APPLICATION NOTE -iSC2F

Single Port RS232/RS422/RS485/Fiber Serial Media Converter

The iSC2F is a cost-effective single serial media converter solution for the conversion between serial RS232, RS485, RS422, and optical fiber interfaces. It can address a variety of applications where a copper serial interface needs to be converted to fiber, for electrical isolation or to achieve communications over greater distances. It may also be used to convert between different copper interfaces, eg from RS-232 to RS485 multidrop. The iSC2F has been designed for power substation applications and other harsh environments and is fully compliant with the IEC 61850-3 and IEEE 1613 standards.

Application One

Connecting Serial out to the switchyard- distances up to 5km

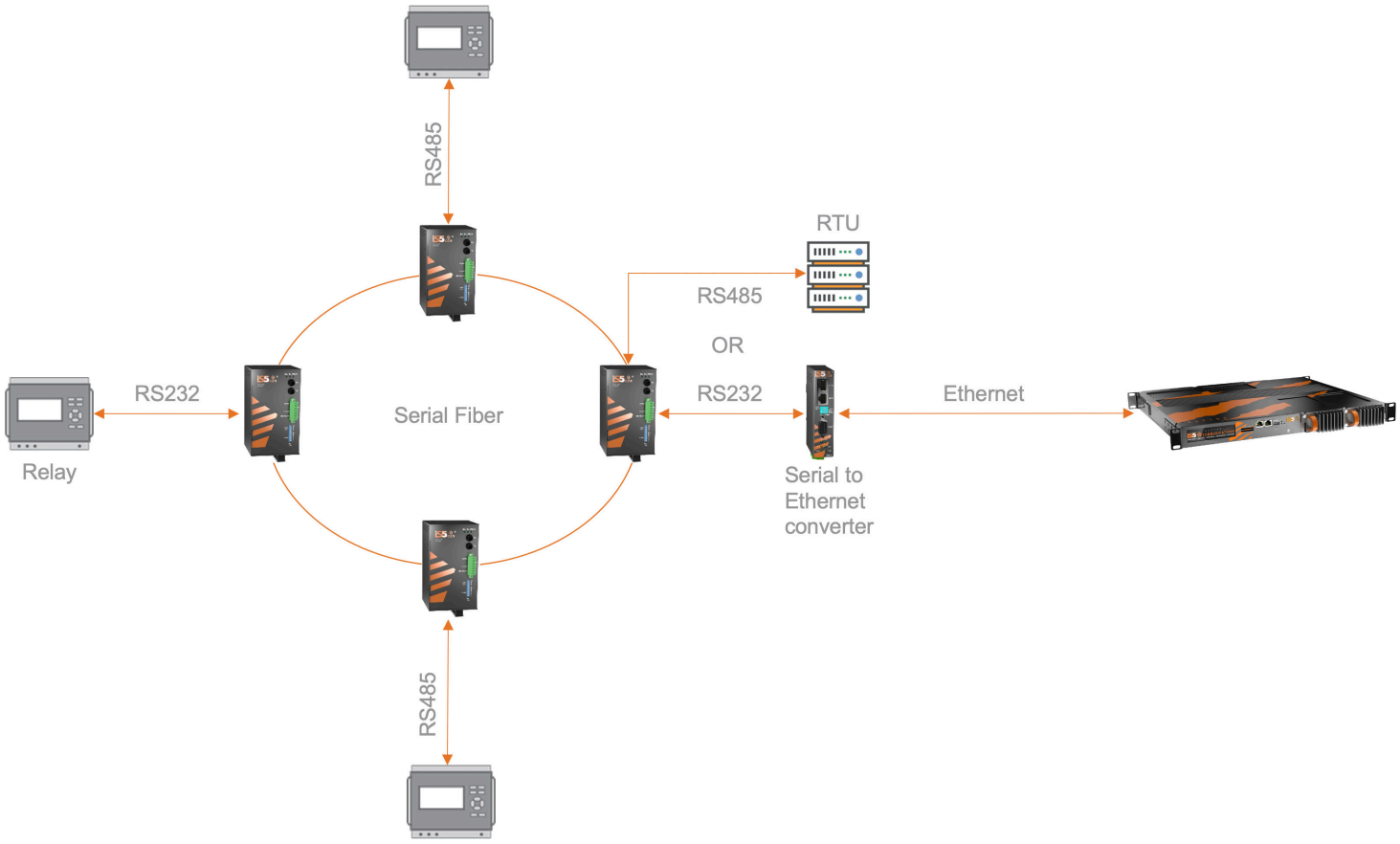
Optical fiber provides the distance needed for applications in the yard and offers electrical isolation for protection from nearby lightning strikes or other electrical surges. Distance on the fiber optic link may be up to 5 kilometers with speeds up to 115K baud on Multimode fiber. The electrical interfaces at each end of the link may be either RS232, RS422, or RS485. You can also use a Serial to Ethernet converter such as the iS5Com iDS3-S to allow serial connections to communicate directly into Ethernet networks inside the substation.

Application Two

Fiber repeater mode

If there is a need for more yard connections, or even serial-based pole top equipment such as reclosures, an alternative to running multiple point-to-point connections is possible using the iSC2F. A fiber-based serial ring may be constructed that allows the connection of many devices and will provide connection distances up to 5 kilometers between serial converters, using Fiber Repeater mode. This mode also supports extended distance between serial devices.

In this architecture, an iSC2F is placed at each field device and connected using the required copper interface. The iSC2Fs are then interconnected in a ring configuration using fiber. The 5km limit applies to the distance between individual units, so longer distances may be achieved by this method because the signal is regenerated at each iSC2F.



The data flows in one direction, but it does allow the multiple serial connections to operate from a single serial source port. The source could be an Ethernet to Serial converter or even an RTU. The end serial connections can be RS232, RS422, or even RS485, as the system also supports serial electrical conversion.

Application Three

Serial conversion- converting the serial connection between RS232/422/485

The iSC2F can electrically convert serial signals between devices. The conversion can take place on a single iSC2F:

In this case, the iSC2F is converting from RS485 to RS232, enabling connections to diverse end devices.

By using the serial fiber connection, conversion is possible over much longer distances:

CONCLUSION

The iSC2F is a very flexible product that provides users and integrators the ability to connect serial systems over long distances and between diverse serial electrical connections. The iSC2F accepts a wide input voltage range from dual 9-36VDC or 36-75 VDC power inputs to a single input of 110-370VDC or 90-264VAC. Its robust electrical design, meeting IEC 61850-3 and IEEE 1613 makes it suitable for harsh operating environments. These features, combined with a wide operating temperature of -40°C to 85°C, help protect mission-critical applications from network interruptions or temporary malfunctions.

ABOUT iS5 COMMUNICATIONS INC.

iS5 Communications Inc. (“iS5Com”) is a global provider of integrated services and solutions, and manufacturer of intelligent Industrial Ethernet products. Our products are designed to meet the stringent demand requirements of utility sub-stations, roadside transportation, rail, and industrial applications. iS5Com’s services and products are key enablers of advanced technology implementation such as the Smart Grid, Intelligent Transportation Systems, Intelligent Oil Field, and Internet of Things. All products have the ability to transmit data efficiently without the loss of any packets under harsh environments and EMI conditions.

iS5 COMMUNICATIONS

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