



# Imola LX x272-1K2W



# Imola LX

## x272-IK2W



### Ultrabroadband eVDSL2, Wi-Fi and LTE router

The **Imola LX** router series is part of the evolution of the IMOLA line, which are certified routers used in the networks of the main telecommunications operators: the models are particularly suitable to be used in business applications where security, service continuity and network performance

are of primary importance.

Imola LX support ultra broadband connectivity both fixed and mobile in a all-in-one device, which integrates routing, switching and modem functionalities.

#### FUNCTIONALITIES

- ⇒ Routing
- ⇒ Switching
- ⇒ Multi fail-over
- ⇒ QoS

#### KEY BENEFITS

- ⇒ Security
- ⇒ Service continuity (always-on connectivity, multiple backups)
- ⇒ Quality of Service (QoS)
- ⇒ Hardware and software at the highest levels of reliability
- ⇒ Zero touch provisioning
- ⇒ Factory pre-configuration, different for each client
- ⇒ 100% of the routers are tested in factory (as well as the SIM cards of the 4G models)
- ⇒ Very low energy consumption

#### APPLICATIONS AND SCENARIOS

- Imola LX models are installed at the client's locations (customer premises), in business scenarios such as:
- ⇒ Services and offer profiles of Telco operators, internet and digital service providers
  - ⇒ Distributed and secure access to branches and remote locations of banks, insurance companies, dealers, franchises, companies and public administrations
  - ⇒ Backup and redundancy of ultra broadband networks

#### MODELS AND FEATURES



IMOLA LX 0272-IK2W



IMOLA LX 5272-IK2W



#### BACKUP: high availability mission critical

**Seamless backup** - The user does not perceive service interruptions and the transition to backup. Transitions from normal to backup mode and vice versa are performed considering operational costs.

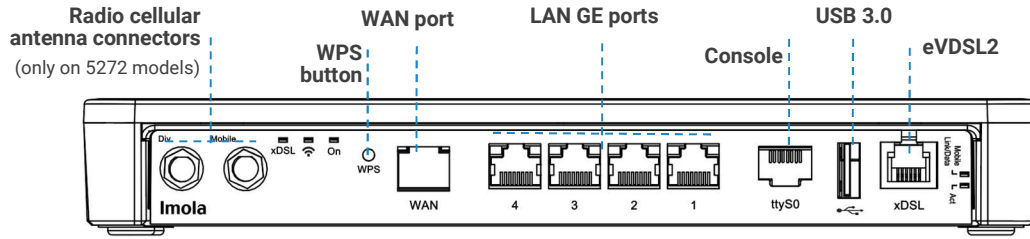
**Multiple backup** - A pair of routers in VRRP performs physical backup of both network and hardware

**Homogeneous backup** - A single router integrates all ports, wired and mobile.

**Heterogeneous backup** - An installed base can be upgraded by adding a mobile router and using the VRRP (Virtual Router Redundancy Protocol).



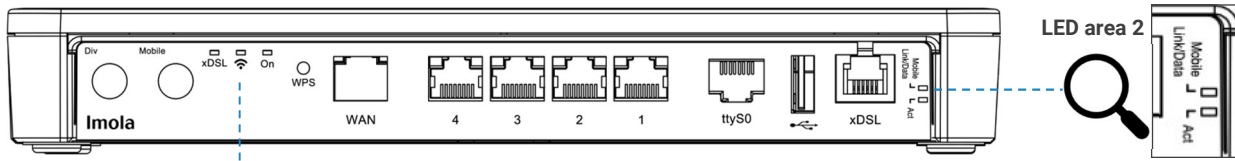
## HARDWARE INTERFACES



Port	Description	Details
LAN	- GE	- 4 ports 10/100/1000 Mbps, connettore RJ45
	- Simultaneous dual Wi-Fi	- 1 port 802.11 b/g/n port (2.4 GHz) 2x2, up to 300 Mbps - 1 port 802.11 ac port (5.4 GHz) 2x2, up to 1300 Mbps
WAN	- GE	- 1 port GE 10/100/1000 Mbps, connector RJ45 (etichetta WAN) - 1 port with RJ-11 connector, Full rate ADSL2/2+ / VDSL2
	- ADSL 2/2+	<b>ADSL2/2+</b> - Downstream data rate up to 24 Mbps - Upstream data rate up to 3.5 Mbp - Standards-compliant G.992.1 annex A,B,C&I, G.992.2-g.Lite, G.992.3 annex A, B, I, J, M, G.992.4-g.Lite.bis, G.992.5 annex A, B, C, I, J, M, ANSI T1.413 issue2, ETSI TS 388 ADSL-over-ISDN, ITU T-I361, ITU T-I.363.5, ITU T-I.432, ITU T-I610, ITU T-I731
	- VDSL	<b>VDSL2</b> - Support for all VDSL2 profiles: 8 MHz to 30 MHz ITU-T G993.2 - G.Vector standard-compliant (ITU-T G.993.5) - ITU-T G.998.4 G.INP standard-compliant - ADSL2 compatible (backward compatibility)
	- eVDSL	<b>eVDSL2</b> - Support 35 MHz ITU-T G993.2 Annex Q (35b or Vplus) profile with aggregate rates up to 400 Mbps
		- 1 radio cellular LTE cat. 4 port. Category 6 and 12 versions available on request
Radio Cellular (modelli 5272)	- GSM	<b>GSM / GPRS / EDGE</b> - Frequency bands: 900/1800/1900 MHz - GPRS multislot 10, EDGE multislot 12
	- UMTS	<b>UMTS / HSDPA / HSUPA / HSPA+</b> - Frequency bands: 900/2100 Mhz - HSDPA data rates up to category 20 - HSUPA data rates up to category 6
	- DC-HSPA+	<b>DC-HSPA+</b> - DC-HSPA+ (42 Mbps in DL)
	- LTE	<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
Console		- 1 port with RJ45 connector
USB		- 1 USB 3.0 port

## LEDS DESCRIPTION

\* NOTE: The use of LEDs depends on the active functionality of each specific model. The figure above highlights the LEDs used in the model covered by this datasheet.



LED	Color	Position	Description
<b>Power</b>	<b>Green</b>	– Led area 1	– 1 x power / operative status
<b>Wi-Fi</b>	<b>Green</b>	– Led area 1	– 1 x operative status
	<b>Green</b>	– Led area 2	– 1 x authentication status (Act)
<b>xDSL</b>	<b>Green</b>	– Led area 1	– 1 x operative status
<b>LAN</b>	<b>Yellow/Green</b>		– 2 on each port, for operative status
<b>Radio Cellular</b> (5272 models)	<b>Yellow</b>	– Led area 2	– 1 x radio cellular connection status (Link)
	<b>Green</b>	– Led area 2	– 1 x radio cellular data activity (Data)

## eVDSL2 - NEW GENERATION NETWORK



Support of the new generation networks (NGN) and ensuring:

- Support for all VDSL2 profiles: 8 MHz up to 35 MHz in accordance with ITU-T G993.2 Annex Q (35b or Vplus profiles) capable of aggregate rates of up to 400Mbps
- G. Vector (ITU-T G.993.5)
- Compliant with ITU-T G.998.4 standard G. INP (impulse noise protection)
- Compatible with ADSL2 (backward compatible)
- Excellent connection stability in case of line disturbances

## CARATTERISTICHE 4G



- LTE with data rates of 150 Mbps on the downlink and 50 Mbps on the uplink
- HSPA+, with data rates of 21.1 Mbps on the downlink and 5.7 on the uplink with EDGE / GPRS fallback
- Dual Cell HSPA mode support
- Multiple Input/Multiple Output (MIMO) support provided
- Possibility of configuring and activating two APNs simultaneously
- Removable external antennas with male SMA connector - various types of optional antennas available (outdoor, omni-directional, directional, high-gain)

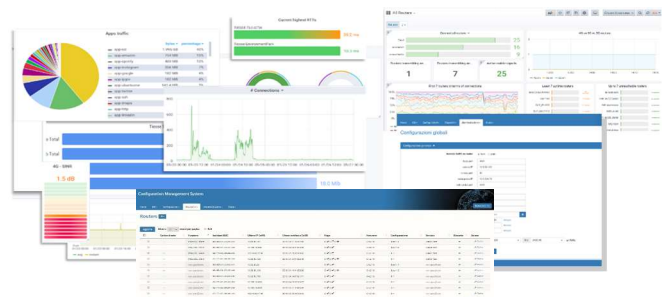
## ZERO TOUCH PROVISIONING



Imola LX routers are integrated in the **TNA (Tiesse Network Architecture)** suite.

TNA is the modular software suite that enables Zero Touch Provisioning network architecture, including monitoring, remote and automated web-based management of configurations and firmware releases of the installed fleet; it enables traffic engineering, network overlays, and many other functionalities.

A complete datasheet of the solution is available at [www.tiesse.com](http://www.tiesse.com).





## SOFTWARE

\* Nota: le funzionalità software dipendono dalla versione e dal livello di aggiornamento del firmware del prodotto.

Area	Main features	
<b>NETWORKING</b>	<ul style="list-style-type: none"> <li>- TCP-UDP IPv4</li> <li>- IPv6</li> </ul>	<ul style="list-style-type: none"> <li>- PVC Bonding</li> </ul>
<b>LAYER 2 FEATURES</b>	<ul style="list-style-type: none"> <li>- LAN Bridging</li> <li>- VLAN support on LAN interface 802.1q in Access mode, Trunk, native VLAN and Hybrid mode</li> </ul>	<ul style="list-style-type: none"> <li>- Layer 2 Protocol Tunneling (L2PT)</li> <li>- 802.1Q-in-802-1Q</li> </ul>
<b>ROUTING &amp; MULTICAST</b>	<ul style="list-style-type: none"> <li>- Static, Policy routing, RIPv1, RIPv2</li> <li>- BGP-4, BGP-4+</li> <li>- OSPFv2</li> <li>- VRF Lite, Routing redistribution AND tagging</li> <li>- VRRP (Virtual Routing Redundancy Protocol) with IPv4-IPv6 authentication</li> </ul>	<ul style="list-style-type: none"> <li>- IGMP v1-v2-v3, IGMP snooping, IGMP proxying</li> <li>- Routing Multicast with sparse-mode PIMv2 and PIMv2 dense-mode, MSDP</li> <li>- IEEE 802.1d (Spanning Tree Protocol)</li> </ul>
<b>QOS</b>	<ul style="list-style-type: none"> <li>- Traffic classification based upon source IP, based on a combination of source IP, destination IP, protocol (UDP, ICMP, TCP, etc), upon DSCP/IP precedence, ToS or Port</li> <li>- DiffServ</li> <li>- CoS on VLAN</li> <li>- QoS on ATM classes</li> </ul>	<ul style="list-style-type: none"> <li>- Shaping with guaranteed allocated bandwidth and redistribution of bandwidth excess</li> <li>- Committed Access Rate e Multicast rate Limit</li> <li>- Mechanisms of traffic prioritization, ability to define an arbitrary number of priority classes</li> <li>- IEEE 802.3ad link aggregation</li> </ul>
<b>SECURITY</b>	<ul style="list-style-type: none"> <li>- NAT/PAT</li> <li>- ACLs, Stateful Firewall</li> <li>- SSL Tunneling</li> <li>- L2TP</li> </ul>	<ul style="list-style-type: none"> <li>- GRE Tunneling with keep alive and key sequence numbering (radio mobile network optimization)</li> <li>- VPN con IPSEC/ESP o IPSEC/AH IKEv1/IKEv2</li> <li>- 3 DES Encryption</li> </ul>
<b>SERVICES</b>	<ul style="list-style-type: none"> <li>- DHCP client, DHCP server with anti-spoofing functions, DHCP Layer Discovery Protocol IEEE 802.1ab, DHCP relay</li> <li>- Intelligent DNS Proxy, both local and remote</li> <li>- Traceroute</li> </ul>	<ul style="list-style-type: none"> <li>- NTP Client and Server support</li> <li>- Easy VPN</li> <li>- DDns</li> </ul>
<b>MANAGEMENT AND CONFIGURATION</b>	<ul style="list-style-type: none"> <li>- SNMP v1, SNMPv2, SNMPv3</li> <li>- Telnet server with multiple simultaneous sessions</li> <li>- SSH server with multiple simultaneous sessions (SSHv2)</li> <li>- Netflow</li> <li>- IP SLA support for: One Way Delay, Round Trip Delay, Jitter, Packet Loss</li> <li>- SAA (Service Assurance Agent)</li> <li>- Fault management Syslog /Trap</li> <li>- Radius Support, TACACS+</li> </ul>	<ul style="list-style-type: none"> <li>- Tracking for backup management, commands and events scheduled</li> <li>- Software update via TFTP, FTP, HTTP, HTTPS, SCP</li> <li>- Configuration via command Line Interface (CLI), Text/Menu oriented and Telnet</li> <li>- TNA (Tiesse Network Architecture) suite for remote self-provisioning and automated management</li> <li>- Management of an unlimited number of configurations</li> </ul>

## ONE ROUTER, THREE MOUNTING OPTIONS



On a horizontal plane, such as a desk



Vertical position, thanks to the use of a special bracket



Wall mounting, using the same bracket for vertical positioning

## SYSTEM FEATURES

<b>POWER</b>	<ul style="list-style-type: none"> <li>– 12V AC/DC Adapter</li> <li>– Pulsante ON/OFF</li> </ul>
<b>CONSUMPTION</b>	– < 12W Full Configuration
<b>FANS</b>	– Fanless
<b>PROCESSOR</b>	– RISC Network processor
<b>MEMORY</b>	– 256 MB - DDR3
<b>FLASH MEMORY</b>	– 256 MB
<b>ENVIRONMENT</b>	<ul style="list-style-type: none"> <li>– Operating temperature: -5°C / +50° C</li> <li>– Storage temperature: -40°C / +70°C</li> <li>– Maximum relative operating humidity: 93% (non-condensing)</li> </ul>

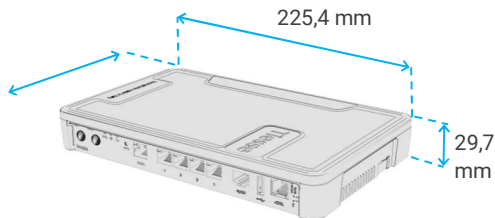
## EXTERNAL FEATURES

<b>MATERIAL</b>	– Plastic chassis
<b>COLOR</b>	– Black
<b>FORM FACTOR</b>	– Desktop
<b>Wi-Fi ANTENNAS</b>	– Internal
<b>LTE ANTENNAS</b>	– 2 external, removable antennas with male SMA connector
<b>LTE ANTENNA ADD-ONS</b>	<ul style="list-style-type: none"> <li>– Optional antennas are also available for outdoor, high-look, omnidirectional and directional installations.</li> <li>– See datasheet available at <a href="http://www.tiesse.com">www.tiesse.com</a></li> </ul>

## SIZE

### Horizontal positioning

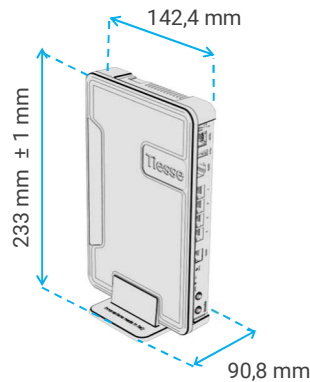
On horizontal flat surface, without bracket.



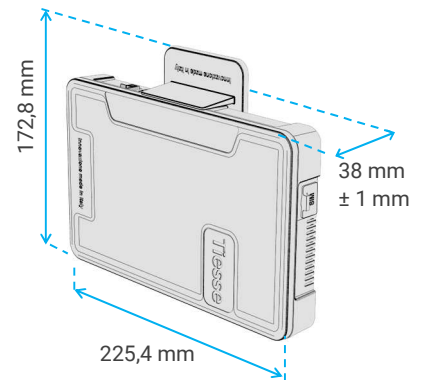
### STANDARD WEIGHT

LX 0272-IK2W: 520 gr ±10%  
LX 5272-IK2W: 620 gr ± 10%

### Vertical desktop mounting with bracket



### Wall mounting with bracket



## TECHNICAL SUPPORT

Supporto on-line su:



**Supporto.tiesse.com:** portal with technical documentation, installation instructions, software updates and how to request technical support.

**Wiki.tiesse.com:** site dedicated to software documentation; it includes user manuals, first access guides, case studies, tutorials and other useful resources for using the products.



# Tiesse

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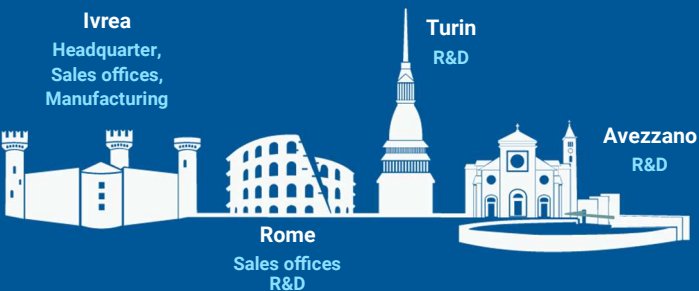
Further information on Tiesse solutions can be found on the company website [www.tiesse.com](http://www.tiesse.com).



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