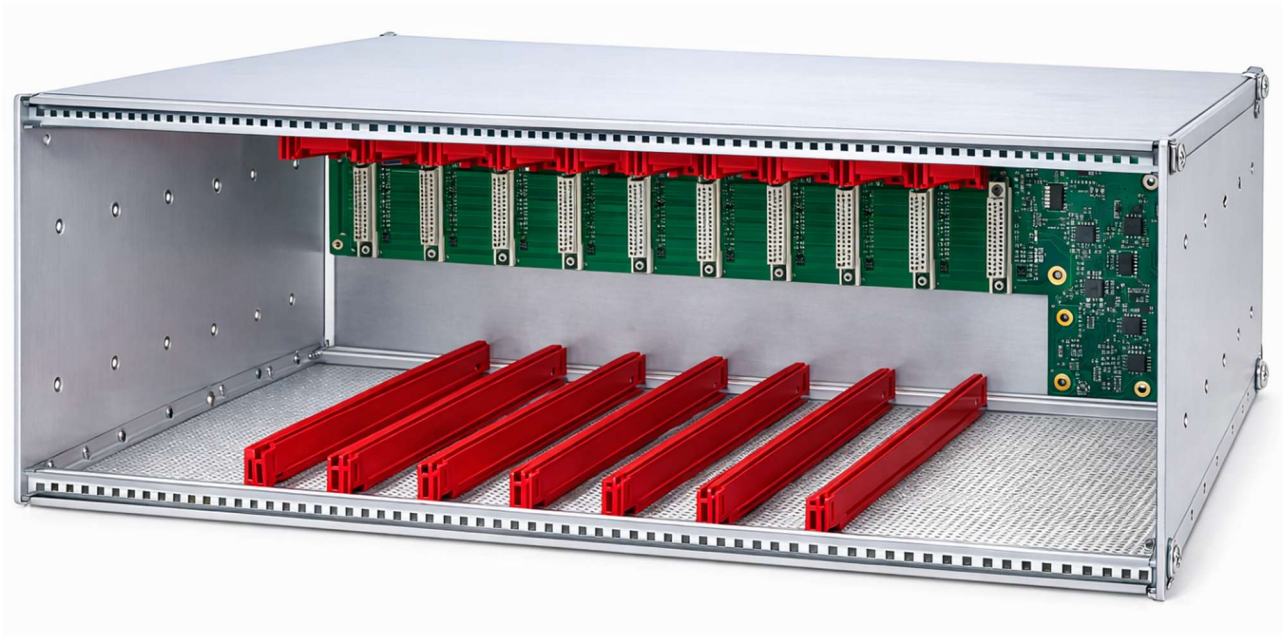
Lynxtester

GenerationRFID
EOL Test & Embedded Electronics



LYNX TESTER CHASSIS

Datasheet & User Manual

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Datasheet & User Manual

OVERVIEW

The Lynx Tester Chassis is a modular rack enclosure designed to host and interconnect up to 10 Lynx Relay boards.

It provides a clean and scalable mechanical and electrical platform for In-Circuit Test (ICT) and functional End-of-Line (EOL) modes, centralizing communication, power distribution, and measurement interfaces within a single compact system.

The chassis integrates a backplane, enabling seamless connection between the mounted boards and the host system.

All external connections are located on the rear panel to ensure a tidy and safe workspace on the front side.

The chassis has been designed for high integration density and low power consumption, offering an optimal balance between functionality, scalability and energy efficiency.

With dimensions of 435 × 130 × 300 mm (W × H × D), the chassis follows a compact 3U-style laboratory rack format. It combines mechanical robustness, expandability, and ease of integration, making it the core infrastructure of the Lynx testing ecosystem.

Its modular concept ensures ease of use, cost efficiency, and long-term scalability, providing an excellent price-to-performance ratio within the Lynx testing platform.

1. SYSTEM DESCRIPTION

The **Lynx Tester Chassis** is composed of a metallic enclosure, an integrated **backplane**, and a set of **guiding rails** that allow the insertion of up to **10 Lynx boards**.
Each slot provides both mechanical support and electrical connection through the backplane, ensuring quick installation and reliable contact.

At the rear of the chassis, the **connection panel** provides all external interfaces required for operation:

- **RJ45** connector for Ethernet communication.
- **DB9** connector for CAN communication.
- **VSUPPLY** and **VDUT** 2-pin terminal blocks for power input and DUT backline supply.
- **DMM** connectors (**V/Ω**, **COM**, **AMP**) for direct connection of measurement instruments.

Internally, the **green backplane PCB** distributes power (VSUPPLY and VDUT), communication lines (Ethernet/CAN), and DMM signals to each board slot.
The **red card guides** positioned on the top and bottom of the chassis ensure accurate alignment of the boards during insertion and protect both the connectors and the PCB edges.

This architecture allows multiple Lynx boards to operate simultaneously, sharing the same communication and power infrastructure while remaining individually addressable by the host system.

Functionally, the Lynx Tester Chassis acts as a **gateway** between the host software and the test boards. It converts communication frames between **Ethernet (LAN)** and **CAN**, enabling transparent data exchange and synchronized operation of all connected Lynx boards.

2. COMPATIBILITY WITH LYNX BOARD

The **Lynx Tester Chassis** is designed to host and interconnect any module from the **Lynx test board family**, providing a unified electrical and mechanical interface for all models.
Each Lynx board adds specific test capabilities, allowing the chassis to be configured as an **ICT**, **EOL functional tester**, or a **hybrid system**.

The following Lynx boards are fully compatible with the chassis backplane:

LYNX BOARD	MAIN FUNCTION	HIGHLIGHTS
Lynx 50	-	• 2 A solid-state relay matrix • 10 × VBatt / GND / open contacts • Controlled power injection for independent DUT lines • Voltage feedback per channel • Output up to +52 VDC
Lynx 53	-	• Fast solid-state relay 1:3 matrix • 24 independent channels • DUT pin isolation and control • External stimulus injection • Combines multiple DUT functions in a single board
Lynx 300	-	• 12 digital + 8 analog + 4 PWM channels • 16 configurable relays (up to 6 A) • Feedback for all DUT connections • Output up to +28 VDC
Lynx ICT	-	• 1:2 relay matrix with 50 channels • Impedance measurement between DUT pins • Combined operation with extended testers • Output up to +52 VDC

Integration benefits:

- All boards share the same **3 × 10 backplane connectors** for power, CAN, and DMM signals.
- Mixed configurations are supported — e.g. Lynx ICT + Lynx 50 in the same chassis.
- The chassis automatically distributes **VSUPPLY**, **VDUT**, **CAN**, and **DMM** lines across all slots.
- Modules are detected and managed by the **Lynx Tester Scheduler** software for seamless configuration.

3. TECHNICAL FEATURES

3.1. General characteristics

- **Chassis type:** metallic modular enclosure with integrated backplane
- **Board capacity:** up to **10 Lynx boards**
- **Format:** compact laboratory rack, approx. **435 × 130 × 300 mm (W × H × D)**
- **Mounting:** desktop or 19" rack (3U height equivalent)
- **Construction:** aluminum frame with perforated side panels for airflow
- **Cooling:** passive (natural convection)

3.2. Electrical distribution

- **VSUPPLY**: main power input that feeds all installed boards through the backplane.
- **VDUT**: secondary supply line for DUT (Device Under Test) power distribution.
- Both power rails are connected via **2-pin terminal blocks** located on the rear panel.

3.3. Communication interfaces

- **Ethernet (RJ45)**: connection between the chassis (and its boards) and the host system.
- **CAN (DB9)**: alternative communication interface following standard CAN wiring.
- The backplane routes Ethernet and CAN lines to each installed board.

3.4. Measurement interface

- **DMM connectors:** three rear banana jacks labeled **V/Ω**, **COM**, and **AMP**.
- These lines are routed through the backplane to allow direct measurement access from a Digital Multimeter or measurement system.

3.5. Mechanical integration

- **Guiding rails:** red plastic rails on the top and bottom align and secure the boards.
- **Backplane connectors:** gold-plated edge connectors at the rear ensure mechanical retention and electrical contact.
- **Maintenance:** boards can be inserted or removed without tools for fast configuration or replacement.

3.6. Software integration

The Lynx Tester Chassis is fully compatible with the **Lynx Tester Scheduler** software environment. This integration allows the user to configure, execute, and monitor test sequences across all installed boards from a single interface, simplifying operation and maintenance tasks.

4. TERMINOLOGY

The following terms and abbreviations are used throughout this document and the Lynx Tester ecosystem.

- **VSUPPLY** – Supply rail for Lynx boards.
- **VDUT** – DUT backline supply rail.
- **DMM** – Digital Multimeter.
- **ICT** – In-Circuit Test.
- **EOL** – End-of-Line.
- **CAN** – Controller Area Network.
- **RJ45** – Standard Ethernet connector.
- **Slot** – Connector for Lynx daughter boards (×10).
- **Backline** – Shared distribution bus for DUT supply and measurement.
- **Gateway** – Internal converter between Ethernet (host) and CAN (test boards).
- **Scheduler** – Lynx Tester software used to configure and execute test sequences.
- **SYNC** – Synchronization line shared among boards.
- **BL1 / BL2** – Backline signal pairs distributed across the backplane.
- **Host** – PC or controller that communicates with the chassis.

5. ELECTRICAL & ENVIRONMENTAL SPECIFICATIONS

5.1. Electrical characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	DESCRIPTION
Input supply voltage	V_{SUP}	11	12	13	VDC	Power supply for all installed board
DUT supply voltage	V_{DUT}	0	12	24	VDC	Power line distributed to DUT / Backline
Current per slot	I_{SLOT}	-	0.5	1.0	A	Typical consumption per Lynx board
Total current capacity	I_{TOTAL}	-	-	10	A	Max. current distributed across all slots
Backplane self-consumption	$P_{BACKPLANE}$	-	1	2	W	Power consumed by the backplane electronics

Notes:

- VSUP and VDUT share a common ground (GND).
- Each slot is protected by the board's internal circuitry; external fusing is recommended for high-current DUTs.
- Power input should come from a regulated 12 V DC source.

5.2. Environmental characteristics

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	DESCRIPTION
Operating temperature	T_{AMB}	0	-	+70	°C	Standard Ethernet speed
Storage temperature	T_{STO}	-20	-	+85	°C	Supported communication speeds

Notes:

- The chassis is intended for indoor laboratory or production environments.
- Avoid condensation or direct exposure to liquids and dust.
- Ensure adequate airflow around the chassis during continuous operation.

5.3. Communication protocol overview

The **Lynx Tester Chassis** manages communication between the **host software (Ethernet LAN)** and the **test boards (CAN bus)** through an internal gateway.
Each test command sent from the host is encapsulated into CAN frames that are distributed to all connected boards through the backplane.

Default communication parameters:

PARAMETER	DESCRIPTION	DEFAULT VALUE
IP address	Ethernet host interface	192.168.0.90
Port	TCP communication port	
Baud rate	CAN bus speed	500 kbps
Tx / Rx identifiers	Depends on the target board	-

Example – Typical communication flow

- Host → Ethernet frame → Lynx Tester Gateway → CAN frame → Lynx board

Example CAN identifiers:

- Tx ID (host → board): 1000 + (BoardSerial % 100)
- Rx ID (board → host): 1100 + (BoardSerial % 100)

Notes:

- CAN IDs and payload structures depend on the selected Lynx board (see individual datasheets).
- The Ethernet-to-CAN conversion layer is fully transparent to the user.

6. MECHANICAL INFORMATION

6.1. Dimensions and format

PARAMETER	SYMBOL	MAX.	UNIT	DESCRIPTION
Width		435	mm	External chassis width
Heigth	H	130	mm	External chassis height
Depth	D	300	mm	External chassis depth
Slot capacity	N	10	-	Number of available board slots
Slot pitch	-	30	mm aprox.	Center-to-center distance between slots
Board insertion depth	-	300	mm aprox.	Usable depth for Lynx boards
Weight		~4	kg	Without boards or cables

Notes:

- Dimensions are indicative and may vary slightly depending on manufacturing tolerances.
- The chassis can be used standalone on a bench or mounted in a **3U, 19" rack frame** using side brackets (optional).
- The front area remains open for board access and ventilation.

6.2. Construction

- **Frame:** Aluminum structure with front and rear reinforcement beams.
- **Panels:** Powder-coated steel, light gray finish.
- **Side walls:** Perforated for passive ventilation.
- **Rails:** Red plastic guiding rails on both top and bottom for each slot.
- **Backplane:** Green PCB mounted on the rear, with gold-plated edge connectors.
- **Rear panel:** Hosts all I/O and power connectors (Ethernet, CAN, VSUPPLY, VDUT, DMM).

6.3. Figures

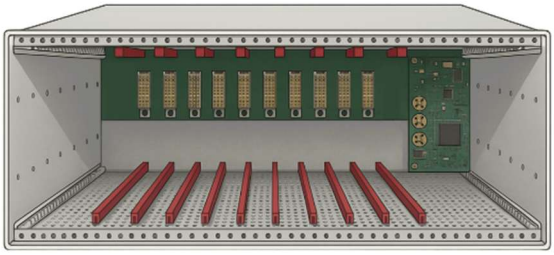


Figure 1. Lynx Tester Chassis (Front view)

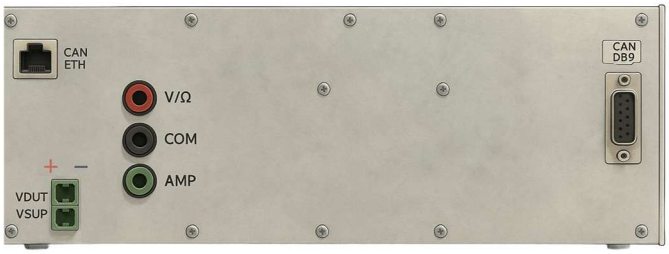


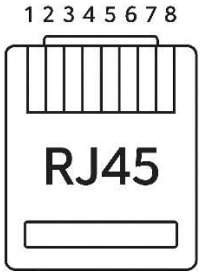
Figure 2. Lynx Tester Chassis (Rear view)

7. CONNECTIONS & PINOUT

All chassis connections are located on the **rear panel**, simplifying cable routing and keeping the front area clear for board access.

The following tables describe the function and pin assignment of each connector.

7.1. Ethernet (RJ45 connector)

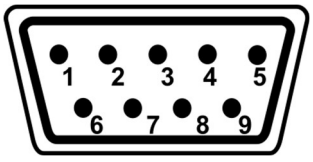


PIN	SIGNAL	DESCRIPTION
1	TX+	Transmit positive
2	TX-	Transmit negative
3	RX+	Receive positive
6	RX-	Receive negative
4, 5, 7, 8	-	Not connected

Type: RJ45 female connector (T568B standard)

Function: Ethernet communication with the host system

7.2. CAN bus (DB9 connector)



PIN	SIGNAL	DESCRIPTION
2	CAN_L	CAN Low
3	GND	Ground
7	CAN_H	CAN High
9	V+	Optional CAN bus power output
1, 4, 5, 6, 8	-	Not connected

Type: DB9 female connector

Baud rate: Default 500 kbps

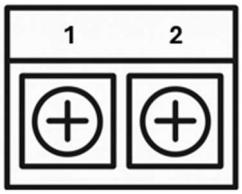
DMM connectors

Connector	Color	Signal	Description
V/Ω	Red	Voltage / Resistance measurement	Connected to DMM positive input
COM	Black	Common reference	DMM ground line
AMP	Black	Current measurement	Dedicated current path input

Type: 4 mm safety banana jacks

Function: External Digital Multimeter connection routed to the backplane for shared measurement access.

7.3. Power connectors



Connector	Pin	Signal	Description
VSUPPLY	1	V+	Main board power input (12 V DC nominal)
	2	GND	Common ground
VDUT	1	GND	DUT / Backline supply
	2	V+	Common ground

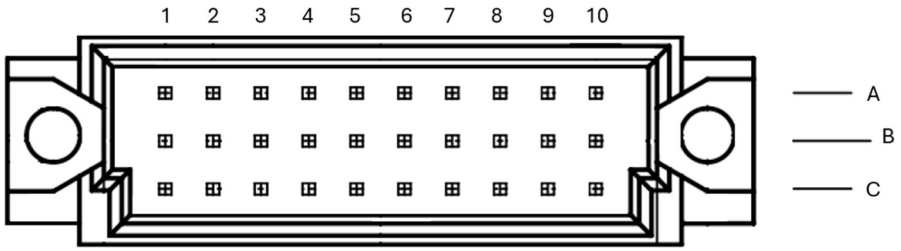
Type: 2-pin green terminal block connector

Recommendation: use 1.5–2.5 mm^2 cables for reliable contact

Note: VSUPPLY and VDUT share the same ground reference

7.4. Board slot connector (Backplane)

Each Lynx board connects to the backplane through a **three-row, 30-pin male connector (3 × 10 pins)**.
The table below defines the signal assignment for each row (A, B, C) and pin number.



Signal	Rows / Pins	Description
CAN_L	A1	CAN bus low line
CAN_H	B1	CAN bus high line
3V3	A2	Logic reference voltage
SYNC	C2	Synchronization signal between boards
VSUP	A4, B4, C4	Main supply rail for all boards
VDUT	A6, B6, C6	DUT / Backline power rail
GND	A3, B3, C3, A5, B5, C5	Common ground
BL1+	A8, B8, C8	Backline 1 positive
BL1-	A7, B7, C7	Backline 1 negative
BL2+	A10, B10, C10	Backline 2 positive
BL2-	A9, B9, C9	Backline 2 negative
Reserved / NC	B2, C1	Not connected

Connector type: 30-pin (3 × 10) male, compatible with standard Lynx board connectors.

Function: Provides power, communication, synchronization, and Backline signals to each installed board.

8. INSTALLATION & USAGE

8.1. Safety and handling notes

- The Lynx Tester Chassis is intended for **indoor laboratory or production use**.
- Ensure that the **power supplies are disconnected** before inserting or removing any Lynx board.
- Avoid contact with live circuits or exposed metal parts during operation.
- Provide adequate airflow around the chassis for passive cooling.
- Do not expose the chassis to liquids, excessive dust, or vibration.

8.2. Installation steps

1. Positioning

- Place the chassis on a stable surface or mount it in a compatible 3U rack frame (optional).
- Verify that the ventilation openings on both sides remain unobstructed.

2. Connecting power

- Connect a regulated **12 V DC source** to the **VSUPPLY** terminal (V+, GND).
- Connect the **VDUT** terminal (V+, GND) if a separate DUT or Backline supply is required.
- Ensure both supplies share a **common ground**.

3. Communication setup

- Use the **RJ45** connector to link the chassis (and its boards) to the host computer via Ethernet.
- Default CAN bitrate: **500 kbps**.
- Default Ethernet IP address (if applicable): **192.168.0.90**.

4. DMM connection (optional)

- Connect the Digital Multimeter leads to the corresponding banana jacks (**V/Ω**, **COM**, **AMP**).
- The measurement lines are routed through the backplane to the shared Backline rails.

5. Inserting the boards

- Align each Lynx board with the **red guiding rails** and slide it gently toward the backplane until it locks into place.
- Ensure that each board is fully seated in its connector.
- Boards can be inserted or removed without tools when the chassis is powered off.

6. Power-up and verification

- Once all boards and connections are secured, power on the VSUPPLY (and VDUT if used).
- Check that the system and host communication are established.
- Verify the correct operation of the connected boards via the host software or test interface.

8.3. Communication and configuration

8.3.1. Communication with the chassis

The Lynx Tester Chassis communicates with the host PC through **Ethernet (RJ45)** or **CAN (DB9)**.
The internal backplane gateway routes all messages between the host software and the Lynx boards.

PC requirements

- Operating system: Windows 10 or later (64-bit).
- Ethernet interface: 100 Mbps minimum.
- Software: *Lynx Tester Scheduler* or compatible host application.
- Administrative rights may be required for initial network configuration.

Address configuration

- The Ethernet **MAC address** is fixed and factory-programmed (not user-modifiable).
- The **IP address** can be changed using the *Lynx Tester Scheduler* software or via a dedicated configuration tool.
- The **CAN identifiers (Tx/Rx ID)** depend on the installed board type and are defined in each board's firmware; these are not modified at the chassis level.

Configuration steps

1. Connect the chassis to the PC using the RJ45 Ethernet cable.
2. Ensure the PC is in the same subnet (192.168.0.x).
3. Launch the *Lynx Tester Scheduler* software to detect the chassis automatically.
4. (Optional) Update the IP address if needed for network integration.
5. Power on the chassis and verify communication.

Common issues

SYMPTOM	POSSIBLE CAUSE	SOLUTION
Chassis not detected over Ethernet	Wrong IP or network mismatch	Check IP configuration and subnet
No CAN communication	Wron ID or baud rate mismatch	Verify board firmware settings
Power LEDs off	No VSUPPLY input	Verify main power connection

9. APPLICATIONS

The **Lynx Tester Chassis** is designed to serve as the mechanical and electrical backbone of the Lynx testing ecosystem. Depending on the installed Lynx boards, the Lynx Tester Chassis can operate in multiple modes:

- EOL Functional Tester, for validating the behavior of complete assemblies.
- Low-Cost ICT Tester, for in-circuit testing of electronic components.
- Combined Functional / ICT Tester, when LynxICT boards are used together with other Lynx modules.

9.1. In-Circuit Test (ICT) configuration

In a typical ICT setup, the chassis hosts several **LynxICT boards**, each responsible for a section of the Device Under Test (DUT).

The **host PC** communicates via Ethernet or CAN, sending test sequences through the chassis backplane to the installed boards.

All boards share the same **VSUPPLY**, **VDUT**, and **DMM** lines, ensuring synchronized operation.

Key characteristics:

- Centralized communication via Ethernet/CAN.
- Shared power and measurement rails.
- Modular scalability (1 to 10 boards).

9.2. End-of-line (EOL) test configuration

For EOL testing environments, the chassis can be used as a **gateway and distribution hub**, linking the test controller to multiple dedicated test modules.

The **VDUT** rail provides power to the DUT, while the **DMM connectors** allow direct measurement of voltage, current, or resistance through the Backline.

Key characteristics:

- Direct DMM integration for automated test benches.
- Support for high-current DUT lines via VDUT.
- Clean rear cabling layout ideal for production lines.

9.3. Laboratory or validation setup

In a laboratory environment, the chassis serves as a flexible **test development platform**, allowing engineers to prototype, validate, and compare Lynx boards under controlled conditions.
Its modular design enables quick swapping of boards and easy access to measure points.

Key characteristics:

- Rapid board insertion/removal without tools.
- Access to shared measurement and communication lines.
- Compact form factor for benchtop integration.

10. CONTACT & SUPPORT

For additional information, technical support, or documentation related to the **Lynx Tester Chassis** and the Lynx product family, please contact the Lynx development team.

Technical support

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