

	BACnet	Modbus	LonWorks	OPC UA
Physical layer	MS/TP (RS-485) or Ethernet	RS-485 (RTU) or Ethernet (TCP)	FT-10, transformer-isolated, or IP	Ethernet / IP only
Adapter to carry	USB-to-RS-485 (MS/TP); plain Ethernet (IP)	USB-to-RS-485 (RTU); plain Ethernet (TCP)	U10 USB Network Interface + OpenLDV driver	None — plain Ethernet
Typical field tool	YABE	QModMaster	NL220 / OpenLNS / LonScanner	UaExpert
Addressing	Device instance + object ID	Slave address + register	Domain/subnet/node + Neuron ID	NodeId (namespace + identifier)
Discovery	Yes — Who-Is / I-Am	No — must know slave address	Network management tool only	Yes — browse address space
Get this first	Device instance + MAC schedule, network numbers	Register map (there is no discovery)	XIF files, binding records, Neuron IDs	Endpoint URL, security mode, read vs. write scope
Writes governed by	16-level priority array	Register-dependent; some read-only	NV binding, set at commissioning	Permissions / security policy
Biggest gotcha	Priority override, or stale mapping after a swap	Register guesswork; 32-bit byte order	Lost commissioning records	Certificate trust rejection
First test when stuck	Who-Is → do you get an I-Am?	Clean register request/response?	Does the network tool see the device?	Reproduce with a generic client
Packet analyzer	Wireshark (native dissector)	Wireshark (needs Decode As off port 502)	Specialist Lon tools — no Wireshark equivalent	Wireshark (security layer is often the issue)