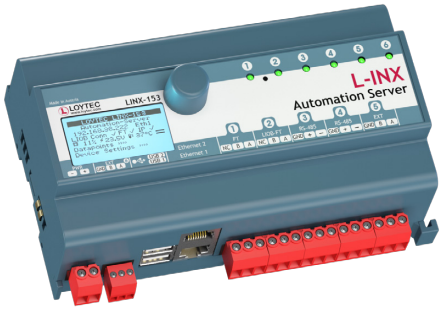
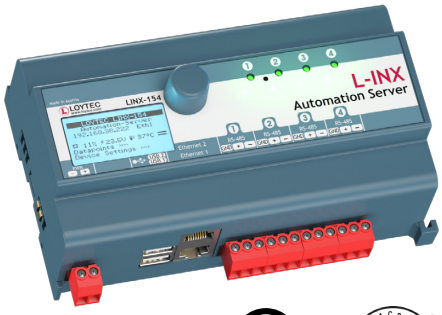
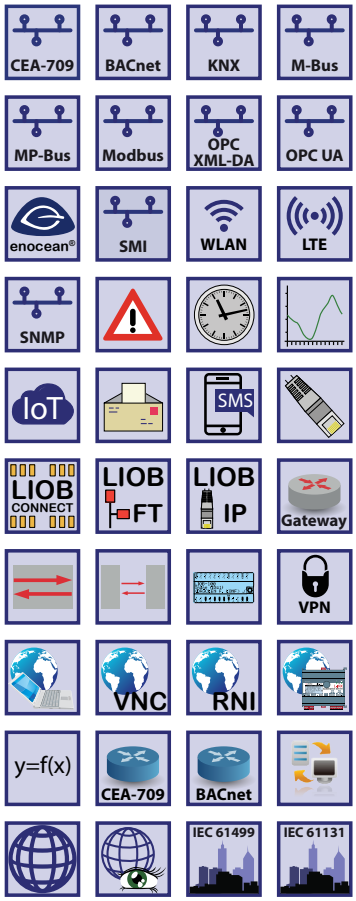
LINX-153, LINX-154

Datasheet #89047924







The L-INX Automation Servers LINX-153 and LINX-154 are powerful, programmable automation stations, which can be programmed by L-STUDIO. The L-INX Automation Servers can host user specific graphical pages and can integrate physical I/Os through L-IOB I/O Modules via LIOB-Connect, LIOB-FT, or LIOB-IP. The LINX-154 can only be extended by LIOB-IP. Local operation and override is provided by the built-in jog dial and the backlit display (128x64 pixels). Device and data point information is shown on the display via symbols and in text format.

The powerful Automation Servers provide connectivity functions to concurrently integrate CEA-709 (LonMark Systems), BACnet, KNX, Modbus, and M-Bus subsystems. LonMark Systems can be integrated via IP-852 (Ethernet/IP) or TP/FT-10. BACnet integration is supported through BACnet/IP (Ethernet/IP) or BACnet MS/TP (RS-485). LINX-153 Automation Servers feature an integrated Remote Network Interface (RNI) to access the TP/FT-10 channel on the device via Ethernet/IP. LINX-153 and LINX-154 Automation Servers feature a BACnet/SC router, BACnet/IP router including BBMD as well as Slave-Proxy functionality, providing the complete feature set of the corresponding L-IP devices.

The LINX-153 and LINX-154 implement the BACnet Building Controller (B-BC) profile and are BTL certified. In addition, the LINX-15x provide connectivity to KNXnet/IP (only LINX-153) and Modbus TCP via Ethernet/IP and to Modbus RTU/ASCII via RS-485. M-Bus and KNX TP1 (only for LINX-153) device integration needs optional interface modules.

The gateway functionality allows data communication between all communication technologies available on the device. Different technology data points are mapped through Local Connections on the device. The mapping of different technology data points on distributed devices is supported by Global Connections. L-INX Automation Servers also support Smart Auto-Connect™ – the automatic generation of connections to substantially reduce engineering efforts and cost. All technology data points are automatically created as OPC XML-DA and OPC UA data points.

Each L-INX Automation Server is equipped with two Ethernet ports. It can either be configured to use the internal switch to interconnect the two ports or every port is configured to work in a separate IP network.

When the Ethernet ports are configured for two separate IP networks, one port can be connected for instance to a WAN (Wide Area Network) with enabled network security (HTTPS) while the second port can be configured to be connected to an insecure network (LAN) where the standard building automation protocols like BACnet/IP, LON/IP, or Modbus TCP are present. These devices also feature firewall functionality of course to isolate particular protocols or services between the ports. The built-in VPN function provides for simple VPN setup and secure access to remote sites. The LTE-800 interface enables wireless access to remote sites through a mobile carrier.

Using the internal switch, a daisy chained line topology of up to 20 devices can be built, which reduces costs for network installation. The IP switch also allows the setup of a redundant Ethernet installation (ring topology), which increases reliability. The redundant Ethernet topology is enabled by the Rapid Spanning Tree Protocol (RSTP), which is supported by most managed switches.

The L-INX devices provide fully featured AST™ functionality (Alarming, Scheduling, and Trending) and can be integrated perfectly into the L-WEB System.

IoT Integration

The IoT function (Node.js) allows connecting the system to almost any cloud service, either for uploading historical data to analytics services, telemetry using MQTT, delivering alarm messages to alarm processing services or operating parts of the control system over a cloud service (e.g., scheduling based on Web calendars or booking systems). Processing Internet information such as weather data in forecast-based control is also possible. Finally, the JavaScript kernel also allows implementing serial protocols to non-standard equipment in primary plant control.

L-INX Automation Server

LINX-153, LINX-154

Features

- Programmable with L-STUDIO IEC 61131-3 and IEC 61499
- Room controller for up to 8 room segments
- Physical inputs and outputs with L-IOB I/O Modules (LIOB-10x/11x, LIOB-15x, and LIOB-45x/55x/56x for LINX-153) (LIOB-45x/55x/56x for LINX-154)
- 128x64 graphic display with backlight
- Local and remote access to information about device status and data points
- Manual operation using the jog dial or VNC client
- Alarming, Scheduling, and Trending (AST™)
- Node.js support for easy IoT integration (e.g. Google calendar, MQTT, Alexa & friends, multimedia equipment,…)
- Event-driven e-mail notification
- Math objects to execute mathematical operations on data points
- Stores customized graphical pages
- Visualization of customized graphical pages through LWEB-900 (Building Management), LWEB-803 (Monitoring and Control), or LWEB-802 (Web Browser)
- Built-in OPC XML-DA and OPC UA server
- Dual Ethernet/IP interface
- Access to network statistics
- Compliant with ANSI/ASHRAE 135-2012 and ISO 16484-5:2012 standard
- Supports BACnet MS/TP, BACnet/IP and BACnet/SC
- BACnet Client Function (Write Property, Read Property, COV Subscription)
- BACnet Client Configuration with configuration tool (scan and EDE import)
- B-BC (BACnet Building Controller) functionality, BTL certified
- Compliant with CEA-709, CEA-852, and ISO/IEC 14908 Standard (LonMark System)
- Supports TP/FT-10 (only LINX-153)
- Support of dynamically created or static NVs
- Support of user-defined NVs (UNVTs) and Configuration Properties (SCPTs, UCPTs)
- Remote Network Interface (RNI) with 2 MNI devices (only LINX-153)
- Integrated BACnet/IP to BACnet/SC and BACnet MS/TP Router including BBMD as well as Slave-Proxy functionality
- Integrated IP-852 to TP/FT-10 Router (only LINX-153)
- KNXnet/IP, connection to KNX TP1 through LKNX-300 Interface (only LINX-153)
- M-Bus Master according to EN 13757-3, connection via optional M-Bus Converter (only LINX-153) (L-MBUS20 or L-MBUS80)
- Gateway functions including Smart Auto-Connect™
- Modbus TCP and Modbus RTU/ASCII (Master or Slave)
- Integrated web server for device configuration and monitoring data points
- Configurable via TP/FT-10 (only LINX-153) or Ethernet/IP
- Connection to EnOcean wireless devices via LENO-80x Interface (only LINX-153)
- Supports SMI (Standard Motor Interface) through LSMI-800 or LSMI-804 (only LINX-153)
- Supports MP-Bus through LMPBUS-804 Interface (only LINX-153)
- Supports WLAN through LWLAN-800 Interface
- Supports LTE through LTE-800 Interface
- Supports RS-232 through LRS232-802 Interface (only LINX-153)
- Stores user-defined project documentation

LINX-153, LINX-154

Specifications LINX-153		
Dimensions (mm)	159 x 100 x 75 (L x W x H), 9 DU, DIM053	
Installation	DIN rail mounting following DIN 43880, top hat rail EN 50022	
Purpose of control	Operating control	
Construction of control	Independently mounted control	
Feature of automatic action	Type 1	
Operating conditions	0 °C to 50 °C, 10 – 90 % RH, noncondensing, degree of protection: IP40, IP20 (terminals), pollution degree 2	
Power supply	24 V DC/ V AC SELV ±10 % via L-POW, or with an external power supply, typ. 2.5 W	
Rated Impulse Voltage	330 V	
Interfaces (LINX-153)	2 x Ethernet (100Base-T): OPC XML-DA, OPC UA, LonMark IP-852, BACnet/IP, BACnet/SC LIOB-IP, KNXnet/IP, Modbus TCP (Master or Slave), HTTP, FTP, SSH, HTTPS, Firewall, VNC, SNMP 1 x LIOB-Connect 1 x TP/FT-10 (LonMark System) 1 x LIOB-FT	2 x RS-485 (ANSI TIA/EIA-485): BACnet MS/TP or Modbus RTU/ASCII (Master or Slave) 2 x EXT: M-Bus, Master EN 13757-3 (needs L-MBUS20 or L-MBUS80) or KNX TP1 (needs LKNX-300) or SMI (needs LSMI-800) 2 x USB-A: WLAN (needs LWLAN-800), EnOcean (needs LENO-80x), SMI (needs LSMI-804), MP-Bus (needs LMPBUS-804) LTE (needs LTE-800) RS-232 (needs LRS232-802)
L-IOB I/O Modules	Up to 24 L-IOB I/O Modules in any combination of type LIOB-10x/11x, LIOB-15x, and LIOB-45x/55x/56x	
Remote Network Interface	1 RNI with 2 MNI devices	
BACnet/IP Router	1	
CEA-709 Router	1	
Program cycle time	Down to 10 ms	
Max. number of Rooms/Segments	8	

Specifications LINX-154		
Dimensions (mm)	159 x 100 x 75 (L x W x H), 9 DU, DIM054	
Installation	DIN rail mounting following DIN 43880, top hat rail EN 50022	
Purpose of control	Operating control	
Construction of control	Independently mounted control	
Feature of automatic action	Type 1	
Operating conditions	0 °C to 50 °C, 10 – 90 % RH, noncondensing, degree of protection: IP40, IP20 (terminals), pollution degree 2	
Power supply	24 V DC/ V AC SELV ±10 % via L-POW, or with an external power supply, typ. 2.5 W	
Rated Impulse Voltage	330 V	
Interfaces (LINX-154)	2 x Ethernet (100Base-T): OPC XML-DA, OPC UA, LonMark IP-852, BACnet/IP, BACnet/SC LIOB-IP, Modbus TCP (Master or Slave), HTTP, FTP, SSH, HTTPS, Firewall, VNC, SNMP	4 x RS-485 (ANSI TIA/EIA-485): BACnet MS/TP or Modbus RTU/ASCII (Master or Slave) 2 x USB-A: WLAN (needs LWLAN-800) LTE (needs LTE-800)
L-IOB I/O Modules	Up to 24 L-IOB I/O Modules in any combination of type LIOB-45x/55x/56x	
BACnet/IP Router	1	
Program cycle time	Down to 10 ms	
Max. number of Rooms/Segments	8	

L-INX Automation Server

LINX-153, LINX-154

Runtime licenses		
Type	**LINX-153**	**LINX-154**
Programming, Tools	L-STUDIO (IEC 61131-3 and IEC 61499 based), L-INX Configurator	
License	L-STUDIO: included	L-STUDIO: included

Resource limits LINX-153			
Total number of data points	30 000	E-mail templates	100
OPC data points	10 000	Math objects	100
BACnet objects	2 000 (analog, binary, multi-state)	Alarm logs	10
BACnet client mappings	5 000	M-Bus data points	1 000
BACnet calendar objects	25	Modbus data points	2 000
BACnet scheduler objects	100 (64 data points per object)	MP-Bus devices (per channel)	16
BACnet notification classes	32	KNX TP1 data points	1 000
Trend logs (BACnet or generic)	512 (13 000 000 entries, ≈ 200 MB)	KNXnet/IP data points	1 000
Total trended data points	2 000	Connections (Local / Global)	2 000 / 250
CEA-709 network variables (NVs)	2 000	Number of L-WEB clients	32 (simultaneously)
CEA-709 Alias NVs	2 000	LIOB I/O Modules	24
CEA-709 External NVs (polling)	2 000	LIOB Terminals (non-local)	600
CEA-709 address table entries	1 000 (non-ECS mode: 15)	Number of EnOcean devices	100
LonMark Calendars	1 (25 calendar patterns)	EnOcean data points	1 000
LonMark Schedulers	100	SMI devices (per channel)	16
LonMark Alarm Servers	1		

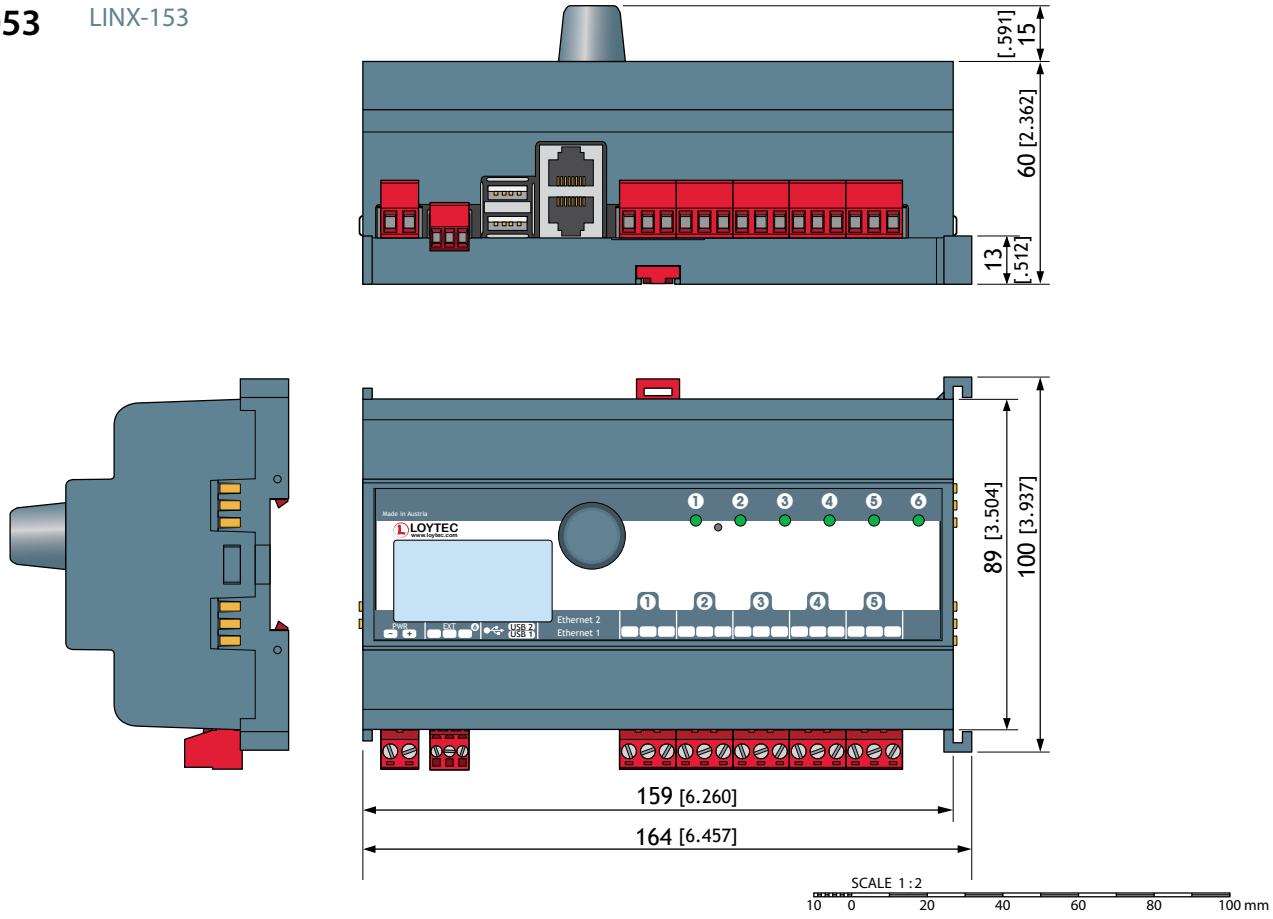
Resource limits LINX-154			
Total number of data points	30 000	CEA-709 address table entries	1 000 (non-ECS mode: 15)
OPC data points	10 000	LonMark Calendars	1 (25 calendar patterns)
BACnet objects	2 000 (analog, binary, multi-state)	LonMark Schedulers	100
BACnet client mappings	5 000	LonMark Alarm Servers	1
BACnet calendar objects	25	E-mail templates	100
BACnet scheduler objects	100 (64 data points per object)	Math objects	100
BACnet notification classes	32	Alarm logs	10
Trend logs (BACnet or generic)	512 (13 000 000 entries, ≈ 200 MB)	Modbus data points	5 000
Total trended data points	2 000	Connections (Local / Global)	2 000 / 250
CEA-709 network variables (NVs)	2 000	Number of L-WEB clients	32 (simultaneously)
CEA-709 Alias NVs	2 000	L-IOB I/O Modules	24
CEA-709 External NVs (polling)	2 000	LIOB Terminals (non-local)	600

Order number	Product description
LINX-153	BACnet & CEA-709 Automation Server with LIOB-Connect and 61131-3 programming in L-STUDIO
LINX-154	BACnet Automation Server with 4 RS-485 channels
L-STUDIO	Development and integration platform for programmable LOYTEC controllers
LIOB-A2	L-IOB Adapter 2 to split the LIOB-Connect bus using 4-wire cables
LIOB-A4	L-IOB Adapter 4 to split the LIOB-Connect bus using RJ45 network cables
LIOB-A5	L-IOB Adapter 5 to terminate the LIOB-Connect bus
LIOB-100	LIOB-Connect I/O Module: 8 UI, 2 DI, 2 AO, 9 DO (5 x Relay 6 A, 4 x Triac 0.5 A)
LIOB-101	LIOB-Connect I/O Module: 8 UI, 16 DI
LIOB-102	LIOB-Connect I/O Module: 6 UI, 6 AO, 8 DO (8 x Relay 6 A)
LIOB-103	LIOB-Connect I/O Module: 6 UI, 6 AO, 5 DO (5 x Relay 16 A)
LIOB-110	LIOB-Connect I/O Module: 20 Universal I/O (IO)
LIOB-112	LIOB-Connect I/O Module: 40 Universal I/O (12 optionally with 4-20 mA Current Output)
LIOB-150	LIOB-FT I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Relay 6 A, 4 x Triac 0.5 A)
LIOB-151	LIOB-FT I/O Module: 8 UI, 12 DI
LIOB-152	LIOB-FT I/O Module: 6 UI, 6 AO, 8 DO (8 x Relay 6 A)
LIOB-153	LIOB-FT I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)
LIOB-154	LIOB-FT I/O Module: 7 UI, 4 AO, 7 DO (5 x Relay 6 A, 2 x Triac 0.5 A), 1 Pressure Sensor
LIOB-450	LIOB-IP852 I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Relay 6 A, 4 x Triac 0.5 A)
LIOB-451	LIOB-IP852 I/O Module: 8 UI, 12 DI
LIOB-452	LIOB-IP852 I/O Module: 6 UI, 6 AO, 8 DO (8 x Relay 6 A)
LIOB-453	LIOB-IP852 I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)
LIOB-454	LIOB-IP852 I/O Module: 7 UI, 4 AO, 7 DO (5 x Relay 6 A, 2 x Triac 0.5 A), 1 Pressure Sensor
LIOB-550	LIOB-BIP I/O Module: 8 UI, 2 DI, 2 AO, 8 DO (4 x Relay 6 A, 4 x Triac 0.5 A)
LIOB-551	LIOB-BIP I/O Module: 8 UI, 12 DI
LIOB-552	LIOB-BIP I/O Module: 6 UI, 6 AO, 8 DO (8 x Relay 6 A)
LIOB-553	LIOB-BIP I/O Module: 6 UI, 6 AO, 5 DO (4 x Relay 16 A, 1 x Relay 6 A)
LIOB-554	LIOB-BIP I/O Module: 7 UI, 4 AO, 7 DO (5 x Relay 6 A, 2 x Triac 0.5 A), 1 Pressure Sensor
LIOB-560	LIOB-BIP I/O Module: 20 Universal I/O (IO)
LIOB-562	LIOB-BIP I/O Module: 40 Universal I/O, (12 optionally with 4-20 mA current output)
LPOW-2415A	LIOB-Connect power supply unit, 24 V DC, 15 W
LPOW-2415B	Power supply unit with power connector 24 V DC, 15 W
L-MBUS20	M-Bus Level Converter, Interface for up to 20 M-Bus devices
L-MBUS80	M-Bus Level Converter, Interface for up to 80 M-Bus devices
LKNX-300	KNX interface to connect KNX TP1 devices
LENO-800	EnOcean Interface 868 MHz Europe
LENO-801	EnOcean Interface 902 MHz USA/Canada
LENO-802	EnOcean Interface 928 MHz Japan
LWLAN-800	Wireless LAN Interface IEEE 802.11bgn
LMPBUS-804	MP-Bus interface for 16 devices per channel, up to 4 channels
LSMI-800	Standard Motor Interface for 16 motors via EXT port
LSMI-804	Standard Motor Interface for 64 motors, 4 SMI channels via USB
LTE-800	LTE Interface
LRS232-802	USB to 2 x RS-232 Interface

Dimensions of the devices in mm and [inch]

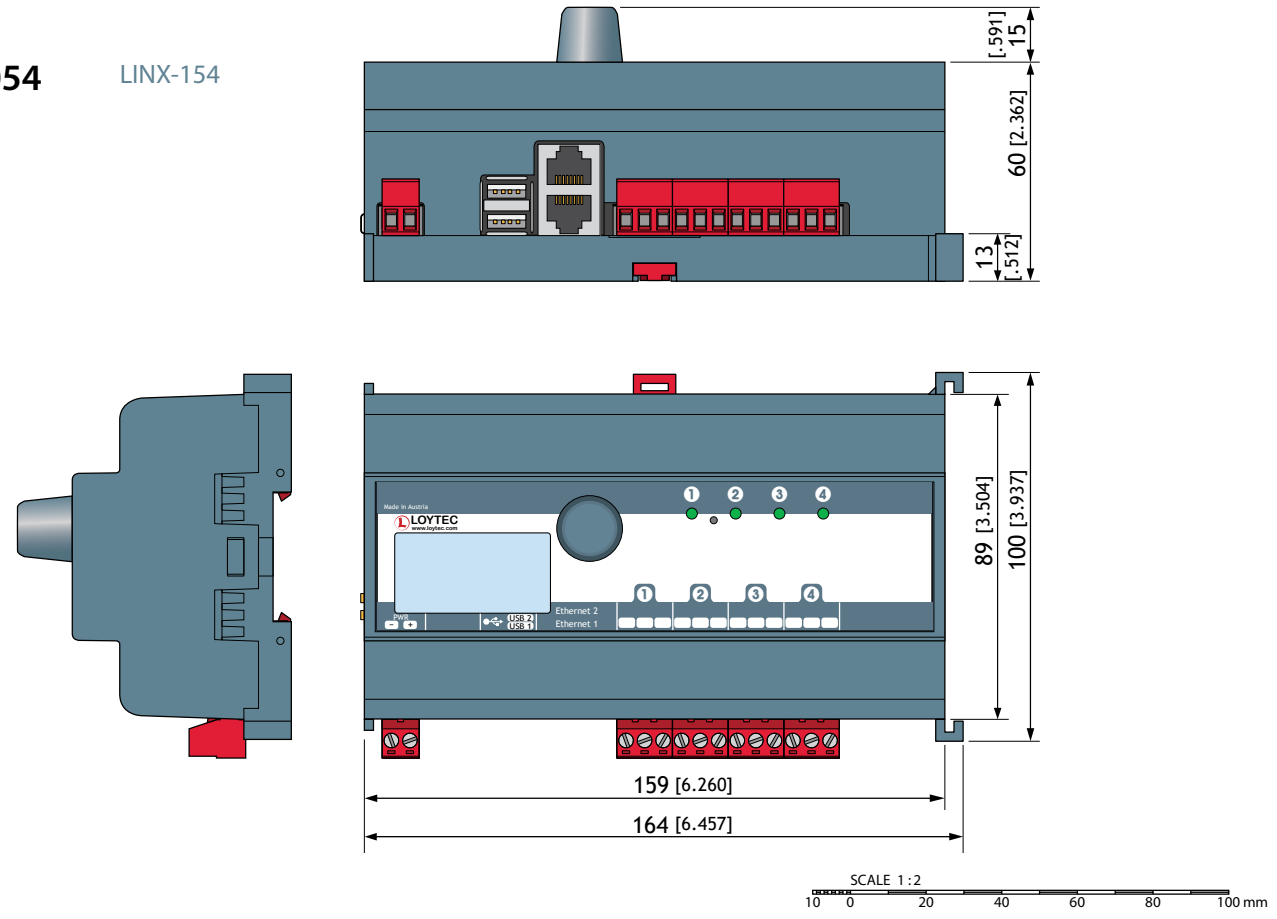
DIM053

LINX-153



DIM054

LINX-154



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