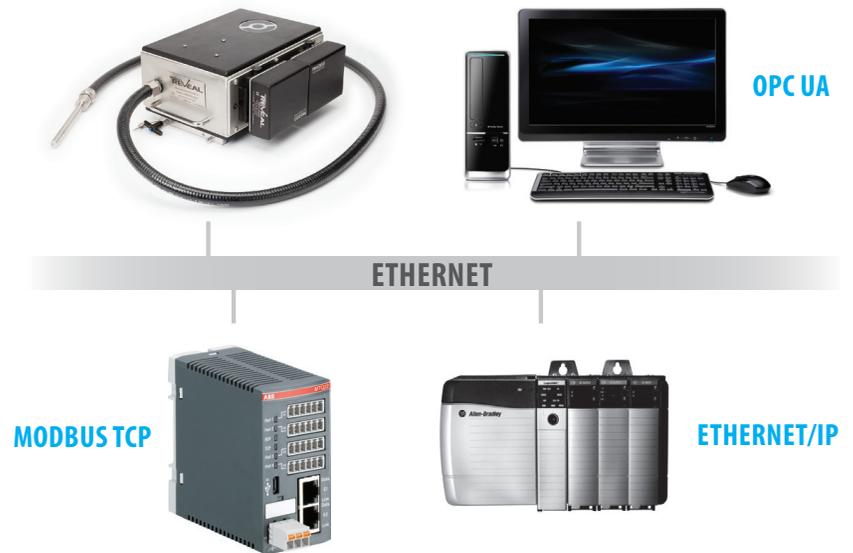# Industrial Communications

The Reveal platform has multiple industrial connectivity features to facilitate integration into existing process control systems. All Reveal platforms offer "out of the box" connectivity using multiple industry standard protocols. These standard connectivity features allow for process data and control integration using connected PLC and HMI devices.

Standard communication protocols included with the Reveal unit are Ethernet/IP, Modbus TCP and OPC UA.

OPC UA

ETHERNET

MODBUS TCP

ETHERNET/IP

Ethernet/IP

Ethernet/IP is an industrial network protocol that uses the Common Industrial Protocol (CIP) over Ethernet. The Reveal unit has a standard Ethernet/IP adapter that enables communication with PLCs (most commonly Rockwell) that support Ethernet/IP. An EDS (Electronic Data Sheet) is available for the Reveal unit. For Rockwell ControlLogix PLCs, an AOI (Add-on Instructions) is available.

Variable	Type	Format	Comment
Heartbeat	Read	16 bit Integer	Value for comm verification
Status	Read	16 bit Integer	ok = 0, other value = error condition
Lamp State	Read	16 bit Integer	0 = off, 1 = on
Sampling State	Read	16 bit Integer	0 = off, 1 = on
Reading ID	Read	16 bit Integer	Reading identifier
Results	Read		Results 1 to 12
Temperature	Read		Device temperature
Lamp Control	Write		> 0 turns lamp on, < 0 turns lamp off
Sampling Control	Write		> 0 turns lamp on, < 0 turns lamp off
External Trigger Control	Write		> 0 takes a sample

Modbus TCP

Modbus TCP/IP is a Modbus variant used for communications over TCP/IP networks. The Reveal unit uses the standard 502 port for connections. There are many devices that support the Modbus protocol including Modicon PLCs as well as many SCADA packages and HMI devices.

Register	Description	Type	Format	Comment
40001	Heartbeat	Output	16 bit integer	Value for comm verification
40002	Status	Output	16 bit integer	ok = 0, Other value = error condition
40003	Lamp State	Output	16 bit integer	0 = off, 1 = on
40004	Sampling State	Output	16 bit integer	0 = off, 1 = on
40009-40010	Reading ID	Output	16 bit integer	Reading identifier
40009-400034	Results	Output	32 bit floating point	Results 1 to 12
400034-40036	Temperature	Output	32 bit floating point	Device temperature
401061	Lamp Control	Input	16 bit integer	> 0 turns lamp on, < 0 turns lamp off
401062	Sampling Control	Input	16 bit integer	> 0 turns lamp on, < 0 turns lamp off
401063	Trigger Control	Input	16 bit integer	> 0 triggers acquisition

OPC UA

OPC UA (Open Platform Communications Unified Architecture) is a data standard that allows for real-time data communication between many different devices from various manufacturers. The Reveal unit is compatible with many common OPC servers including Kepware and Matrikon.

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