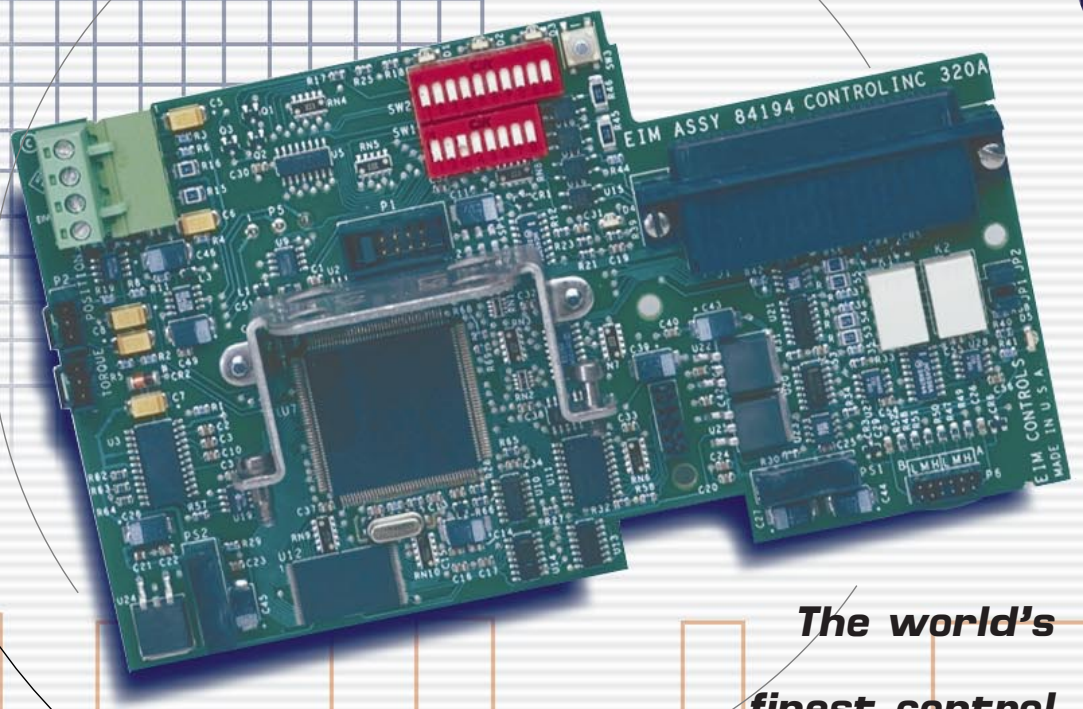
CONTROLINC®

CONTROLINC 320A



The world's finest control system for valve actuators just got

BETTER.

EIM CONTROLS

50 years of experience that will keep your business competitive this year and every year.

Valve actuators have come a long way since the days when the only control options available were "on" and "off," using a heavy-duty electrical drum switch that was operated manually. As valve actuators grew in complexity and were asked to accomplish increasingly sophisticated tasks, EIM was there, designing and developing the smart technology that allows today's actuators to facilitate everything from precise throttling to full process control. EIM Controls, Inc. has been manufacturing high-quality valve actuators since 1949. From the earliest pushbutton systems, to analog PLC controllers to today's advanced LAN-based systems, we have been setting the standards for valve control. In fact, EIM has developed many of the advanced capabilities the industry takes for granted today. Our Series 2000 Electric Actuators are in use at thousands of locations around the world and are considered by many to be the most rugged and upgradable actuators on the market today. However, we aren't resting on our laurels. Our latest innovation, the **CONTROLINC 320A Field Unit Card**, extends the capabilities of the proven 2000 Series by allowing actuators to be controlled remotely through a LAN network. EIM was the first to introduce network capability to valve actuators in 1985. Since then, many improvements, refinements and advanced features have been added, resulting in the most advanced and fastest communication actuator available today.

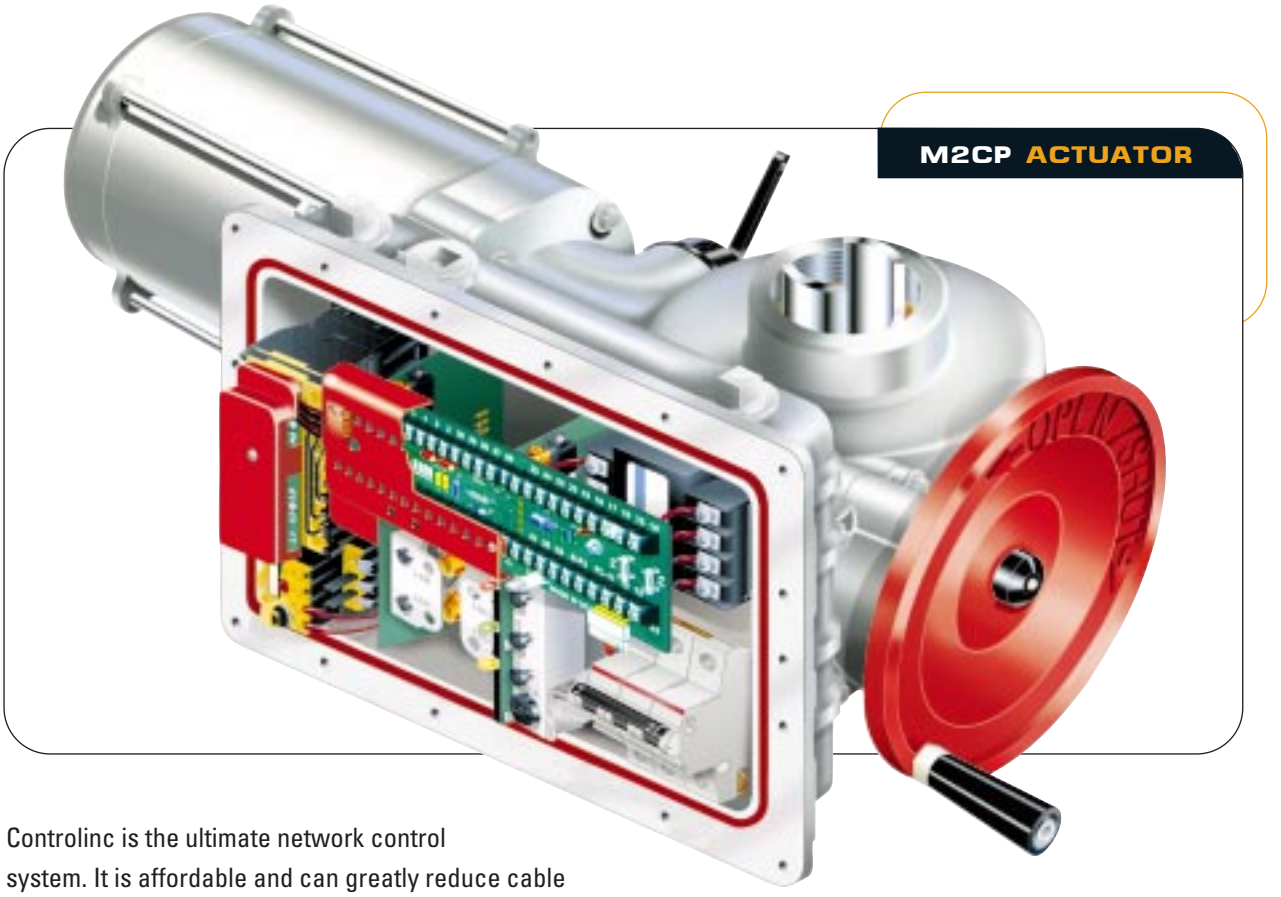
Controlinc network control: the path to improved performance.

Almost everyone recognizes the advantages of today's digital valve control systems over older 20mA loop network systems. Today's sophisticated networked valve control systems are faster, more reliable and offer unmatched flexibility. However, all LAN systems are not the same. EIM's Controlinc system offers significant advantages over competitive alternatives.

Controlinc has the fastest overall response time on the market. With speed and long distance capability, the EIM system can be used to build the most responsive and flexible network available today.

320A Modbus Function Codes

01	Read Coil Status
02	Read Input Status
03	Read Holding Registers
04	Read Input Registers
05	Force Single Coil
06	Preset Single Register
07	Read Exception Status
08	Loopback Diagnostic Test
15	Force Multiple Coils
16	Preset Multiple Registers
17	Report Slave I.D.



Controlinc is the ultimate network control system. It is affordable and can greatly reduce cable costs. It is reliable as attested by many satisfied users. It is expandable, giving you the ability to add up to 254 nodes per network. It is also standards-based, supporting the popular and widely accepted Modbus communications protocol. **Since we fully support Modbus function codes, including the powerful Report by Exception command, we are able to update the status of 100 actuators in less than 2 seconds.** ***Nobody else even comes close.***

By adding the Controlinc 320A Field Unit Card to our 2000 Series Actuators, you are able to utilize almost any commonly accepted network topology to create a flexible, intelligent system with built-in redundancy. It accomplishes far more than previous analog controller systems that were limited to simply "torque and turns." With the 320A installed in your valve actuators, you can control up to 254 nodes per network.

An optional **Controlinc Network Master module** can enhance system performance even further by offloading processing and network management tasks from the host computer. This compact 19" rackmountable unit supports up to six network ports and can function both as a master and a slave with multiple network topologies. Parallel networks, ring networks, and fully redundant networks are all supported at speeds of up to 115,200 baud and distances of up to 200 miles. The Controlinc Network Master functions as a network manager, a data concentrator and a protocol converter, significantly improving the performance and reliability of your entire system.

OPTIONAL CONTROLINC NETWORK MASTER

How intelligent are your actuators?

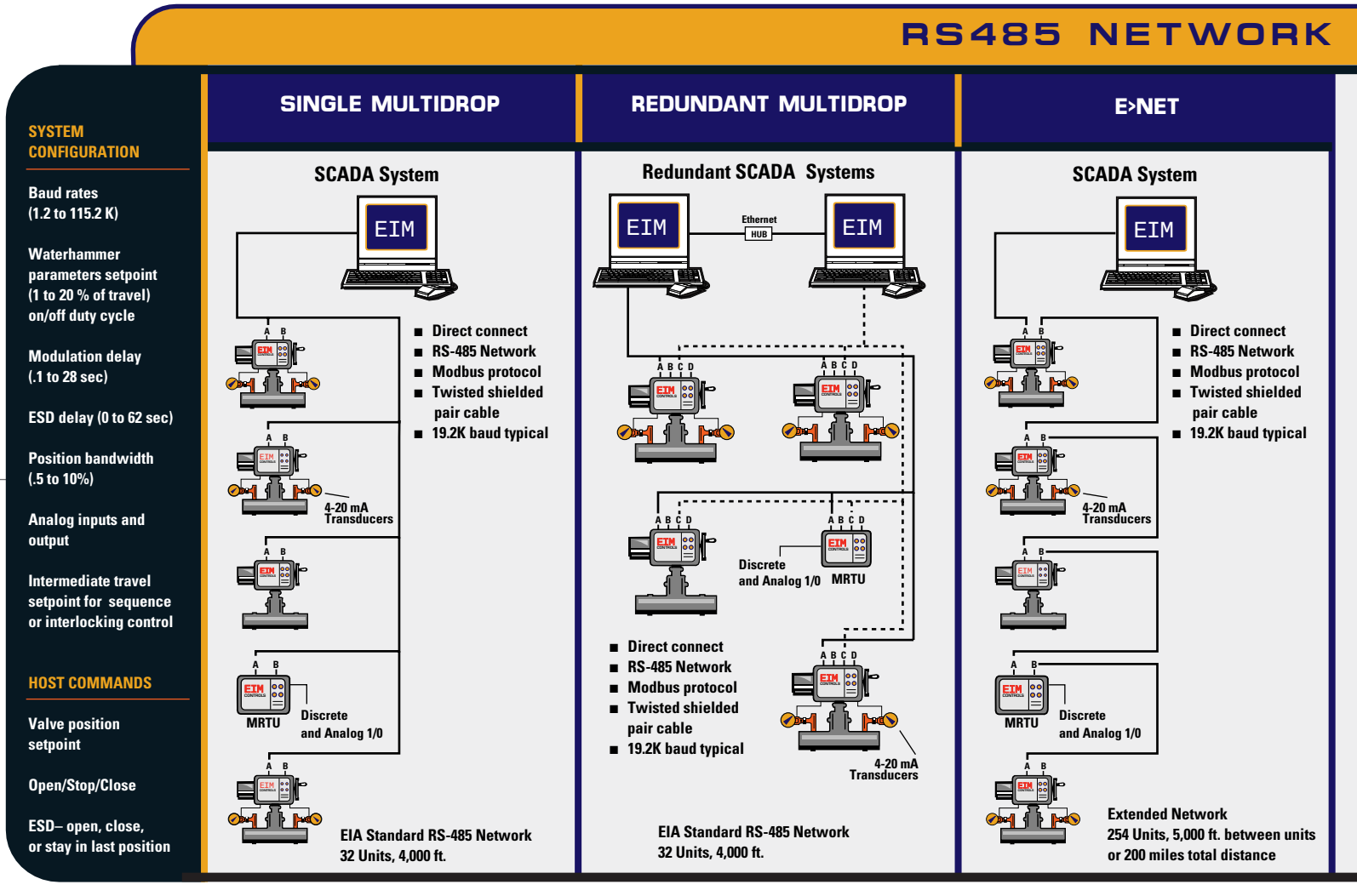
The new generation of intelligent valve actuators is accomplishing far more than simply opening and closing valves in the field. Today's sophisticated LAN control systems and digital valve actuators are smart enough to learn and adapt to the characteristics of any size valve. The 320A has its own on-board microprocessor and can provide the host computer with instant feedback on all actuator parameters.

These sophisticated microprocessors provide real-time valve position feedback, allowing the valve to be continually repositioned to achieve the desired flow rate. The Controlinc 320A continually monitors all available valve functions, setting new standards for valve control with auto-calibration capabilities and reconfiguration for any valve application. In addition to precise process control, the 320A Field Unit can control field devices, like pumps, motors, and other types of data acquisition equipment. As your needs grow, the 320A provides you with the power and flexibility you need to grow with them.

The Controlinc advantage.

The Controlinc network control system with 320A Field Units is extremely powerful and versatile. This revolutionary control device takes advantage of powerful on-board microprocessors in each actuator that make it possible for a single host device to control hundreds of valves through a simple two-wire Local Area Network (LAN) connection. Using the Controlinc system, a single host can control valves up to 200 miles away. All widely used network topologies and multimedia interfaces, such as fiber optics, are fully supported. To increase reliability, Controlinc also supports a variety of redundant network configurations to ensure that faults in the line do not result in a loss of field service.

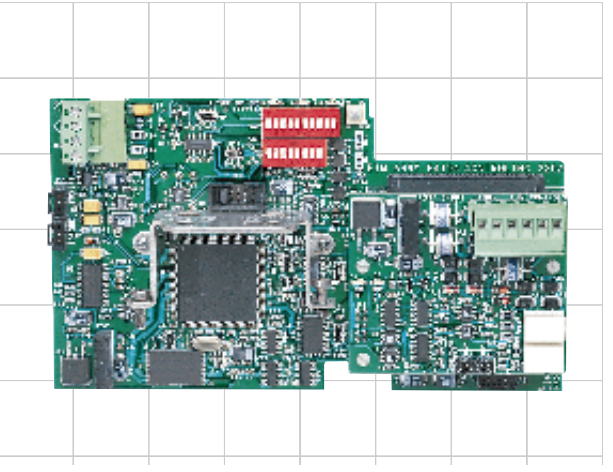
Since the 320A Field Unit Card gives each valve actuator the capability of serial communication with the host controller, actuators are now able to accomplish far more than simply controlling valves. Any type of information that can be measured or switched, such



as pump control, pressure, temperature, the status of switches, valve torque trending and much more can be monitored and transmitted to the host by the microprocessor. In addition to automating 254 valves per network, auxiliary I/O of Controlinc 320A can automate over 1,700 pumps, solenoids and transducers on a single network.

Flexible and reliable valve operation under tough field conditions.

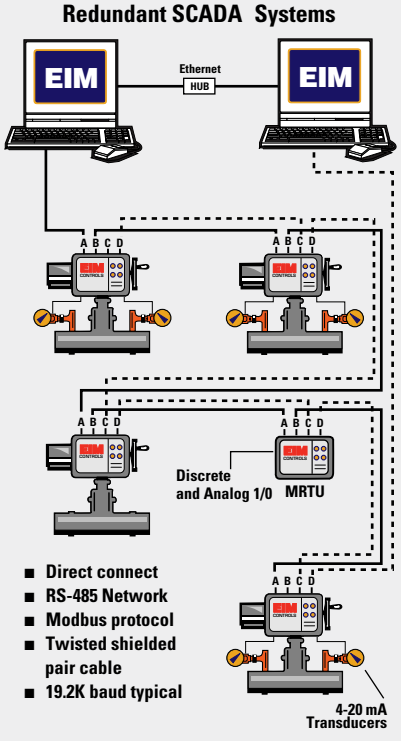
The 320A is extremely reliable and has been designed for tough field conditions. Standard features include built-in lightning suppression, network redundancy and full support for all industry accepted network topologies and methods.



CONTROLINC 320A FIELD UNIT CARDS

TOPOLOGY OPTIONS

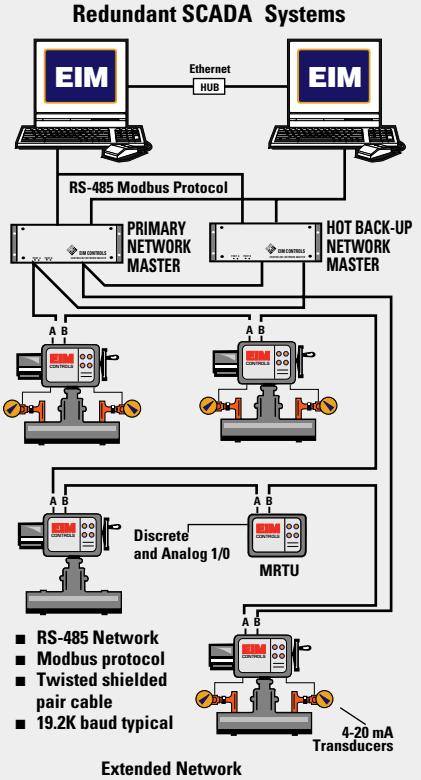
REDUNDANT E>NET



- Direct connect
- RS-485 Network
- Modbus protocol
- Twisted shielded pair cable
- 19.2K baud typical

Extended Network
254 Units, 5,000 ft. between units
or 200 miles total distance

E>NET RING



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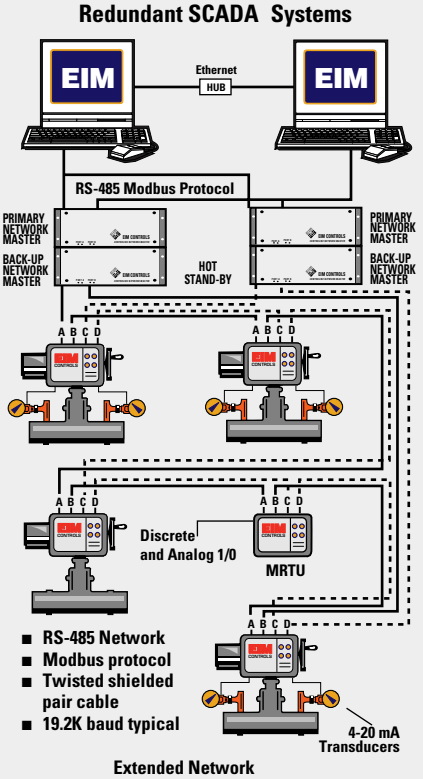

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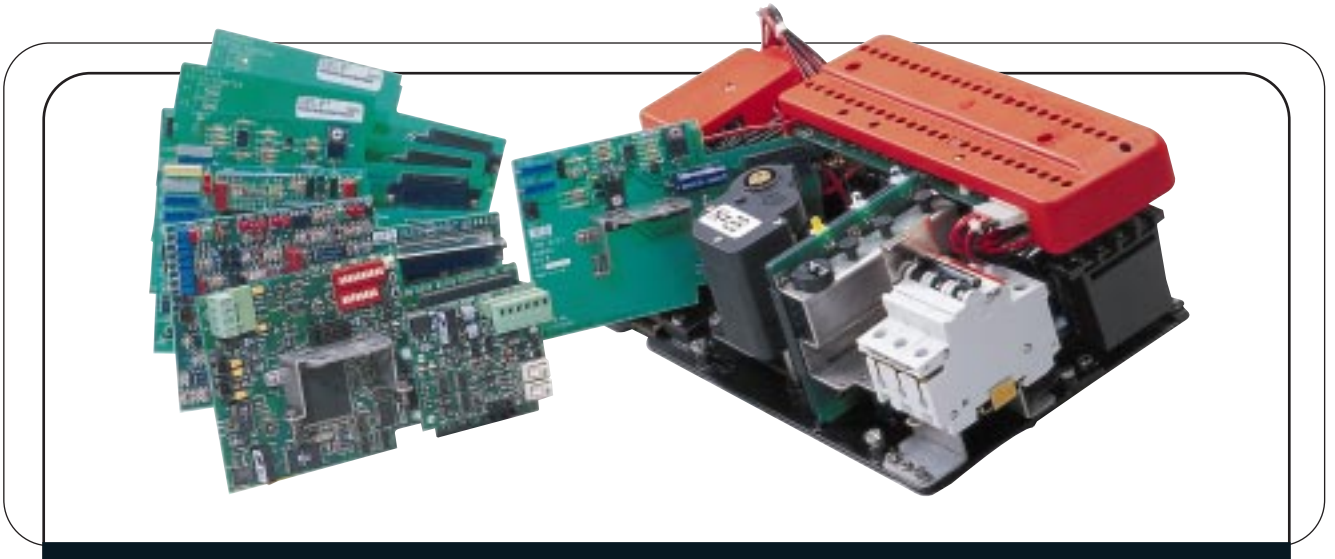
ACTUATOR REPLY

- Valve position (0 to 100 %)
- Open and Close Limits
- Valve moving direction
- Selector switch (local/off/remote)
- Torque trending (at 10% increments of travel)

ALARMS

- Open and Close Torque Switch
- Valve stall (not moving)
- Loss of power
- Motor thermal or O/L relay trip
- Phase monitor
- Local ESD
- Actuator failed self- diagnostic
- Loss of comm ports



Controlinc 320A was developed to perform the functions of a complete series of control cards including discrete control, analog control, precision positioner plus full digital network control using only one card. Any EIM 2000 series valve actuator may be upgraded to *Controlinc* using the universal card slot of the M2CP control package.

As an integral part of the Controlinc system, our 320A Field Unit Cards are easily integrated into large and complex networks driven by manufacturers of every major host system.

The 320A is a single-board plug-in logic module containing our exclusive Controlinc microprocessor and all necessary network connectivity. It is readily accessible within the valve actuator switch compartment and can be replaced in seconds, so upgrades and repairs are a snap. The 320A turns 2000 Series actuators into fully self-calibrating units that automatically learn the characteristics of any size and speed valve and adapt themselves automatically. Auto-calibrating analog inputs and analog valve position feedback are standard and a local pushbutton control is included for independent field operation if necessary. Local pushbutton controls operate independently from the electronic module, so valves remain operable under all conditions. Controlinc 320A also performs its own self-diagnostic routines and will send appropriate alarm messages back to the host controller if required.

Standard 320A reporting capabilities include Open and Close limit switches, Open and Close torque switches, Local and Remote selector switch position and analog valve position. All valve parameters are stored in nonvolatile EEPROM memory: **No Batteries Required**. To further enhance reliability, complete optical isolation is maintained between field wiring and control circuits. All 320A components are designed and manufactured to exceed the most demanding user expectations for superior performance and long operating life. Our ISO 9001 certification is proof of our commitment to quality today and to continued improvement in the future.

Upgradable, scalable and fully compatible in almost any environment.

When EIM introduced the Controlinc system in 1985, we wanted to create an open and upgradable network that would protect our customer's investment. As a result, the majority of our original Valve Controllers are still in operation today. EIM designs and specifications are fully standards-based and can be readily integrated into virtually any network topology. Since standard Modbus protocol with CRC error checking is used by the 320A, the unit can be directly installed into most networks without further modifications.

The 320A's multi-tasking operating system features Flash EEPROM programming environment, so it is easy to upgrade the logic board to meet changing user requirements. A unique plug-in network adapter configuration can support single and redundant bus and ring networks up to 22,000 feet in length. E>Net Extended Networks can extend this distance up to 200 miles. This flexible design allows up to 254 stations to operate on a single network.

With available functions that include torque switch anti-hammer protection, remote diagnostics, setpoint positioning, auto calibration, shut-down and alarm monitors, analog trending for valve diagnostics and much more, we've done everything we can to ensure the 320A will meet your requirements both now and in the future.

Proven in water treatment, pipeline, petrochemical, power, industrial and marine installations around the world.

The Controlinc 320A is the latest addition to a proven and reliable system. Thousands of 112 and 320 Valve Actuators are in operation in tank farms, water treatment plants, power generation plants, ships, oil refineries and factories around the world. We have been improving our basic design for over a decade and the 320A takes full advantage of everything we've learned to date.

Municipal and industrial customers have nothing but praise for the Controlinc 320. According to a Supervisor for Special Projects for the Dallas Water Department, the Controlinc System has saved both time and resources, especially during high usage conditions. "We are able to exercise our sluice gate valves from our office to keep them free of debris. This saves many man-hours because we used to have a crew drive to the valves to perform this function."

The 320A supports baud rates of up to 115,200 BPS for high-speed remote operation. By adding 320A Field Units to your Controlinc System, it is now possible to control complex processes from anywhere in the world. As competition continues to increase in the global energy market and municipalities everywhere attempt to adapt to new regulatory changes, it is more important than ever to maximize the effectiveness of a wide range of manufacturing and materials handling processes. Based on the proven design of the Controlinc System, the 320A Field Unit can be a powerful tool to increase the reliability and flexibility of your operation.

When your application demands the highest level of intelligence with maximum performance and reliability, *Controlinc* is the solution.

Tell us your needs and we'll help you meet them.

EIM valve actuators and components are produced by a highly skilled and dedicated team at our corporate headquarters outside of Houston, Texas. We are committed to meeting our customer's needs, both now and in the future. EIM already leads the industry in providing customers with innovative, competitive solutions and on-time delivery. Helping us stay in touch with ongoing customer needs is an extensive distributor network. Our distributors can provide the resources you need to design, install and service a project that will fulfill all your requirements. The industry knowledge, expertise and after-sale support demonstrated by our distributor network is especially important in the complex world of two-wire digital control networks.

Customers have one word for EIM products: **RELIABLE.** Our reputation rests with the performance, quality, and long life of the valve actuators we design and build. With almost 50 years of experience, EIM is recognized worldwide as a leader in actuator design and manufacturing. If you've got a question, call us. We look forward to meeting all your valve control needs today and in the future.

EIM CONTROLS
13840 Pike Road, Missouri City, Texas 77489
Ph: (281) 499-1561, 1-800-679-1561 Fax: (281) 499-8445
www.eim-co.com

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