Key Technologies

■ SSL Data Encryption

SSL Data Encryption Benefits

SSL data encryption provides several benefits. It enforces data privacy via strongly designed data encryption schemes. Additionally, it allows identity establishment, i.e. each client has his or her own unique "digital certificate" . Moreover, SSL data encryption is a trust-based data communication scheme. Data communications exist if and only if the server and the client formally trust each other.

■ PPPoE and DDNS for Internet Connection

PPPoE Benefits

PPPoE enables clients to adopt the traditional dial-up access mode, which allows end users to use the familiar hardware and similar software to access the Internet. Moreover, clients can also use Ethernet adapters to connect PCs and xDSL modems so that PCs can share xDSL lines and thus saves investment.

DDNS Benefits

With DDNS, the administrator does not need to set up the static IP address for each PC every time the network infrastructure changes. Moreover, you only need addresses that would be used simultaneously, rather than having one for every possible user of IP.

■ Wave Division Modulation, WDM

• A cost-effective solution for reducing fiber requirements
• Higher capacity on existing fiber infrastructure
• Speed- and protocol-agnostic passive
  multiplexing/de-multiplexing
• No configuration required with plug-and-play installation
• Saves cost over trenching, pulling, or leasing new fiber

■ Fiber ring

Designed to facilitate conversion between serial and fiber interfaces, fiber ring technology enables you to extend the serial communication distances by optical fiber cables.

Product table

Industrial DIN-Rail Serial to Ethernet Device Server

	IDS-311F-SS-SC2/IDS-311F-MM-SC2	IDS-420FX+	IDS-342GT/IDS-342GT+	IDS-342/IDS-342+	IDS-342/IDS-322+	IDS-322/IDS-312+	IDS-312/IDS-312+	IDS-3112L	IDS-111L
Serial Port Number	1	4	4	4	2	1	1	1	1
Serial Port Mode	RS-232/422/485	RS-422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232
Serial Port Type	DB9	Terminal	DB9	DB9	DB9	DB9	DB9	DB9
10/100Base-T(X) port	1	-	-	2	2	2	2	1
10/100/1000Base-T(X) port	-	2	2	-	-	-	-	-
Fiber port number	1 (100Base-FX)	-	-	-	-	-	-	-
Serial Isolation	-	★	-	-	-	-	-	-
IEEE 802.3af PoE PD	-	★	★	★	★	★	-	-

Industrial M2M Gateway

	IMG-4312-4G / IMG-4312+-4G
Serial Port Number	1
Serial Port Mode	RS-232/422/485
Serial Port Type	DB9
10/100Base-T(X) port	2
Fiber port number	1(100Base-FX)
Cellular Interface	4G/3.5G/2G
Wireless	b/g/n
IEEE 802.3af PoE PD	★

Industrial Rack-Mount Serial to Ethernet Device Server

	RDS-3008G	RDS-3116G	RDS-P3000
Serial Port number	8	16	16
Serial Port Mode	RS-232/422/485	RS-232/422/485	RS-232/422/485
Serial Port Type	RJ48	RJ48	RJ48/DB9
10/100/1000Base-T(X) ports	4	4	4
100/1000Base-X SFP	2	2	2
IEC 61850-3 Compliant	-	-	★
Combo Ethernet Switch function	★	★	-
Modbus Support	★	★	★

Serial to Fiber Media Converter

	ISC-1110FR-SS-SC-R	ISC-1110FR-SS-SC-L	ISC-1110FR-MM-SC	ISC-1110FR-MM-ST	ISC-1110FR-SS-SC	ISC-1110FR-SS-ST
Serial Port number	1	1	1	1	1	1
Serial Port Mode	RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485	RS-232/422/485
Serial Port Type	DB9	DB9	DB9	DB9	DB9	DB9
Fiber port number	1	1	1	1	1	1
Fiber port type	SC	SC	SC	ST	SC	ST
Fiber mode	Single	Single	Multi	Multi	Single	Single
Wavelength (nm)	TX: 1550 RX: 1310	TX: 1310 RX: 1550	850	850	1310	1310
Additional function	WDM BiDi	WDM BiDi	Ring	Ring	Ring	Ring

MQTT
(Message Queue Telemetry Transport)

■ MQTT (Message Queue Telemetry Transport)

MQTT is an ISO standard (ISO/IEC PRF 20922) publish-subscribe-based "lightweight" messaging protocol for use on top of the TCP/IP protocol. It is designed for connections with remote locations where a "small code footprint" is required or the network bandwidth is limited. MQTT is designed to support wireless networks with varying levels of latency due to occasional bandwidth constraints or unreliable connections. There are several projects that implement MQTT, such as Facebook Messenger, IECC Scalable, The EVRYTHNG, Amazon Web Services, and so on.

■ Machine-to-Machine (M2M)

M2M is where "Machines" use network resources to communicate with remote application infrastructure for the purposes of monitoring and control, either of the "machine" itself, or the surrounding environment. M2M with Internet protocols could be considered a subset of the Internet of Things and understood from a more vertical and closed point of view.

■ Integrate IoT solution/M2M gateway to Device server products

ORing offers different kinds of device server and M2M gateway which support UART, RS-232/422/485, PoE, and PLC interface. The device server/M2M gateway is IoT Master with data logger function which can collect log from IoT Slave, then upload data to Cloud via MQTT.

Industrial Serial Connectivity

Industrial Serial Connectivity: New PCI Express Serial Card, device server, wireless device server with roaming. M2M gateway

Industrial I/O

Serial I/O , Wireless I/O

Connected with Cloud

AI Data logger

As a global leading industrial Networking equipment manufacture, ORing offers wide variety of projects in various applications, such as railway, intelligent transportation systems, renewable energy, factory automation and more.

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Get Connected Anytime, Anywhere

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Industrial DIN-Rail Serial to Ethernet Device Server

IDS-300 Series
Industrial Secure Serial to Ethernet device, RS-232/422/485 to 10/100Base-T(X)
- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- 1KV isolated 802.3af PoE PD port on Eth1 (IDS-312+/322+/342+)
- Configurable by Web Server and Windows utility (DS-Tool)
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP
- Slim type (IDS-111L/312L)

IDS-4312(+)/4322(+)/4342(+)
Industrial Secure Serial to WLAN device with Wireless client, RS-232/422/485 to WLAN and 10/100Base-T(X)
- Support up to 150 Mbps WLAN IEEE 802.11 b/g/n
- 1KV isolated 802.3af PoE PD port on Eth1 (IDS-4312+/4322+/4342+)
- Dual redundant Ethernet port support redundant mode (Recovery time < 10ms)
- Configurable by Web Server and Windows utility (DS-Tool)
- NAT-pass through: user can manage device through NAT router
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP

IDS-242GT-I+
Industrial Secure Serial to Ethernet device with Serial Isolation, 4 isolated ports RS-422/485 to 2 ports 10/100/1000Base-T(X) with 1 port PoE PD
- 2KV isolated serial port and 1KV isolated 802.3af PoE PD port on Eth2
- Support Modbus Protocol: Modbus TCP, Modbus RTU, Modbus ASCII
- Configurable by Web Server and Windows utility (DS-Tool)
- Operating Modes:
  Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP

IDS-342GT(+)
Industrial Secure Serial to Ethernet device, 4 ports RS-232/422/485 to 2 ports 10/100/1000Base-T(X)
- 1KV isolated 802.3af PoE PD port on Eth2 (IDS-342GT+)
- Support Modbus Protocol: Modbus TCP, Modbus RTU, Modbus ASCII
- Configurable by Web Server and Windows utility (DS-Tool)
- Operating Modes:
  Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP

IDS-311F
Industrial Secure Serial to Ethernet and Fiber device, 1 port RS-232/422/485 to 1 port 10/100Base-T(X) and 1 port 100Base Fiber
- Operating Modes: Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP
- Support single-mode and multi-mode fiber:
  IDS-311F-SS for single-mode
  IDS-311F-MM for multi -mode
- Configurable by Web Server and Windows utility (DS-Tool)
- Event Warning by Syslog, Email, SNMP trap, Relay and Beeper
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP

Industrial M2M Gateway

IMG-4312-4G
Industrial IEEE 802.11 b/g/n 4G LTE Cellular Router with 2x10/100Base-T(X) 1 x RS-232/422/485 Gateway
- Operating Modes: Virtual COM, TCP Server, TCP Client, UDP (IP range supported)
- 2x10/100Base-T(X) Ethernet ports
- IEEE 802.11 b/g/n WLAN interface support up to 150Mbps link speed
- High Security : SSL data encryption and secured management by HTTPS and SSH;
- Dual power input (12 ~ 48 VDC)
- Supports DS-Tool and Web Configuration

Industrial Rack-Mount Serial to Ethernet Device Server

RDS-3086G/3166G
Industrial Secure Serial to Ethernet Rack-mount device
- Rack mount model
- Support Modbus Protocol: Modbus TCP, Modbus RTU, Modbus ASCII
- Built-in 15 KV ESD protection for all serial signals
- Standard 1U rack-mount size
- Provide 4 Gigabit Ethernet ports and 2 Gigabit Fiber ports in SFP socket
- Operating Modes:
  Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- 8/16 ports RS-232/422/485 to 4 ports 10/100/1000Base-TX and 2 ports 100/1000Base-X Fiber

RDS-P3000
Industrial IEC 61850-3 Secure Serial to Ethernet Rack-mount device 4 isolated ports RS-422/485 3 KV isolated Protect Serial port
- Designed for power substation / Railway application and fully compliant with the requirement of IEC 61850-3 and IEEE 1613
- Modular designed makes network and serial planning easy:
  4 Serial slots (DB9 or RJ48) to 1 Ethernet slot
- Support Modbus TCP
- Support RS-232/422/485 in DB9 or RJ48 connector
- Supports SNMP v1/v2 & 802.1Q VLAN Network Management
- 19 inches rack mountable design
- Operating Modes:
  Virtual Com, Serial Tunnel, TCP Server, TCP Client, UDP, Modbus Gateway
- Redundant multiple host devices:
  5 host devices: Virtual COM, TCP Server, TCP Client mode;
  4 IP ranges: UDP

Serial to Fiber Media Converter

ISC-1310FR
Industrial serial to fiber media converter, 1 port RS-232/422/485 to 1 port fiber
- Support Ring mode
- Support auto or fixed baudrate from 50 to 921.6 Kbps
- Support single-mode or multi-mode fiber
  ISC-1310FR-SS for single-mode
  ISC-1310FR-MM for multi-mode
- SC or ST fiber optical connector:
- SC type: ISC-1310FR-SS-SC,
  ISC-1310FR-MM-SC
- ST type: ISC-1310FR-SS-ST,
  ISC-1310FR-MM-ST

ISC-1310FW
Industrial Serial to Fiber media converter, 1 port RS-232/422/485 to 1 port WDM (Wave Division Modulation) fiber
- Support auto or fixed baud rate from 50 to 921.6 Kbps
- WDM Fiber Port for save cable cost
- SC fiber optical connector
- Pair device:
  ISC-1310FW-SS-SC-L with TX1310/RX1550
  ISC-1310FW-SS-SC-R with TX1550/RX1310

Serial Cards

PCard-E1021L-SI-D5
PCard-E2021L-SI-D5
PCard-E3021L-SI-D5
PCard-E1021L-I-D5
PCard-E2021L-I-D5
PCard-E3021L-I-D5
Industrial Serial to PCI Express Card with Serial Port 4 KV Surge Protect
- PCI Express x1 compliant
- Two Serial Ports with One D-Sub25 Connector
- Low Profile for Small Size PC
- PCard-E1021L-(SI/I)-D5 Supports RS232
- PCard-E2021L-(SI/I)-D5 Supports RS422/485
- PCard-E3021L-(SI/I)-D5 Supports RS232/422/485
- Support baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model
- 3 KV Serial Ports Isolation

PCard-E1021-SI-D9
PCard-E2021-SI-D9
PCard-E3021-SI-D9
PCard-E1021-I-D9
PCard-E2021-I-D9
PCard-E3021-I-D9
Industrial Serial to PCI Express Card with Serial Port 4 KV Surge Protect
- PCI Express x1 compliant
- Two Serial Ports with Two D-Sub9 Connectors
- Standard Profile
- PCard-E1021-(SI/I)-D9 Supports RS232
- PCard-E2021-(SI/I)-D9 Supports RS422/485
- PCard-E3021-(SI/I)-D9 Supports RS232/422/485
- Support baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model
- 3 KV Serial Ports Isolation

PCard-E1041L-S-D4
PCard-E2041L-S-D4
PCard-E3041L-S-D4
PCard-E1041L-D4
PCard-E2041L-D4
PCard-E3041L-D4
Industrial Serial to PCI Express Card with Serial Port 4 KV Surge Protect
- PCI Express x1 compliant
- Four Serial Ports with One D-Sub44 Connector
- Low Profile for Small Size PC
- PCard-E1041L-(-S)-D4 Supports RS232
- PCard-E2041L-(-S)-D4 Supports RS422/485
- PCard-E3041L-(-S)-D4 Supports RS232/422/485
- Support baudrate from 50 to 921.6 Kbps
- Serial Ports with 4 KV Surge Protect for"-S" model

PCard-E1041L-SI-D4
PCard-E2041L-SI-D4
PCard-E3041L-SI-D4
PCard-E1041L-I-D4
PCard-E2041L-I-D4
PCard-E3041L-I-D4
Industrial Serial to PCI Express Card with Serial Port 4 KV Surge Protect
- PCI Express x1 compliant
- Four Serial Ports with One D-Sub44 Connector
- Low Profile for Small Size PC
- PCard-E1041L-(SI/I)-D4 Supports RS232
- PCard-E2041L-(SI/I)-D4 Supports RS422/485
- PCard-E3041L-(SI/I)-D4 Supports RS232/422/485
- Support baudrate from 50 to 921.6 Kbps
- Serial Ports with 4 KV Surge Protect for"-S" model
- 3 KV Serial Ports Isolation

Serial Cards

PCard-E3021L-D5
PCard-E2021L-D5
PCard-E1021L-D5
PCard-E3021L-S-D5
PCard-E2021L-S-D5
PCard-E1021L-S-D5
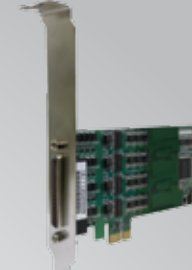**Industrial Serial to PCI Express Card With Serial Port 4KV Surge Protect**
- PCI Express x1 compliant
- Two Serial Ports with One D-Sub25 Connector
- Low Profile for Small Size PC
- PCard-E1021L(-S)–D5 Supports RS232
- PCard-E2021L(-S)–D5 Supports RS422/485
- PCard-E3021L(-S)–D5 Supports RS232/422/485
- Support Baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model

PCard-E3081L-S-VH
PCard-E2081L-S-VH
PCard-E1081L-S-VH
PCard-E3081L-VH
PCard-E2081L-VH
PCard-E1081L-VH
Industrial Serial to PCI Express Card With Serial Port 4KV Surge Protect
- PCI Express x1 compliant
- 8 Serial Ports with One VHDCI Connector
- Low Profile for Small Size PC
- PCard-E1081L(-S)–VH Supports RS232
- PCard-E2081L(-S)–VH Supports RS422/485
- PCard-E3081L(-S)–VH Supports RS232/422/485
- Support Baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model

PCard-E3081-S-D8
PCard-E2081-S-D8
PCard-E1081-S-D8
PCard-E3081-D8
PCard-E2081-D8
PCard-E1081-D8
Industrial Serial to PCI Express Card With Serial Port 4KV Surge Protect
- PCI Express x1 compliant
- 8 Serial Ports with One D-Sub78 Connector
- Standard Profile
- PCard-E1081(-S)–D8 Supports RS232
- PCard-E2081(-S)–D8 Supports RS422/485
- PCard-E3081(-S)–D8 Supports RS232/422/485
- Support Baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model

PCard-E3161-S-VH
PCard-E2161-S-VH
PCard-E1161-S-VH
PCard-E3161-VH
PCard-E2161-VH
PCard-E1161-VH
Industrial Serial to PCI Express Card With Serial Port 4KV Surge Protect
- PCI Express x1 compliant
- 16 Serial Ports with Two VHDCI Connector
- Standard Profile
- PCard-E1161(-S)–VH Supports RS232
- PCard-E2161(-S)–VH Supports RS422/485
- PCard-E3161(-S)–VH Supports RS232/422/485
- Support Baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model

PCard-E3021-S-D9
PCard-E2021-S-D9
PCard-E1021-S-D9
PCard-E3021-D9
PCard-E2021-D9
PCard-E1021-D9
Industrial Serial to PCI Express Card With Serial Port 4KV Surge Protect
- PCI Express x1 compliant
- Two Serial Ports with Two D-Sub9 Connectors
- Standard Profile
- PCard-E1021(-S)–D9 Supports RS232
- PCard-E2021(-S)–D9 Supports RS422/485
- PCard-E3021(-S)–D9 Supports RS232/422/485
- Support Baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model
- 3KV Serial Isolation Protect

PCard-E3081-SI-D8
PCard-E2081-SI-D8
PCard-E1081-SI-D8
PCard-E3081-I -D8
PCard-E2081-I -D8
PCard-E1081-I -D8
Industrial Serial to PCI Express Card With Serial Port 4KV Surge Protect
- PCI Express x1 compliant
- 8 Serial Ports with One D-Sub78 Connector
- Standard Profile
- PCard-E1081-(SI/I) –D8 Supports RS232
- PCard-E2081-(SI/I) –D8 Supports RS422/485
- PCard-E3081-(SI/I) –D8 Supports RS232/422/485
- Support Baudrate from 50 to 921.6 Kbps
- Serial Ports with 4KV Surge Protect for "–S" Model
- 3KV Serial Isolation Protect