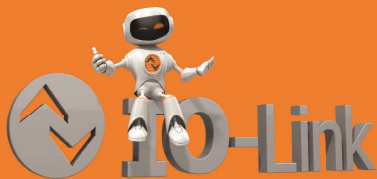




ifm IO-Link Webinar

Wednesday 22 July



Introduction to IO-link



Business Development Manager - Industrial Networking

Krzysztof Lapacz

Presenter



New Business Development Manager

Johan van Niekerk

Host





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Overview

- Introduction to Industry 4.0
- What is IO-Link
- IO-Link Consortium
- Features of IO-Link
- IO-Link Masters
- Network Architecture
- IO-Link Expansion Hubs
- IO-Link Signal Convertors
- Questions and Answers

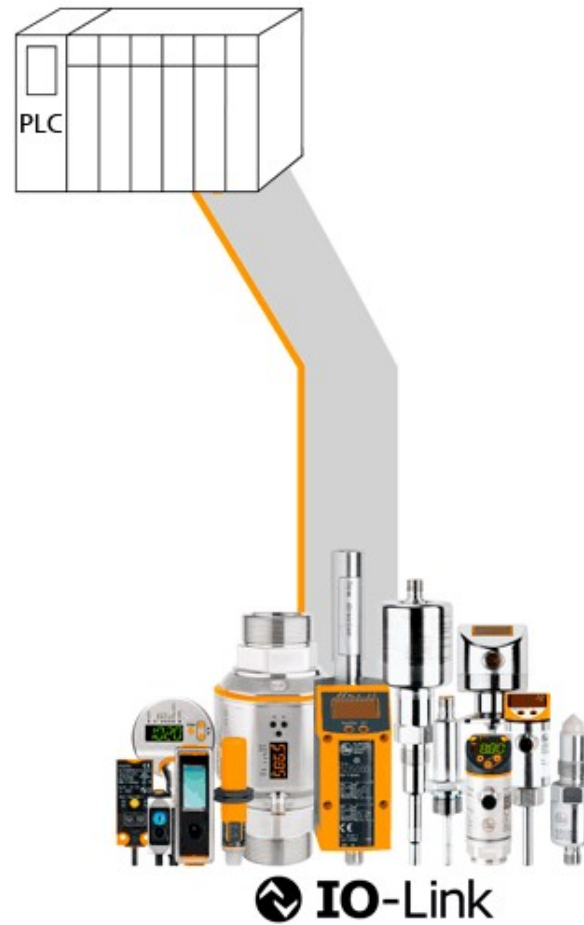


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Only **5%** of sensor data is
used in the PLC

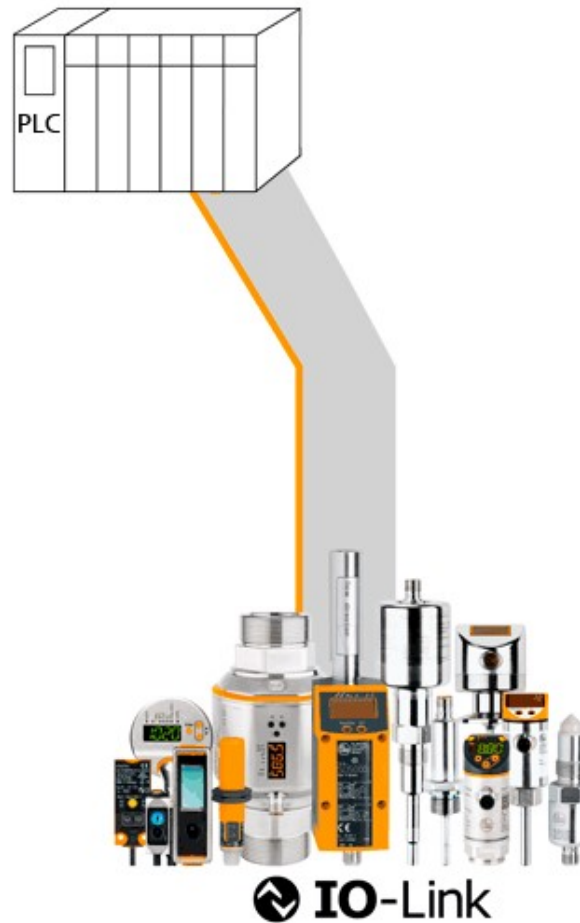
- Process signals
- Switching signals





Only **5%** of sensor data is used in the PLC

- Process signals
- Switching signals



95% of sensor data is lost or unused

- Events and Diagnostics
- Parameterization



With **IO-Link** all this data can be accessed...

In the PLC

- Process signals
- Switching signals
- Events and Diagnostics
- Parameterization



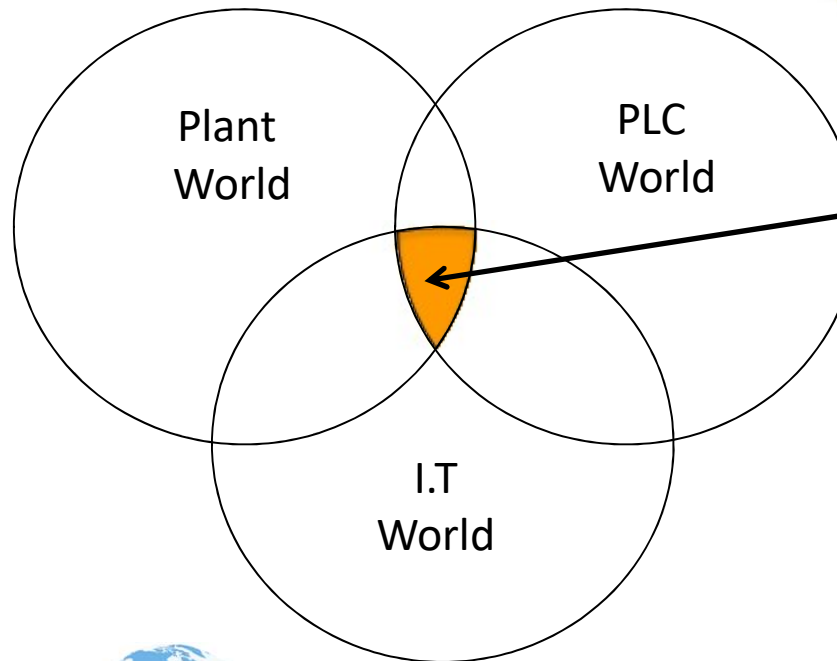
As well as For **IOT / I4.0** applications

- Real time maintenance
- Quality monitoring
- Energy monitoring
- Remote Access



Industry 4.0

Industry 4.0 in the Automation World?



**INDUSTRY
4.0**

Industry 4.0 can easily be defined
As a merger of 3 technologies to achieve benefits





What is IO-Link?

Input Output – Link

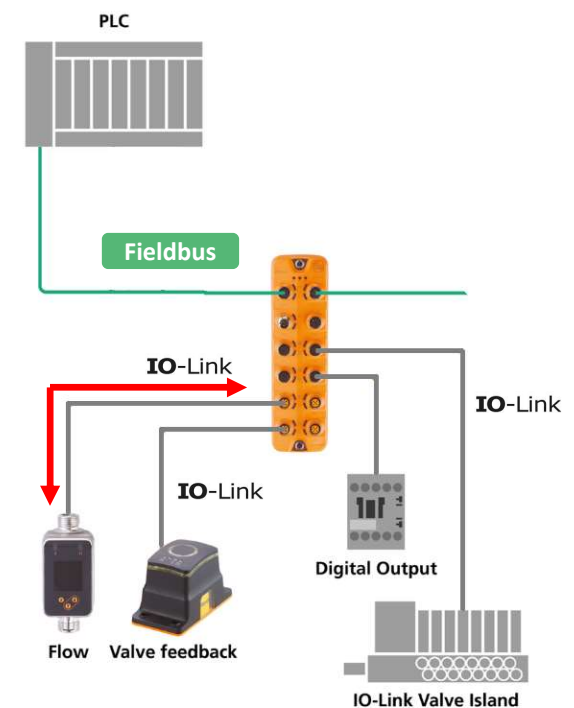
"new" solution for the connection of sensors and actuators

Point- to-point bi-directional connection → **not a bus system!**

Based on Digital / Binary Signals

Allows the transfer of

- Process Data
- Parameters
- Event and Diagnostic Data

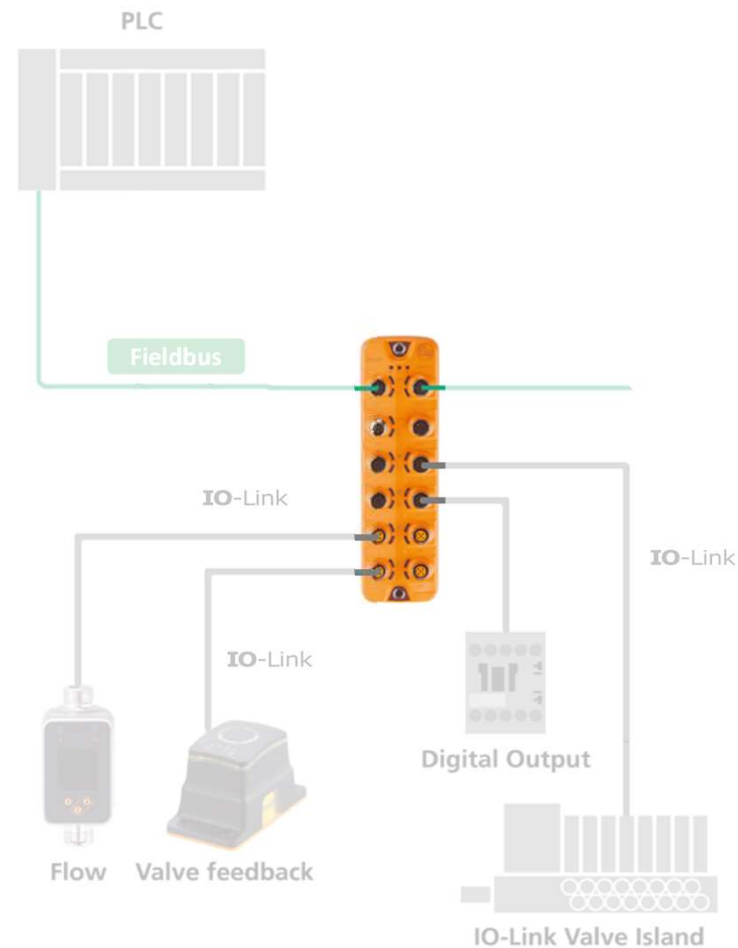




What is IO-Link?

A typical IO-Link System is made up of

- IO-Link Master

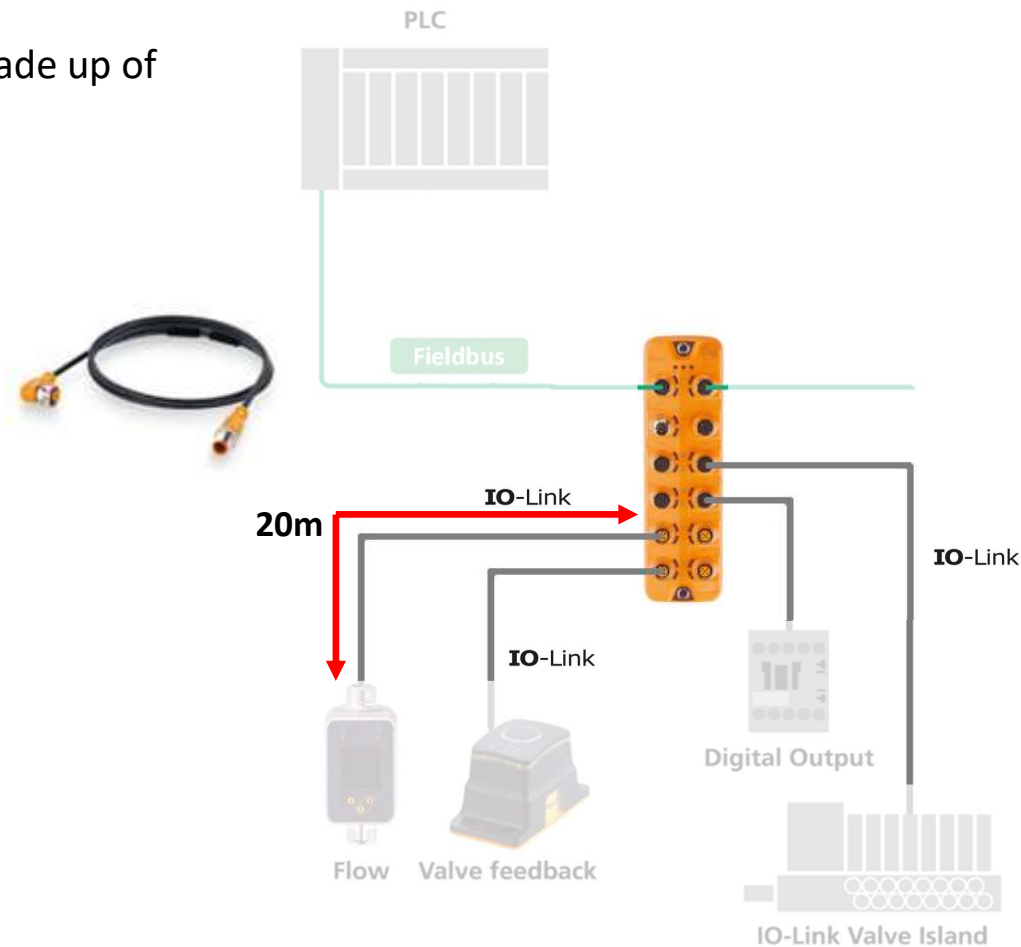




What is IO-Link?

A typical IO-Link System is made up of

- IO-Link Master
- Connection Medium

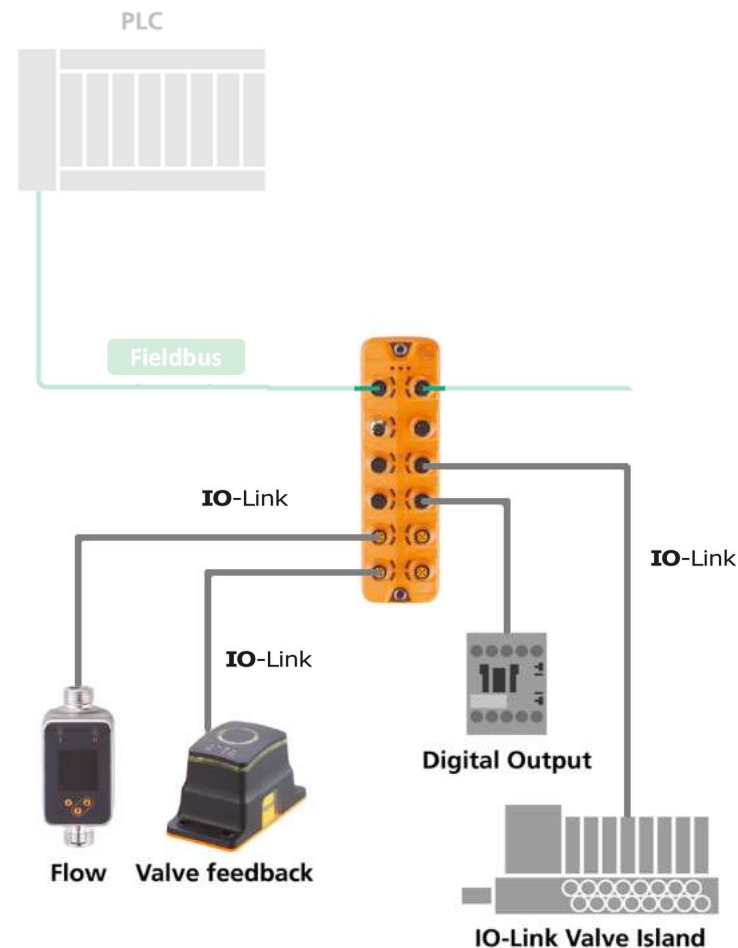




What is IO-Link?

A typical IO-Link System is made up of

- IO-Link Master
- Connection Medium
- Devices





IO-Link Consortium

Standardization

IO-Link an open vendor technology supported by many companies

For this reason a Consortium was created of major sensor manufacturers and industrial manufacturing companies to promote the IO-Link standard



www.io-link.com





Features and Benefits



Identification

Identify what is connected and to where



Easy sensor replacement

Sensor parameters are configured using a configuration software and are stored in the master



Wire break detection and diagnosis

Wire break , short circuit and diagnostic data is available.



Remote Parameterization

IO-Link allows remote parameterization from PLC or via configuration software



Multiple sensor values

IO-Link allows you to transmit multiple sensor values , eg : flow and temperature



Reduction in costs and time

IO-Link is based on digital binary signals , no analog functionality needs to be built into the sensors
No need for conventional complex parallel hardwired technology



IO-Link Master Field Modules

IP67



Factory and
general applications

IP69



Hygienic and
food industry

IO-Link Master Panel modules

IP20



Panels and
control cabinets





IO-Link Master Features

Duplicated Fieldbus Ports for Daisy Chaining and Ring Topology



24V Power Supply



Robust IP 67 or IP 69 Housing



2nd IP address port for IOT functionality



4 or 8 configurable IO-link ports

Pin 2 – DI / DO
Pin 4 – IO-Link , DI , DO





Performance Line IO-Link Master

2 x 24 Power Supply ports
for Daisy chaining of power
Max 12A



2nd Power supply port



High Current Outputs
Up to 2A



Current monitoring
per port




IO-Link Sensor Connection

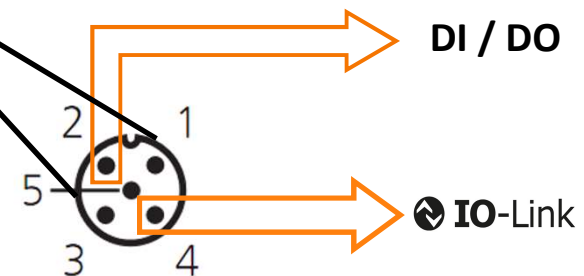
IO-Link consortium has standardised
On pin4 to be used for IO-Link
communications

This includes all

- IO-Link process data
- Parameters
- Events and Diagnostics



Pin	Description
1	24+
2	DI / DO
3	GND
4	DI/ DO /  IO-Link






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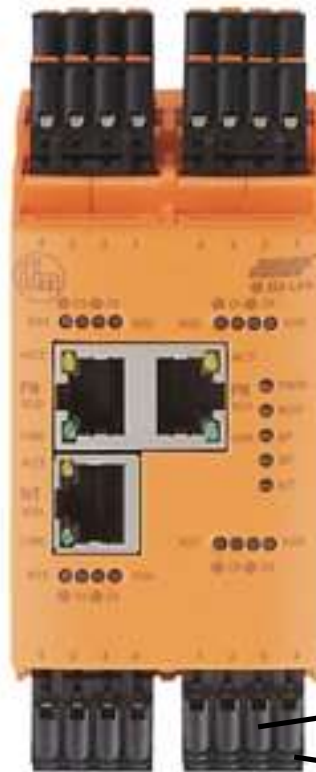



IO-Link Sensor Connection

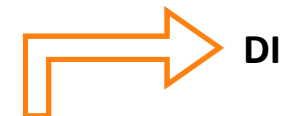
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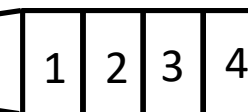
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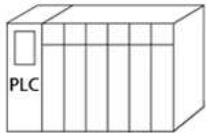
DI



 IO-Link

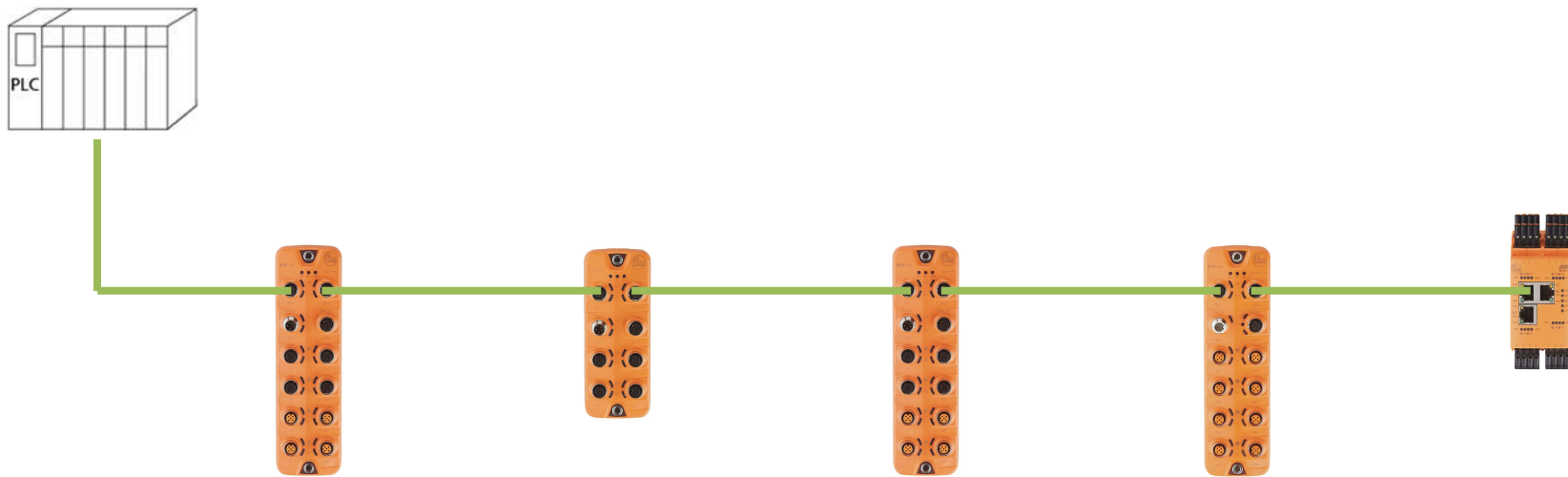


Iolink Field Architecture



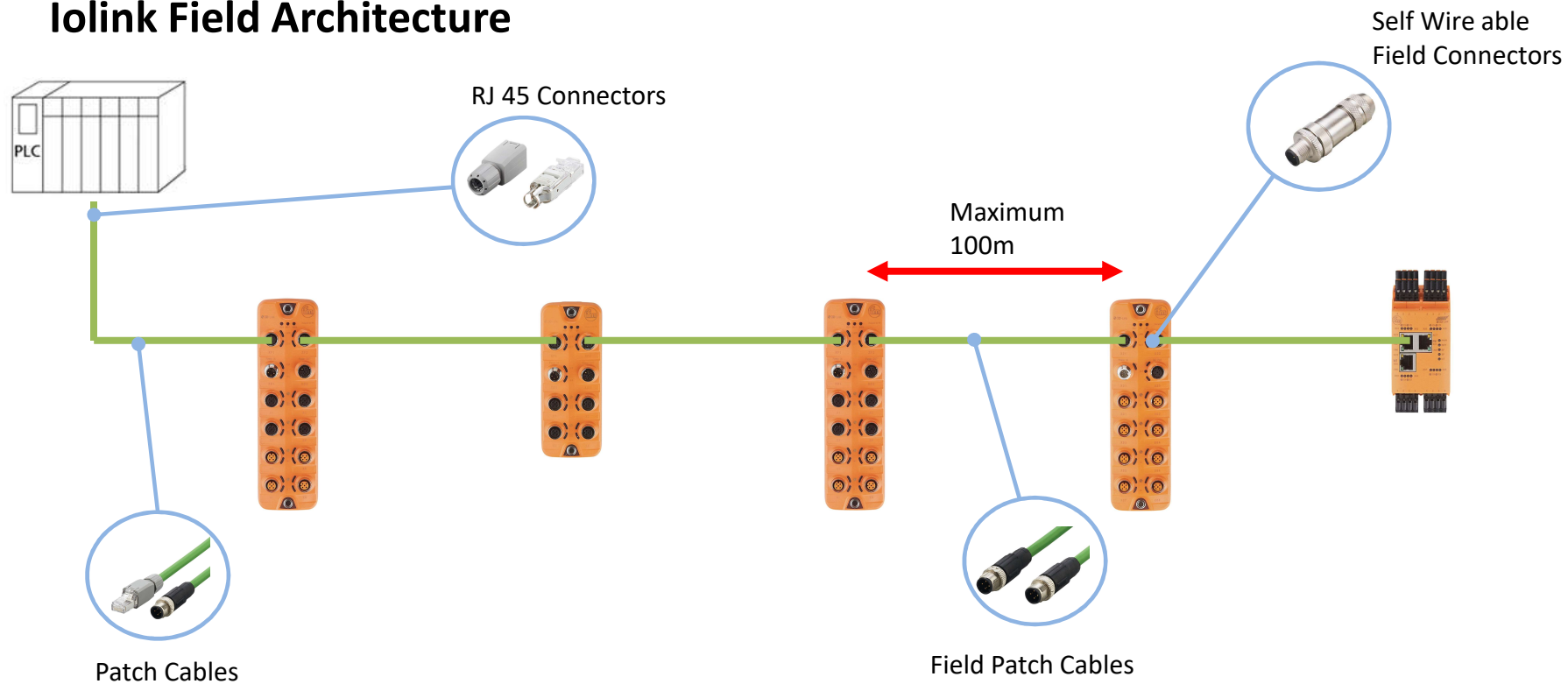


Iolink Field Architecture



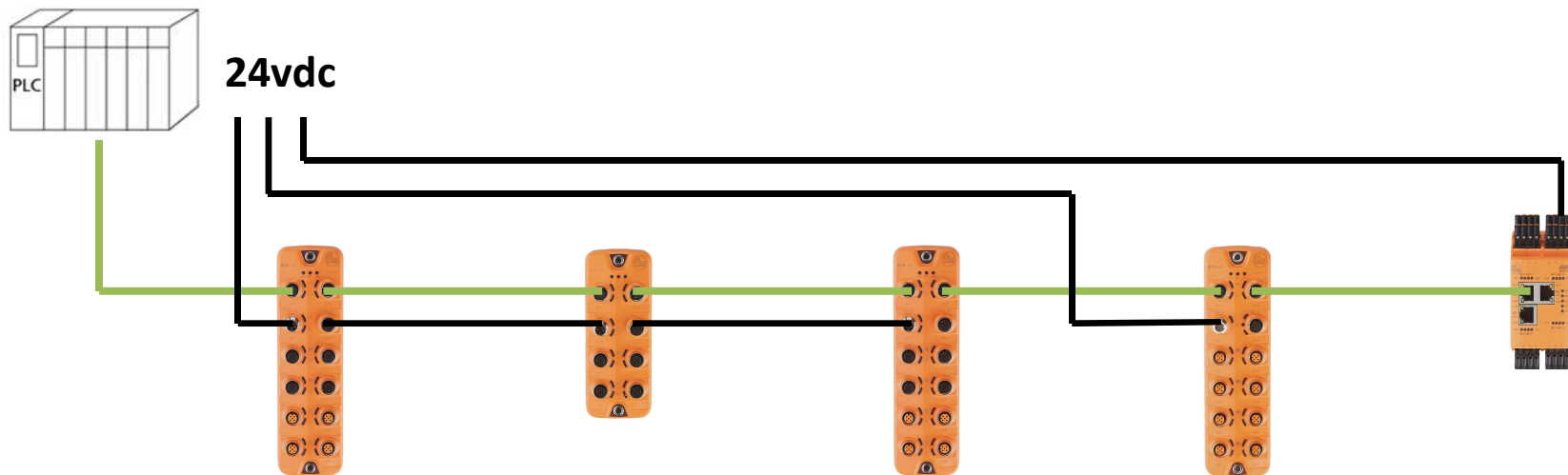


Iolink Field Architecture



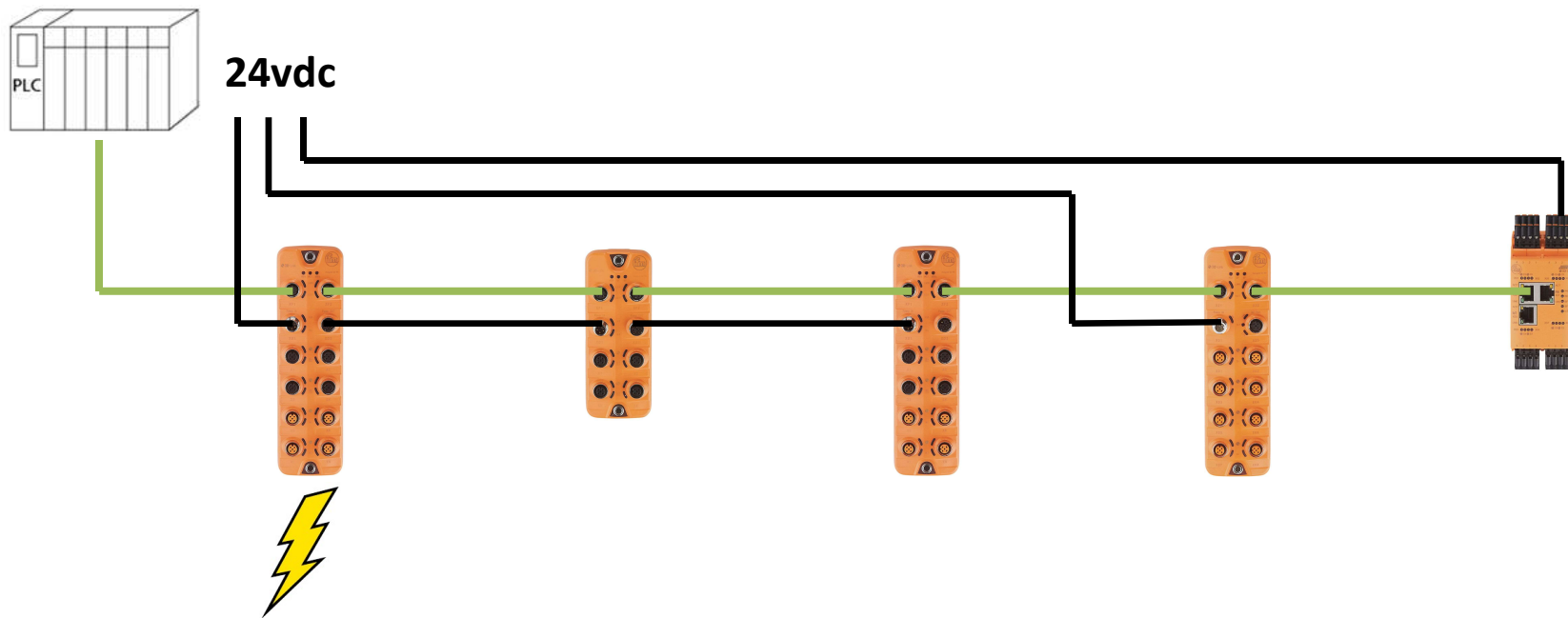


Iolink Field Architecture





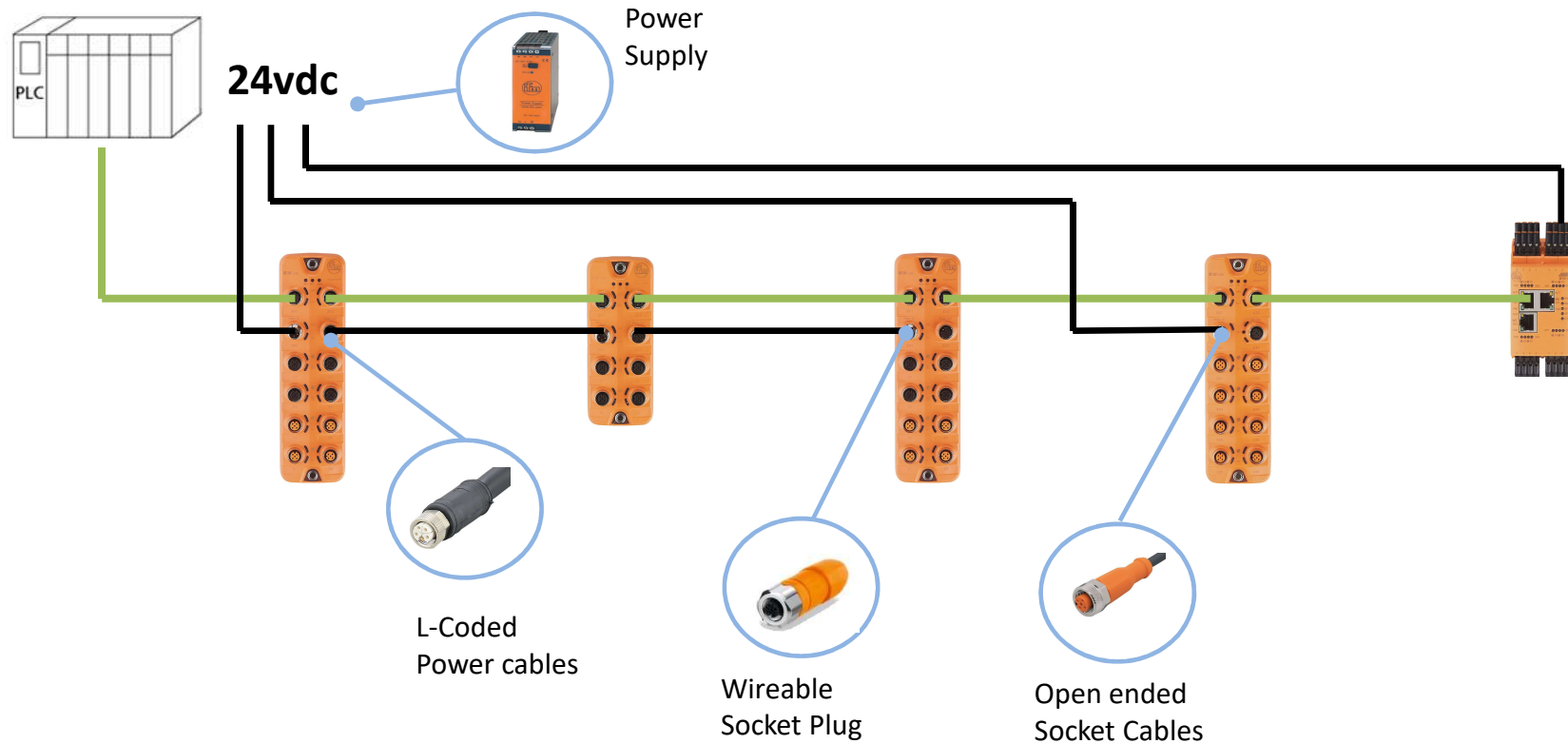
Iolink Field Architecture



Consider current
consumption

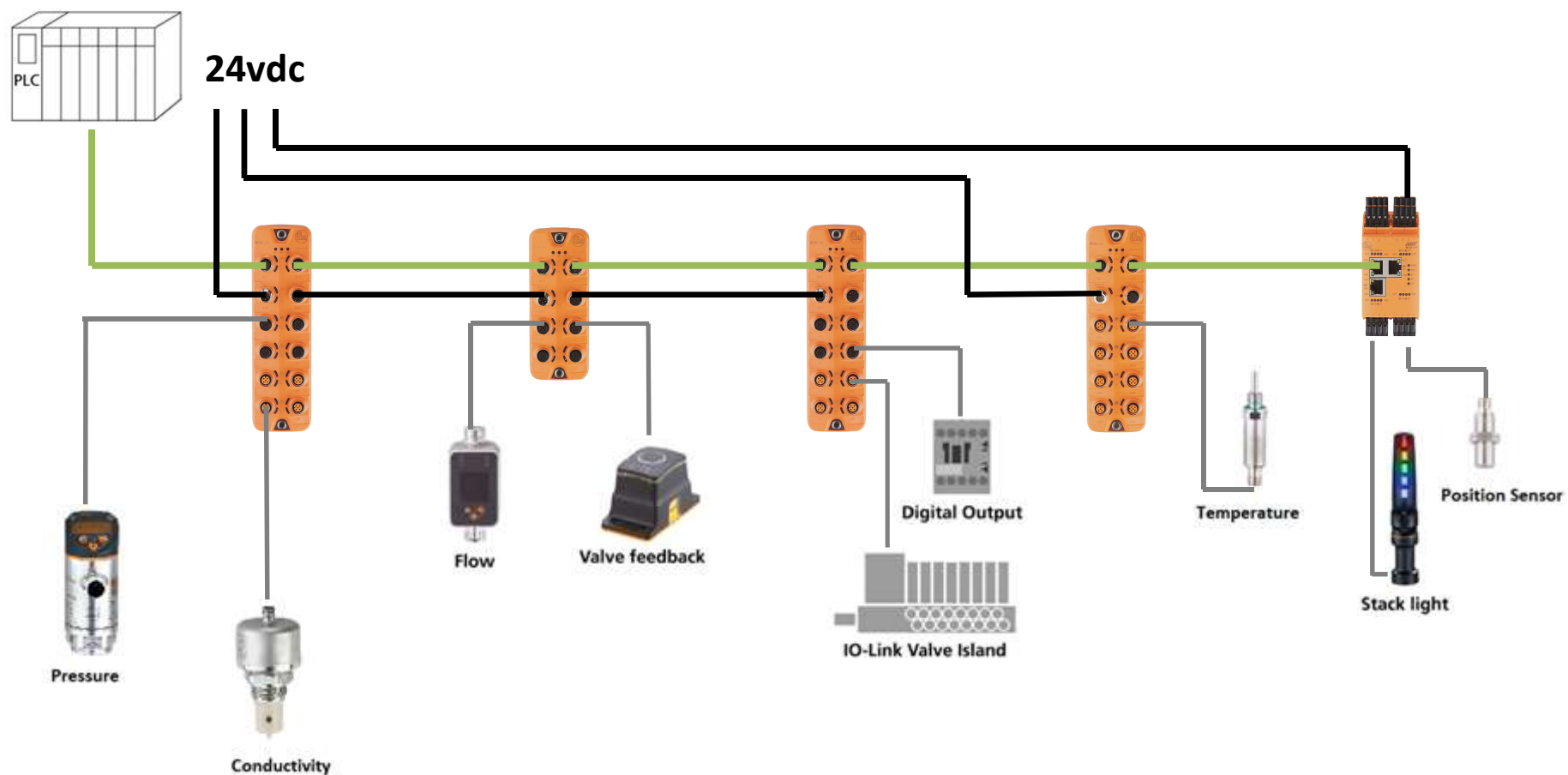


Iolink Field Architecture



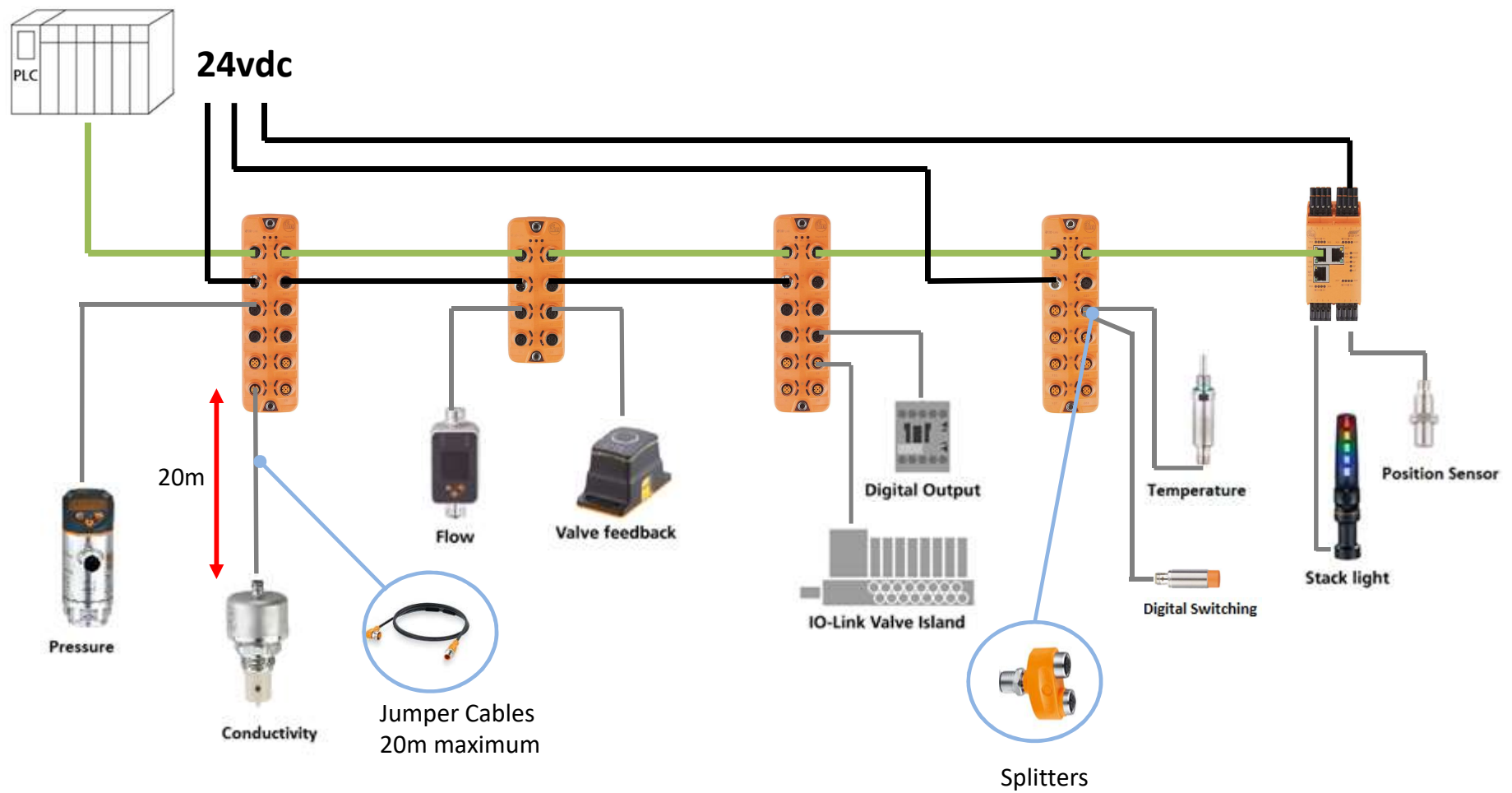


Iolink Field Architecture





Iolink Field Architecture





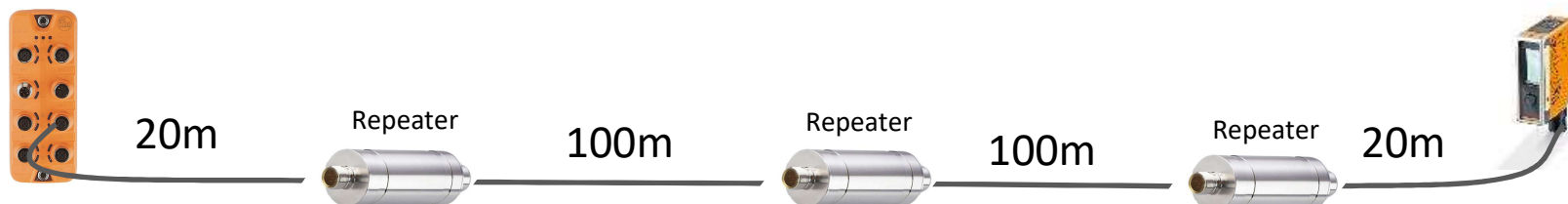
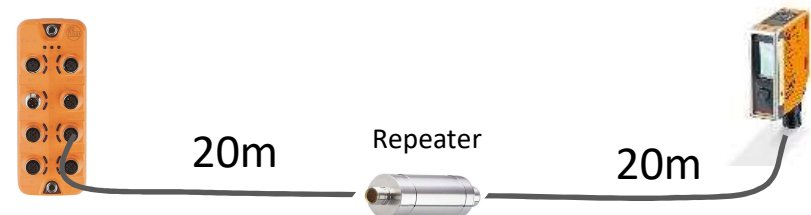
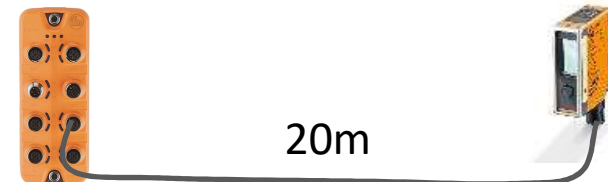
IO-Link Sensor Connection

IO-link specifications are set to maximum 20m between sensor and IO-link master

What if there is a need to exceed 20m?

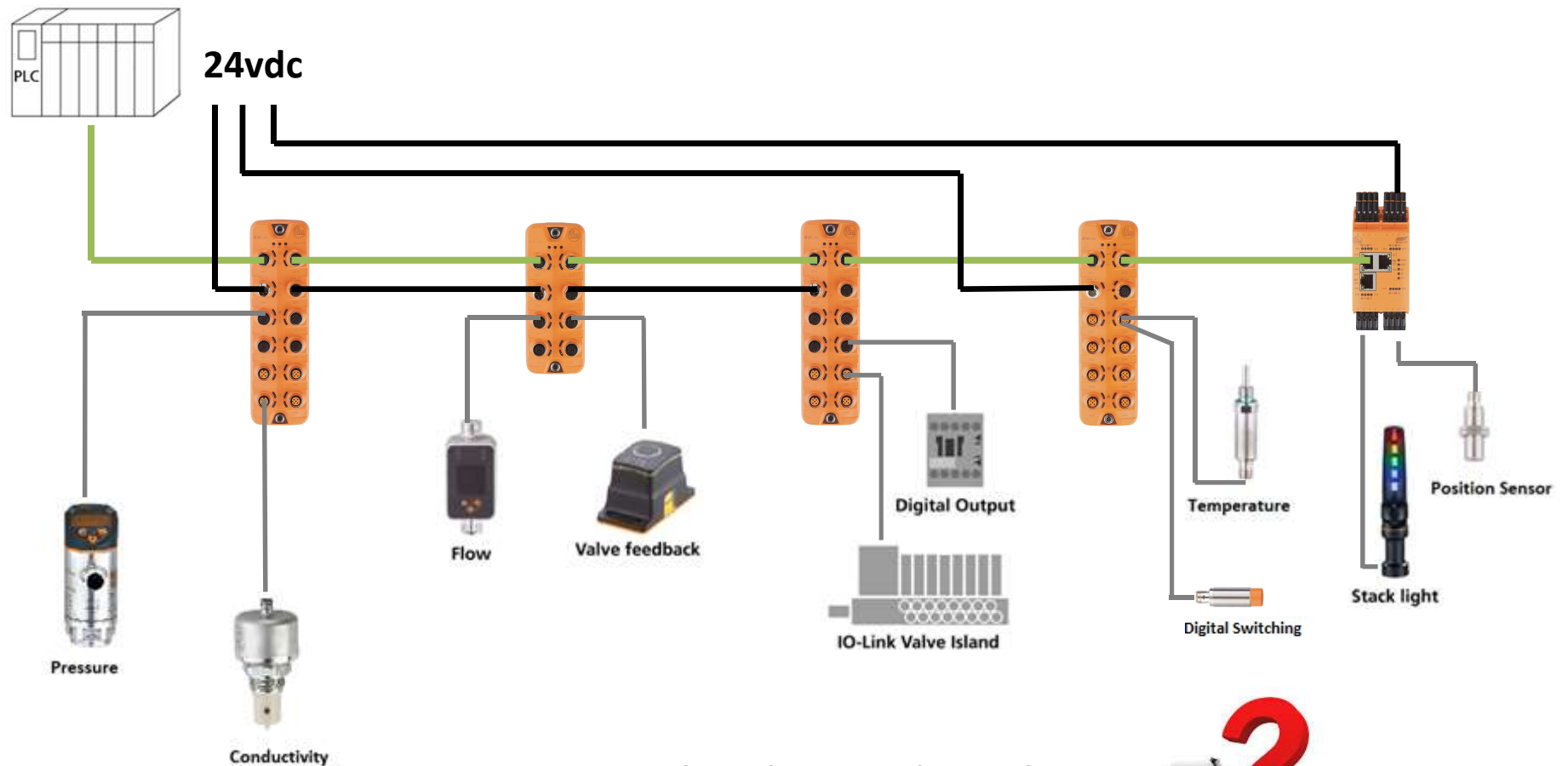
IFM has introduced an IO-Link Repeater

- Passive plug and play inline device
- 100m is possible between Repeaters
- Max 3 Repeaters in Series





Iolink Field Architecture



What about traditional
Analog Inputs and Outputs?





IO-Link Expansion Hubs

In some applications there is always a need for more

- Digital Inputs
- Digital Outputs
- mA and mV Input signals

Expansion Hubs via Iolink

Featuring Flexible multiport Inputs that can be configured for either

- Digital Inputs
- Digital Outputs
- Analog Inputs

No Analog Output functionality at this stage

Standard Digital IN / OUT expansion hubs

Featuring up to 20 Digital inputs or 20 Digital outputs

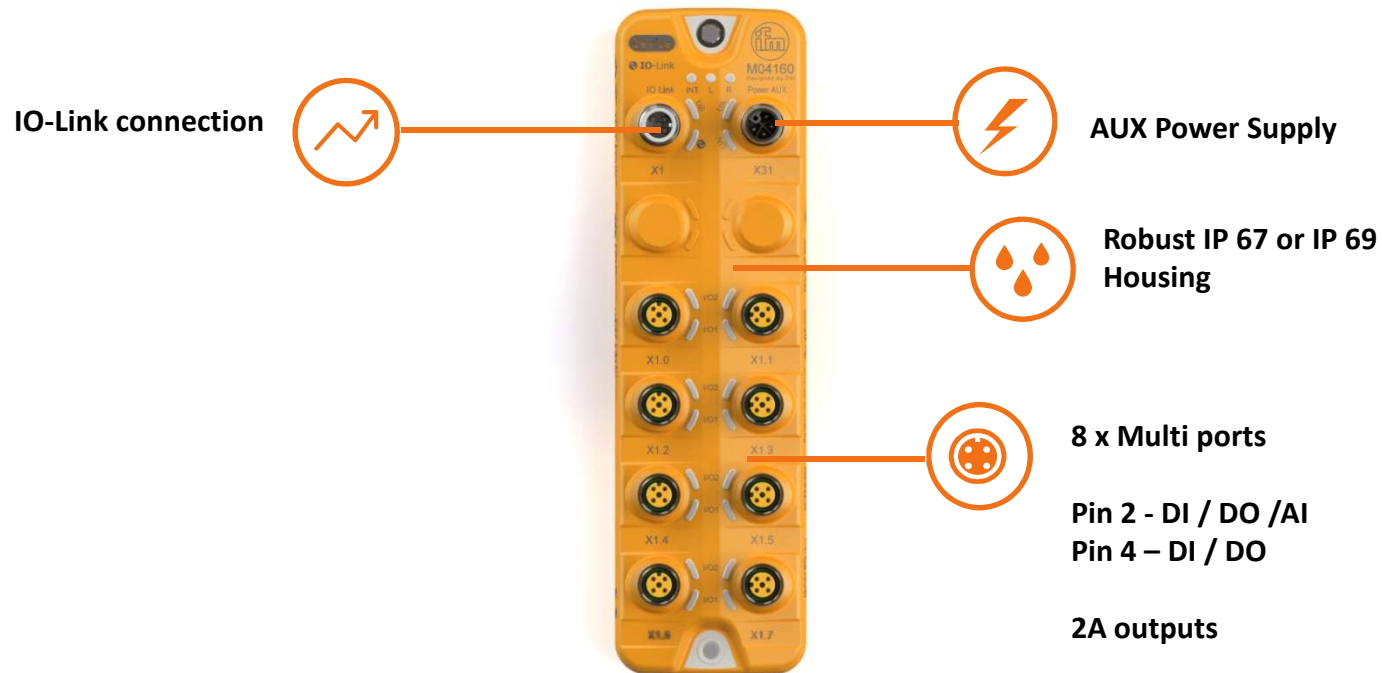




IO-Link Expansion Modules

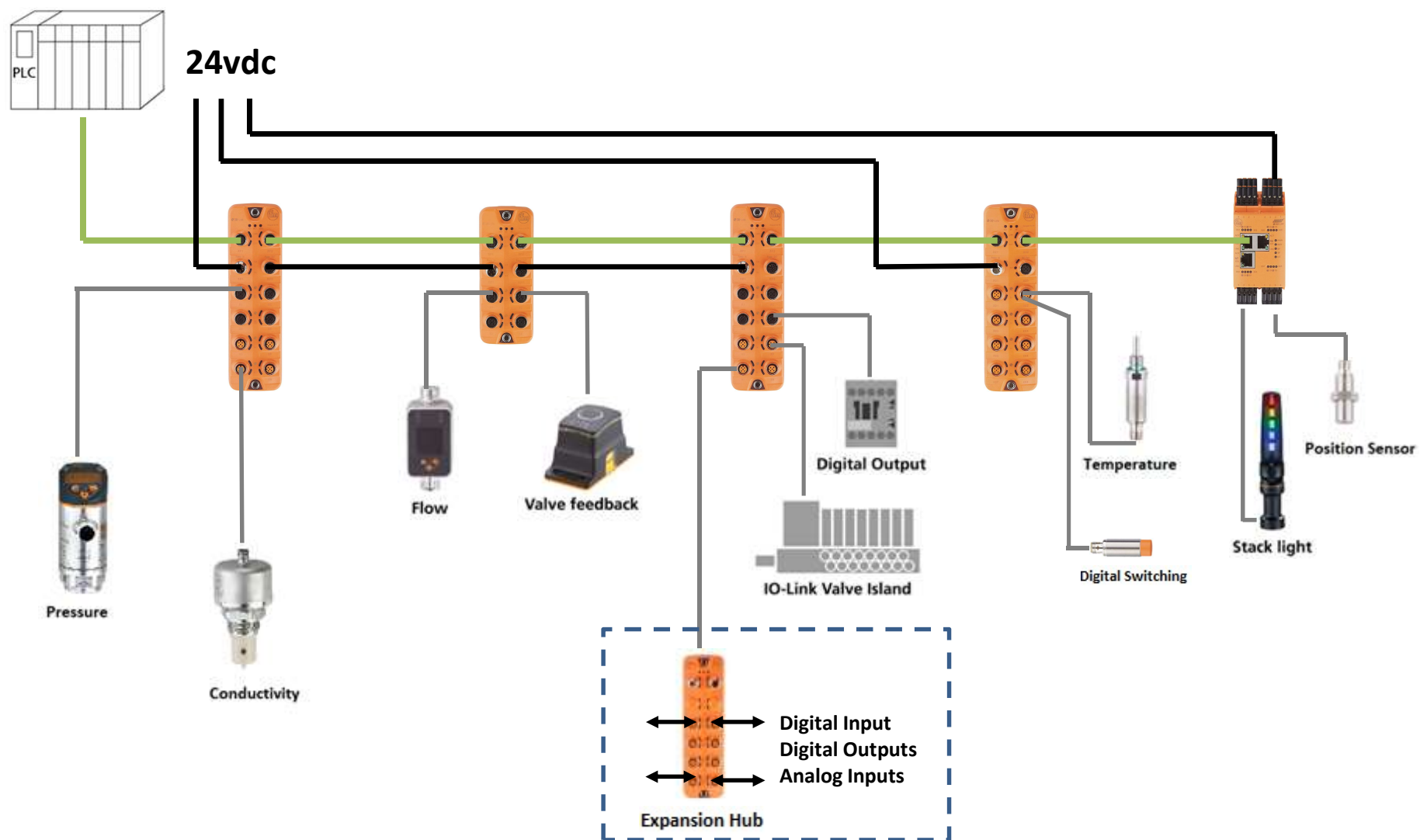
Multiport Expansion Module – Maximum flexibility

Combination of Digital and Analog Signals





Iolink Field Architecture



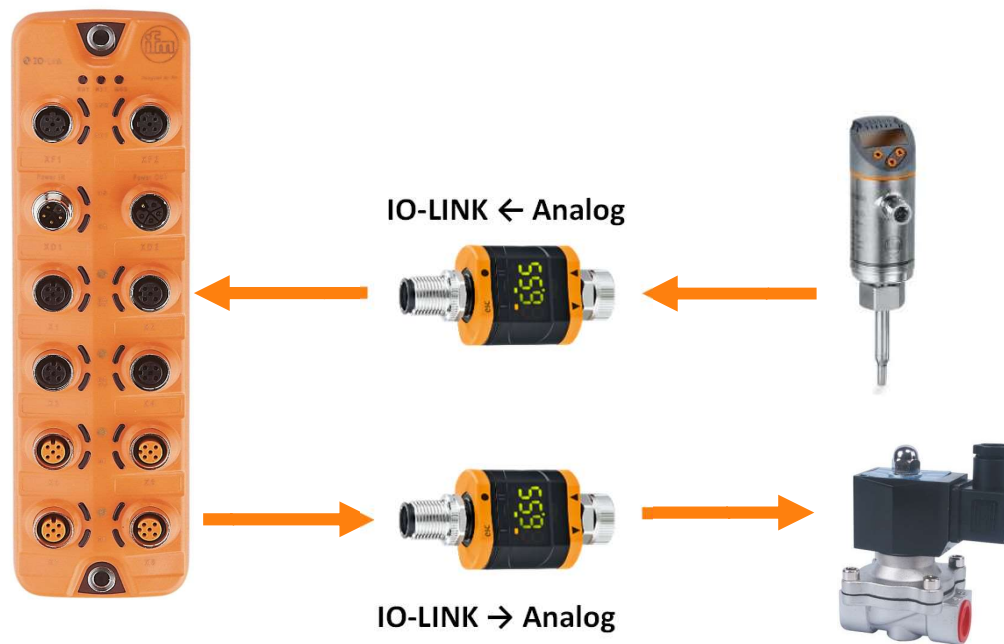


IO-Link Convertors

Convert Single Analog or IO-Link signals

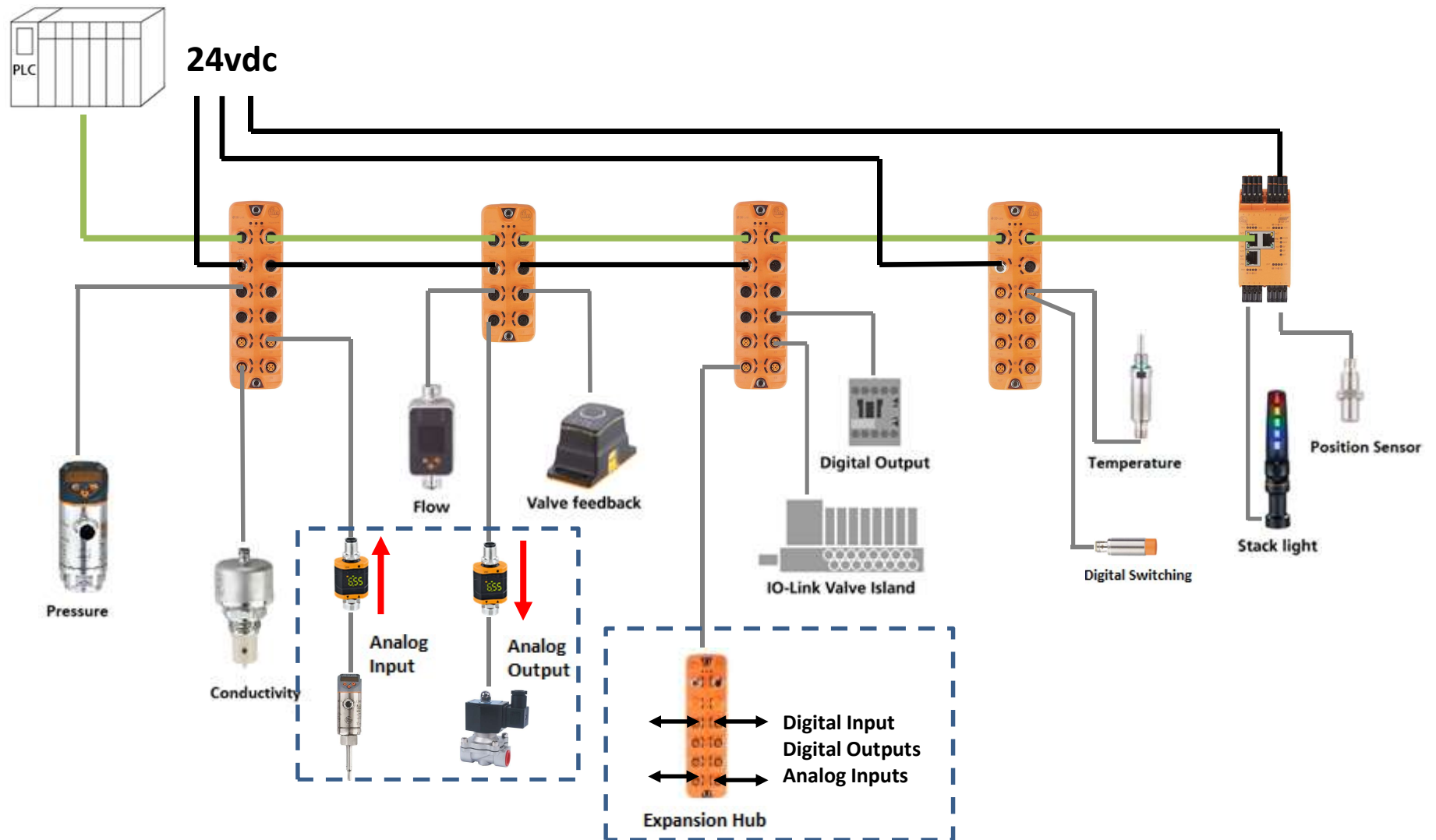
- Analog → IO-Link
- IO-Link → Analog

Only works in combination with an IO-Link master



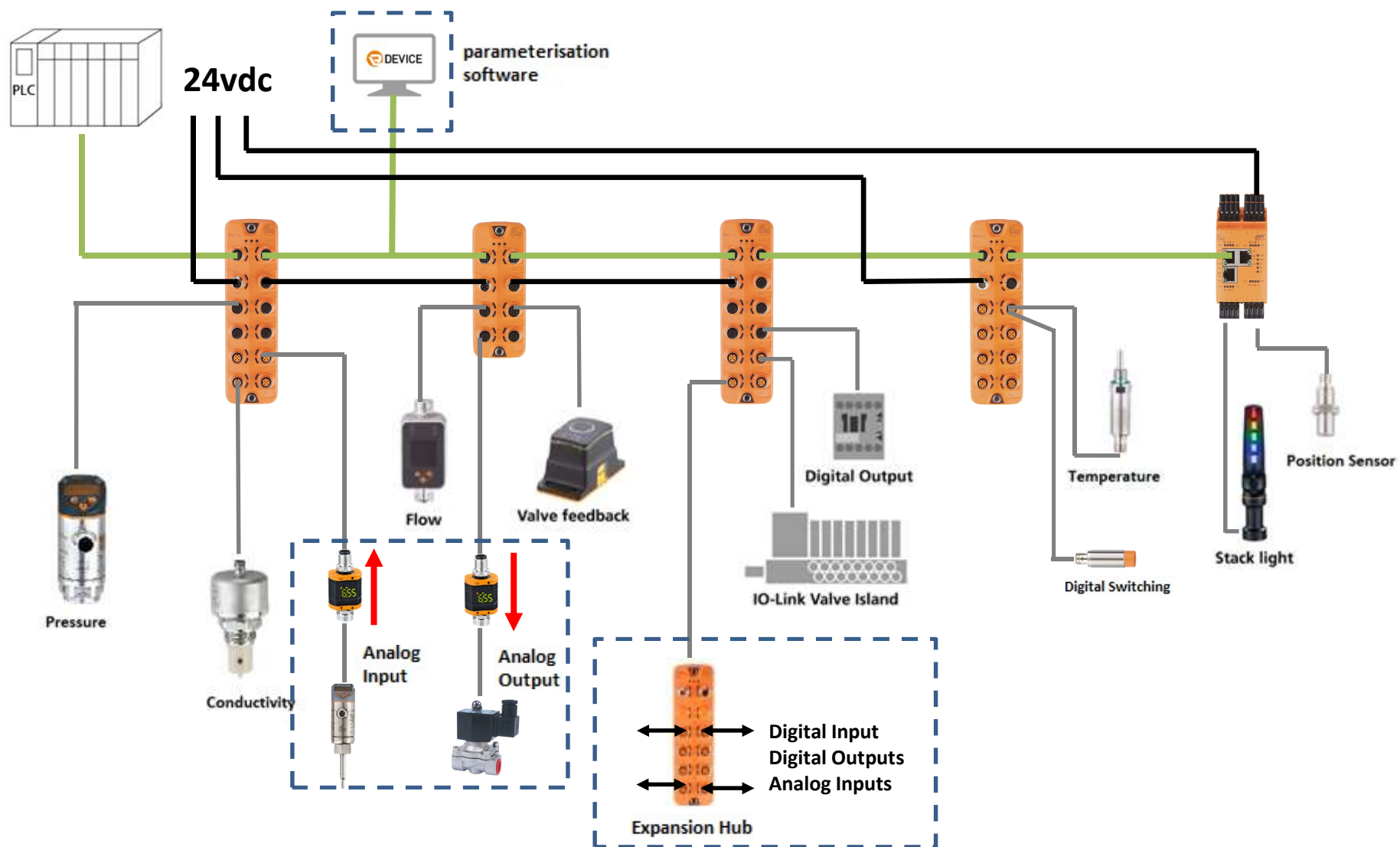


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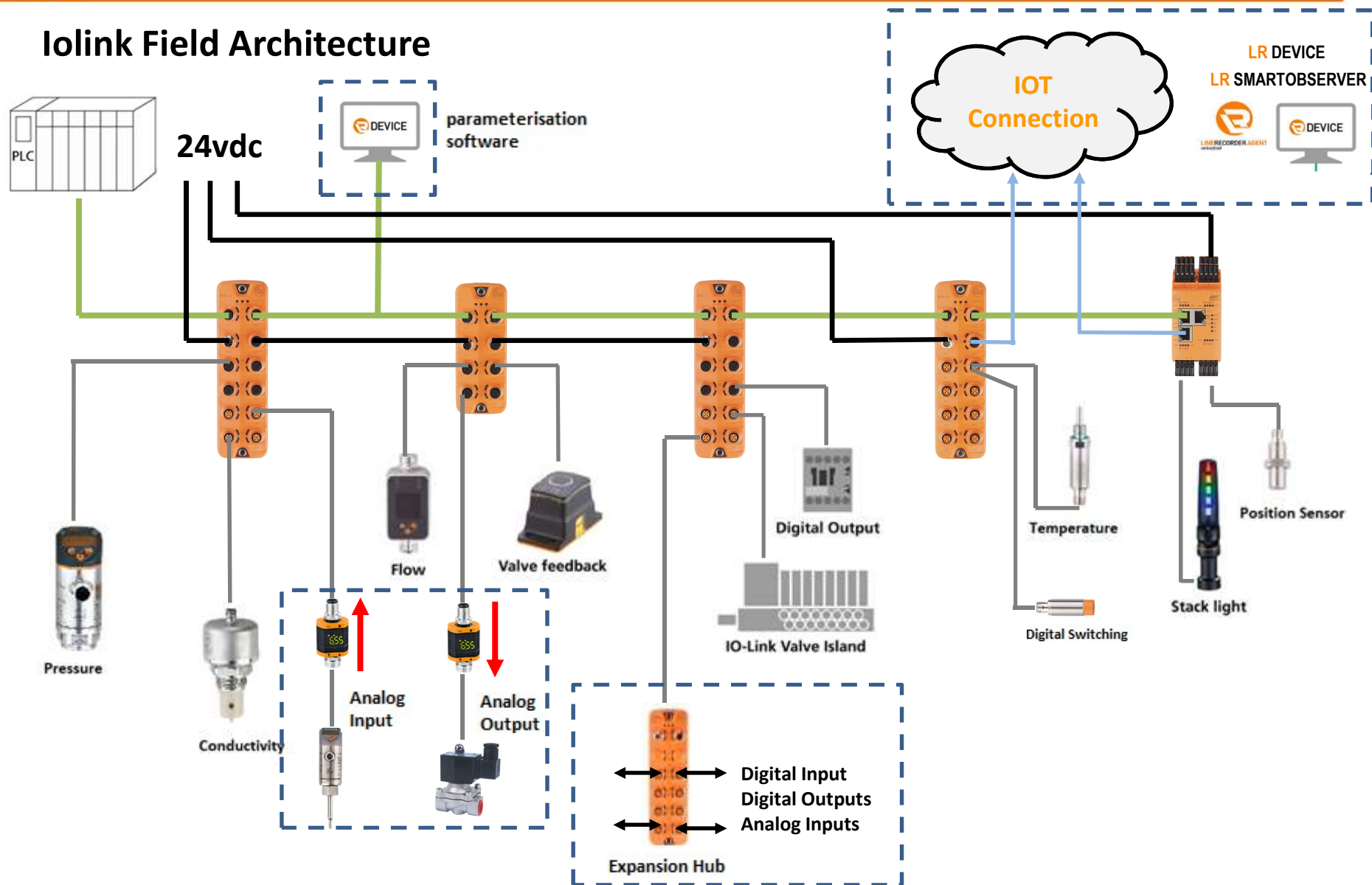


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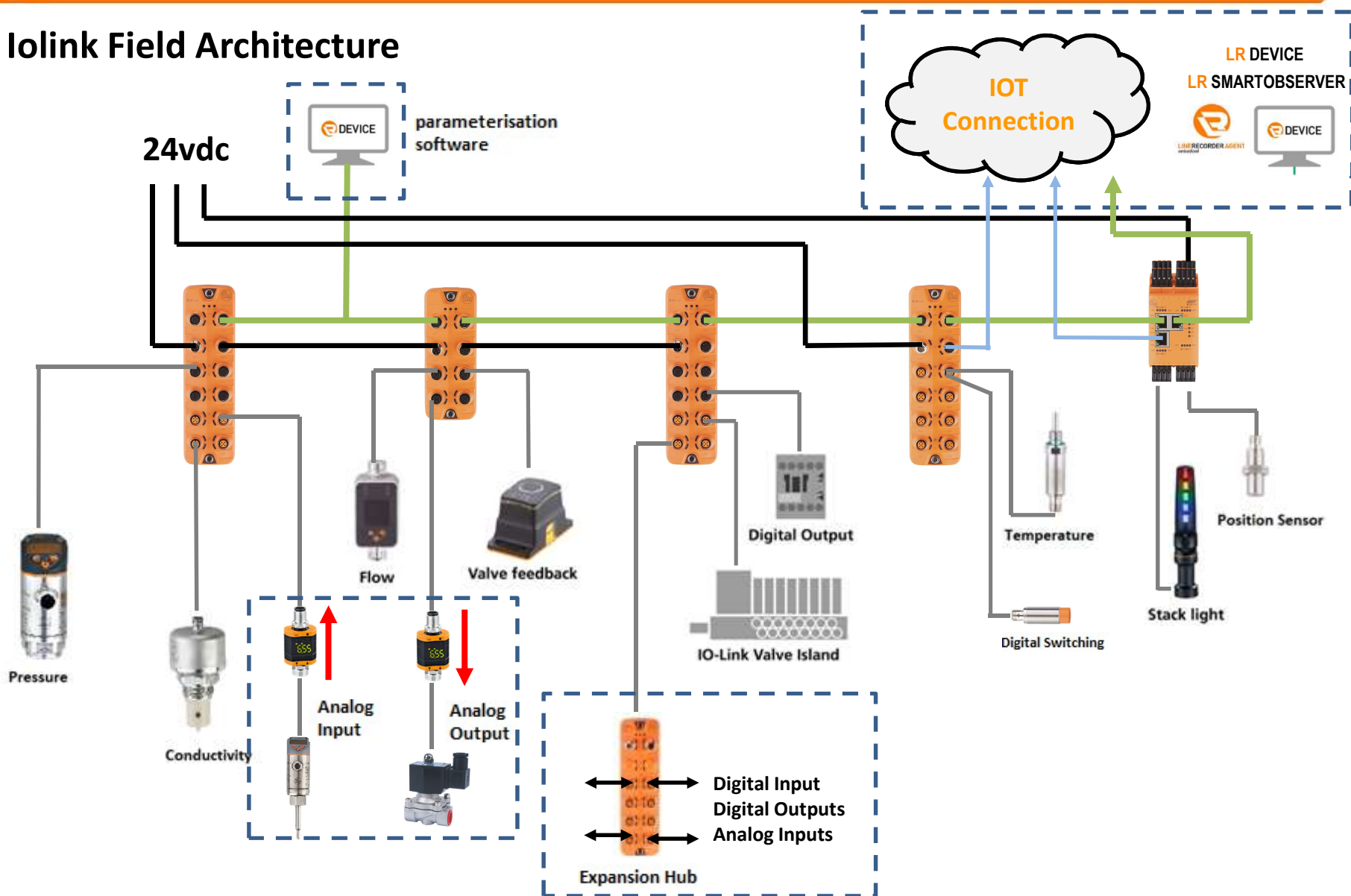


Iolink Field Architecture





Iolink Field Architecture





IO-Link Starter Kits

Various IO-Link started kits are available
For different fieldbus protocols

Includes:

- LR Device Software
- IO-Link Master
- Sensor
- Cables and accessories



Let us help you **start** your journey to the
4th Industrial Revolution

Questions & Answers ?





Webinar Schedule

22 July 2020	Introduction to IO-link
29 July 2020	IO-Link: Implementing a Smart Wiring Solution
05 August 2020	Smart observer – Versatile online monitoring
12 August 2020	ifm's New valve sensor - Continuous position feedback and diagnostics
19 August 2020	Compact Versatile Single Signal Lamp with IO-Link Technology
26 August 2020	IO Link Precise Pressure Sensor with Temperature Monitoring

See the next webinars at the link below:

<https://www.ifm.com/za/en/za/webinars/2020>





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