Distribution box I O interface

Overview

Passive I / O distribution box with fixed, plug master cable or M12 or M8 connector trunk cable, for easy connection of PNP/NPN-sensors and actuators.

Key Takeaways

A distribution box I/O interface provides centralized connection points for multiple sensors and actuators, typically using M8 or M12 connectors, with options for passive or active signal distribution in industrial automation systems.

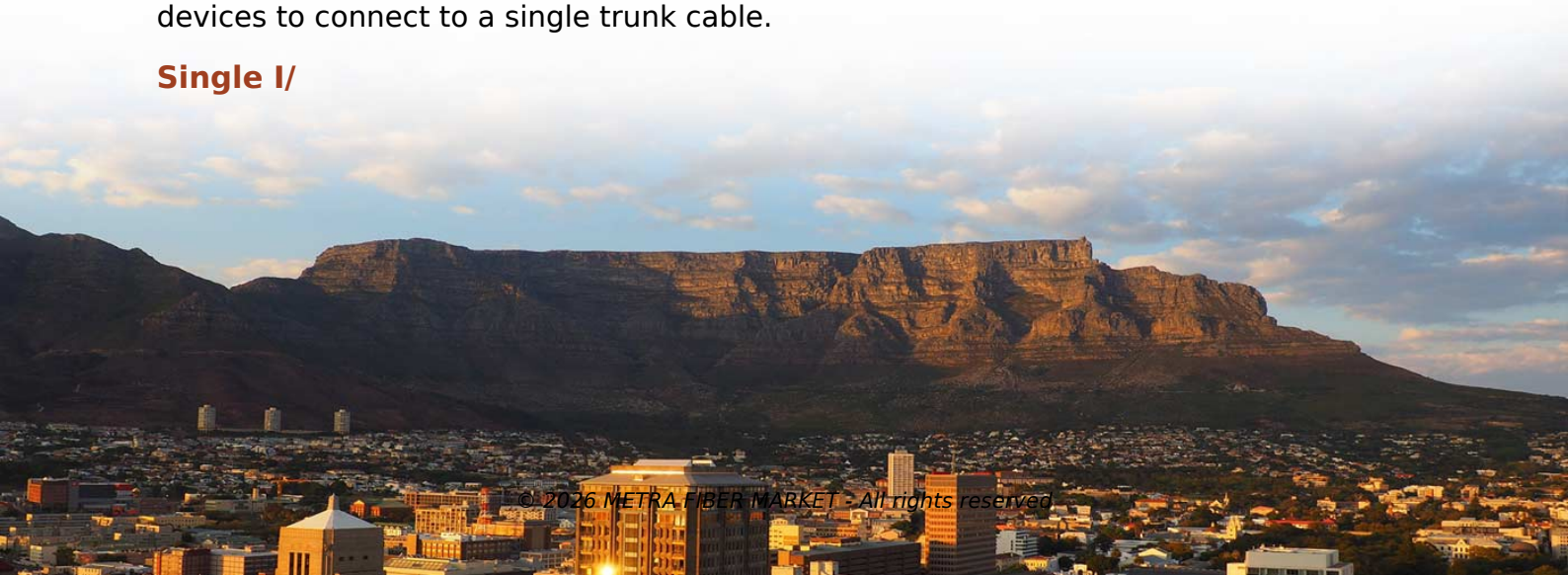
Overview of Distribution Box I/

O Interfaces

Distribution boxes serve as central hubs for input and output signals in industrial environments, allowing structured and reliable wiring of sensors, actuators, and control devices. They simplify installation, reduce wiring complexity, and improve diagnostics and maintenance efficiency. Connector Types and Port ConfigurationsM8 and M12 connectors are commonly used, with 3-, 4-, or 5-pole configurations, often A-coded for compatibility.

Port numbers vary from 6 to 10 or more, depending on the model, allowing multiple devices to connect to a single trunk cable.

Single I/



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O per port is typical, with LED indicators for system supply (green) and port status (yellow) to facilitate monitoring. Some boxes support 2-, 3-, and 4-wire input wiring and PNP sensor types, accommodating a wide range of industrial sensors. Passive vs Active Distribution BoxesPassive distribution boxes simply route signals from sensors and actuators to the control system without processing, ideal for straightforward signal distribution.

Active I/

O boxes include integrated electronics for direct communication with controllers via fieldbus or Industrial Ethernet, enabling intelligent signal processing and diagnostics.

Environmental and Electrical Specifications

Protection ratings: IP67 is common, ensuring dust-tight construction and temporary immersion protection. Operating temperature ranges: Typically from -25°C to 80°C, suitable for harsh industrial conditions. Actuator supply voltage: Usually 24 V DC nominal, with a range of 10–30 V DC, supporting currents up to 1.

5 A per connector. Housing materials: Durable plastics like PBT, ASA, or TPU, sometimes stainless steel, for mechanical robustness and longevity.

Applications

Distribution box I/O interfaces are widely used in: Industrial automation for connecting multiple sensors and actuators efficiently. Manufacturing and process control to streamline wiring and reduce installation errors. Decentralized and modular systems, where flexible and robust signal distribution is required.

Advantages

Simplifies wiring and reduces clutter in control cabinets. Provides robust, reliable connections with LED diagnostics. Supports modular and scalable system designs.

Ensures compliance with industrial standards (RoHS, UL 508, CE) for safety and environmental protection. In summary, the I/O interface of a distribution box is a critical component for structured signal management in industrial systems, offering flexibility, durability, and ease of monitoring through standardized connectors, port configurations, and protective housings.

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Article Content

Passive I / O distribution box, for easy connection of sensors and ...

Passive I / O distribution box with fixed, plug master cable or M12 or M8 connector trunk cable, for easy connection of PNP/NPN-sensors and actuators.

Passive Distribution Boxes | M12 I/O Modules

You use a passive distribution box to centrally connect multiple sensors and actuators and to organise I/O wiring efficiently within machines and installations.

IO Systems junction boxes

Both passive distribution systems for simple signal distribution without intelligence and active I/O boxes with integrated electronics for direct communication with

Distribution Box I/O Passive

It supports M12, 5/4-pole A-coded I/O connections and offers a flexible open-end control cable interface. With operating temperatures ranging from -15°C to 80°C, the module is suitable for a wide range of

I/O Systems

For intelligent and reliable data transmission, a flexible and cost-effective I/O system is essential. The Belden I/O systems portfolio offers a variety of solutions to meet your needs, ranging from passive

Distribution boxes – For modular and decentralized

Download our product catalog for sensor-actuator cabling and circular connectors or our portfolio overview for FieldPower® distribution boxes for power transmission

I/O Systems at a glance | Murrelektronik

With IO-Link I/O Modules you can easily connect multiple digital sensors and actuators to a single IO-Link master port using a standard sensor cordset. In combination with Murrelektronik''s IO-Link

M12 Distribution Systems

Murrelektronik offers a versatile range of M12 distribution boxes designed to simplify wiring tasks in machines and automation systems. Alongside sensor modules, the product lineup includes

Sensor actuator boxes

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Our sensor actuator boxes are equipped with metal threaded rings as standard. This ensures a particularly secure screw connection. The portfolio includes M8 and M12 distribution boxes in plastic

IO interface and distributor

ASSA ABLOY IO interface - central control flexible connection compatible with ePED®. Find out more now!

EtherNet/IP based Distributed IO | WAGO USA

EtherNet/IP based Distributed IO Increase system performance while reducing costs with WAGO''s distributed I/O couplers for EtherNet/IP networks. Select from DIN

M12 Distribution Systems

Streamline Industrial Wiring with Murrelektronik M12 Distribution Boxes Murrelektronik offers a versatile range of M12 distribution boxes designed to simplify wiring tasks in machines and automation

Passive Distribution Boxes | M12 I/O Modules

Passive distribution boxes for sensor and actuator wiring. M8 and M12 I/O modules with IP65, IP67 or IP69K protection.

Understanding I/O Terminal Types And When To Use

Understanding I/O Terminal Types And When To Use Them Embedded, modular, panel mount, distributed, machine mount, and remote, oh

Sensor Distribution Boxes

Sensor Distribution Boxes Welcome to our Sensor Distribution Boxes category page! Explore our wide range of cutting-edge solutions designed to streamline your sensor deployment and distribution

Decentralized Building Automation Distribution Boxes (MSR)

Distribution boxes for building automation. Pluggable system solutions for energy-efficient smart buildings with flexible and fast electrical installation.

Terminator I/O

Terminator Field I/O The Terminator field I/O system offers many options for distributed I/O, including AC or DC power supplies, half or full-size terminal blocks, and Ethernet, DeviceNET, or Modbus

Boxes, Cabling & Interfaces | Schneider Electric Ireland

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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