Tiesse
Innovation made in Italy®

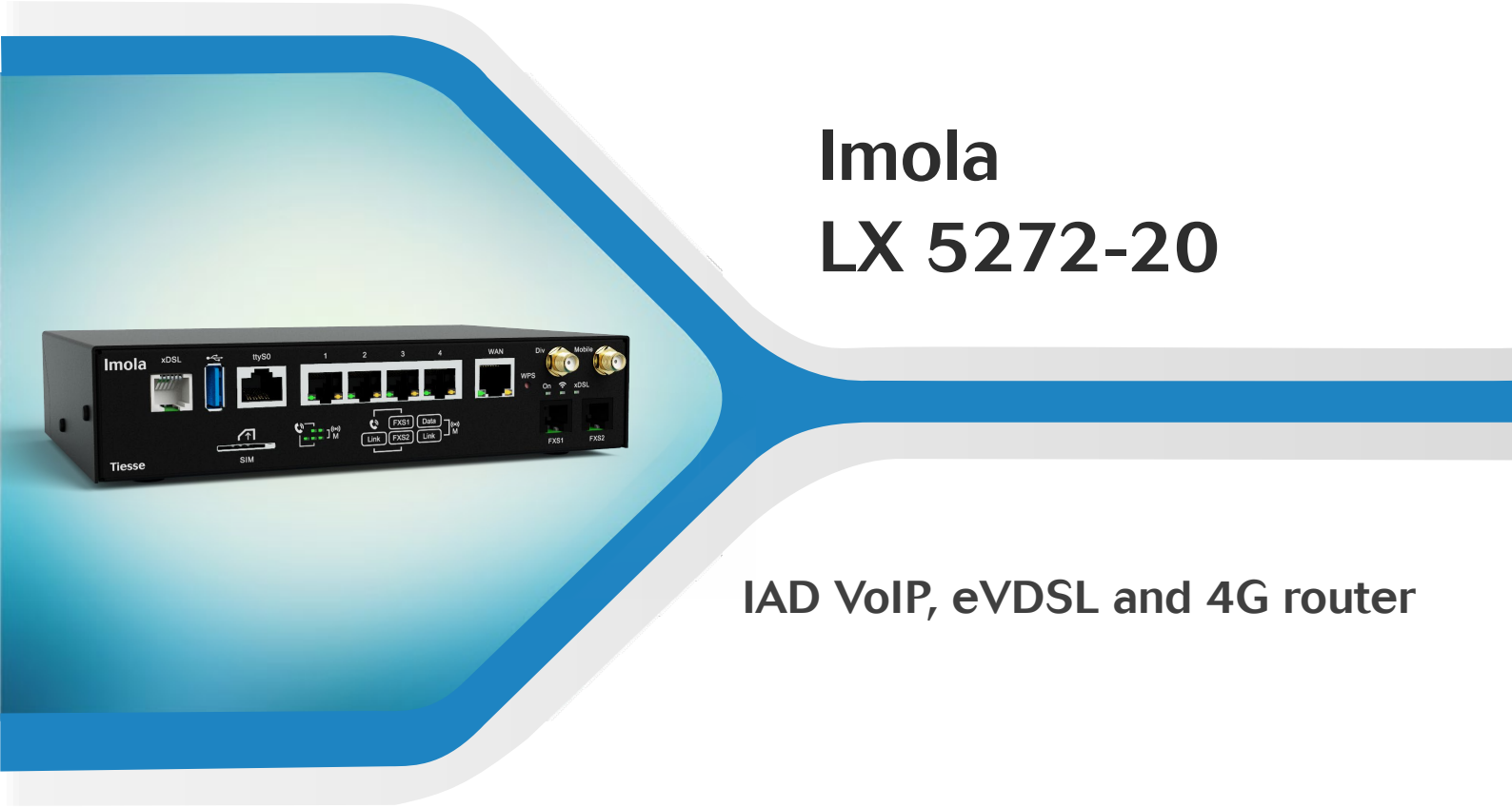
Imola LX
Router series

Imola LX 5272-20

GE EVDSL 4G LTE

Datasheet

WWW.TIESSE.COM



Imola
LX 5272-20

IAD VoIP, eVDSL and 4G router

SERIE IMOLA LX x272

The **Imola LX x272** series is an advanced line of routers with eVDSL 35b plus and Gigabit Ethernet WAN connectivity, designed specifically for business applications that require high security standards and optimal network performance.

The compact size make the Imola LX x272 models easy to install in any environment, while the low-power design helps reduce operating costs.

ALL-IN-ONE

FTTC, FTTH, VoIP and 4G in a single device for reliable, versatile and scalable connectivity. Our Imola LX series devices are adaptable to any technology and include the features

- Routing & switching
- Multi fail-over
- QoS

KEY FACTORS

Secure by design
Right from the design phase for robust and natively secure solutions.

Always-On
Stable connections anywhere, with multiple links, transparent backup, and quality of service for uninterrupted business.

Certified
Validated for inclusion in business offering profiles and use within the networks of major telecom operators.

Rugged and reliable
Designed to last: hardware and software offering maximum reliability and durability.

Smart value
Maximizes business value with an excellent performance-to-price ratio.

Zero Touch Provisioning
For remote management and agile configuration of installed equipment, with Tiesse's TNA suite.

Eco-efficient
Minimal consumption, lower environmental impact and higher operating cost savings.

Factory pre-configurations
Receive your product pre-configured according to your specific case.

100% factory-tested
We test all our equipment, including SIM cards for models with a cellular radio connection.

IMOLA LX 5272-20

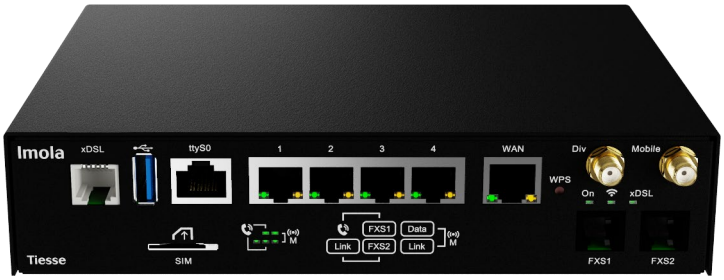
Imola LX 5272-20 is a high-performance router/IAD designed for professional eVDSL networks, analogue voice connections for up to 2 calls, plus a mobile radio connection up to 4G.

Ideal for businesses and commercial establishments that require reliability and advanced data and voice traffic management.

Imola LX 5272-20 offers advanced QoS (Quality of Service), security and routing functions.

- 5 Gigabit Ethernet ports
- 1 eVDSL port
- 1 radio cellular port
- 2 VoIP ports
- Zero Touch Provisioning

Backup and redundancy on multiple links
Optimised products for ultra-connected branches and remote locations



SUGGESTED SCENARIOS AND APPLICATIONS

ISP & Telco Ready
Designed to meet the requirements of service providers, telecom operators, carriers, and system integrators.

Backup and redundancy on multiple links
Optimised products for ultra-connected branches and remote locations

Business continuity in legacy scenarios
VoIP calls and calls via modem on traditional cellular networks (mobile phones), allowing you to manage barriers, alarms, industrial machinery and remote infrastructure.

Service continuity and Mission Critical applications
- Voice and data services for small and medium-sized enterprises
- Banking and insurance
- Retail

BACKUP: high availability mission critical

Seamless backup
The user does not perceive service interruptions and the transition to backup.

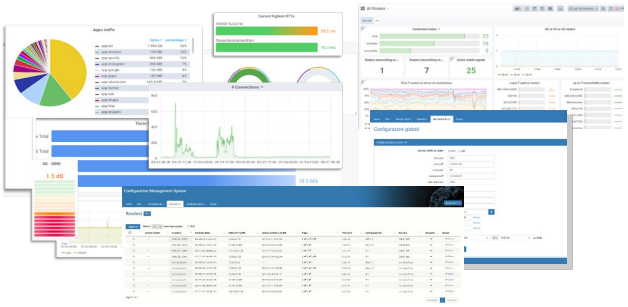
Transitions from normal to backup mode and vice versa are performed considering the operational costs.

Multiple Backup
A pair of routers in VRRP performs physical backup of both the 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).

ZERO TOUCH PROVISIONING



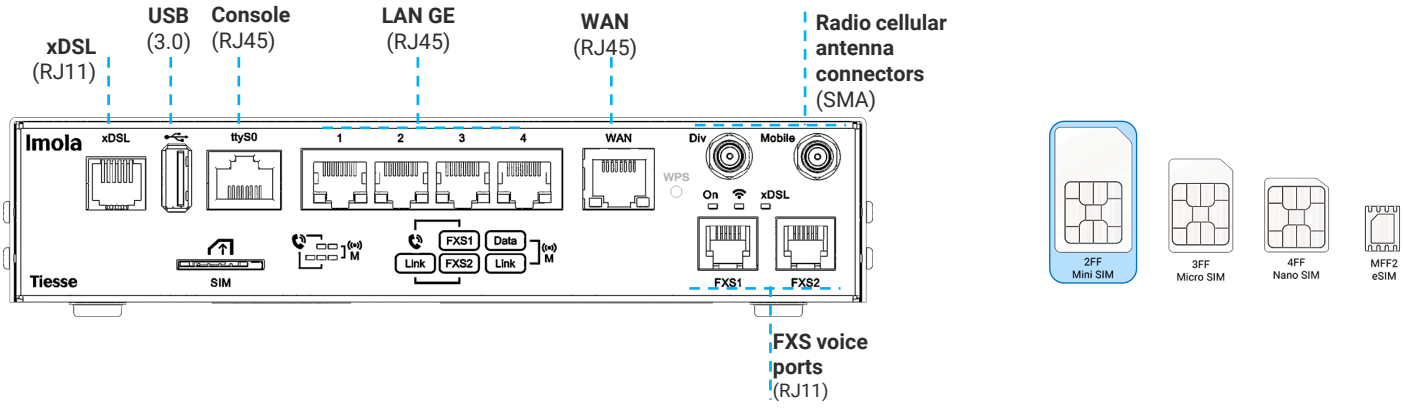
Tiesse's router are integrated in the **TNA (Tiesse Network Architecture)** suite.

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.

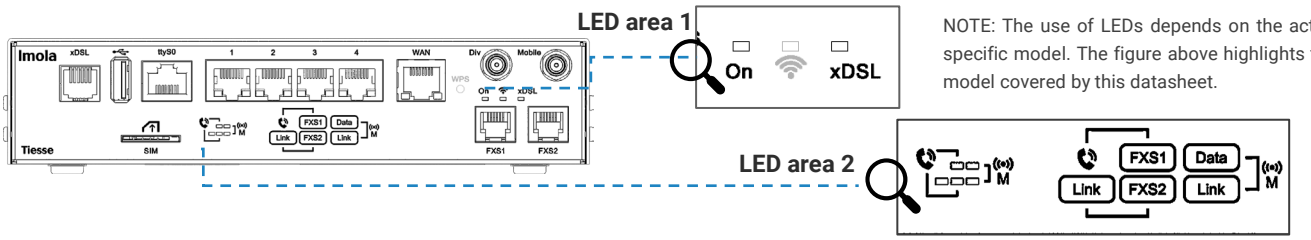
A complete datasheet of the solution is available at www.tiesse.com.

HARDWARE INTERFACES

Port	N°	Type	Details
LAN	4	**GE**	10/100/1000 Mbps
WAN	1	**GE**	10/100/1000 Mbps (label WAN)
	1	**xDSL**	Full rate ADSL2/2+ / eVDSL
		ADSL2/2+	- Downstream data rate up to 24 Mbps and upstream data rate up to 3.5 Mbps - Compliant with Standard 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
		VDSL2	- Support for all VDSL2 profiles: 8 MHz up to 30 MHz ITU-T G993.2 - Compliant with G.Vector standard (ITU-T G.993.5) - Compliant with ITU-T G.998.4 G.INP standard - Compatible with ADSL2 (backward compatibility)
		eVDSL	- Support for all VDSL2 profiles: 8 MHz up to 35 MHz, in compliance with ITU-T G993.2 Annex Q (35b or Vplus profiles), capable of aggregate rates of up to 400Mbps - G.Vector support (ITU-T G.993.5) - Compliant with ITU-T G.998.4 G.INP standard (impulse noise protection) - Compatible with ADSL2 (backward compatibility) - Excellent connection stability in case of line disturbances
RADIO CELLULAR *(The throughput value depends on the network configuration, bandwidth allocated to the UE, number of users, and RF signal conditions.)*	1	**GSM / GPRS / EDGE**	- Frequency bands: 900 / 1800 / 1900 MHz - GPRS multislot 10 - EDGE multislot 12
		UMTS / HSDPA / HSUPA / HSPA+	- WCDMA frequency bands: 900 / 2100 Mhz - HSDPA data transmission speed up to category 20 - HSUPA data transmission speed up to category 6 - HSPA+ data rate: 21.1 Mbps in Downlink and 5.7 in Uplink - Dual Carrier HSPA mode support
		DC-HSPA+	42 Mbps in download
		LTE	- Possibility to configure and activate two APNs simultaneously - Frequency bands: 800 / 900 / 1800 / 2100 / 2600 MHz - Data transmission speed: category 4, MIMO - LTE data rate: 150 Mbps in Downlink and 50 Mbps in Uplink
	2	**Antennas**	- 2 removable antennas, SMA male connector, front of product - Multiple Input/Multiple Output (MIMO) support - Outdoor antennas (omnidirectional and directional), high gain and vandal-proof antennas also available (optional)
	1	**SIM**	1 SIM slot for mini-SIM card (2FF) accessible from the outside of the product
VoIP	2	**FXS**	- VoIP ports, FXS type.



LED



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

LED	Color	Position		Label and description
Power	**Green**	LED area 1	On	Power status
xDSL	**Green**	LED area 1	xDSL	xDSL connection status
LAN	**Yellow**	On the LAN port		One for each ETH port, 1 Gbps connection status
	Green	On the LAN port		One for each ETH port, 100 Mbps connection status
VoIP	**Yellow**	LED area 2	Link	VoIP Link: operational status of the voice line connection
	Green	LED area 2	FXS1	FXS1: operational status for voice calls on FXS1 port
	Green	LED area 2	FXS2	FXS2: operational status for voice calls on FXS2 port
Radio celllular	**Green**	LED area 2	Data	Data: radio cellular connection activity
	Green	LED area 2	Link	Link: radio cellular connection status

OTHER INFORMATION AND SUPPORT

SUPPORTO.TIESSE.COM

- Technical documentation, installation instructions, quick start guide, first access data
- Firmware updates
- Declaration of conformity EMC, RED, RoHS, ...
- Technical support request
- End of sale and end of product support information
- Warranty repair and product reconditioning

WIKI.TIESSE.COM

- Website dedicated to software documentation
- User manuals
- First access guides
- Case studies, tutorials and other useful resources for product use

MONITORING AND PERFORMANCE MEASUREMENT FUNCTIONALITIES

IP SLA / Active Probing support for quality measurements	Active measurement of link quality using test packages	Data collection and supervision
- One-Way Delay - Round-Trip Delay - Jitter - Packet Loss	- BFD – Rapid detection of connectivity faults - ICMP Echo / Ping – RTT and reachability - UDP/TCP Probe – Verification with real transport protocols - HTTPS Probe – Application service availability check - TWAMP/OWAMP – Standardised measurement of delay, Jitter and loss	- SNMPv2/v3 – Polling and status traps - Syslog – System event and alarm logs - NetFlow / IPFIX – Traffic flow analysis - TNA MOS Tiesse

SOFTWARE

Note: the following list is purely indicative, active features depend on version and software update (NOS).

NETWORKING	- TCP-UDP IPv4, IPv6
LAYER 2	- LAN Bridging - VLAN on802.1q LAN interfaces in Access mode, Trunk, native VLAN and Hybrid mode - Layer 2 Protocol Tunneling (L2PT) - 802.1Q-in-802-1Q
ROUTING & MULTICAST	- Static, Policy routing, RIPv1, RIPv2 - BGP-4, BGP-4+ - OSPFv2 - VRF Lite, Routing redistribution and tagging - IEEE 802.1d (Spanning Tree Protocol) - VRRP (Virtual Routing Redundancy Protocol) with IPv4-IPv6 authentication - IGMP v1-v2-v3, IGMP snooping, IGMP proxying - Multicast routing with PIMv2 sparse-mode and PIMv2 dense-mode, MSDP
QoS	- Traffic classification based on source IP, destination IP, protocols (UDP, ICMP, TCP, etc.) and ports, and their combinations, on application recognition, on IP Precedence and DSCP - DiffServ - CoS on VLAN - QoS on ATM classes - Shaping with guaranteed allocated bandwidth and redistribution of excess bandwidth - Committed Access Rate and Multicast rate limit - Traffic prioritisation mechanisms, definition of an arbitrary number of priority classes - IEEE 802.3ad link aggregation
SECURITY	- NAT/PAT - ACLs, Stateful Firewall - SSL Tunnelling - L2TP - GRE Tunnelling with keep alive and key sequence numbering (cellular network optimisation) - VPN with IPSEC/ESP or IPSEC/AH IKEv1/IKEv2 - 3 DES Encryption
SERVICES	- DHCP client, DHCP server with anti-spoofing functions, DHCP Layer Discovery Protocol IEEE 802.1ab, DHCP relay - Intelligent DNS Proxy, local and remote - Traceroute - NTP Client and Server Support - Easy VPN
MANAGEMENT & CONFIGURATION	- SNMP v1, SNMPv2, SNMPv3 - Telnet server with multiple simultaneous sessions - SSH server with multiple simultaneous sessions (SSHv2) - Netflow - IP SLA support for: One-way delay, round trip delay, jitter, packet loss - Syslog /Trap fault management - Radius, TACACS+ support - Tracking for management of backups, commands and scheduled events - Software update via TFTP, FTP, sFTP, HTTP, HTTPS, SCP - Configuration via Command Line Interface (CLI), Text/Menu oriented and Telnet - TNA (Tiesse Network Architecture) suite for self-provisioning and automated remote management - Management of an unlimited number of configurations
VoIP	- IP line calling functionality (VoIP) - Modem calling functionality via mobile phone network - Compliant with SIP standards: 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 - SIP registration, SIP UAC, registration cancellation - Codec support and negotiation - OOB DTMF tone management, in-band and announcement tones - Unconditional call forwarding, call waiting functionality - T.38 fax support - Interoperability with PBX - Line hunting

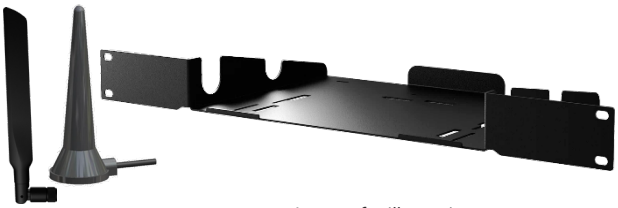
SYSTEM FEATURES

PROCESSOR	RISC Network processor	**CHASSIS**	Metallic case, black color
MEMORY	DRAM 256 MB	**FORM FACTOR**	Desktop
FLASH MEMORY	256 MB		

ADD-ONS

Optional accessories such as antennas for both indoor and outdoor omnidirectional and directional installations, are available.

Please check the add-ons datasheets, which can be downloaded from www.tiesse.com.



Images for illustrative purposes

SUSTAINABILITY

SYSTEM

Power	- 12V AC/DC Adapter - On/Off button
Cooling	Fanless
Consumption (full functions)	≈ 11,5W
EEE (Energy-Efficient Ethernet)	Tiesse products comply with the EEE (802.3az) standard, which saves energy by automatically reducing the consumption of Ethernet ports during periods of low traffic, without altering their performance
Dynamic Power Scaling	Tiesse products use control mechanisms to automatically reduce power consumption by lowering the CPU clock frequency when the load is low.
Mean Time Between Failure (MTBF)	≈ 643790 hours

OTHER INFORMATION

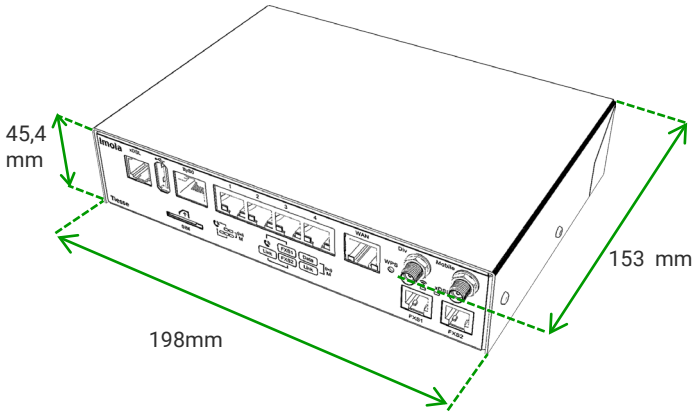
Packaging and wrapping	The packaging material of this product is ≈81% paper/cardboard, and the incidence of plastic packaging is about 19% or less.
	100% of the packaging material is recyclable
RAEE waste	For the correct disposal of Waste Electrical and Electronic Equipment (WEEE), pursuant to Article 26 of Legislative Decree No. 49 of 14 March 2014 'Implementation of Directive 2012/19/EU': contact raee@tiesse.com

ENVIRONMENT DATA

Operating temperature	–5° C / +50° C
Storage temperature	–40° C / +70° C
Maximum relative operating humidity	93% (non condensing)
Protection grade	IP40

SIZE and WEIGHT – IMOLA LX 5272-20

Machine body	198 x 153 x 45,4 (W x D x H mm)		
Weight	≈ 1750 gr *(maximum weight including packaging and accessories)*		
	Product	**Accessories**	**Packaging**
	≈ 1035 gr	≈ 610 gr	≈ 105 gr



Tiesse

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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.

Info: info@tiesse.com

Marketing & sales: marketing@tiesse.com

Tel. +39.0125.230544

www.tiesse.com

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