IP NETWORK RELAY TRANSMISSION

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IP network cameras and NVRs (Network Video Recorders) have changed the way we look at CCTV installations. The IP network is like a Super-Highway that can easily carry camera video, computer data and control signals all on the same network cable if you have enough bandwidth for each application. If you have a network connecting two points, you can send and receive any type of signal you want to, provided the equipment will interface with that form of data.

For computer data, almost all the computers have a port to use for this purpose and many other manufacturers have provided a port to connect to the internet or a LAN (Local Area Network) for communication. The problem comes when the equipment does not have a network interface and you want to get the signal from A to B location on a network cable or over the internet. This is the case for most of the legacy equipment you find in the field and having to change out all the equipment in a system just to get an internet feature can be very expensive.

The IP transmission system is exclusively digital between its nodes, yet many signal sources you want to convey start out as an analog signal. Our four senses sight, hearing, touch and smell all have analog sources and like us there are many types of sensors and detectors that have analog inputs with one difference, they have relay outputs in the place of our brains. To be precise, the switch produces a binary digital output, however you can’t directly attach it to a network and expect the signal to get through, it has the wrong format for the network.

Many examples of relay outputs are found in the equipment used in the alarm industry such as beam trip sensors, fixed motion detectors, heat or fire detectors, and magnetic contact door switches. Each one of these have a relay or switch and have open or closed outputs. For industrial applications there is remote control of equipment, telemetry or relay transmission to monitor the operation of equipment, various equipment alarms and indicators that must find their way onto an IP network to make the connection.

One of the most common types of signals used for remote control and telemetry is the simple switch contact used for alarm or control depending on the direction of the transmission. To get this type of signal delivered through to the IP network you need and interface device to convert the switch or contact open or close signal into the language used for network transmission.

The format used for this type of data is referred to as TCP/IP (Transmission Control Protocol/Internet Protocol) it employs 10/100Mbit ethernet protocol. It has been in use for more than 20 years and is proven to be stable and secure. This protocol is in wide-spread use and is easy to route though almost all networks and since it is Peer to Peer communication with addresses for both sender and receiver it works much like a telephone call person to person.

To get contact switch controls onto a network you can use a product called IPG-8T. The "T" in the name stands for transmitter and this unit sends the contact information to the far end of the network. The IPG-8T has 8 inputs for switch connections and an 8P8C type connector for the network connection. The network connector has Bi-Color LED indicators for link status, speed, and activity. The system is password protected for high security and reliability, powered by a 12VDC power cube, and mounts easily on any surface.

On the delivery end of the network an IPG-8R receives the signal and converts the switch contact information into relay outputs, one relay for each of 8 contact signals. If a switch closes on the transmitter unit a relay will close in the receiver unit and an LED will light indicating the condition of that relay as "ON". You can also invert the relay operation when that is needed with a jumper inside the unit. For security a ninth relay output monitors the communications path and will trigger an alarm if the signal is lost. This alarm relay can be used when maximum security is required and just like the transmitter the network connection has Bi-Color LED indicators for link status, speed, and activity. This unit is powered by a 12VDC power cube.

The IPG-8T/R is a transmitter / receiver set used to send up to 8 switch contacts or relay contacts over an IP network for remote control or telemetry. Use it to monitor remote equipment or operate controls remotely in industrial applications and alarm systems where an IP network or LAN exists to carry the relay signals.