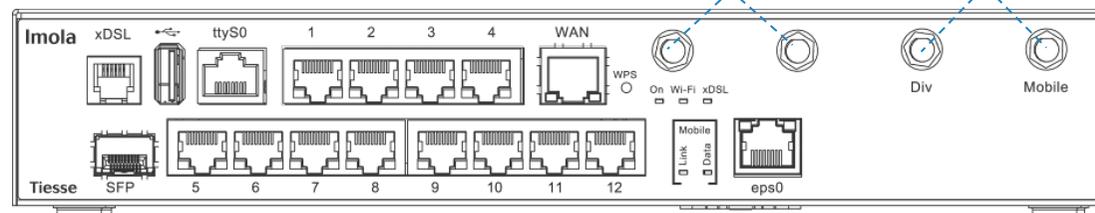
Below we highlight only the different features compared to the Imola 0872-IKF-IKW model



Imola 0872-IKF-IK2W  
 Imola 0872-IKF-IKW-PoE



Imola 5872-IKF-IKW  
 Imola 5872-IKF-IKW-PoE



Imola 5872-IKF-IK2W

# Broadband & Cellular Routers

## eVDSL - GbE - Fiber series

- Imola 0872-IKF-IKW
- Imola 0872-IKF-IK2W
- Imola 0872-IKF-IKW-PoE
- Imola 5872-IKF-IKW
- Imola 5872-IKF-IK2W
- Imola 5872-IKF-IKW-PoE

HARDWARE FEATURES			0872			5872		
			IKF-IKW	IKF-IK2W	IKF-IKW-PoE	IKF-IKW	IKF-IK2W	IKF-IKW-PoE
LAN	FE	10/100 Mbps ports, RJ45 connector	8	8	8	8	8	8
	GE	10/100/1000 Mbps ports - RJ45 connectors	4	4	4	4	4	4
	PoE	Poe Port (label eps0)	-	-	1	-	-	1
	Wi-Fi	802.11 b/g/n port (2.4 GHz) 2x2 802.11 b/g/n (2.4 GHz) 2x2 + 802.11 ac (5 GHz) port 3x3	1	-	1	1	-	1
WAN	GE-WAN	10/100/1000 Mbps WAN port, RJ45 connector	1	1	1	1	1	1
	SFP WAN	SFP Cage for Fiber and GPON connections (SFP module not included)	1	1	1	1	1	1
	ADSL 2/2+	Full rate ADSL2/2+ / VDSL2, RJ11 connector						
	VDSL	ADSL2/2+: downstream data rate up to 24 Mbps – upstream data rate up to 3.5 Mbps VDSL2: supports for profiles VDSL2: 8 MHz to 30 MHz ITU-T G993.2	1	1	1	1	1	1
	eVDSL	eVDSL: support 35 MHz ITU-T G993.2 Annex Q (35b or Vplus) profile with aggregate rates up to 400 Mbps						
	GSM / GPRS / EDGE	Frequency band: 900/1800/1900 MHz GPRS multslot 10, EDGE multslot 12	-	-	-	•	•	•
RADIO CELLULAR	UMTS / HSDPA / HSUPA / HSPA+	Frequency band: 900/2100 Mhz HSDPA data rates up to category 20 HSUPA data rates up to category 6	-	-	-	•	•	•
	DC-HSPA+	DC-HSPA+ (42 Mbps in DL)	-	-	-	•	•	•
	LTE	Frequency band: 800/900/1800/2100/2600 MHz Data rates (category 4, MIMO)* - Peek data rates 150 Mbps DL, 50 Mbps UL	-	-	-	•	•	•
	SIM slot	2 SIM holder (one internal and one with external access), mutual exclusive	-	-	-	2	2	2
CONSOLE	RJ45 connector	1	1	1	1	1	1	
USB	USB 3.0 port	1	1	1	1	1	1	

\* category 6 and 12 available on request

# Broadband & Cellular Routers

## eVDSL - GbE - Fiber series

- Imola 0872-IKF-IKW
- Imola 0872-IKF-IK2W
- Imola 0872-IKF-IKW-PoE
- Imola 5872-IKF-IKW
- Imola 5872-IKF-IK2W
- Imola 5872-IKF-IKW-PoE

### SYSTEM FEATURES

<b>POWER</b>	Power supply	AC/DC adapter (Internal Universal 100-240 VAC)
	PSU option	DC/DC 12V version - DC/DC 24V-48V version
	Consumption	< = 12W (Full configuration)
<b>ENVIRONMENT</b>	Operating temperature	-25° C / +70° C (96 hours)
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
<b>PROCESSOR</b>		RISC Network processor
<b>MEMORY</b>	DRAM	DRAM 256 MB
	Flash memory	256 MB

### EXTERNAL HARDWARE FEATURES

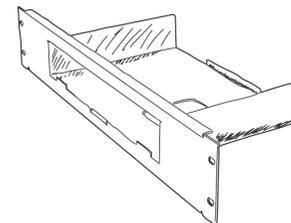
<b>HOUSING</b>	Material	Metal
	Dimensions (W x H x D)	274 x 48.8 x197.5 mm
	Weight	1950 gr ±10%
<b>ANTENNAS</b>	Radio WLAN	SMA male connector - External removable antennas
	Radio cellular	2 x 4G external removable antennas SMA male connector
<b>MOUNTING</b>	Default	Desktop / horizontal plane
	Optional	Rack mounting kit (not included)
<b>LED</b>	Status LED	1 x power / operational status
	Ethernet	2 x operational status (for each port)
	xDSL	1 x connection status
	Wi-Fi	1 x radio signal activity
	Radio cellular	1 x radio-cellular connection status 1 x radio-cellular data activity

#### Add-ons for Imola products

**IMOLA** series is provided with optional add-ons like omnidirectional outdoor antennas and brackets for mounting on a 2U rack.

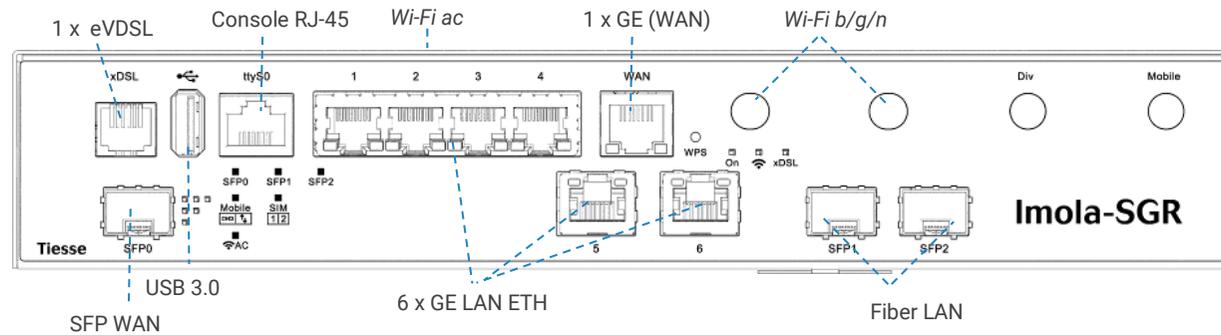
The fiber models also support a wide range of SFP transceivers.

Refer to the specific documentation on both add-ons and supported SFP transceiver for more information.

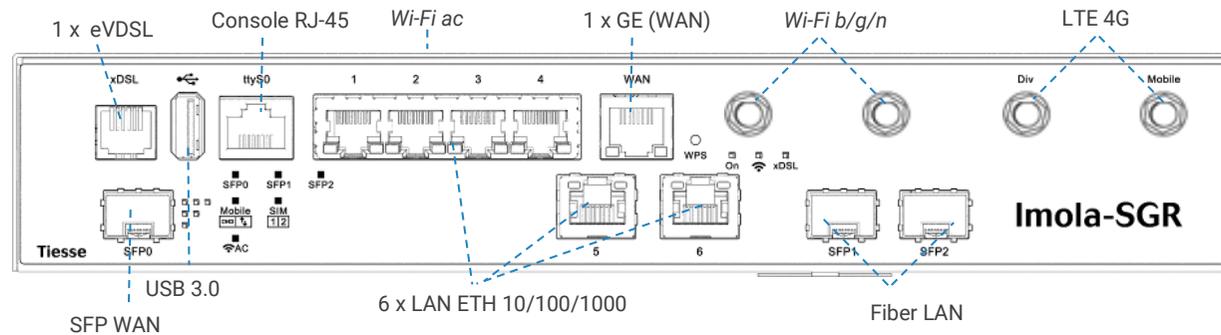


Imola 0272-SGR | Imola 0272-SGR-IK2W  
 Imola 5272-SGR | Imola 5272-SGR-IK2W  
 Imola 0872-IK2V-Ik2F

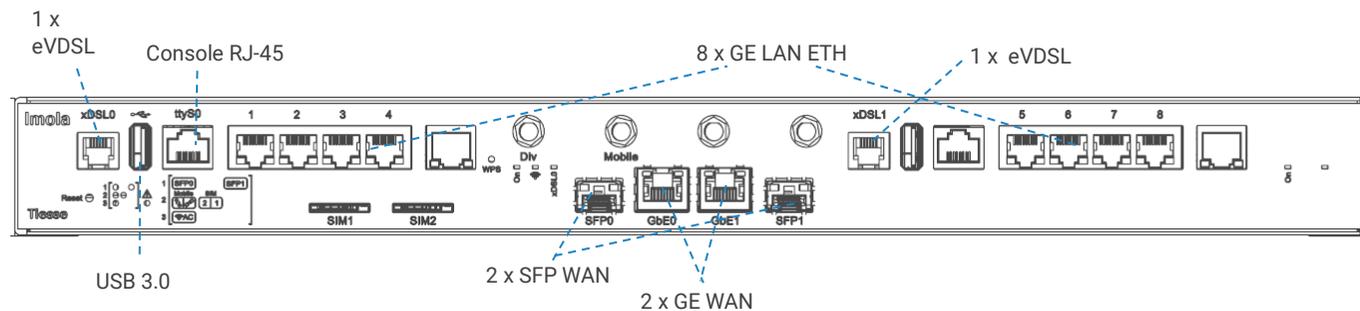
# eVDSL + Multi-fiber ports series



Imola 0272-SGR  
 Imola 0272-SGR-IK2W



Imola 5272-SGR  
 Imola 5272-SGR-IK2W



Imola  
 0872-IK2V-Ik2F

## Imola Multi-fiber ports series - eVDSL, GbE and Fiber routers

The Imola Multi-fiber series is part of the Imola product line, which is composed by certified routers, used in the networks of the main telecommunication operators.

All models have **eVDSL fixed connectivity**, **GE ports**, and multi fiber connectivity.

The **IK2V-IK2F** models are rack mountable and have two eVDSL ports, as well as two fiber port (SFP cage).

The **SGR models** are also rack mountable using the appropriate kit (optional) and have one eVDSL port and three fiber ports (SFP cage).

The **5xxx models** have integrated **4G cellular** connectivity.

# Broadband & Cellular Routers

## eVDSL + Multi-fiber ports series

- Imola 0272-SGR
- Imola 0272-SGR-IK2W
- Imola 0872-IK2V-IK2F
- Imola 5272-SGR
- Imola 5272-SGR-IK2W

Hardware FEATURES		0272-SGR	0272-SGR-IK2W	5272-SGR	5272-SGR-IK2W	0872-IK2V-IK2F	
LAN	<b>GE</b>	10/100/1000 Mbps ports - RJ45 connectors	6	6	6	6	10
	<b>SFP LAN</b>	SFP Cage for LAN side Fiber connection	2	2	2	2	-
	<b>Wi-Fi</b>	802.11 b/g/n port (2.4 GHz) 2x2 802.11 b/g/n (2.4 GHz) 2x2 + 802.11 ac (5 GHz) port 3x3	1	-	1	-	-
WAN	<b>GE-WAN</b>	Combo port GE 10/100/1000 Mbps - RJ45 connector(label WAN) and WAN SFP port (label SFP0)	1	1	1	1	-
		10/100/1000 Mbps WAN port - RJ45 connector					2
	<b>SFP WAN</b>	SFP Cage for Fiber and GPON connections (SFP module not included)	1	1	1	1	2
	<b>ADSL 2/2+</b>	Full rate ADSL2/2+ / VDSL2 - RJ11 connector ADSL2/2+: downstream data rate up to 24 Mbps – upstream data rate up to 3.5 Mbps					
<b>VDSL</b>	VDSL2: supports for profiles VDSL2: 8 MHz to 30 MHz ITU-T G993.2	1	1	1	1	2	
<b>eVDSL</b>	eVDSL: support 35 MHz ITU-T G993.2 Annex Q (35b or Vplus) profile with aggregate rates up to 400 Mbps						
RADIO CELLULAR	<b>GSM / GPRS / EDGE</b>	Frequency band: 900/1800/1900 MHz GPRS multslot 10 EDGE multslot 12	-	-	•	•	-
	<b>UMTS / HSDPA / HSUPA / HSPA+</b>	Frequency band: 900/2100 Mhz HSDPA data rates up to category 20 HSUPA data rates up to category 6	-	-	•	•	-
	<b>DC-HSPA+</b>	DC-HSPA+ (42 Mbps in download)	-	-	•	•	-
	<b>LTE</b>	Frequency band: 800/900/1800/2100/2600 MHz Data rates (category 4, MIMO)* - Peek data rates 150 Mbps DL, 50 Mbps UL - WCDMA	-	-	•	•	-
	<b>SIM slot</b>	2 SIM holder (one internal and one with external access), mutual exclusive	-	-	2	2	-
CONSOLE	RJ45 connector	1	1	1	1	1	
USB	USB 3.0 port	1	1	1	1	1	

# Broadband & Cellular Routers

## eVDSL + Multi-fiber ports series

- Imola 0272-SGR
- Imola 0272-SGR-IK2W
- Imola 0872-IK2V-IK2F
- Imola 5272-SGR
- Imola 5272-SGR-IK2W

### SYSTEM FEATURES - Imola x272-SGR models

<b>POWER</b>	Power supply	AC/DC adapter (Internal Universal 100-240 VAC) Power Switch ON/OFF
	PSU option	DC/DC 12V version - DC/DC 24V-48V version
	Consumption	< = 12W (Full configuration)
<b>ENVIRONMENT</b>	Operating temperature	-25° C / +70° C (96 hours) -40° C / +70° C (4 hours)
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
<b>PROCESSOR</b>		Dual core 1 GHz
<b>MEMORY</b>	DRAM	DRAM 256 MB DDR3
	Flash memory	256 MB

### SYSTEM FEATURES - Imola 0872-IK2V-IK2F

<b>POWER</b>	External	AC/DC adapter (Internal Universal 100-240 VAC)
	PSU option	DC/DC 12V version - DC/DC 24V-48V version
	Consumption	< = 15 W (full configuration)
<b>ENVIRONMENT</b>	Operating temperature	-5° C / +55° C (96 hours)
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
<b>PROCESSOR</b>		Dual CORE ARM A9 – 1 Ghz
<b>MEMORY</b>	DRAM	Default 256 MB - DDR2
	Flash memory	32 MB up to 1 GB

### EXTERNAL HARDWARE FEATURES - Imola x272-SGR models

<b>HOUSING</b>	Material	Metal
	Dimensions (W x H x D)	274 x 48.8 x197.5 mm
	Weight	1900 gr ±10%
<b>ANTENNAS</b>	Radio	SMA male connector - External removable antennas SGR models: 2 antennas - IK2W models: 5 antennas
	Radio mobile	2 x 4G external removable antennas, SMA male connector
<b>MOUNTING</b>	Default	Desktop / horizontal plane
	Optional	Bracket for rack mounting
<b>LED</b>	Status LED	1 x power / operational status
	Wi-Fi	1 x radio signal activity
	xDSL	1 x connection status
	Ethernet	2 x operational status (for each port)
	SFP	3 x fiber connection status
	Radio-cellular	1 x radio-cellular connection status and data activity
		1 x active SIM status

### EXTERNAL HARDWARE FEATURES - Imola 0872-IK2V-IK2F

<b>HOUSING</b>	Material	Metal - color: black
	Dimensions (W x H x D)	440 x 1U x 239 mm
<b>MOUNTING</b>	Default	Desktop / horizontal plane
	Optional	x872 models: 1U rack mount kit included
<b>LED</b>	Status LED	1 x power / operational status
	Ethernet	2 x operational status (for each port)
	SFP	1 x operational status for each port
	xDSL	2 x connection status

# Imola 5572-SGR

## Ultra broadband 5G router



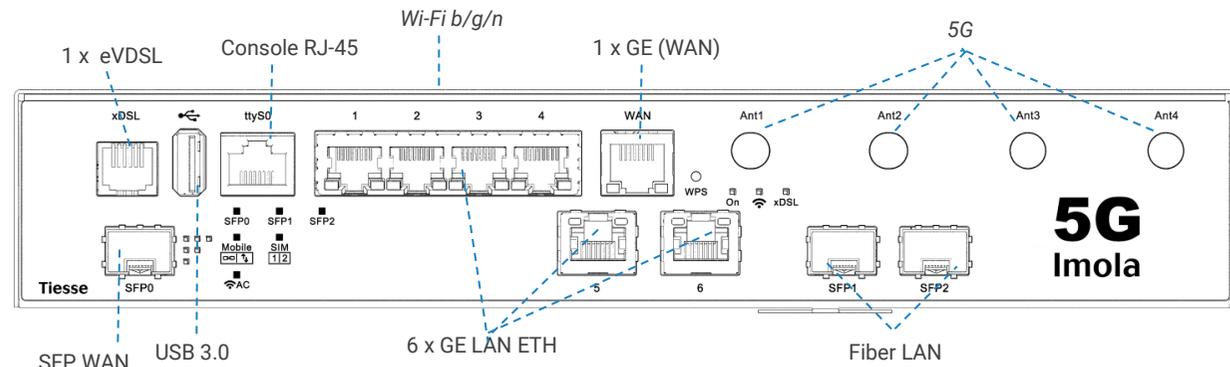
**Imola 5572-SGR** is a latest generation 4G/5G router (release 15). It's an integral part of the IMOLA series, certified routers used in the networks of major telecom operators.

Imola 5572-SGR is an all-in-one 5G router with fiber and eVDSL connectivity; it is particularly suitable to be used in business applications where security, business continuity and network performance are of primary importance.

The 5572-SGR model is also available in a dual Wi-Fi version (b/g/n at 2.4 GHz and ac 5ghz). High-performance routing, switching, and modem capabilities allow you to leverage broadband network speeds for data, voice, and video service applications.

### KEY BENEFITS

- ⇒ Safety
- ⇒ High performance for Giga networks
- ⇒ Reliability of hardware and software
- ⇒ Quality of service (Qos)
- ⇒ Ruggedness (fanless, internal power supply, metal chassis, Operation at extended temperature ranges)
- ⇒ Zero Touch provisioning
- ⇒ Factory preconfigurations, differentiated by customer
- ⇒ 100% factory tested equipment (including SIM cards for 4G models)
- ⇒ Minimum energy consumption



### USE SCENARIOS



Thanks to the support for 5G, LTE, and WCDMA 3GPP, including standalone 5G NR (SA), non-standalone (NSA), dual connectivity LTE-5G NR (EN-DC) and dynamic spectrum sharing between LTE and 5G.

Imola 5572-SGR is designed to support 5G scenarios described by

# Broadband & Cellular Routers - Imola 5572-SGR

## GbE + Fiber + eVDSL + 5G

Hardware FEATURES		5572-SGR	
LAN	GE	– 10/100/1000 Mbps ports, RJ45 connectors	6
	Fiber	– SFP cage for fiber connections (SFP module not included)	1
	Wi-Fi	– WLAN 802.11 b/g/n (2.4 Ghz) port	2
	GE / SFP	– GE 10/100/1000 Mbps (RJ45 connector) combo port with WAN SFP port (label SFP0)	1
WAN	ADSL 2/2+ VDSL eVDSL	<ul style="list-style-type: none"> <li>– Full rate ADSL2/2+ / VDSL2, RJ11 connector</li> <li>– ADSL2/2+: downstream data rate up to 24 Mbps – upstream data rate up to 3.5 Mbps</li> <li>– VDSL2: supports for profiles VDSL2: 8 MHz to 30 MHz ITU-T G993.2</li> <li>– eVDSL: support 35 MHz ITU-T G993.2 Annex Q (35b or Vplus) profile with aggregate rates up to 400 Mbps</li> </ul>	1
	UMTS / HSDPA / HSUPA / HSPA+	<ul style="list-style-type: none"> <li>– 3G HSPA+ Release 8</li> <li>– Throughput 3G: 42 Mbps download and 11 Mbps upload (*)</li> </ul>	•
	WCDMA	– Frequencies: 5, 8, 3, 4, 2, 1, 9, 19	•
RADIO CELLULAR	LTE	<ul style="list-style-type: none"> <li>– Data rates: 7 CA up to 20 layers in download and 3 CA in upload, 256-QAm in download/upload</li> <li>– Frequency range : 1, 2, 3, 4, 5, 8, 9, 12, 13, 14, 17, 18, 19, 20, 26, 28, 71, 25, 66, 39, 29 (DL), 30, 32, 7, 38, 40, 41, 42, 43, 46, (LAA), 48 (CBRS), 34, 27</li> <li>– Throughput 4G: up to 1 Gbps in download and 211 Mbps in upload (*)</li> </ul>	•
	5G	<ul style="list-style-type: none"> <li>– 5G sub-6 FDD and TDD supported</li> <li>– 5G core network Opt. 3a/3X and Opt 2</li> <li>– Throughput 5G: up to 1 Gbps in download and 1 Gbps in upload (*)</li> <li>– Frequency range 1 (FR1): n1, n2, n3, n5, n7, n12, n14, n20, n28, n30, n41, n66, n71, n77, n78, n79</li> </ul>	•
	SIM slot	– 2 SIM holder (one internal and one with external access), mutual exclusive	•
CONSOLE		– RJ45 connector	1
USB		– USB 3.0 port	1

# Broadband & Cellular Routers - Imola 5572-SGR

## GbE + Fiber + eVDSL + 5G

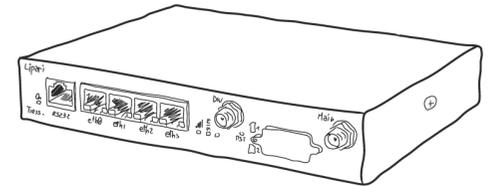
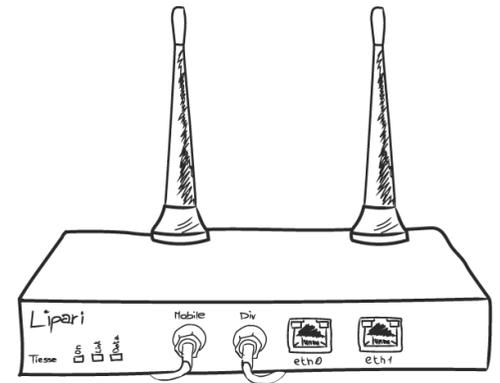
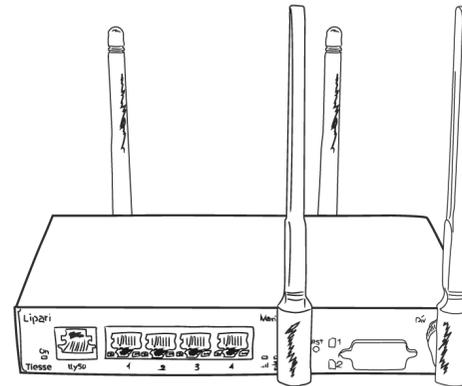
### SYSTEM FEATURES

<b>POWER</b>	Power supply	AC/DC adapter (Internal Universal 100-240 VAC) Power Switch ON/OFF
	Consumption	< = 12W (Full configuration)
<b>ENVIRONMENT</b>	Operating temperature	-25° C / +70° C (96 hours) -40° C / +70° C (4 hours)
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
<b>PROCESSOR</b>		Dual core 1 GHz
<b>MEMORY</b>	DRAM	DRAM 256 MB DDR3
	Flash memory	256 MB

### EXTERNAL HARDWARE FEATURES

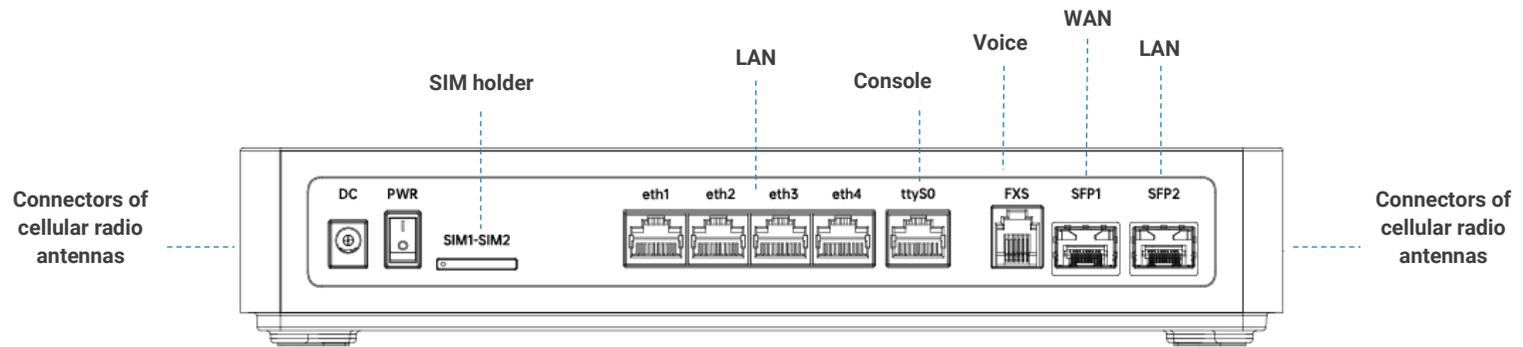
<b>HOUSING</b>	<b>Material</b>	Metal
	<b>Dimensions (W x H x D)</b>	274 x 48.8 x197.5 mm
<b>ANTENNAS</b>	<b>Radio WLAN</b>	2 external removable antennas - SMA male connector
	<b>Radio cellular</b>	4 external removable antennas - SMA male connector
<b>MOUNTING</b>	<b>Default</b>	Desktop / horizontal plane
	<b>Optional</b>	Rack mounting kit (not included)
<b>LED</b>	<b>Status LED</b>	1 x power / operational status
	<b>Ethernet</b>	2 x operational status (for each port)
	<b>SFP</b>	1 x operative status - for each port
	<b>xDSL</b>	1 x connection status
	<b>Wi-Fi</b>	1 x 2.4 GHz radio signal activity
		1 x radio cellular connection status
	<b>Radio cellular</b>	1 x radio cellular data exchange activity
	1 x operational SIM	

# Lipari series



# Lipari 5584-W

## 5G indoor router

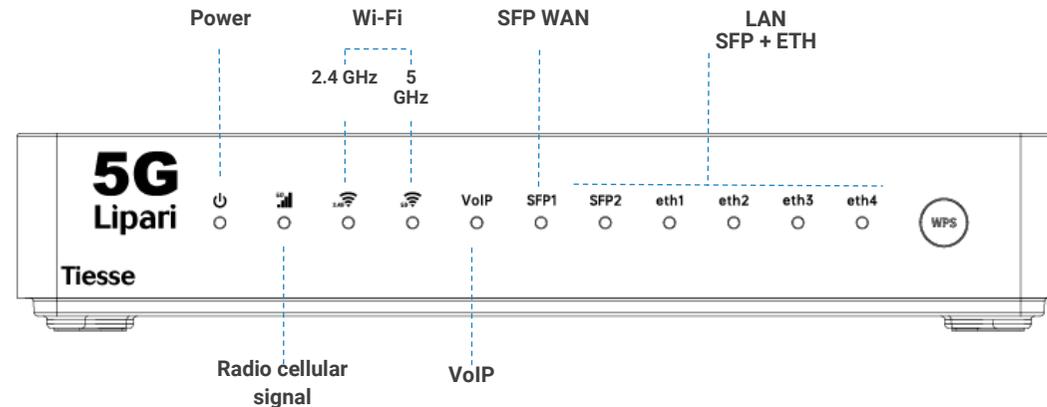


### Lipari, cellular router series

**Lipari 5584-W** is an all-in-one router of the latest 4G/5G generation; it is equipped with GE / Fiber connectivity 2.5 Gbits and Wi-Fi AX3600.

Thanks to the support of 5G, LTE and WCDMA networks, it can be used globally, taking advantage of all the benefits of fixed and mobile Gigabit networks; Lipari 5584-W is suited for high-performance, bandwidth-intensive applications.

**Lipari 5584-W** is designed to support 5G scenarios described by 3GPP, including standalone 5G NR (SA), non-standalone (NSA).



# Cellular Routers - Lipari 5584-W

## 5G indoor router

Hardware features			5284-W
<b>LAN</b>	<b>GE</b>	– 4 ports 10/100/1000 Mbps	4
		– 1 x 2.5 Gbit Ports via SFP cages (not included)	1
<b>Wi-Fi</b>	<b>RF</b>	– IEEE 802.11ax    IEEE 802.11ac	•
		– IEEE 802.11b    IEEE 802.11g    IEEE 802.11n	
	– IEEE 802.11a		
	<b>Frequency bands</b>	– 2.4 GHz e 5 GHz concurrent	
	<b>Throughput</b>	– 1147 Mbps (2.4 GHz) 2402 Mbps (5 GHz) (theoretical maximum)	
	<b>MIMO</b>	– 4 x 4	
<b>WAN</b>	<b>GE / SFP</b>	– 2.5 Gbit Ports via SFP cages (not included)	1
		<b>WCDMA</b>	– <b>Frequencies:</b> B1, B5, B8 – <b>Throughput :</b> Max. 42 (DL)/Max. 5.76 (UL)
<b>Radio Cellular</b>	<b>LTE</b>	– <b>Frequencies:</b> LTE-FDD: B1/3/5/7/8/20/28 LTE-TDD: B38/40/41/42/43	•
		– <b>Throughput:</b> LTE-FDD: Max. 1.6 Gbps (DL) / Max. 211 Mbps (UL) (*)	
	<b>5G Sub-6 GHz</b>	– <b>5G NR Frequencies</b> n1/3/5/7/8/20/28/38/40/41/77/78	
		– <b>Throughput:</b> 5G SA Sub-6: Max. 4.67 Gbps (DL)/Max. 1.25 Gbps (UL) (*) 5G NSA Sub-6: Max. 3.74 Gbps (DL)/Max. 1.46 Gbps (UL) (*)	
	<b>MIMO</b>	– DL: 4 x 4 UL: 2 x 2 (4 external antennas via SMA connector) – UL: 2 x 2 (4 Antenne Esterne via connettore SMA)	
	<b>SIM</b>	– Nano SIM Slots (Dual SIM Single ACTIVE)	2
<b>Voice</b>	<b>FXS</b>		1
<b>Console</b>	<b>RJ45</b>	– RJ45 connector	1

### RADIO CELLULAR FREQUENCIES

#### 5G FR1

n1, n2, n3, n5, n7, n12, n14, n20, n28, n30, n41, n66, n71, n77, n78, n79

#### 5G LTE

1, 2, 3, 4, 5, 8, 9, 12, 13, 14, 17, 18, 19, 20, 26, 28, 71, 25, 66, 39, 29 (DL), 30, 32, 7, 38, 40, 41, 42, 43, 46, (LAA), 48 (CBRS), 34, 27

#### WCDMA

5, 8, 3, 4, 2, 1, 9, 19

### SYSTEM FEATURES

<b>POWER</b>	<b>Power supply</b>	– External Desktop 12V – ON/OFF button
	<b>Consumption</b>	– ≤ 28 W (full configuration)
<b>PROCESSOR</b>		– Quadcore 2 GHz
<b>MEMORY</b>	<b>DRAM</b>	– 1 GB
	<b>Flash memory</b>	– 1 GB

### EXTERNAL HARDWARE FEATURES

<b>HOUSING</b>	<b>Material</b>	– Plastic chassis
	<b>Dimensions (W x H x D)</b>	– 260 x 50 x 277 mm (with antenna con-
<b>ANTENNAS</b>	<b>Radio WLAN</b>	– internal
	<b>Radio cellular</b>	– 4 external removable antennas - SMA male connector
<b>MOUNTING</b>	<b>Default</b>	– Desktop / horizontal plane

# Lipari series

## Cellular routers



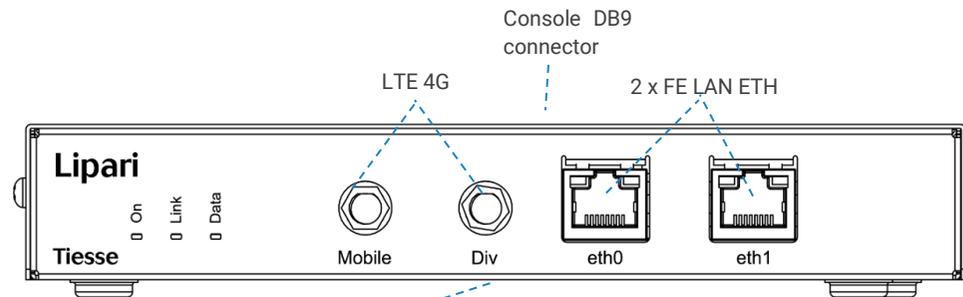
### Lipari, cellular router series

Lipari is an innovative series of routers that provides **cellular 2G/3G/4G connectivity** to the user who accesses the public or private data network (Internet / Intranet) with the appropriate level of security.

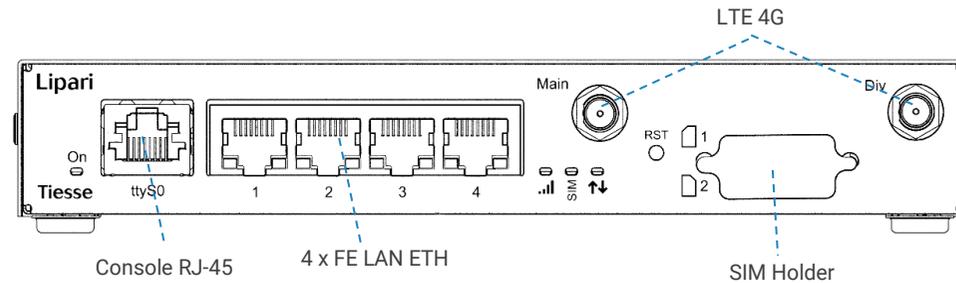
**Lipari 5100** has two Ethernet ports. This router count as an industrial product and is compliant to IEC 61850-3 standard.

All **Lipari 5200** models have four Ethernet LAN ports as well as two SIM slots to support failover and backup configuration.

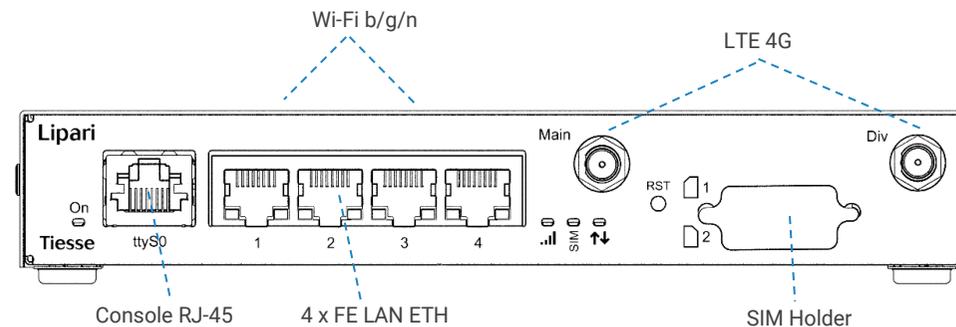
**Lipari 5200-IKW** adds the Wi-Fi 2.4 GHz connection to the base model.



Lipari 5100



Lipari 5200



Lipari 5200-IKW

# Cellular Routers - Lipari series

## 4G cellular only

- Lipari 5100
- Lipari 5200
- Lipari 5200-IKW

### Hardware interfaces - Lipari 5100 model

<b>LAN</b>	<b>FE</b>	– 10/100 Mbps ports - RJ45 connector, with or without auto-negotiation,	2	
<b>RADIO CELLULAR</b>	<b>GSM</b>	– GSM 850 (850 MHz)	•	
	<b>GPRS</b>	– EGSM 900 (900 MHz)		
	<b>EDGE</b>	– DCS 1800 (1800 MHz)		
		– PCS 1900 (1900 MHz)		
<b>UMTS (WCDMA)</b>	– EDGE throughput up to 236 kbps	•		
	– Band 1 (2100 MHz)			
<b>RADIO CELLULAR</b>	<b>UMTS (WCDMA)</b>	– Band 2 (1900 MHz)	•	
		– Band 5 (850 MHz)		
	<b>HSDPA</b>	– Band 6 (800 MHz)		
		– Band 8 (900 MHz)		
<b>HSUPA</b>	– <b>HSPA+</b> :			
<b>RADIO CELLULAR</b>	<b>LTE</b>	– Frequency bands: 800 / 900 / 1800 / 2100 / 2600 Mhz	•	
		– Data rates category 4, MIMO*		
		– Peak data rates 150 Mbps DL, 50 Mbps UL (actual throughput is dependent on network configuration, bandwidth assigned to the UE, the number of users and RF signal conditions)		
		– WCDMA 900/2100		
<b>RADIO CELLULAR</b>	<b>LTE</b>	– * Category 6 and 12 available on requests	•	
		– SIM slots		1
		– Internal		1
<b>CONSOLE</b>		– DB9 asynchronous connector up to 115.2 Kbps	1	

### Hardware interfaces - Lipari 5200 models

			5200	5200-IKW
<b>LAN</b>	<b>FE</b>	– Ethernet ports 10/100 Mbps -RJ45 connector - with or without auto-negotiation, configurable	4	4
	<b>Wi-Fi</b>	– 802.11 b/g/n (2.4 GHz)	-	•
<b>RADIO CELLULAR</b>	<b>Bands</b>	– LTE FDD: B1/B3/B7/B8/B20/B28 – WCDMA: B1/B8 – GSM: B3/B8	•	•
	<b>GSM</b>	– EDGE: max 296 Kbps (DL) - max 236.8 Kbps (UL) – GPRS: max 107 Kbps (DL) - max 85.6 Kbps (UL)	•	•
	<b>UMTS</b>	– DC-HSDPA: max 42 Mbps (DL) – HSUPA: max 5.76 Mbps (UL) – WCDMA: max 384 Kbps (DL/UL)	•	•
	<b>LTE</b>	– Support up to CAT4 * – LTE FDD: 150 Mbps (DL) - Max 50 Mbps (UL) – * Category 6 and 12 available on requests	•	•
<b>CONSOLE</b>		– RJ45 connector	1	1
<b>SIM SLOTS</b>		– External access – SIMs are mutual exclusive – SIM connector: push-push	2	2

# Cellular Routers - Lipari series

## 4G cellular only

- Lipari 5100
- Lipari 5200
- Lipari 5200-IKW

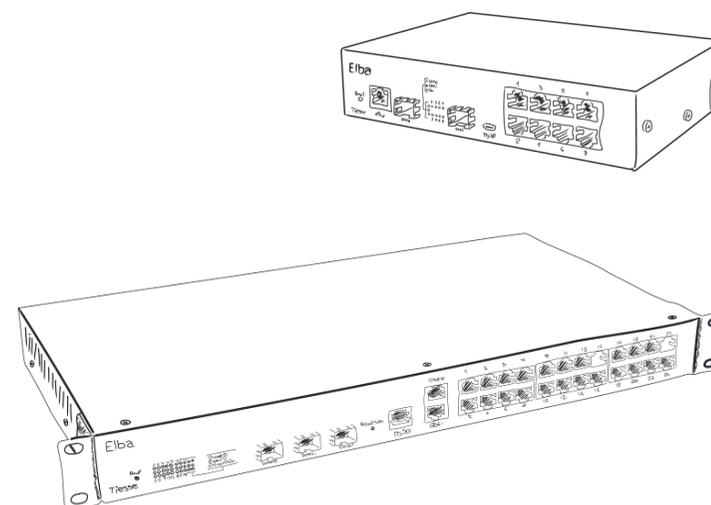
### SYSTEM FEATURES

<b>POWER</b>	<b>Power supply</b>	<b>Lipari 5100:</b> 5 V <b>Lipari 5200 and Lipari 5200-IKW:</b> <ul style="list-style-type: none"> <li>– AC Adapter Desktop 12V 2,5A RoHS3 external power supply</li> <li>– 12-24 VDC (range 9-28)</li> </ul>
	<b>PSU consumption</b>	<b>Lipari 5100:</b> 9-36 VDC <b>Lipari 5200 and Lipari 5200-IKW:</b> 12-24 VDC (range 9-28)
	<b>Consumption</b>	< 3 W
<b>ENVIRONMENT</b>	<b>Operating temperature</b>	<b>Lipari 5100:</b> -25° C / +55° C <b>Lipari 5200 and Lipari 5200-IKW:</b> -5° C / +55° C -40° C / +70° C - limit range of operation
	<b>Storage temperature</b>	-40° C / +70° C
	<b>Max operating humidity</b>	95% (non condensing)
<b>PROTECTION RATING</b>		<b>Lipari 5200:</b> IP40 <b>Lipari 5200-IKW:</b> IP40
<b>PROCESSOR</b>		Network processor @400 Mhz
<b>MEMORY</b>	<b>DRAM</b>	DRAM 256 MB DDR3
	<b>Flash memory</b>	256 MB

### EXTERNAL HARDWARE FEATURES

<b>HOUSING</b>	<b>Material</b>	Metal - color: black or gray (optional)
	<b>Dimensions (W x H x D)</b>	Plastic model: 180,6 x 29,7 x 135 mm
<b>ANTENNAS</b>	<b>Radio WLAN</b>	<b>Lipari 5200-IKW models:</b> 2 x external removable b/g/n antennas.
	<b>Radio cellular</b>	2 x external removable 4G antennas SMA male connectors
<b>MOUNTING</b>	<b>Default</b>	Desktop / horizontal plane
	<b>Optional</b>	1U Rack mounting kit (not included)
<b>LED</b>	<b>Status LED</b>	1 x power / operational status
	<b>Ethernet</b>	2 x operational status (for each port)
	<b>Radio cellular</b>	1 x status/activity radio cellular connection
		<b>Lipari 5100:</b> 1 x SIM operative status (Lipari 5100)
		<b>Lipari 5200 and 5200-IKW:</b> - 1 x reporting which SIM is in use (SIM1 vs SIM2) - 1 x IP address operative state

# Elba series



# Elba 100

## Managed switches

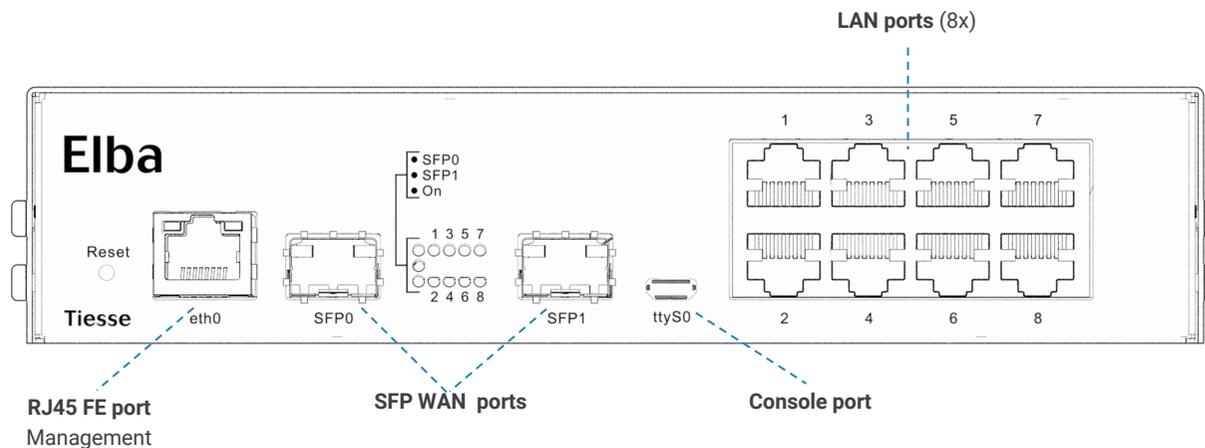


### Elba switch series

**ELBA series** products are managed Ethernet switches, with fixed configuration and they are part of the line of networking solutions entirely designed and produced by Tiesse, a 100% Italian company.

**Elba 100** has 10 ports: 8 are Gigabit Ethernet and 2 are SFP ports up to 10 Gigabit.

**Elba 100** is easy to configure and thus the set-up time within the network is reduced.



### PORTS FEATURES

<b>LAN</b>	<b>GE</b>	– 8 x 10/100/1000 Mbps ports - RJ45 connectors
<b>WAN</b>	<b>SFP WAN</b>	– 2 x 10 Gb port
<b>CONSOLE</b>		– 1 x RJ45 FE connector
<b>USB</b>	<b>3.0</b>	– 1 x 3.0 USB port

# Switch only - Elba 100

## Managed switch

### SYSTEM FEATURES

<b>POWER</b>	Power supply	External Desktop 12 V (internal Vdc 2.5 A) Power Switch ON/OFF
	Consumption	< = 20 W (Full configuration)
<b>ENVIRONMENT</b>	Operating temperature	-5° C / +55° C
	Storage temperature	-40° C / +70° C
	Max operating humidity	93% (non condensing)
<b>FANS</b>		fanless
<b>PROCESSOR</b>		ARM Cortex-A7 500 MHz
<b>RESET</b>		Reset and restore factory functions

### EXTERNAL HARDWARE FEATURES

<b>HOUSING</b>	<b>Material</b>	Metal
	<b>Dimensions (W x H x D)</b>	195x x 42,1 x 140 mm
<b>MOUNTING</b>	<b>Default</b>	Desktop / horizontal plane
	<b>Status LED</b>	1 x power / operational status
<b>LED</b>	<b>Ethernet</b>	2 x operational status (for each port)
	<b>SFP</b>	1 x operative status - for each port



# Broadband & Cellular Routers

## WAN FIXED LINE - Summary table

Here you find a summary of all our routers with only fixed connectivity.

Series	Model											
Imola LX	0272-IKW-V	-	•	-	•	-	•	-	•	-	-	•
	0272-IKW	-	•	-	•	-	-	•	•	-	-	•
	0272-IK2W	-	•	-	•	-	-	•	-	•	-	•
	0272-20	-	•	-	-	-	•	-	-	-	•	•
Imola	0872-IKF-IKW	•	•	-	-	•	•	•	•	-	-	•
	0872-IKF-IK2W	•	•	-	-	•	•	•	-	•	-	•
	0872-IKF-IKW-PoE	•	•	•	-	•	•	•	•	-	-	•
	0872-IK2V-IK2F	-	•	-	-	••	•	••	-	-	-	•
Imola SGR	0272-SGR	-	•	-	-	•••	•	•	•	-	-	•
	0272-SGR-IK2W	-	•	-	-	•••	•	•	-	•	-	•



# Broadband & Cellular Routers

## FIXED & MOBILE LINE - Summary table

Here you find all our routers which have both fixed and mobile connectivity.



Series	Model	FE	GE	PoE	FTTH	FIBER	SFP 2.5	EVDSL	4G LTE	5G	4G LTE	4G LTE	2.4 GHz	2.4 GHz 5 GHz	ax	VoIP	TNAs
Imola LX	LX 5272-IKW	-	•	-	•	-	-	•	•	-	•	-	-	-	-	-	•
	LX 5272-IK2W	-	•	-	•	-	-	•	•	-	•	-	-	-	-	-	•
Imola	5872-IKF-IKW	•	•	-	-	•	-	•	•	-	•	-	-	-	-	-	•
	5872-IKF-IK2W	•	•	-	-	•	-	•	•	-	•	-	•	-	-	-	•
	5872-IKF-IKW-PoE	•	•	•	-	•	-	•	•	-	•	-	-	-	-	-	•
Imola SGR	5272-SGR	-	•	-	-	•••	-	•	•	-	•	-	-	-	-	-	•
	5272-SGR-IK2W	-	•	-	-	•••	-	•	•	-	•	-	•	-	-	-	•
	5572-SGR	-	•	-	-	•••	-	•	•	•	•	-	•	-	-	-	•
Lipari	5584-W	-	•	-	-	-	••	-	•	•	-	•	•	•	•	•	-

# Ultra Broadband and Cellular Routers

## Cellular only routers - Summary table

A summary table with all our cellular connectivity products: you will find our router of the Lipari series as well our products for IoT applications.

Router series	Model	FE	GE	SFP	2.4 GHz	ax	2G	3G	4G <sup>cat. 4</sup>	5G	4G LTE	5G	VoIP	TNA
Lipari	5100	•	-	•	-	-	•	•	•	-	-	-	-	•
	5200	•	-	-	-	-	•	•	•	-	•	-	-	•
	5200-IKW	•	-	-	•	-	•	•	•	-	•	-	-	•
	5584-W	•	•	-	•	•	•	•	•	•	-	•	•	-



# Software features

## General features for Tiese products

Software features can be slightly different for each series, please refer to the specific datasheet product for detailed information.

### NETWORKING

- TCP-UDP, IPv4
- ICMP
- ARP, CMP, IPv4 Path MTU Discovery
- IPv6 support
- ICMPv6, IPv6 Path MTU Discovery, IPv6 Neighbor Discovery
- IPv6 Stateless Address Auto Configuration
- PVC bonding
- Pseudowire Ethernet to extend layer-2 circuits over IP networks

### LAYER 2 FEATURES

- LAN bridging
- VLAN support on LAN interface 802.1q in Access mode, Trunk, native VLAN and Hybrid mode
- VLAN 802.1q over Ethernet
- Layer 2 Protocol Tunneling (L2PT)
- 802.1Q-in-802-1Q

### ROUTING & MULTICAST

- Static, Policy routing, RIPv1, RIPv2
- BGP-4, BGP-4+
- OSPFv2
- Multicast Routing PIM SM V2, PIM DM
- Routing redistribution and tagging
- VRF Lite
- VRRP (Virtual Routing Redundancy Protocol)
- VRRP (Virtual Routing Redundancy Protocol) with IPv4-IPv6 authentication
- IGMP proxy
- IGMP v1-v2-v3, IGMP snooping
- Multicast routing with PIMv2 sparse-mode and PIMv2 dense-mode, MSDP
- IEEE 802.1d (Spanning Tree Protocol)

### SECURITY

- NAT/PAT
- ACLs, Stateful Firewall
- IP Filtering
- SSL Tunnelling
- L2TP
- PPTP
- Generic routing encapsulation (GRE)
- GRE Tunnelling, GRE Tunnelling with keep alive and key sequence numbering (radio mobile network optimization)
- VPN with IPSEC, VPN with IPSEC/ESP or IPSEC/AH IKEv1/IKEv2
- 3 DES Encryption
- DMVPN
- Wi-Fi with WPA2, Multiple SSID
- OpenVPN

# Software features

Software features can be slightly different for each series, please refer to the specific datasheet product for detailed information.

## QoS

- Traffic classification based on source IP, and based on a combination of source IP, destination IP, protocol (UDP, ICMP, TCP, etc) ports, application recognition, DSCP/IP Precedence
- Traffic classification based on source IP, and based on a combination of ToS or Port
- DiffServ
- Layer 2 remarking CoS
- IP Precedence remarking, DSCP and CoS
- CoS on VLAN
- QoS on ATM class
- IPSLA based on QoS
- Shaping with guaranteed allocated bandwidth and redistribution of bandwidth excess
- Committed Access Rate e Multicast rate Limit
- Mechanisms of traffic prioritization, ability to define an arbitrary number of priority classes
- Link aggregation IEEE 802.3ad

## SERVICES

- DHCP client, DHCP server with antispoofing functions
- DHCP Layer Discovery Protocol IEEE 802.1ab
- DHCP server, client, relay
- Intelligent DNS Proxy, local and remote
- Traceroute
- NTP Client and Server support
- Easy VPN
- DDns
- SMS

## MANAGEMENT & CONFIGURATION

- SNMP v1, SNMPv2, SNMPv3
- Telnet server with multiple simultaneous sessions
- SSH server with multiple simultaneous sessions (SSHv2)
- IP SLA support for: One Way Delay, Round Trip Delay, Jitter, Packet Loss
- SAA (Service Assurance Agent)
- Syslog (local and remote)
- Fault management Syslog /Trap
- User authentication PAP/CHAP
- Radius Support, TACACS+
- Tracking for backup management, commands and scheduled events
- Software update via TFTP and FTP
- Configuration via command Line Interface (CLI), text/menu oriented and Telnet
- Configuration via HTTP
- TNA (Tiesse Network Architecture) suite for auto-provisioning and remote automated management
- Management of an arbitrary number of configurations
- Support of Network Configuration Protocol (NETCONF)
- Support of YANG Data Modeling Language for NETCONF

## VOICE

- SIP registration features, SIP UAC, deregistration, GNR registration
- SIP standard compliance: RFC 2327 SDP, RFC 2617 , RFC 3261 SIP, RFC 2833, RFC 2976, RFC 3262, RFC 3264, RFC 3265, RFC 3311, RFC 3323 ,RFC 3325, RFC 3326, RFC 3398, RFC 3578, RFC 3842, RFC 3960, RFC 4566
- Registration features SIP, SIP UAC, registration deletion
- Codec support and negotiation
- OOB DTMF tone management, in-band and announcing tone
- Call forwarding unconditional both no answer and busy user
- Unconditional call forwarding
- Call waiting / hold features
- On hold call capability
- T.38 fax support
- Interworking with PBX
- Voice Fallback on POTS (FXO or BRI) interfaces
- Line hunting



# About us

Tiesse is a 100% Italian company that, since 1998, has been designing and manufacturing ultrabroadband and cellular routers, industrial routers, switches, gateways, IoT/M2M devices and automation, management and monitoring systems.

With more than 25 years of experience, Tiesse has become one of the leading suppliers of CPE (Customer Premise Equipment) with both fixed and cellular radio and Wi-Fi connectivity for the main Telecommunications operators.

Tiesse S.p.A. has a long experience in providing - from designing to production - innovative products and technologies for enterprise networks and mission critical infrastructures. Our customers are large national and international companies in sectors such as telecommunications, energy, finance, industry, public administration and defence.

Tiesse's solutions consist of **Imola** and **Lipari**, Tiesse's ultrabroadband router series with both fixed and cellular connectivity, and the **Elba** switch series: you can find them in the major telecommunications networks, petrol stations, insurance companies, banks and the networks of major gaming operators.

The **Levanto** and **kloTo** series IoT devices are present in the networks of major international operators in the energy and utilities sectors. Last but not least, the **TGR** series consists of products that are industrial LTE routers and Edge gateways, which also meet security and satellite communication requirements.

Innovative, competitive and certified, the entire line of Tiesse products and solutions is further enhanced by virtual routers and the **TNA** (Tiesse Network Architecture) software suite, which allows remote management and real-time monitoring of the network and its individual devices.

## Innovation made in Italy

Our motto denotes our desire for innovation and continuous research, to provide intelligent and secure connectivity to national and international companies. Made in Italy is synonymous with **reliability, quality** and **security**.

In addition, since 2016, Tiesse has been granted the status of **Innovative SME by the Ministry of Economic Development (MISE)**, as it is characterised by a strong innovation component with significant R&D expenditure. Tiesse's products are at the cutting edge of technology also thanks to continuous investment in R&D and close collaboration with Telco's and Universities.

## Passion for Technology

is written in the **DNA** of Tiesse and of the people who are part of it: this factor, added to the enhancement of talent, resource management and flexibility, makes our company an excellent organisation.

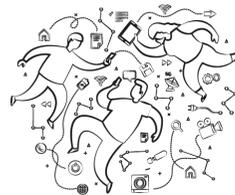
## Commitment to the customer

is present at every stage of the product lifecycle, from design to installation and after-sales support. The total resolution of any problems that may arise is accompanied by the complete satisfaction of our customers. Our **competence, reliability** and **experience** have also enabled us to develop innovative projects for our customers, who have entrusted Tiesse with the research and development of some of their products.



### INNOVATION

Our motto is "Innovation Made in Italy" and we stuck to it!



### PASSION

The passion for technology is written in our DNA



### COMMITMENT

Commitment to the customer is present at every stage of the product lifecycle

## About us

### Quality and sustainability

Tiesse implements a quality management system in accordance with the principles of the latest **ISO 9001** standard and guarantees the **quality, safety and efficiency** of its research, products and services.

Tiesse is also certified both **UNI EN ISO 14001:2015** (Environmental Management System) and **UNI EN ISO 14064-1:2019** (Greenhouse Gases), furthermore it activates projects to compensate CO2 emissions generated by the production of its products, such as the planting of trees. Tiesse works continuously to improve the **durability of its products** and to reduce the use of plastic in the packaging process in view of the plastic-free objective, selecting recycled and recyclable materials from verifiable and controlled supply chains.

Last but not least, it focuses on remanufacturing, refurbishing, upgrading or replacing its products for new use in the field.



ISO 9001:2015

### QUALITY

We got certified to ensure high quality standards



ISO 14001:2015

### ENVIRONMENT

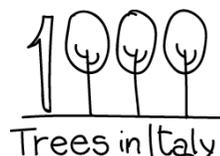
We care about nature and the environment, we design and produce in their respect



ISO 14064-1

### GREENHOUSE

Because we care about nature, we worked hard to limit the gas emissions that hurt the planet



1000 Trees in Italy

### Sustainability

And even before we got the environmental certifications, we had already started planting trees to support the planet

### Milestones

Tiesse has achieved several milestones over the years, the most important of which include:

- **Leadership** with connectivity solutions in the areas of **e-money, regulated gaming** and betting
- **Leadership** in the **telecommunications** network sector with products certified by the main Telco operators in the Italian market, with volume (white label) and project-based supplies
- **Leadership** with the supply of **LTE routers** for the main telecommunications operators also for mission critical scenarios
- **Leadership** in the **energy field**, with important volume supplies of routers for remote control and monitoring in primary and secondary substations in Italy, Europe and Latin America (also in Smart Grid scenarios)
- **Strong position** for supplies in the **distributed networks** of banks, service stations, insurance companies, municipalities and public bodies, dealers, large-scale distribution, retailers and franchising

### Research and innovation

Tiesse pursues research and technological innovation through:

- Digitisation with 5G radio connections
- Virtual routers
- Overlay network
- Network Anomaly Detection
- Edge routing solutions and IoT applications with docker containers
- Embedded systems

### Where we are

Tiesse is located in the North of Italy in **Ivrea** (To), where you will find the headquarters with management, administration, research & development, 2 production sites and warehouses. Further sales offices and R&D centres are located in **Rome, Turin** and **Avezzano** (AQ).

On the Internet, Tiesse can be reached from its website [www.tiesse.com](http://www.tiesse.com) and its page on **LinkedIn**.



# Our solutions and products: security, business continuity and high performances

## ACCESS ROUTERS

### Ultra broadband routers

- o Imola
- o Imola LX



### Cellular routers

- o Lipari



### Industrial routers

- o Imola SGR
- o Imola E



### Switch

- o Elba



- Selected and certified by leading TELCOs and ISPs
- Compact and all-in-one models
- xDSL, fibre, 4G and 5G cellular radio, Wi-Fi radio
- Industrial and rack mountable devices
- Models for industrial and Smart Grid environments

## DEVICES FOR IoT CONNECTIONS

### IoT & M2M devices

- o Levanto
- o kloTo



- Radio-cellular connectivity up to 4G
- Remote device management and control
- Suitable for being housed within industrial systems, cabinets or machinery, power cabins,...

### Industrial LTE gateway and EDGE routers

- o TGR



- High reliability, flexibility and versatility
- Multiple serial, I/O and Ethernet ports to support different application scenarios
- Open platform to host even third-party applications

## SOFTWARE FOR MANAGEMENT AND AUTOMATION

### Automation software

- o TNA (Moduli CoS, MoS, OVN)



- Software suite enabling Zero Touch Provisioning management of networks
- Includes monitoring, automatic configuration management, traffic engineering: 360 degree network control
- Network Anomaly Detection

### Virtual routers

- o MTNOS



- Virtual Router implementing layer 2 and layer 3 functions
- Suitable to be hosted on third-party hardware platforms with Linux operating system.
- Installable on virtual machines in Cloud scenarios.

## INTEGRATION AND CUSTOMISATION

### Custom & Vertical

- Customised software pre-configurations and bundles
- White labels for volume sales
- Design, engineering, production and certification to customer specifications
- Research and development projects for solutions with different technologies (e.g. NB-IoT, LoraWAN, ...)



Visit [www.tiesse.com](http://www.tiesse.com) for more information

# Tiesse

Innovation made in Italy®

Tiesse is a **totally Italian company** with more than **25 years of experience** in the design, development and production of **network equipment and IoT devices**, suitable for use in mission-critical and industrial scenarios. Tiesse's most successful series, **Imola**, **Lipari** and **Levanto**, are innovative, competitive and certified, and are present in the networks of the major telecommunications operators, in the energy sector, large-scale distribution and vertical sectors, both in the Italian and foreign markets.

Further information on Tiesse solutions can be found on the company website [www.tiesse.com](http://www.tiesse.com).



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