INSTRON®

Labtronic EVO®

The pioneering product family

The solution for servo-hydraulic components and test systems



POWERED BY RSLabSite® modulogic

Disclaimer

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About Instron GmbH

Instron GmbH with its highly skilled employees is your competent partner for pioneering testing technology **in over 50 countries**. With comprehensive know-how, Instron GmbH develops **future-proof solutions** that will continue to meet the highest industry standards for years to come. We are one of the world's leading manufacturers of flexible component test rigs and test systems for the simulation of operation loads.

Instron GmbH draws on **more than 100 years of experience** in the development of test systems for automotive, the railroad industry, shipbuilding, construction, wind power and aerospace. Innovative developments in mechanical engineering, electrical engineering, measurement and control technology are reflected in the system solutions of customer-oriented test benches.

We strive to meet a **standard of superior quality, sustainability, and customer satisfaction** at every one of our locations. We continue to work in line with the guiding principle **"Made in Germany"**. In order to meet this quality standard, our value creation process is concentrated in Germany.

The Darmstadt location, with its more than 70 years of experience in the field of servo-hydraulic load simulation, has developed into a core competency center.

By selecting our testing systems, you cover a wide range of requirements. These range from test rigs for single axle component testing to complex simulation of superimposed loads and crash simulation systems.

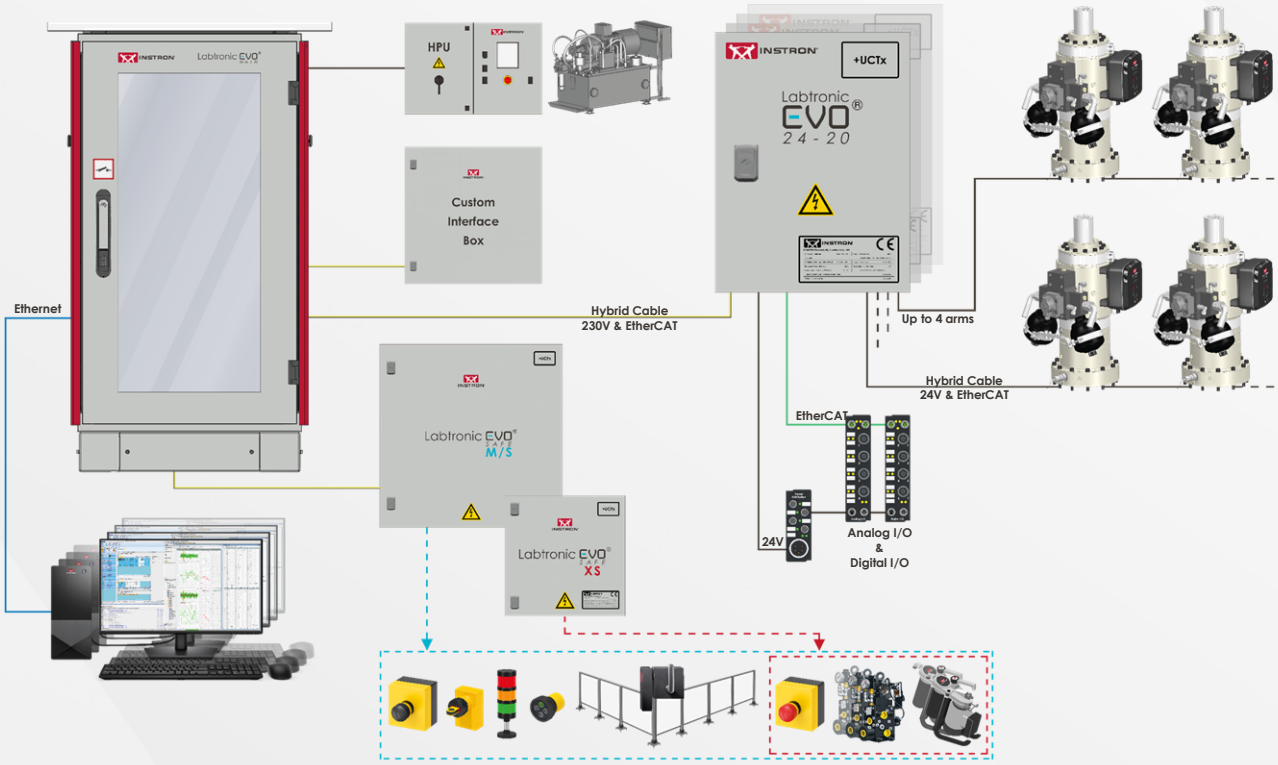
With our control software likewise, we emphasize domestic value creation. That's why we develop and program the software RS***LabSite***® modulogic exclusively at our Darmstadt site.



Labtronic EVO®

The pioneering product family

In collaboration with a group of experts from German OEMs and Tier 1, we have now created the new pioneering Labtronic **EVO®** – allowing users to operate servo-hydraulic components and system tests more flexible than ever before.



The Labtronic **EVO®** offers:

- All the necessary electronic hardware components for operating simple test setups through to complex test systems
- Backwards compatible with existing Labtronic® 8800***ml***
- Step-wise renewal, replacement or expansion of existing Labtronic® 8800***ml*** components
- Fully compatible with Instron RS***LabSite***® modulogic 2.8 or later
- Modern, transparent laboratory safety concept
- Long-term service life and investment security

The decentralized architecture of the Labtronic **EVO®** uses the proven EtherCAT fieldbus technology and enables a structured and clear layout of the test rig electronics with short analog cables.

Labtronic EVO® *CORE*

The center of power and performance

The Labtronic **EVO®** ***CORE*** is the center of the product family Labtronic **EVO®**. The Labtronic **EVO®** ***CORE*** provides the computing power for up to 8 control channels and establishes the EtherCAT interface to the other components of the product family Labtronic **EVO®**. Up to 3 Labtronic **EVO®** ***CORE*** can be installed in a compact control cabinet format.

Features:

- Connection of the individual Labtronic **EVO®** ***CORE*** with each other or with existing PCMs via optical link
- Integration into networks and buses, e.g. with CAN bus
- HIL, Hardware in the Loop
- Integration of real-time capable devices via EtherCAT (according to IEC 61158)



- Sampling rate up to 10 kHz for improved continuous control behavior
- Multi-channel data acquisition with a consistently high control cycle of 10 kHz, independent of the number of channels
- Backwards compatible with Labtronic® 8800***ml***
- Suitable for new installations, extensions and retrofits

Technical Data:

Type	Labtronic **EVO®** ***CORE*** (2U rack mount)
additional cards	Optical link card
Dimension	19“ rack mountable
Voltage [V]	230 V ± 10 %
Wattage [W]	350 W
Frequency [Hz]	50/60 Hz ± 4 %

Labtronic EVO® *MAIN*

The compact cabinet format

The Labtronic **EVO®** ***MAIN*** is your compact housing for up to 3 Labtronic **EVO®** ***CORE*** and UPS. It combines optimal usability with a timeless design and provides reliable protection against environmental factors like dust, moisture, temperature fluctuations, and unauthorized access.





Features:

- Max. 3 Labtronic **EVO®** ***CORE***
- Uninterruptible power supply (UPS)
- Main switch
- Common Labtronic **EVO®** ***CORE*** switch-on
- Supply for up to 4 24 V Distribution Boxes
- Supply for up to 3 Labtronic **EVO®** ***SAFE*** control cabinets
- Enclosure fan cooling

Labtronic EVO® *24-10 & 24-20*

24 V Distribution box - perfectly controlled in one box

Each Labtronic **EVO®** ***LINK*** is connected via a hybrid cable with the 24 V Distribution box. This converts from 230 V AC to 24 V DC supply voltage. Two versions for either 10 A or 20 A maximal supply current are available:
Labtronic **EVO®** ***24- 10*** and/or
Labtronic **EVO®** ***24-20***.

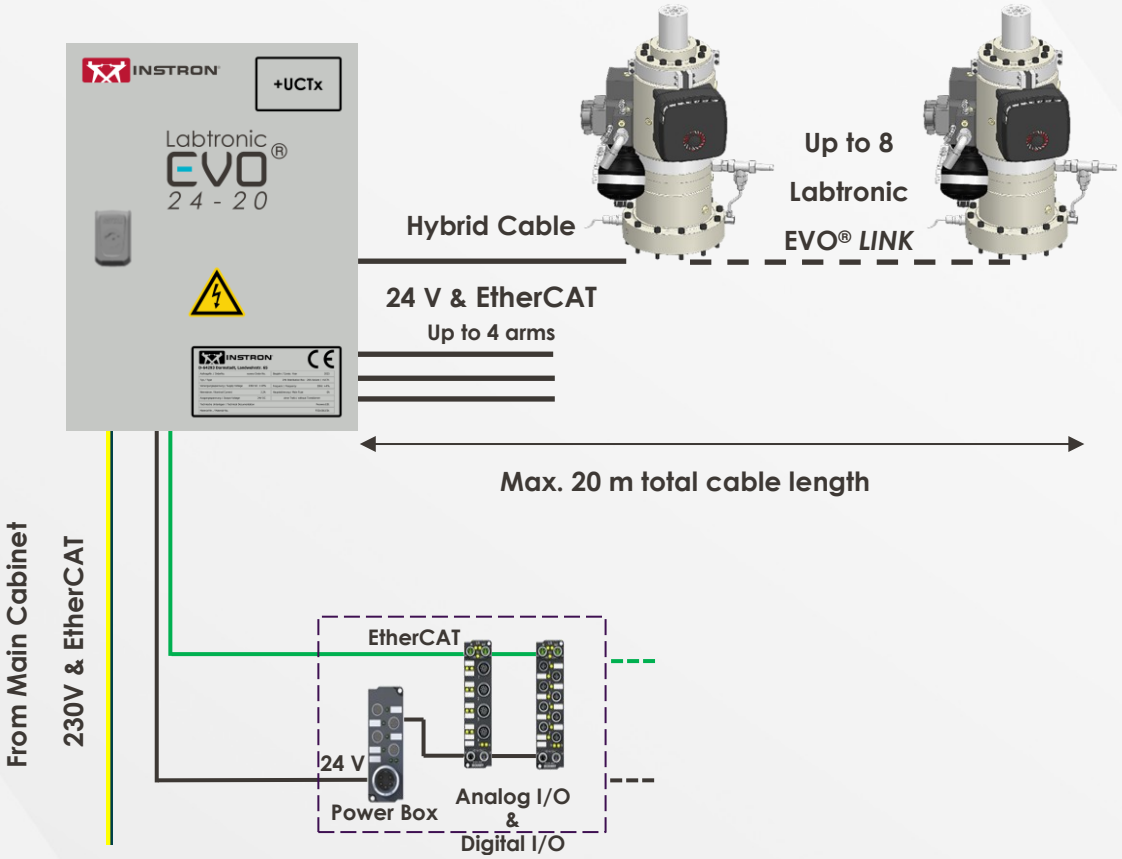
The Labtronic **EVO®** 24 V Distribution box not only supplies the 24 V for the Labtronic **EVO®** ***LINK***, but also for additional digital and analog I/Os. An integrated EtherCAT switch distributes the EtherCAT signal to the connected devices and extends the EtherCAT bus. The 24 V Distribution box is part of a system and cannot be operated independently. It can also be used as an individual component for system expansions.



Technical Data:

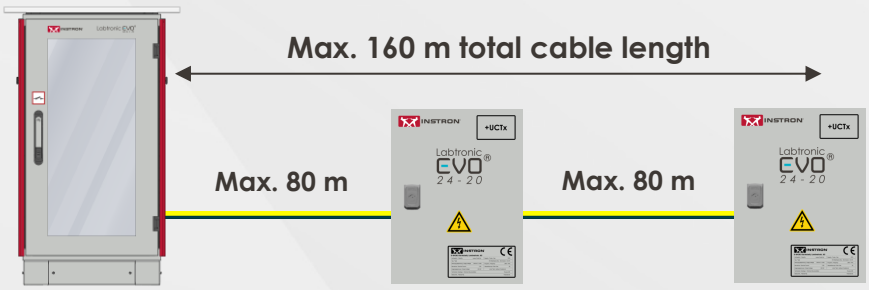
	10 A variant	**20 A variant**
Voltage [V] (Supply)	230 V ±10%	
Current [A] (Supply)	1.2 A	2.3 A
Frequency [Hz] (Supply)	50/60 Hz ±4%	
Voltage [V] (Feed-out)	24 V	
Max. Current [A] (Feed-out)	Max. 9 A Divided into individual arms.	Max. 18 A Divided into individual arms.
Housing material	Sheet steel	
Housing color	RAL 7035	
Protection class	IP65	
Ambient temperatures [°C] outside the control cabinet	5 – 40 °C	
Ambient temperatures [°C] inside the control cabinet	10 – 60 °C	
Height [mm]	400 mm	
Width [mm]	300 mm	
Depth [mm]	210 mm	
Complies with Norm EN60204-1, EN IEC 61439-1 and EN IEC 61439-2		

Labtronic EVO® *24-20*

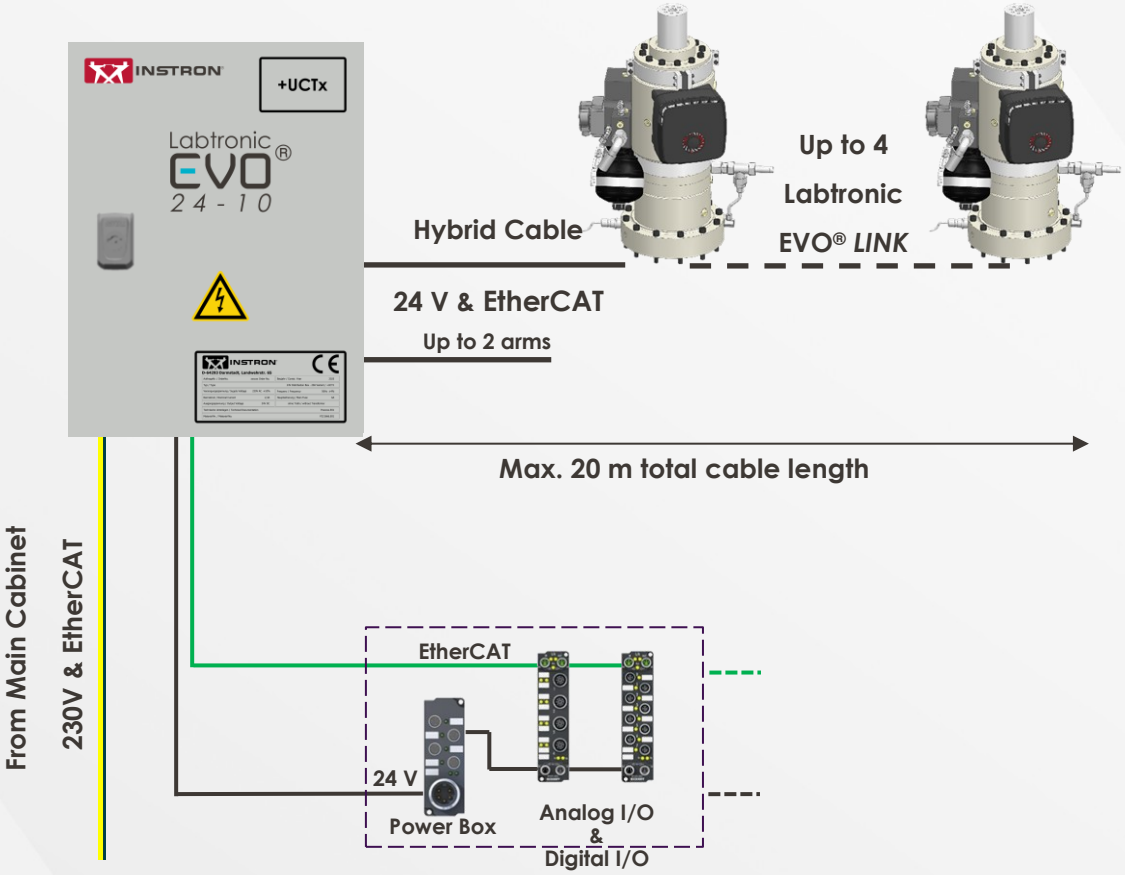


Size: 210x300x400 mm [DxWxH]

- Up to 8 Labtronic **EVO®** ***LINK*** on up to 4 arms
- Never achieved range
- Up to 20 m cable length per 24 V arm
- Up to 80 m cable length between Labtronic **EVO®** ***MAIN*** & 24 V Distribution box or 24 V Distribution box & 24 V Distribution box
- Analog I/O and/or Digital I/O up to 4 A total load
- Daisy chaining with one Labtronic **EVO®** ***24-10*** or Labtronic **EVO®** ***24-20***

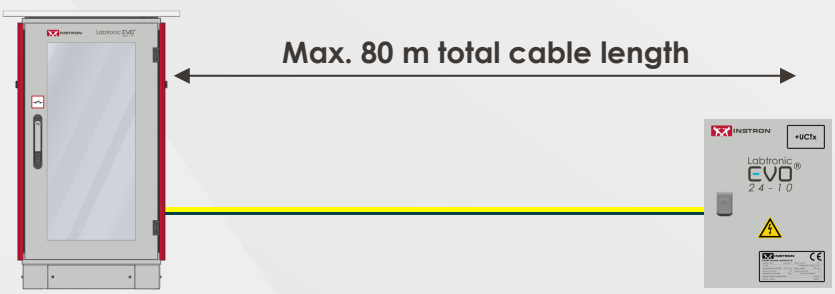


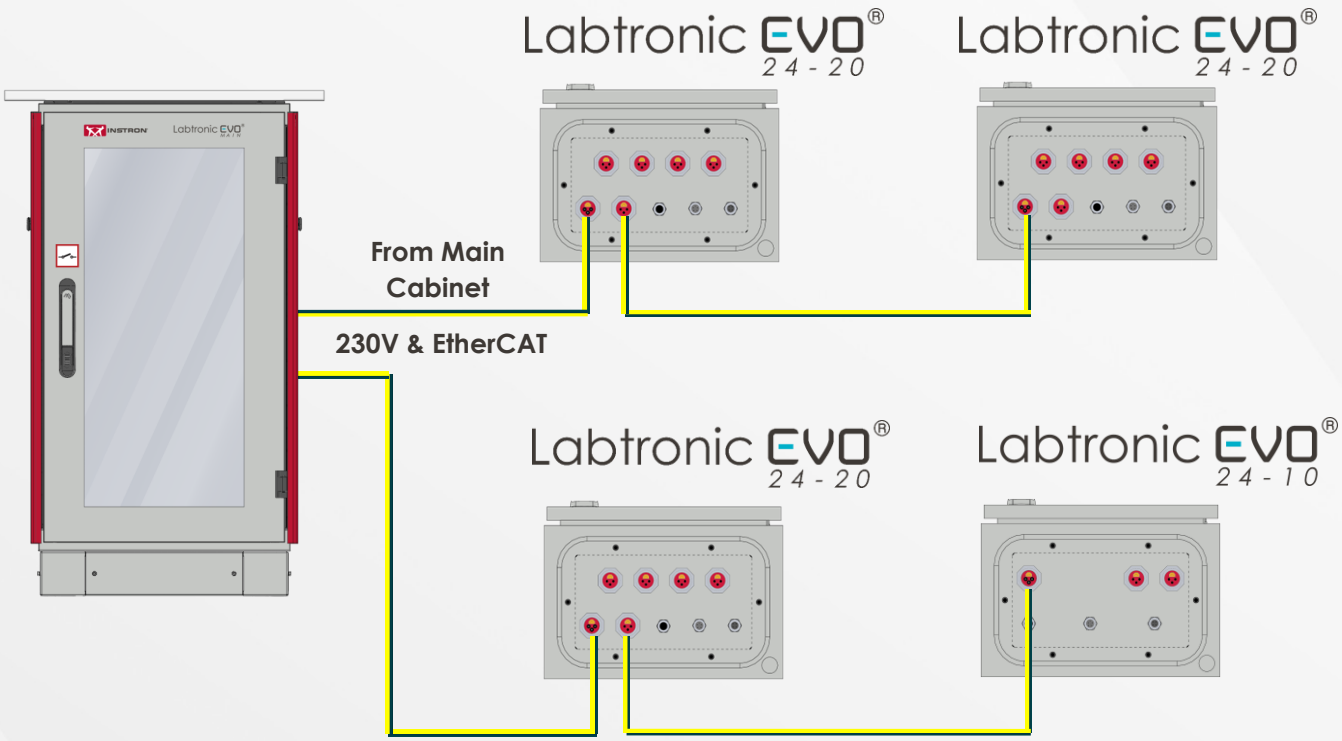
Labtronic EVO® *24-10*



Size: 210x300x400 mm [DxWxH]

- Up to 4 Labtronic **EVO®** ***LINK*** on up to 2 arms
- Up to 20 m cable length per 24 V arm
- Up to 80 m cable length between Labtronic **EVO®** ***MAIN*** & 24 V Distribution box or 24 V Distribution box & 24 V Distribution box
- Analog I/O and/or Digital I/O up to 4 A total load
- No daisy chaining - only at the end of a daisy chain





*Picture: Labtronic **EVO®** 24 V Distribution box daisy chaining*

- Up to 4 24 V Distribution boxes can be connected to one main cabinet
- Up to 2 24 V Distribution boxes can be connected to the Labtronic **EVO®** ***MAIN*** in a single arm using daisy chaining
- More than 2 24 V Distribution boxes will require a separate arm

Labtronic EVO® *LINK*

The heart of precision and efficiency

The heart of the system is the Labtronic **EVO®** ***LINK***, which is mounted either directly on or near the actuator. The integration of measured variables, valve controls and CAN bus or CAN FD is decentralized as close as possible to the respective sensors or valves.

The proximity to the transducers and valves enables the use of short analog cables, allowing quick and efficient installation and commissioning. The Labtronic **EVO®** ***LINK*** is equipped with 4 universal measuring amplifiers and connections for servovalves, multivalves, shuntvalves, and CAN bus or CAN FD.



The signals are transmitted from the Labtronic **EVO®** ***LINK*** to the Labtronic **EVO®** ***CORE*** compute unit via a hybrid cable, which provides both the power supply and the EtherCAT communication. Labtronic **EVO®** ***LINK*** can be connected to other Labtronic **EVO®** ***LINK*** via these hybrid cables. Up to 8 Labtronic **EVO®** ***LINK*** can be daisy chained (see chapter Labtronic **EVO®** ***24-10*** & ***24-20***).

Features:

- Short connections to sensors and actuators
- Time-saving installation
- Efficient cabling
- Better signal quality
- Digital data transmission right up to the sensor

Two mounting options:

- Actuator
- Wall



Connections:



Technical Data:

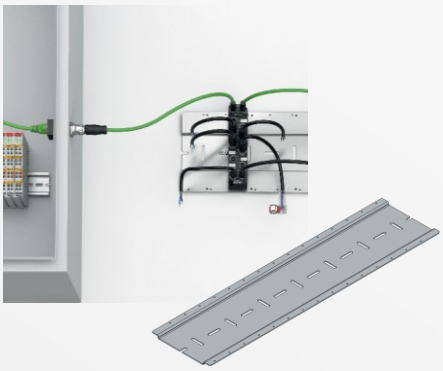
Voltage [V]	19 – 32 V
Current [A]	Max. 2.2 A
Frequency [Hz]	50/60 Hz ± 4%
Data Bus	EtherCAT
Shock resistance	5 ms, 50 g
Vibration resistance	10-1000 Hz 5 Grms
Housing color	Black
Ambient temperatures [°C]	5 – 45 °C
Height [mm]	190 mm
Width [mm]	190 mm
Depth [mm]	95 mm

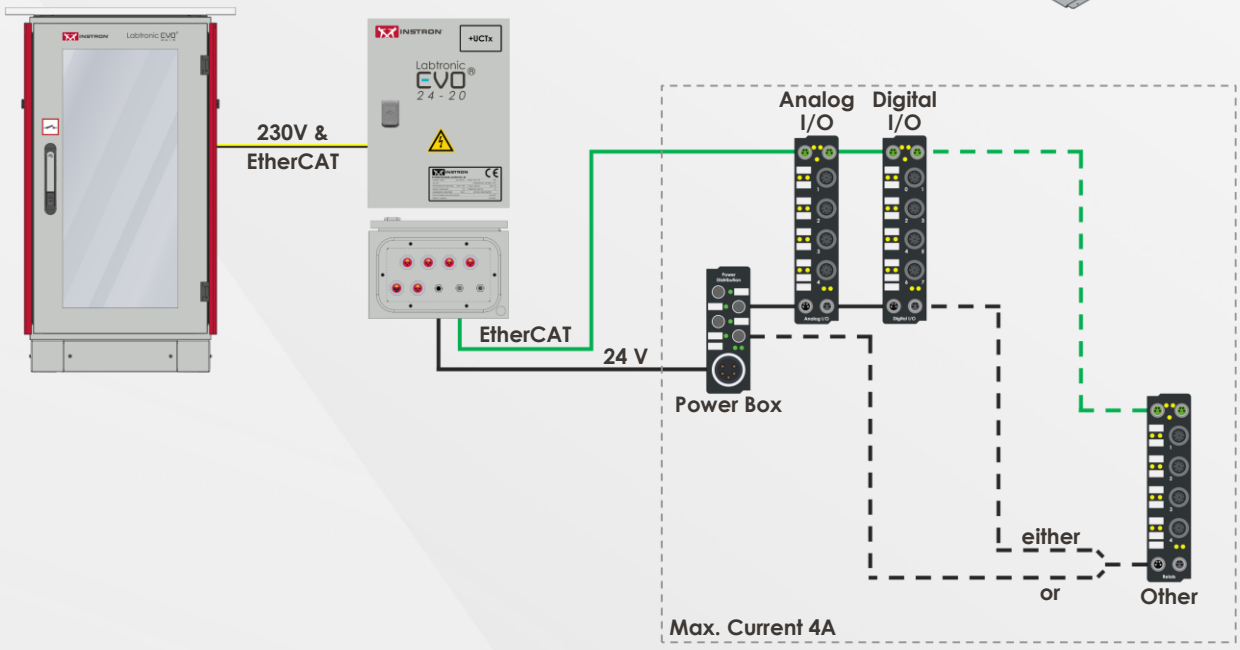
Customer Interface Box

For special customer requirements, we offer the option of a separate customer interface box, e.g. for integration of wheel force transducers.

Analog & Digital I/O

Analog and digital I/Os can be flexibly connected to the respective 24 V Distribution box using appropriate EtherCat modules.



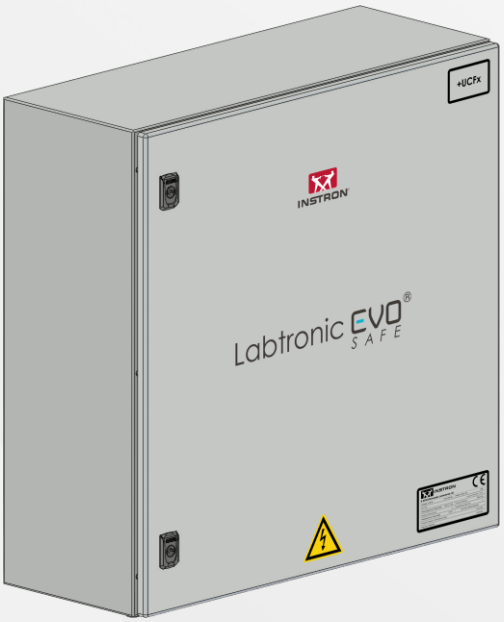


Labtronic EVO® *SAFE*

Maximum safety and full control from one source

The Labtronic **EVO®** ***SAFE*** is our comprehensive and standardized safety solution for your test area. With its future-proof, sustainable design and a wide range of benefits, it sets new standards for safety and reliability.

The Labtronic **EVO®** ***SAFE*** is designed for Instron's hydraulic control modules. In combination with the associated shut-off units, a safe redundant hydraulic shut-off according to ISO 13849-1/2 Performance Level d is achieved.



The Labtronic **EVO®** ***SAFE*** takes over the management of the safety fence surrounded test cell and monitors the door interlocks and indicates to the operator the status of the system (signal column). The Labtronic **EVO®** ***SAFE*** ensures that the system can only be entered if it is in a safe state.

Everything from one source

Instrons Labtronic **EVO®** ***SAFE*** adds to the established electrical, mechanical components, controllers, power units, connection units, actuators and software portfolio to be able to deliver turn-key solutions for your testing needs.

Features:

- Simple diagnostics: Complete analysis of the test systems through the test bench computer
- Remote support capability
- Cluster capability: Flexible use of the equipment within one test cell
- Scalability: Single and multi-test cell(s) capability through daisy chaining
- Upgradeability: Labtronic **EVO®** ***SAFE*** remains in place if the controller is changed
- Fast availability through standardization for new orders
- Standardized safety: Fast and simple safety for the lab, according to ISO 13849-1/2 and Performance Level d.
- Fast installation: Few cables, short distances, quick and easy installation
- Three versions available:
  - Labtronic **EVO®** ***SAFE*** M – main device and communication interface to Labtronic **EVO®** ***CORE***
  - Labtronic **EVO®** ***SAFE*** S – extension device to Labtronic **EVO®** ***SAFE*** M
  - Labtronic **EVO®** ***SAFE*** XS – integration solution for established safety systems

Integration into RS*LabSite*® modulogic 2.n software

The Labtronic **EVO® *SAFE*** integrates itself into RS***LabSite***® modulogic 2.n software. The Labtronic **EVO® *SAFE*** automatically reports the wired configuration back to the controller and enables precise error analysis and diagnostics via a user interface.

Daisy chaining

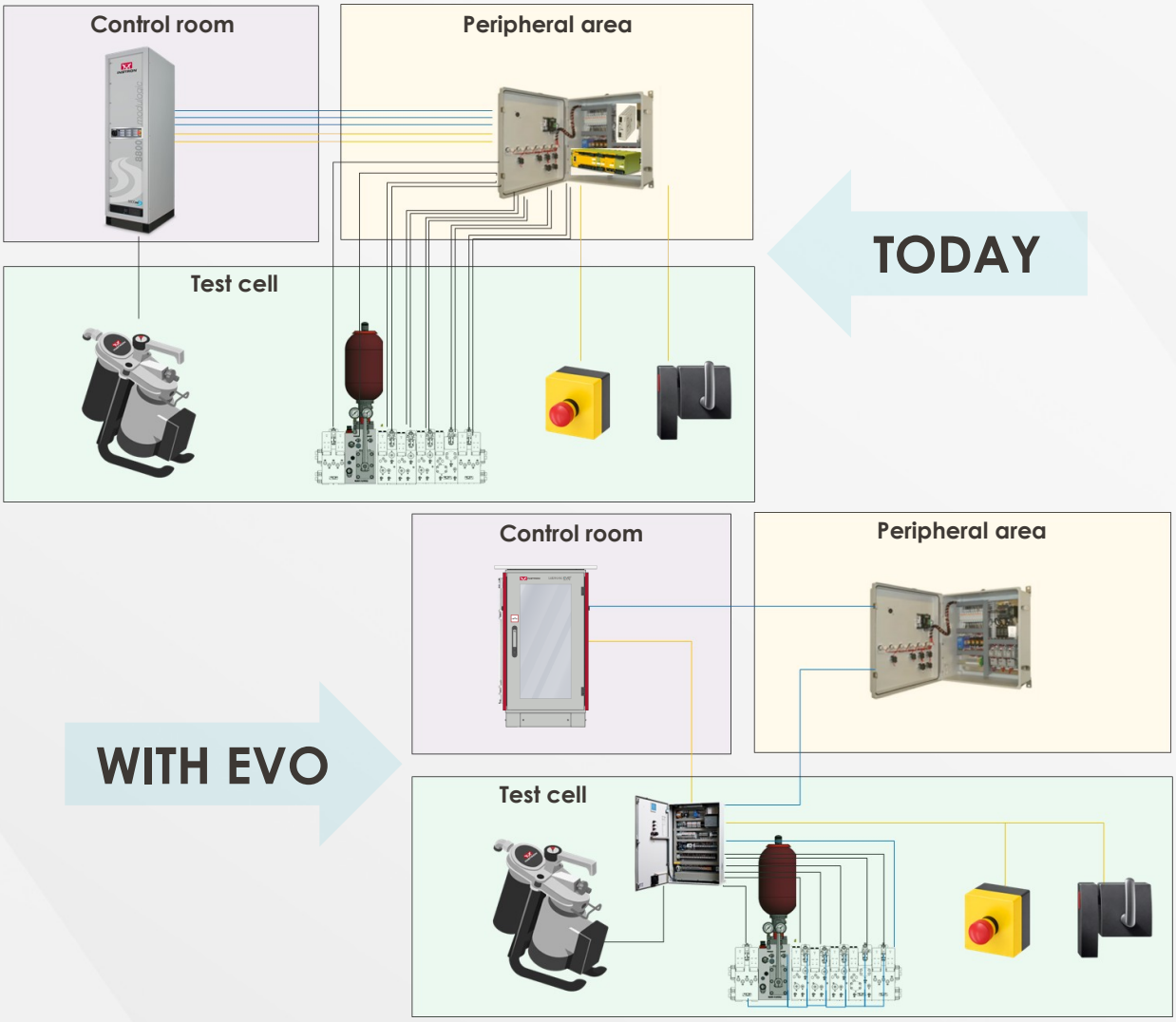
The careful use of resources is also an essential goal for the Labtronic **EVO® *SAFE***. This can be taken into account when selecting the components on the one hand, and when developing the functions on the other (Energy-efficient scavenge pump control and daisiy chaining capability).

The functionalities of the Labtronic **EVO® *SAFE*** are made available where they are needed. If an extension of the functionalities is required, the junction boxes can be wired together to enable simple, fast and material-saving installation.

Technical Data:

Manifolds	6
Isolation blocks	2
Accumulator blocks	1
E-Stops	3
Safe Stop	3
Door locks	5
Solenoid interlocks	2
External safe signal I/O	2 I + 2 O
External non-safe signal	1 I
Scavenge pumps	8
Height [mm]	760 mm
Width [mm]	760 mm
Depth [mm]	300 mm
Voltage [V]	230 V ± 10 %
Wattage [W]	350 W
Frequency [Hz]	50/60 Hz ± 4 %
Leckage pump external input Voltage [V] Wattage [W] Frequency [Hz]	 230 V 16 A 50/60 Hz
Internal Firewall (optional)	Preparation for the Cyberresilience Act
Remote Support (optional)	Remote Support directly to the PLC

I/O functionality LabSafety



New communication technologies allow us to use natural resources more sustainably. Our cable routes can be drastically shortened by using Labtronic **EVO®** ***SAFE***.

Safety Periphery of the Labtronic EVO® *SAFE* product

Door locking
- Escape release
- Emergency release



Operating mode selector switch
- 3 operating modes
- Selection on the test cell



Control unit
- Illuminated keypad
- Acknowledgement/door lock



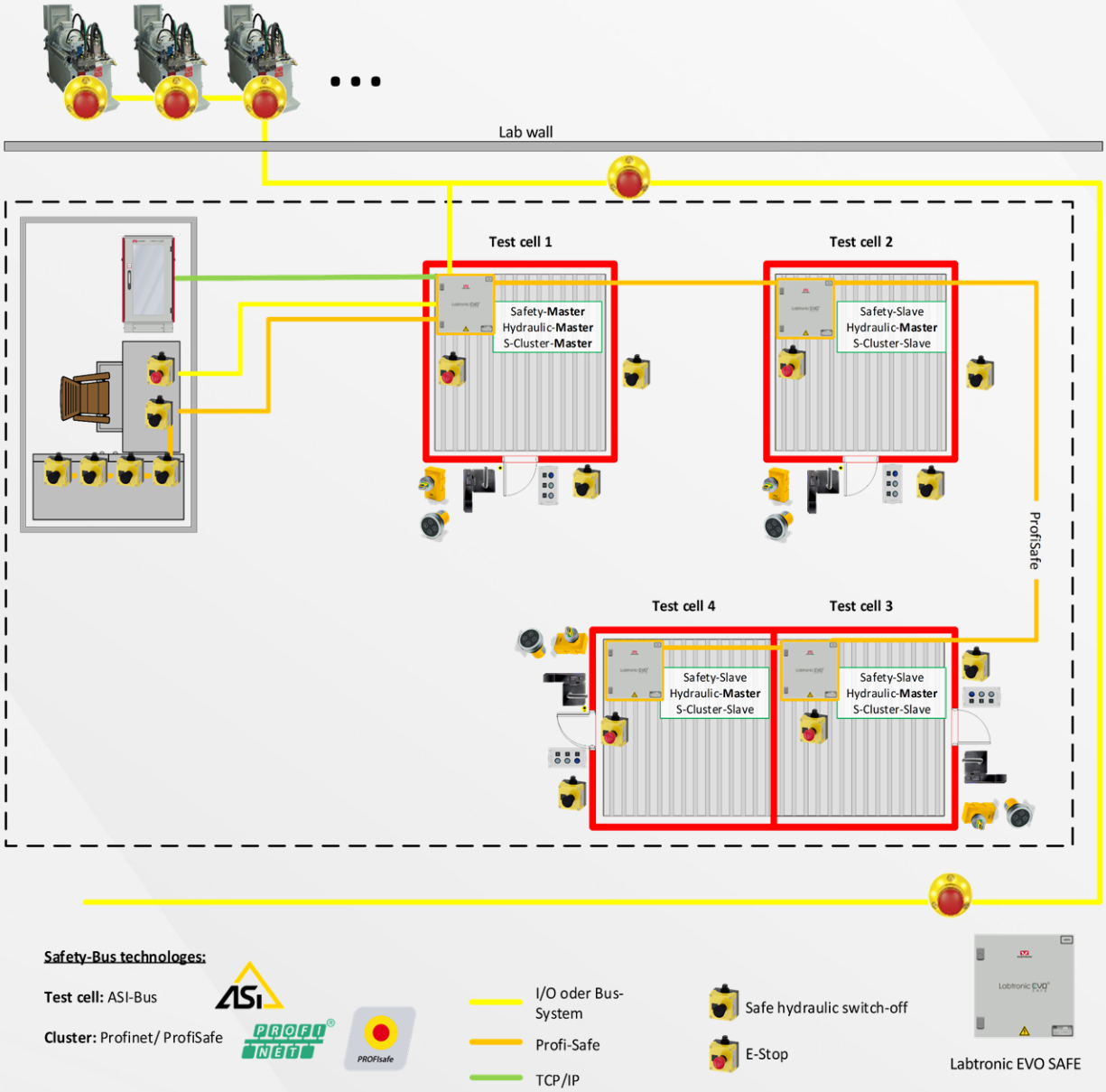
Emergency stop
- Inside the test cell
- Control room and/or wall



Safe hydraulic stop on the outside of the test cell and at the operator station
- Outside the test cell



Example for Multi-test cell operation



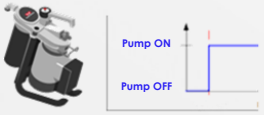
*Picture: Example for Multi-test cell operation with Labtronic **EVO® SAFE** M and Labtronic **EVO® SAFE** S. Labtronic **EVO® SAFE** M is located in the first test cell. Additional Labtronic **EVO® SAFE** S can be daisy chained for connecting and managing safety for further test cells.*

Energy-efficient scavenge pump control

The scavenge pumps remain active even when the Labtronic **EVO®** ***MAIN*** or the Labtronic **EVO®** ***SAFE*** cabinet is turned off. This ensures that the actuators are reliably evacuated. In this way, the benefits of a Hydropuls® actuators are further emphasized.

Continuous operation





Hydr. ON

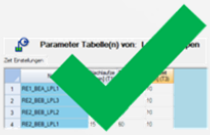


Intervall operation





Hydr. OFF



Intervall operation





Hydraulic off
Controller / LabSafety off

Safety according to Performance Level d

The standardized safety functions of the Labtronic **EVO®** ***SAFE*** offer an easy and quick integration of the mandatory safety measures according to machinery directive. Our customers can rely on Instron's expertise. With the Labtronic **EVO®** ***SAFE*** M and S, we provide a comprehensive solution to ensure the safety of servo-hydraulic systems.

The product is offered as:

- Safety component as swap out for existing safety solutions
- In combination with an incomplete machine
- In combination with complete machine

EVO SAFE XS

The Labtronic **EVO®** ***SAFE*** XS is optimized to be used for test benches with an implemented higher-level safety solution.



The Labtronic **EVO®** ***SAFE*** XS provides the following functions:

- Emergency stop
- 2-channel release contact for higher-level safety controller
- Emergency stop release
- Control of up to 4 hydraulic control module
- Control of up to 4 scavenge pumps

Hybrid cabling

The super-fast wiring for your system

Our hybrid cable solution consists of a robust connector with a bayonet lock. It carries both EtherCAT communication and electric power supply. The decisive advantage is obvious: quick installation and commissioning.

Hybrid Cable 230V/EtherCAT

Outer jacket material	PUR
UV resistance	Yes
Oil resistance	in accordance with DIN EN 60811-404
Halogen-free	Yes
FCKW-Free	Yes
Silicon-Free	Yes
RoHS- compliant	Yes
UL	Yes



Hybrid Cable 24V/EtherCAT

Outer jacket material	PVC V0 gem. UL 94
UV resistance	UV-stabilized
Oil resistance	7d/90°C. reference oil IRM 902
Flame-resistant	in accordance with UL 758 (cUL-FT1)
FCKW-Free	Yes
Silicon-Free	Yes
RoHS- compliant	Yes
UL	Yes, UL E-file Number: E63216



Sustainability

Thinking sustainability in development means thinking efficiently in development. With a modular system, backwards compatibility and simplified installation, downtimes are reduced, personnel are relieved and the use of materials for the changeover to the Labtronic **EVO®** is minimized.

The backwards compatibility of the Labtronic **EVO®** with the Labtronic® 8800***ml*** also aims to reduce the amount of material required to switch to the new platform, in addition to the added value for the customer. Installation options in existing 19" industrial control cabinets as well as modular expansion promote the continued use of the customer's required infrastructure. The advanced BUS technology of the Labtronic **EVO®** enables the connection of the Labtronic **EVO®** products with only one cable which ensures the 230 V or 24 V supply as well as the data transfer. The result is a reduction in the number and length of cables and simpler and faster installation, which reduces the workload for Instron personnel and our customers. We use industry standards for the components of the Labtronic **EVO®** and continue to focus on the long service life of our products. Sustainable development for sustainable laboratories.

Regulations & certification

Labtronic **EVO®** ***CORE***	• Low voltage directive 2014/35/EU • EMC Directive 2014/30/EU
Labtronic **EVO®** ***LINK***	• EMC Directive 2014/30/EU
Labtronic **EVO®** ***24-10*** and Labtronic **EVO®** ***24-20***	• Low voltage directive 2014/35/EU • EMC Directive 2014/30/EU
Labtronic **EVO®** ***SAFE***	• Machinery Directive 2006/42/EC from January 20, 2027: Machinery Regulation (EU) 2023/1230 • EMC Directive 2014/30/EU
Labtronic **EVO®** ***MAIN***	• Low voltage directive 2014/35/EU • EMC Directive 2014/30/EU
System including Labtronic **EVO®**	• Machinery Directive 2006/42/EC from January 20, 2027: Machinery Regulation (EU) 2023/1230 • Pressure Equipment directive 2014/68/EU • EMC Directive 2014/30/EU
In addition the Cyber Resilience Act (EU) 2024/2847 considered individually (valid from December 11, 2027)	

Software maintenance

To provide you with additional advantages, Instron offers individually tailored maintenance contracts.

With a Software maintenance contract, you benefit in a number of ways, which include the following:

- All applications are adapted to meet state-of-the-art standards of technology and are provided to you via regular software updates
- Planning security for your budget by bringing all test systems under a single contract
- Comprehensive support from our experts in Darmstadt via hotline support

Software training

As part of software training you learn the basic skills in the software modules that are included in the quoted scope of supply.



The training in software basics is offered by an experienced Instron trainer at our training site. The training focuses heavily on the development of practical skills. For this purpose, we use the Labtronic® 8800***ml*** controller with appropriate software and a Mini 4-Poster, as well as the setup with different samples which serve as examples.

The basics can best be conveyed through practically oriented training models. More in-depth training covering rig-specific testing scopes is normally provided on site with you. Here we draw directly on your own test rig and the electronic system that you have purchased. This offers an ideal introduction to your future daily routine with the Labtronic® **EVO**.

Other information

If you are interested in additional information on the software, electronics, or other products, we'll be happy to send further information. Call us, send us an email or use the query form on our website, which you can reach by scanning the following QR-code.

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