

Comparing Key Performance Criteria of Industrial Digital Protocols

	 EtherNet/IP	 EtherCAT	 PROFIBUS	 CANopen	 DeviceNet	 Fieldbus	 HART	 RS-485
NODES 	Unlimited	65,535	Unlimited	127	64	240	15	16
BUILD RATES 	10 100 1 MBPS, MBPS, Gbps	100 MBPS	100 1 MBPS, Gbps	1200-12 MBPS	125 250 500	31.25 K	1200	1200-115 K
MESSAGE SIZE 	511 BYTES	1500 BYTES	1440 BYTES	244 BYTES	8 BYTES	240 BYTES	31 BYTES	24 BYTES
MAIN TOPOLOGY 	 MULTI DROP	 MULTI DROP	 RING, STAR, TREE	 MULTI DROP	 MULTI DROP WITH BRANCHES	 MULTI DROP WITH BRANCHES	 POINT-TO-POINT	 MULTI DROP DAISY CHAIN
MESSAGE TYPES 	 PRODUCER-CONSUMER NETWORK	 PASS THROUGH	 PRODUCER-CONSUMER NETWORK	 MASTER-SLAVE POLL EXPLOIT	 MASTER-SLAVE POLL EXPLOIT	 PEER-TO-PEER	 MASTER-SLAVE POLL EXPLOIT	 MASTER-SLAVE POLL EXPLOIT
CABLEING 	 STANDARD ETHERNET RJ45	 STANDARD ETHERNET RJ45	 STANDARD ETHERNET RJ45	 PRE-DEFINED COROSETS	 PRE-DEFINED COROSETS	 PRE-DEFINED COROSETS	 2-WIRE (4-20 mA)	 PROPRIETARY CABLES

KEY ADVANTAGES:

EtherNet/IP

EtherCAT

PROFIBUS

CANopen

PROFIBUS

DeviceNet

Fieldbus

HART

RS-485

Exceptional performance, flexible topologies, full duplex, self-terminating, easy to deploy, uses standard, cost-effective Ethernet cabling

Widely used and field proven industry standards communication protocols, well suited for medium and large automation projects, cost-effective versus point-to-point solutions

Widely accepted, ideal for set-up, diagnostics and troubleshooting, easy implementation over 4-20 mA signal lines, easy to use with HART hand held communicator, can be used effectively over long distances and in electrically noisy environments

Good for small automation projects or systems, supports typical topologies used in small systems, custom tools and software (DDE, DLL, 0260 Smart Interface), simplifies installation