EXTEND

DAISY CHAIN

POINT TO POINT

STAR WIRING

REDUNDANT RING
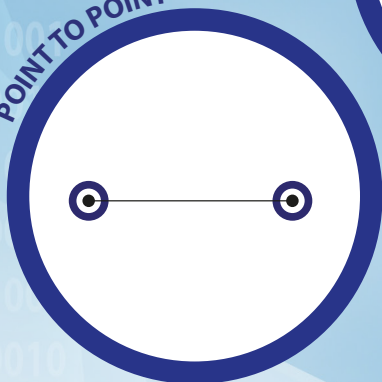
NETWORK

TCP / IP

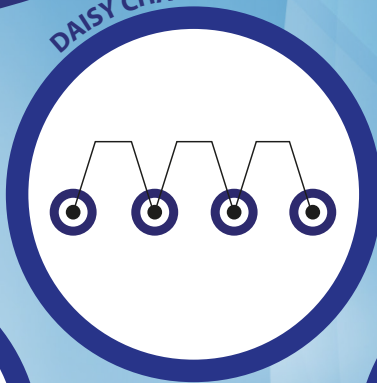## CommFront®
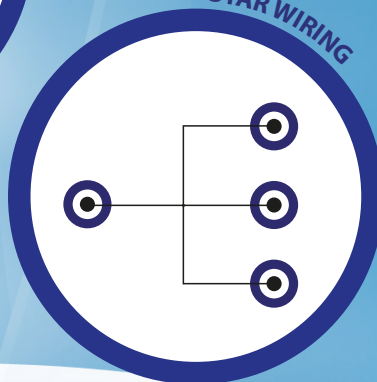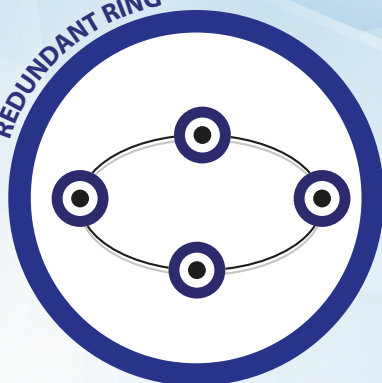
Communications made easy
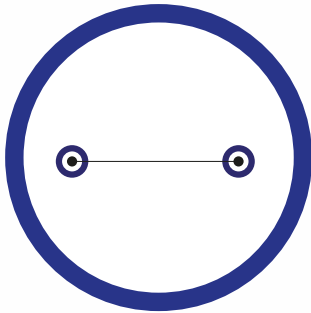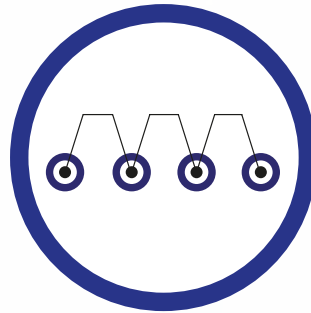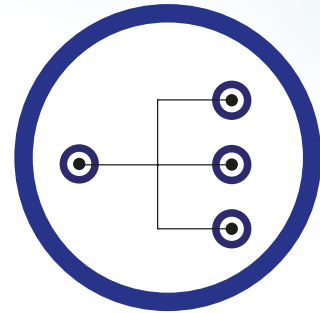
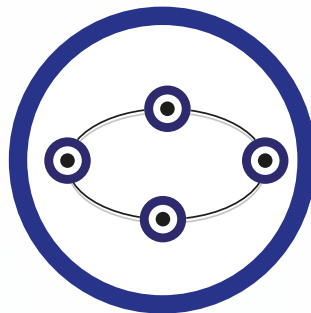# EXTEND

COMMUNICATIONS WITHOUT LIMITS
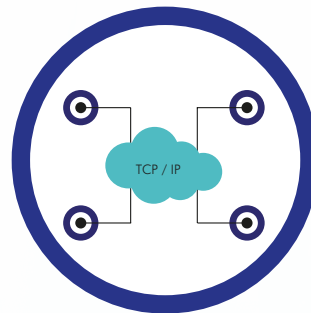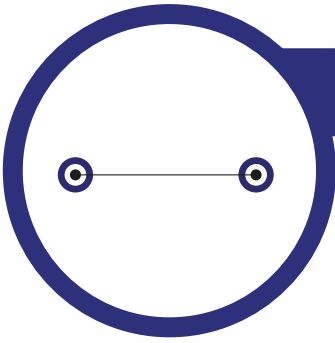
POINT TO POINT

DAISY CHAIN

STAR WIRING

REDUNDANT RING

NETWORK

TCP / IP

Your network is only as effective as its reach – yet unbalanced signals such as USB and RS-232 can reliably transmit only up to 15 feet, and even balanced Ethernet signals are capped at 300 feet. With a growing range of connectivity platforms, modern data networks require not just compatibility and reliability but also flexibility and expandability. CommFront offers ideal solutions to meet modern networks' data distance needs by converting unbalanced signals to balanced ones, deploying repeaters to boost signal strength, and implementing hubs for star-configured connections, while still taking full advantage of cost-effective and readily available copper wire. For large systems that go far beyond what copper wires can reach, we have perfect solutions too: Our fiber-optic converters work in both conventional point-to-point and advanced daisy-chain/redundant-ring configurations, giving your data network a boost in distance, ranging from 3 miles to hundreds of miles, and additional flexibility, reliability, and expandability. CommFront's Serial-TCP product offers another ideal solution for merging serial communication protocols with modern TCP/IP communication, yielding benefits such as widely available infrastructures and greater distance, reliability, and speed. With our complete product range of converters, repeaters, hubs, fiber-optics, and software solutions, CommFront makes your data travel without limits.

Point to Point

Used mostly for one-to-one unbalanced signal (RS-232, TTL, and USB, etc.) extension, it can also be used for one-to-one optical fiber extension. Depending on the signal types, the extended distance ranges from 250 feet (70 m) to 4000 feet (1.2 km) for copper wire and from 3 miles (5 km) to 40 miles (25 km) for optical fiber.
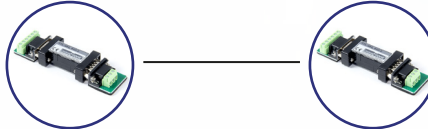
RS-232 extension	TTL extension	USB extension
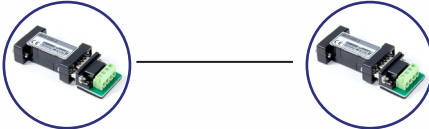
Model: RPT-232-3

Description: Industrial Port-powered RS-232 Repeater

Key Features:
- Extend RS-232's distance to up to 1.8 miles
- Rugged industrial-grade
- 2500V opto-isolation
- Operating Temperature: -40°F to 185°F
- Built-in 600W surge protection
- Built-in 15KV ESD protection
- Operates reliably from 300 to 28.8K baud

Model: TTL-485_422-2

Description: Industrial RS-485/RS-422 to TTL Converter/TTL Repeater (full-duplex)

Key Features:
- Converts RS-485/RS-422 to TTL signal
- Extends full-duplex TTL's distance to up to 4000 feet
- Rugged industrial-grade
- Operating Temperature: -40°F to 185°F
- Built-in 600W surge protection
- Built-in 15KV ESD protection
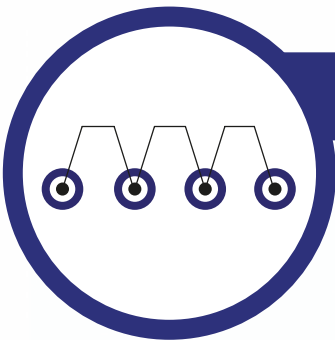- Operates reliably from 300 to 115.2K baud
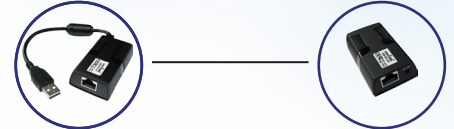
Model: USB-RPT-2

Description: Industrial USB 2.0 Repeater
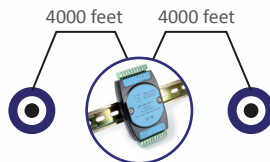
Key Features:
- Extends USB's distance to up to 250 feet
- USB 2.0 compatible
- Rugged industrial-grade
- Operating Temperature: -40°F to 185°F
- Plug and play, no software drivers required
- Supports low, full and high-speed data rates: 1.5Mbps, 12Mbps, 480Mbps

Daisy Chain

In this type, typically used for multi-drop RS-485/RS-422 networks, addressable commands from the Master can be sent to all Slaves, and the addressed Slave can respond to the Master through the same wires, thus reducing the system's costs. The typical distance for a daisy-chain RS-485/RS-422 network is 4000 feet (1.2 km), and with the RS-485/RS-422 repeater, this distance can be extended by another 4000 feet (1.2 km).

RS-485/RS-422 extension (with opto-isolation)	RS-485/RS-422 extension (w/o opto-isolation)

4000 feet   4000 feet

Model: RPT-485_422-4

Description: Industrial RS-485/RS-422 Repeater/Converter/Isolator

Key Features:
- Extend RS-485/RS-422's distance to up to 4000 feet
- Converts 2-wire RS-485 to 4-wire RS-485/RS-422
- Rugged industrial-grade
- 2500V opto-isolation
- Operating Temperature: -40°F to 185°F
- Built-in 600W surge protection
- Built-in 15KV ESD protection
- Supports wide range of DC inputs (9 to 30VDC)
- Direct DIN-rail (rack) or wall/panel mounting
- Operates reliably from 300 to 115.2K baud

4000 feet   4000 feet

Model: RPT-485_422-2

Description: Industrial RS-485/RS-422 Repeater/Converter
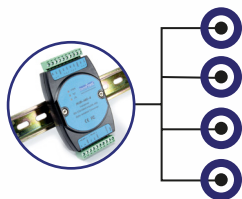
Key Features:
- Extend RS-485/RS-422's distance to up to 4000 feet
- Converts 2-wire RS-485 to 4-wire RS-485/RS-422
- Rugged industrial-grade
- Operating Temperature: -40°F to 185°F
- Built-in 600W surge protection
- Built-in 15KV ESD protection
- Operates reliably from 300 to 115.2K baud

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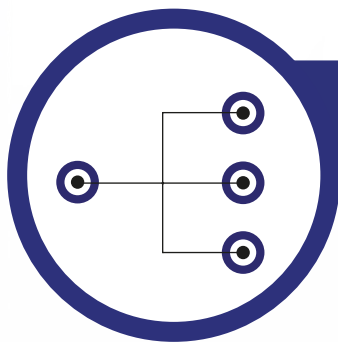
Star Wiring

Due to the nature of the signals and the requirements of impedance matching, the RS-485/RS-422 network must run on a linear, daisy-chain (multi-drop) configuration; however, star-wiring is inevitable in many places. With our very well-engineered hubs, the star-wiring configuration is more than just possible; it makes the system much more robust and reliable.

RS-485 Hub	USB Hub	USB to 4-Port RS-232 Hub

Model: HUB-485-4
Description: Industrial 4-Port RS-485 Hub

Key Features:
- Expands RS-485 network into four (4) with star-wiring configuration
- Supports four (4) loops of multi-drop RS-485 networks (up to 512 [4x128] nodes)
- 2500V opto-isolation
- Rugged industrial-grade
- Operating Temperature: -40°F to 185°F
- Built-in 600W surge protection
- Built-in 15KV ESD protection
- Direct DIN-rail (rack) or wall/panel mounting
- Operates reliably from 300 to 115.2K baud
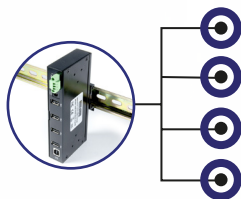
Model: USB-HUB-2
Description: Industrial USB 4/7-Port Hub

Key Features:
- Expands one USB 2.0 port into 4 or 7
- Rugged industrial-grade
- Plug and play, no software drivers required
- Bus power for low power-consumption applications
- External power for high power-consumption applications
- Operating Temperature: -4°F to 158°F
- Built-in 15KV ESD protection
- Direct DIN-rail (rack) mounting
- Supports low, full, and high speed data rates: 1.5Mbps, 12Mbps, and 480Mbps
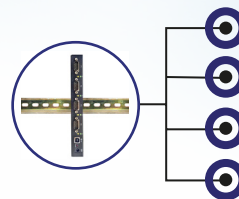
Model: USB-232H-3
Description: Industrial USB to 4-Port RS-232 Hub

Key Features:
- Expands one USB 2.0 port into four RS-232 ports
- Rugged industrial-grade
- External power supply included (for high power-consumption applications)
- Operating Temperature: -40°F to 167°F
- Built-in 15KV ESD protection
- Direct DIN-rail (rack) mounting
- Supports all major Windows, Mac, and Linux
- Supports serial rates up to 12Mbps
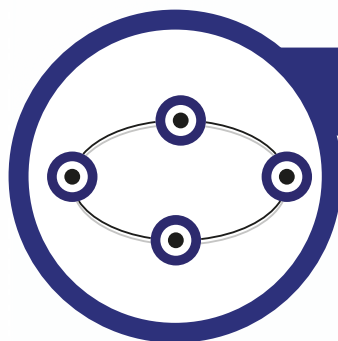
Redundant Ring

Data networks are critical for production, security, and information exchange, any system downtime is very costly - and even deadly in some situations. With an extra self-healing redundant link, a system will not break down even if there is a breaking point in the system, as these redundant-ring networks work both clockwise and counter-clockwise. If the clockwise link is down, the counter-clockwise link will recover the system instantly.

Multi-Drop Fiber Optic Converter (Daisy-chain or Self-Healing Redundant Ring)
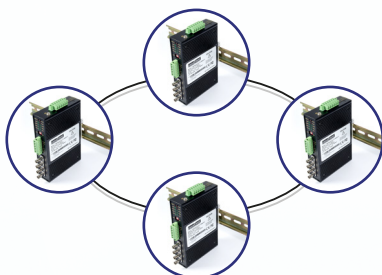
Model: FBR(M)-Serial-2
Description: Industrial RS-232/RS-485/RS-422 to Multi-Drop Fiber Optic Converter

Key Features:
- Daisy-chain or self-healing redundant ring fiber network configurations
- Extends serial data network uninterruptedly over extremely large areas
- Supports up to 255 fiber nodes
- Supports up to 128 nodes of RS-485/RS-422 devices per fiber node
- Rugged industrial-grade
- No software drivers required
- Operating Temperature: -40°F to 185°F
- Built-in 600W surge protection
- Built-in 15KV ESD protection
- Direct DIN-rail (rack) mounting
- Operates reliably from 300 to 115.2K baud

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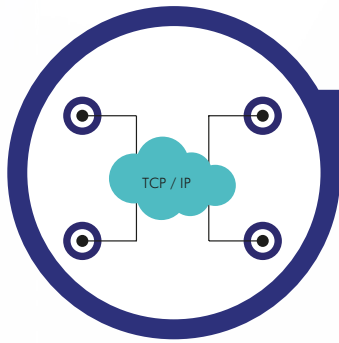
TCP / IP

Network

Legacy serial communication protocols such as Modbus have merged rapidly with modern TCP/IP communications, yielding benefits such as widely available infrastructures and greater distance, reliability, and speed. CommFront's Serial-TCP program offers ideal solutions to bridge your existing Serial/COM port and TCP/IP without the need for changing protocol. It works seamlessly and transparently, just like a pair of passive repeaters; furthermore, instead of requiring installation of cables and converters with limited distance, the Serial-TCP program simply makes use of existing computers and networks with an unlimited transmission distance.

Serial-TCP (Bridging Serial Ports and TCP/IP)

TCP / IP

Serial-TCP (Client)

Serial-TCP (Server)

RS-232/485/422/TTL

RS-232/485/422/TTL

Model: Serial-TCP (Freeware)
Description: Serial-TCP (Bridging Serial Port and TCP/IP)

Key Features:
- Bridges existing Serial/COM port and TCP/IP without the need for changing protocol
- Extends serial (RS-232, RS-485, RS-422, TTL) communication distance via TCP/IP
- Expands the capability of your existing TCP/IP control software
- Analyze TCP/IP and COM network with the built-in tools and features
- Works seamlessly and transparently
- No installation of cables and converters
- Unlimited transmission distance
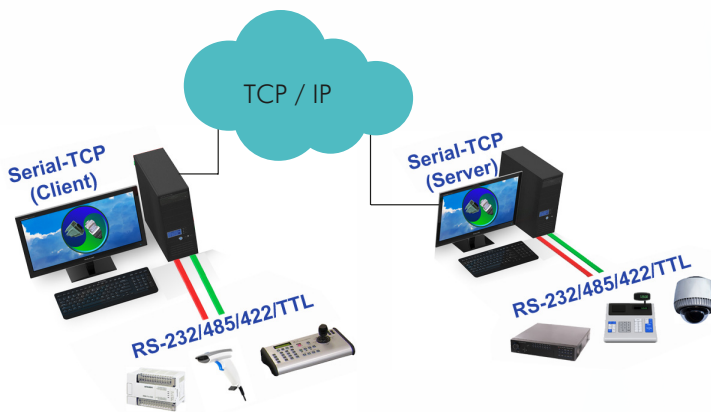
THE PRODUCTS

RPT-232-3	RPT-485_422-2	RPT-485_422-4	HUB-485-4	TTL-485-2
TTL-485_422-2	FBR-Serial-2	FBR(M)-Serial-2	FBR-Ethernet-2	USB-RPT-1
USB-RPT-2	USB-HUB-2	USB-232H-3	Serial-TCP	

KEY FEATURES

- Rugged industrial grade.
- Built for harsh environments and interfacing with mission-critical equipment.
- Extends Serial, USB, and Ethernet signals through copper wires, optic fiber, and TCP/IP.
- Options of point-to-point, daisy-chain, star-wiring, redundant-ring, and TCP/IP network.
- Unique and proprietary designs for in-line, wall, panel, and/or DIN-rail mounting.

Model	Description
RPT-232-3	Industrial RS232 Repeater (Port-Powered/Isolated)
RPT-485_422-2	Industrial RS485/RS422 Repeater/Converter (Externally-Powered)
RPT-485_422-4	Industrial RS485/RS422 Isolator/Repeater/Converter (Externally-Powered/Isolated)
HUB-485-4	Industrial 4-Port RS485 Hub/Splitter(Externally-Powered/Isolated)
TTL-485-2	Industrial RS485 to TTL Converter/ TTL Repeater (Externally-Powered)
TTL-485_422-2	Industrial RS485/RS422 to TTL Converter/ TTL Repeater (Externally-Powered)
FBR-Serial-2	Industrial RS232/RS485/RS422 to Fiber Optic Converter (Externally-Powered)
FBR(M)-Serial-2	Industrial RS232/RS485/RS422 to Multi-Drop Fiber Optic Converter (Externally-Powered)
FBR-Ethernet-2	Industrial 10/100M Ethernet to Fiber Optic Converter (Externally-Powered)
USB-RPT-1	Industrial USB Extender Cable (Port-Powered)
USB-RPT-2	Industrial USB Extender (Port- and Externally-Powered)
USB-HUB-2	Industrial USB 4-Port/7-Port Hubs (Externally-Powered)
USB-232H-3	Industrial USB to 4-Port RS232 Hub (Port-Powered/Isolated)
Serial-TCP	Serial to TCP/IP Bridge (Freeware)

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Industrial Communication Solutions
RUGGED. SIMPLE. RELIABLE.

For the past decade, CommFront has built a reputation as a major supplier of rugged and reliable, yet simple, data communication products and solutions. From factories to energy plants, shipyards to transportation terminals, and server rooms to laboratories, CommFront provides complete solutions for data and device connectivity, conversion, protection, extension, and research. CommFront offers the broadest selection of rugged, simple, and reliable data communication and machine-to-machine (M2M) connectivity products, ranging from legacy serial communications to modern TCP/IP communications, copper wire to optical fiber, and D-sub to USB connectivity.

CommFront products have been proven to be reliable and are widely used in critical areas that require safe, reliable, and uninterrupted operation, including:

- Factory Automation
- Building Automation
- Energy Plants
- Shipyards and Marine
- Transportation
- Industrial and Commercial Buildings

- PoS, ATMs, and Banks
- PLC, RTU, HMI, and SCADA Systems
- Security and Surveillance
- Instrumentation
- IT Networks
- Laboratories

Pushing our products to the limit, so you don't have to

Data networks are widely used in automation, control, and communication systems that perform many important tasks ranging from production, automation, communications, security, surveillance, to research. Data networks are mission-critical, and even the shortest downtime or delay can be very costly; furthermore, data networks consist of many different components and are often used over long distances in an electrically noisy environment. Engineering, testing, and troubleshooting can be very time-consuming and challenging. At CommFront, we push our products to their limit over a 3-to-6-month assessment and certifying process, complete with functionality, reliability, and EMC/EMI tests. We test radiation, emissions, and immunity to guarantee the safety of our human users and compatibility with their devices. The industry has many certifying agencies, ranging from the reputable to the less reputable, and from 3 months to 3 days of certification time. CommFront chooses to partner with SGS and TUV because they have the strictest rules and regulations for product testing and certifications. Both SGS and TUV are the Nationally Recognized Testing Laboratories [NRTLs] in North America (approved by the Occupational Safety & Health Administration [OSHA]) and the Notified Bodies in the European Union, the most meticulous and recognized certifying labs in the industry. This makes our products worry- and hassle-free for safety, compatibility, and interfacing with mission-critical equipment.

A reliable data network starts with choosing the right solutions and partners. CommFront engineers have the rich field experience and in-depth knowledge to understand your problems, how to solve them, and most importantly, how to prevent them – right from the design stage. We design and engineer our products not just on the product level but also from the system perspective, for we believe that data communication products do not function by themselves; rather, they are part of a system. Any supplier can sell you a product, but only CommFront is equipped with the rich field experience, world-class certifications, proven track record, and strict ISO quality management system to ensure your total satisfaction.

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THE KEYS TO OUR EXCELLENCE

- Industrial Ruggedness
- Certification by World-Class Labs
- Designed & Manufactured to ISO Standards
- Lead-Free RoHS Compliance
- Applied Reliability Engineering

- Proven Track Record
- 5-Year Replacement Warranty
- 30-Day Money-Back Guarantee
- Free Worldwide Shipping
- Intensive and Fast Support

SAFETY ASSURANCE

CommFront products are strictly certified by SGS/TUV – the world's leading inspection, testing, and certification companies.

QUALITY ASSURANCE

CommFront products are designed and manufactured to ISO 9001 standards. Our quality control system is strictly certified by SGS (Cert No. SG12/04213).

WARRANTY & GUARANTEE

CommFront products have been proven to be reliable. We back our high-quality products with a 5-year replacement warranty and a 30-day risk-free money-back guarantee.

OUR CLIENTS

Throughout the years, CommFront has gained a sterling reputation in the industry, and its clients include many industry leaders. Below are some of our satisfied customers from around the world, just to name a few:

ABB	Hewlett Packard	NASA	Spectra Energy
Advanced Control Systems	Honeywell Corp.	Nissan	Serveron Corp.
Allied Electronics	IBM Corp.	Northrop Grumman	Toshiba
Applied Materials	Intel Corp.	Panasonic	Toyota
AT&T	ITT Corp.	Qualcomm	Thales Comm.
BAE Systems	Johnson Controls	Raytheon Corp.	Tyco Electronics
Boeing	L-3 Communications	Rockwell Collins	University of Nebraska
Cisco	LG Corp.	Samsung	University of Wisconsin
Emerson Power	Lockheed Martin	Schneider Electric	UL Laboratory
Fluke	Microsoft	Seagate	US Robotics
General Electric	Mitre Corp.	Siemens Corp.	Vaddio
Google Inc.	MIT Laboratory	Singapore Technologies	Volvo
Harris Corp.	Motorola	Sirius Satellite	Volkswagen

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