DIGITAL OUTPUTS

To simplify the experience for our customers, Lion Precision has developed product lines for both Capacitive Sensors and Eddy Current Sensors that feature digital outputs instead of analog. By doing this, our customers no longer need to install and configure an analog-to-digital converter to be able to process the data coming from our products. No more converters, means shorter setup times and lower cost.

Our products may feature four different types of digital output. They are Ethernet, EtherCAT, USB and SPI.

Outputs Available

Ethernet (TCPIP)

- Ethernet is the most common type of local network used today
- Reaction time of 100ms on average

- Web API
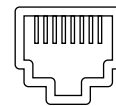- Allows for flexible network topology

Diagram 1 - Ethernet Connector (Image not to scale)

EtherCAT (Ethernet for Control Automation Technology)

Using the same connector as Ethernet, EtherCAT is a protocol developed by Beckhoff Automation. The main objective of this protocol is to decrease cycle times for real-time automation purposes.

Benefits of using EtherCAT:

- Increase processing speed (reduce cycle time) and avoid delays ($\leq$ 100 µs)
- Lower data requirements for equipment
- No external switches are needed within the network
- Allows alternate topology options

- Reduces data traffic in the network
- Provides redundancy for intra network communication
- The distributed clock system lowers jitter (accurate synchronization $\leq$1 µs) and provides more accurate data
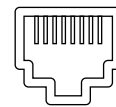

Diagram 2 - EtherCAT Connector (Image not to scale)

USB 2.0

- 480 Mbit/s speeds
- USB interface is in most cases self-configuring
- Cable length limitations

- Strict tree-network topology
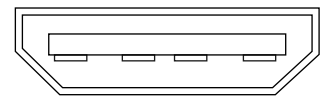- Communication with only one peripheral at a time

Diagram 3 - USB Connector (Image not to scale)

SPI

- Synchronous protocol (Host generates clock signal)
- Allows for transmitting and receiving data at the same time (full-duplex interface)

- Allows for one host and multiple peripherals
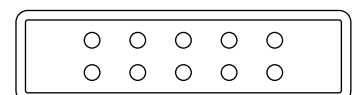- Flexibility for implementation to any embedded system

Diagram 4 - SPI Connector (Image not to scale)

Outputs Per Product Line

The table below showcases the available output options by product line. For the Capacitive Sensor lines, the CPL590 is the digital output option while the ECD360 and ECD310 are the Eddy Current options.

Product Line		Digital Output				Analog Output
		Ethernet	EtherCAT	SPI	USB	
Capacitive	CPL590	●	●	●	●	
	CPL490					●
	CPL190/290					●
	CPL230					●
	CPL350					●
	CPA100					●
Eddy Current	ECL202					●
	ECL150					●
	ECD360			●		
	ECD310	●	●	●		
	ECL101					●
	ECL110					●
	ECA102					●

Additional Resources

How does EtherCAT work?

Are you interested in learning how the EtherCAT output works and the benefits you get by choosing this option? Read our tech bulleting here (Add hyperlink) and learn all about it.

Lion Precision Products with Digital Output

Do you want a deeper dive in to the products available with digital outputs from Lion Precision? Read our tech bulleting here (add Hyperlink) to gather the information you need.

Ordering Information

Please contact Lion Precision for ordering information.
We can be reached via email at info@lionprecision.com, or via telephone at (651)-484-6544.

Lion Precision products are subject to U.S. export control regulations. They may be subject to certain licensing requirements and restricted for export.