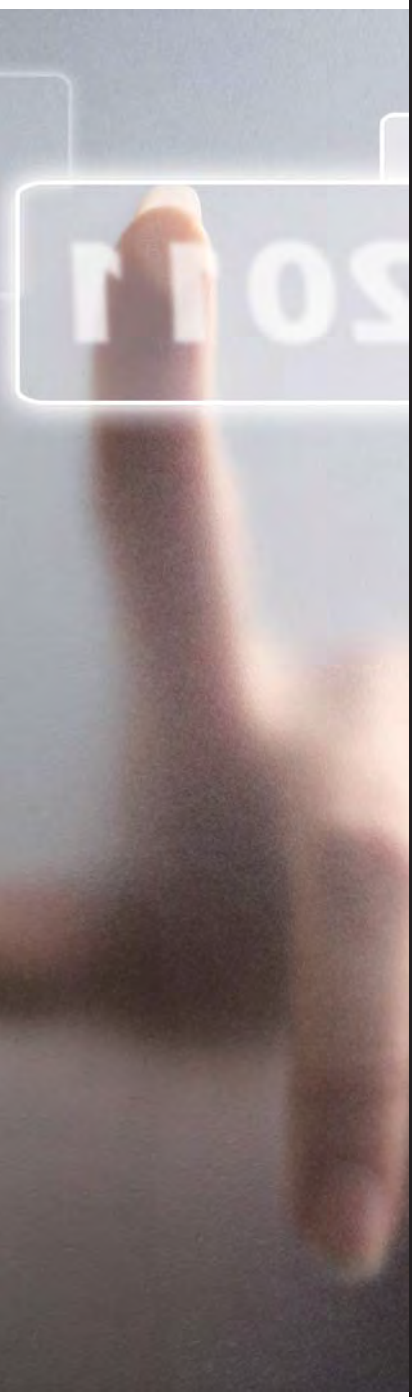
ETHERNET DIRECT

Best quality and value in Ethernet based products

2011

ETHERNETDIRECT MASTER CATALOGUE

Growing Momentum Beyond Expectations



Never stop achieving a new milestone

The name Ethernet Direct is popularly known in the industrial networking arena representing “reliability” and “customer satisfaction.” Ethernet Direct has taken a victory leap forward in the industry by offering a manifold of avant garde product solutions to cater any application. With Ethernet Direct, you can be confident about your operation and investment protection. Being a world-class provider, we offer a versatile selection of true industrial grade solutions backed by encompassing quality and highly specialized design engineering. The Ethernet Direct product portfolio covers the entire Industrial Ethernet, Industrial Communication and Industrial Automation pyramid to satisfy any given application and adverse environmental considerations. Ethernet Direct continues to stay ahead and strives for introducing new products with the latest technology to the market.

Creativity and continuous progress beyond expectations

2011 is our flight year where continuous progress soars beyond limits and expectations. Industry specialists know that Ethernet Direct provides strong engineering capabilities and deliver the highest product standards and service. Ethernet Direct brings a control system engineering perspective to networking technology. The Global Ethernet Direct team covers operation from product know-how, design implementation, product safety compliance, quality assurance, manufacturing, logistics, sales & marketing and technical support. Our reputation has been established by deploying our products in mission critical applications, making Ethernet Direct a highly experienced Industrial networking total solution provider. To stay current, we offer an online technical support called **Educational Link** to offer clients with real time information to ensure safe applications.

Ethernet Direct Network

Ethernet Direct is covered in more than 50 countries around the world and continuously expanding. Our global network, high quality products and professional knowledge service set us apart from other and making Ethernet Direct an innovative leader in Industrial Ethernet. Ethernet Direct is an alliance partner of IntraVUE™ and members of various well recognized industrial organizations. The speed of Ethernet Direct penetration justifies our reliability and capabilities.

Ethernet Direct

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Rhino-270	Industrial PC/Intel® Atom™ N270 Fan-less System with NVRAM and PCMCIA	**061**
Rhino-200A	Industrial Vehicle PC/Intel® Atom™ N270 1.6GHz Processor with 1GB RAM & GPS (GPS module & antenna included)	**063**
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MOOSE

Solutions

Industrial Modbus over TCP Switch

Modbus is a serial communication protocol used to connect a supervisory computer with a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems. It has become a standard communication protocol which is a commonly available means of connecting industrial electronic devices. Modbus makes it possible for communication between many devices connected to the same network, for example, a system that measures temperature and humidity and communicates the results to a computer.

Ethernet Direct offers Moose Series Industrial Modbus over TCP Solutions which include industrial switches and gateways. In industrial applications, a fault-tolerant Ethernet network protects the system from downtime which will cause a great amount of losses in a production. In SCADA applications, it is important that a device can monitor the status of Ethernet and fiber ports with Modbus or OPC protocol. This is the design concept of Moose Series Industrial Ethernet Switches. The MRM Managed Ethernet Switch supports Modbus/TCP protocol to read port status. It comes with extended temperature and conformal coating options. MRM Series supports Modbus/TCP, Modbus/RTU and OPC protocols to provide majority of applications with a seamless process. When these devices are placed into a redundant ring application, its redundant ring technology detects and recovers a fiber or copper link failure in milliseconds.

Naming Rules

MXM-XXXX

M	X	M	-	X	X	X	X
Moose	U: Unmanaged R: Redundancy	Modbus		Number of TX Ports	Number of Fiber Ports	Type of Fiber Ports 0: None 1: MM, SC 2: MM, ST 3: SM, SC	Other Specifications E: Extended Temperature C: Conformal Coated G: Full Gigabit L3: Layer 3

Model	MRM-800E(C)	MRM-621E(C)	MRM-622E(C)	MRM-623E(C)
	Industrial Extended Temperature 8 x 10/100Base-T(X) Managed Redundant Modbus Switch	Industrial Extended Temperature 6 x 10/100Base-T(X) + 2 x Multi-mode (SC) 100FX Managed Redundant Modbus Switch	Industrial Extended Temperature 6 x 10/100Base-T(X) + 2 Multi-mode (ST) 100FX Managed Redundant Modbus Switch	Industrial Extended Temperature 6 x 10/100Base-T(X) + 2 x Single-mode (SC) 100FX Managed Redundant Modbus Switch
Number of Ports				
10/100Base-T(X)	8	6	6	6
10/100/1000Base-T(X)	-	-	-	-
Multi-mode 100Base-FX	-	2	2 (ST)	-
Single-mode 100Base-FX	-	-	-	2
Hardware				
Power Input	12 to 48VDC	12 to 48VDC	12 to 48VDC	12 to 48VDC
Fault Relay Output	√	√	√	√
Hi-Pot Protection	√	√	√	√
IP Protection	IP-30	IP-30	IP-30	IP-30
Operating Temperature	-40 to 75°C	-40 to 75°C	-40 to 75°C	-40 to 75°C
Conformal Coating Protection	MRM-800EC	MRM-621EC	MRM-622EC	MRM-623EC
Software				
Direct Ring Redundancy	< 300ms	< 300ms	< 300ms	< 300ms
STP	√	√	√	√
DHCP	Client	Client	Client	Client
Port Trunking	√	√	√	√
VLAN	√	√	√	√
QoS	√	√	√	√
Regulatory Approvals				
CE/FCC	√	√	√	√

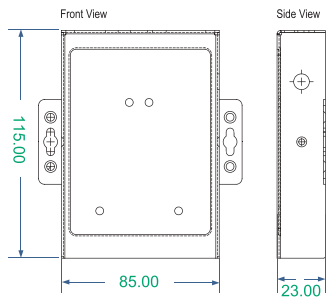
BMM-101

Introduction

Overview

The Moose BMM-101 is a single port Modbus gateway. BMM-101 is designed for industrial applications to allow the legacy Modbus RTU/ASCII devices to operate on a Modbus TCP network. It allows either Modbus serial master or slave to communicate with Modbus TCP's slave or master. BMM-101 allows multiple Modbus TCP masters to communicate with a Modbus serial network. Since Modbus serial network can only handle one query at a time, queries from different masters are pipelined and processed one by one. When BMM-101 functions as Modbus RTU/ASCII master to Modbus TCP slave gateway, the device can connect up to 8 Modbus TCP slave. Users can specify a UID range for each Modbus TCP slave.

Dimensions (unit=mm)



Features

- Connects Modbus devices to TCP/IP network
- Provides 1 RS-232/422/485 serial ports
- Supports 10/100Base-T(X) Ethernet
- Supports 230.4kbps serial data rate
- Supports up to 8 MODBUS TCP master to MODBUS RTU/ASCII
- Supports MODBUS RTU/ASCII master to link up to 8 MODBUS TCP clients
- Supports inactive timeout to shutdown one connection to allow the next connection
- Supports Telnet/Serial consoles for device configuration
- Supports Windows utility for device configuration and management
- Management access password protected
- Supports loop back mode
- Firmware upgradeable

Specifications

Hardware Specifications

Interface

Serial Port:

1 x RS-232/422/485 serial port, DB9 male connector, Setting Port: software selectable

RJ-45 Port:

1 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, RJ-45 Port: connector

LEDs: Link, Ready, P1

Serial Specifications

Signals: RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GNDRS-422: TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+, RTS-, GNDRS-485: Data+, Data-, GND
Baud Rate: 110bps to 230.4Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: None, RTS/CTS, XON/OFF

Power Requirements

Power Input: 9 to 15VDC
Power Consumption: 2.25 watts

Physical

Dimensions: 85mm (W) x 115mm (H) x 23mm (D)
Installation: Wall mounting

Technology

Network Protocol: TCP, UDP, HTTP, Telnet, IP, ICMP, ARP, DHCP (client)
Operation Mode: Modbus RTU/ASCII, Modbus TCP, Modbus TCP masters to Modbus RTU/ASCII slaves, Modbus RTU/ASCII master to Modbus TCP slaves, Inactive timeout
Virtual COM Mode: Supports Windows 98/2000/XP/Vista
Configuration Mode: Configure utility, serial console, Telnet console

Environmental

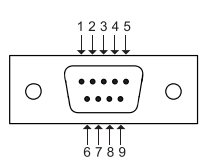
Operating Temperature: -10 to 70ºC
Storage Temperature: -40 to 85ºC
Operating Humidity: 5% to 95% RH (Non-condensing)

Regulatory Approvals

Regulatory Approvals
EMI: FCC Class A
EMS:
EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5EN 61000-4-6, EN 61000-4-11
Safety: UL, cUL
Shock: IEC 60068-2-27
Vibration: IEC 60068-2-6
Free Fall: IEC 60068-2-32
Environmental: WEEE, RoHS
Warranty: 5 years

Pin Assignments

	RS-232	RS-422	RS-485
1	DCD	RX-	---
2	RXD	RX+	---
3	TXD	TX+	Data+
4	DTR	TX-	Data-
5	GND	GND	---
6	DSR	CTS-	---
7	RTS	CTS+	---
8	CTS	RTS+	---
9	RI	RTS-	---



Ordering Information

BMM-101	Industrial 1-Port High Speed Modbus Gateway

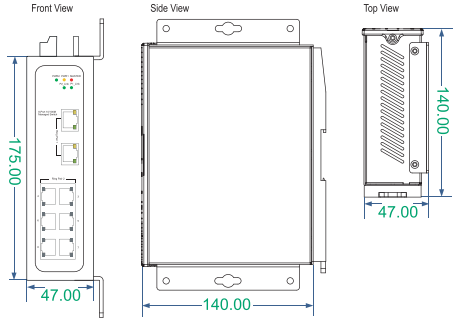
MRM-800E(C)

Introduction

Overview

The Moose MRM-800E and MRM-800EC are Industrial 8-port Managed Ethernet Switches with eight 10/100Mbps Ethernet ports and Direct Ring technology. The self healing technology can recover from any network downtime in less than 300ms. MODBUS/TCP, MODBUS/RTU and OPC are supported by MRM-800E(C). SCADA applications can monitor status of Ethernet and fiber ports via Modbus or OPC protocol. For integration with sensors and alarms in IP networks such as surveillance equipments, digital input is embedded in the unit. The switch can be managed through RS-232 via serial console or Ethernet port using WEB browser or Telnet. MRM-800E(C) supports powerful network functions such as Tag-based VLAN, Port based VLAN, QoS, Port Trunk, cable testing and Port Mirror. The MRM-800E(C) comes ready with conformal coating and extended temperature of -40 to 75 plus two power inputs that can be connected to live DC power sources. In addition, the Moose switches offer Ethernet isolation of 1500Vrms and frame ground for EMS protection which is not a standard feature in most Industrial Ethernet devices.

Dimensions (unit=mm)



Features

High Performance Network Switching Technology
- Complies with IEEE standards
- Provides 8 x 10/100Base-T(X) with RJ-45 connector
- Direct Ring technology with < 300ms recovery time
- QoS/ToS/DiffServ/Port-based VLAN/802.1Q Tag-based VLAN
- Port Trunking with LACP/Port mirroring
- Supports Web/Telnet/CLI management

Reliable Power Design
- Metal case complies with IP-30 housing standard
- DIN-Rail or wall mounting installation

Robust Industrial Design
- Equipped with redundant power inputs
- Power input of 12 to 48VDC
- 1500Vrms for Ethernet Isolation

Specifications

Hardware Specifications

Interface

Total Ports: 8 ports
RJ-45 Ports: 8 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, auto MDI/MDI-X
Console Ports: RS-232 (RJ-45 interface)
Digital I/O: 3 digital input channels and 3 digital output channels
DIP Switch: For firmware upgrading
Reset Button: Reset to factory default
LEDs: Power 1, Power 2, Master
RJ-45 Ports: Link/Activity, Speed
Alarm Contact: 1A@24VDC

Power Requirements

Power Input: 12 to 48VDC, redundant power inputs
Power Consumption: 5.76 watts max.
Power Protection:
Power reverse polarity, frame ground for EMS protection, 1500Vrms for Ethernet Isolation

Physical

Dimensions: IP-30 standard, 47mm (W) x 175mm (H) x 140mm (D)
Installation: DIN-Rail or wall mounting

Environmental

Operating Temperature: -40 to 75ºC
Storage Temperature: -40 to 85ºC
Operating Humidity: 5% to 95% RH (Non-condensing)

Technical

Standard:
IEEE 802.3 10Base-T Ethernet
IEEE 802.3u 100Base-TX
IEEE 802.3x Flow Control
IEEE 802.3ad Port Trunk with LACP
IEEE 802.1D Spanning Tree
IEEE 802.1p Class of Service
IEEE 802.1Q VLAN Tagging
Protocol Technology: CSMA/CD
Switching Architecture: Store and Forward

Management

Redundancy: Direct Ring with recovery time < 300ms, STP
Management: Web/Telnet/CLI management, Modbus/TCP configurations
Port Trunk: EEE802.3ad with LACP function, Max. 4 trunk groups
Max. 4 ports per group (including 2 uplink ports)
VLAN: Port based VLAN and Tag VLAN (256 entries), VID: 1 to 4094
Static VLAN groups up to 256
QoS: Port based with IEEE 802.1p, QoS determined by port, per port 4 queues
Tag and IPv4 ToS, IPv4 DiffServ
Port Mirror: RX, TX and Both packet
SMTP: Up to 6 E-mail accounts with pre-defined warning events
Firmware Upgrade: Via Web browser

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

MRM-800E	Industrial 8 x 10/100Base-T(X) Managed Redundant Modbus Switch, -40 to 75ºC
MRM-800EC	Industrial 8 x 10/100Base-T(X) Managed Redundant Modbus Switch, -40 to 75ºC, Conformal Coated

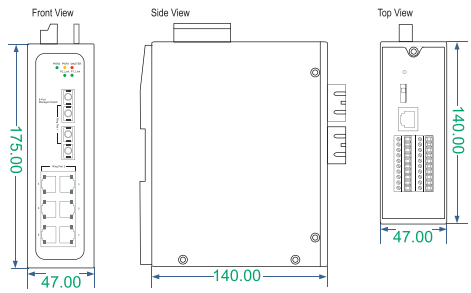
MRM-621E(C)

Introduction

Overview

The Moose MRM-621E and MRM-621EC are Industrial 8-port Managed Ethernet Switches with six 10/100Mbps Ethernet ports and two multi-mode fiber ports and Direct Ring technology. The self healing technology can recover from any network downtime in less than 300ms. MODBUS/TCP, MODBUS/RTU and OPC are supported by MRM-621E(C). SCADA applications can monitor status of Ethernet and fiber ports via Modbus or OPC protocol. For integration with sensors and alarms in IP networks such as surveillance equipments, digital input is embedded in the unit. The switch can be managed through RS-232 via serial console or Ethernet port using WEB browser or Telnet. MRM-621E(C) supports powerful network functions such as Tag-based VLAN, Port based VLAN, QoS, Port Trunk, cable testing and Port Mirror. The MRM-621E(C) comes ready with conformal coating and extended temperature of -40 to 75ºC plus two power inputs that can be connected to live DC power sources. In addition, the Moose switches offer Ethernet isolation of 1500Vrms and frame ground for EMS protection which is not a standard feature in most Industrial Ethernet devices.

Dimensions (unit=mm)



Features

High Performance Network Switching Technology
- Complies with IEEE standards
- Provides 6 x 10/100Base-T(X) with RJ-45 connector
- Provides 2 x multi-mode 100FX fiber ports with SC connector
- Direct Ring technology with < 300ms recovery time
- QoS/ToS/DiffServ/Port-based VLAN/802.1Q Tag-based VLAN
- Port Trunking with LACP/Port mirroring
- Supports Web/Telnet/CLI management

Reliable Power Design
- Metal case complies with IP-30 housing standard
- DIN-Rail or wall mounting installation

Robust Industrial Design
- Equipped with redundant power inputs
- Power input of 12 to 48VDC
- 1500Vrms for Ethernet Isolation

Specifications

Hardware Specifications

Interface

Total Ports: 8 ports
RJ-45 Ports: 6 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, auto MDI/MDI-X
Fiber Ports: 2 x multi-mode 100FX, SC connector
Console Port: RS-232 (RJ-45 interface)
Digital I/O: 3 digital input channels and 3 digital output channels
DIP Switch: For firmware upgrading
Reset Button: Reset to factory default
LEDs: Power 1, Power 2, Master
Fiber Ports: P1_Link, P2_Link
RJ-45 Ports: Link/Activity, Speed
Alarm Contact: 1A@24VDC

Power Requirements

Power Input: 12 to 48VDC, redundant power inputs
Power Consumption: 8 watts max.
Power Protection:
Power reverse polarity, frame ground for EMS protection, 1500Vrms for Ethernet Isolation

Physical

Dimensions: IP-30 standard, 47mm (W) x 175mm (H) x 140mm (D)
Installation: DIN-Rail or wall mounting

Environmental

Operating Temperature: -40 to 75ºC
Storage Temperature: -40 to 85ºC
Operating Humidity: 5% to 95% RH (Non-condensing)

Technical

Standard:
IEEE 802.3 10Base-T Ethernet
IEEE 802.3u 100Base-TX/100Base-FX
IEEE 802.3x Flow Control
IEEE 802.3ad Port Trunk with LACP
IEEE 802.1D Spanning Tree
IEEE 802.1p Class of Service
IEEE 802.1Q VLAN Tagging
Protocol Technology: CSMA/CD
Switching Architecture: Store and Forward

Management

Redundancy: Direct Ring with recovery time < 300ms, STP
Management: Web/Telnet/CLI management
Management: Modbus/TCP configurations
Port Trunk: EEE802.3ad with LACP function, Max. 4 trunk groups
Max. 4 ports per group (including 2 uplink ports)
VLAN: Port based VLAN and Tag VLAN (256 entries), VID: 1 to 4094
Static VLAN groups up to 256
QoS: Port based with IEEE 802.1p, QoS determined by port, per port 4 queues
Tag and IPv4 ToS, IPv4 DiffServ
Port Mirror: RX, TX and Both packet
SMTP: Up to 6 E-mail accounts with pre-defined warning events
Firmware Upgrade: Via Web browser

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

MRM-621E	Industrial 6 x 10/100Base-T(X) and 2 x Multi-mode (SC) 100FX Managed Redundant Modbus Switch, -40 to 75ºC
MRM-621EC	Industrial 6 x 10/100Base-T(X) and 2 x Multi-mode (SC) 100FX Managed Redundant Modbus Switch, -40 to 75ºC, Conformal Coated

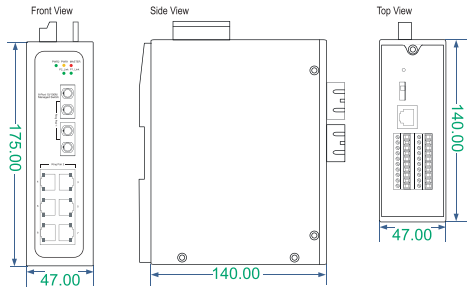
MRM-622E(C)

Introduction

Overview

The Moose MRM-622E and MRM-622EC are Industrial 8-port Managed Ethernet Switches with six 10/100Mbps Ethernet ports and two multi-mode fiber ports and Direct Ring technology. The self healing technology can recover from any network downtime in less than 300ms. MODBUS/TCP, MODBUS/RTU and OPC are supported by MRM-622E(C). SCADA applications can monitor status of Ethernet and fiber ports via Modbus or OPC protocol. For integration with sensors and alarms in IP networks such as surveillance equipments, digital input is embedded in the unit. The switch can be managed through RS-232 via serial console or Ethernet port using WEB browser or Telnet. MRM-622E(C) supports powerful network functions such as Tag-based VLAN, Port based VLAN, QoS, Port Trunk, cable testing and Port Mirror. The MRM-622E(C) comes ready with conformal coating and extended temperature of -40 to 75 plus two power inputs that can be connected to live DC power sources. In addition, the Moose switches offer Ethernet isolation of 1500Vrms and frame ground for EMS protection which is not a standard feature in most Industrial Ethernet devices.

Dimensions (unit=mm)



Features

High Performance Network Switching Technology

- Complies with IEEE standards
- Provides 6 x 10/100Base-T(X) with RJ-45 connector
- Provides 2 x multi-mode 100FX fiber ports with ST connector
- Direct Ring technology with < 300ms recovery time
- QoS/ToS/DiffServ/Port-based VLAN/802.1Q Tag-based VLAN
- Port Trunking with LACP/Port mirroring
- Supports Web/Telnet/CLI management

Reliable Power Design

- Metal case complies with IP-30 housing standard
- DIN-Rail or wall mounting installation

Robust Industrial Design

- Equipped with redundant power inputs
- Power input of 12 to 48VDC
- 1500Vrms for Ethernet Isolation

Specifications

Hardware Specifications

Interface

Total Ports: 8 ports
RJ-45 Ports:
6 x 10/100Base-T(X) auto-negotiation speed,
Full/Half duplex, auto MDI/MDI-X
Fiber Ports: 2 x multi-mode 100FX, ST connector
Console Port: RS-232 (RJ-45 interface)
Digital I/O: 3 digital input channels and 3 digital output channels
DIP Switch: For firmware upgrading
Reset Button: Reset to factory default
LEDs: Power 1, Power 2, Master
Fiber Ports: P1_Link, P2_Link
RJ-45 Ports: Link/Activity, Speed
Alarm Contact: 1A@24VDC

Power Requirements

Power Input: 12 to 48VDC, redundant power inputs
Power Consumption: 8 watts max.
Power Protection:
Power reverse polarity, frame ground for EMS protection, 1500Vrms for Ethernet Isolation

Physical

Dimensions: IP-30 standard, 47mm (W) x 175mm (H) x 140mm (D)
Installation: DIN-Rail or wall mounting

Environmental

Operating Temperature: -40 to 75ºC
Storage Temperature: -40 to 85ºC
Operating Humidity: 5% to 95% RH (Non-condensing)

Technical

Standard:
IEEE 802.3 10Base-T Ethernet
IEEE 802.3u 100Base-TX/100Base-FX
IEEE 802.3x Flow Control
IEEE 802.3ad Port Trunk with LACP
IEEE 802.1D Spanning Tree
IEEE 802.1p Class of Service
IEEE 802.1Q VLAN Tagging
Protocol Technology: CSMA/CD
Switching Architecture: Store and Forward

Management

Redundancy: Direct Ring with recovery time < 300ms, STP
Management: Web/Telnet/CLI management, Modbus/TCP configurations
Port Trunk: EEE802.3ad with LACP function, Max. 4 trunk groups
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QoS: Port based with IEEE 802.1p, QoS determined by port, per port 4 queues
Tag and IPv4 ToS, IPv4 DiffServ
Port Mirror: RX, TX and Both packet
SMTP: Up to 6 E-mail accounts with pre-defined warning events
Firmware Upgrade: Via Web browser

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

MRM-622E	Industrial 6 x 10/100Base-T(X) and 2 x Multi-mode (ST) 100FX Managed Redundant Modbus Switch, -40 to 75ºC
MRM-622EC	Industrial 6 x 10/100Base-T(X) and 2 x Multi-mode (ST) 100FX Managed Redundant Modbus Switch, -40 to 75ºC, Conformal Coated

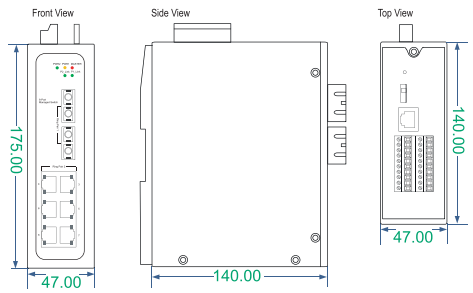
MRM-623E(C)

Introduction

Overview

The Moose MRM-623E and MRM-623EC are Industrial 8-port Managed Ethernet Switches with six 10/100Mbps Ethernet ports and two single-mode fiber ports and Direct Ring technology. The self healing technology can recover from any network downtime in less than 300ms. MODBUS/TCP, MODBUS/RTU and OPC are supported by MRM-623E(C). SCADA applications can monitor status of Ethernet and fiber ports via Modbus or OPC protocol. For integration with sensors and alarms in IP networks such as surveillance equipments, digital input is embedded in the unit. The switch can be managed through RS-232 via serial console or Ethernet port using WEB browser or Telnet. MRM-623E(C) supports powerful network functions such as Tag-based VLAN, Port based VLAN, QoS, Port Trunk, cable testing and Port Mirror. The MRM-623E(C) comes ready with conformal coating and extended temperature of -40 to 75 plus two power inputs that can be connected to live DC power sources. In addition, the Moose switches offer Ethernet isolation of 1500Vrms and frame ground for EMS protection which is not a standard feature in most Industrial Ethernet devices.

Dimensions (unit=mm)



Features

High Performance Network Switching Technology
- Complies with IEEE standards
- Provides 6 x 10/100Base-T(X) with RJ-45 connector
- Provides 2 x single-mode 100FX fiber ports with SC connector
- Direct Ring technology with < 300ms recovery time
- QoS/ToS/DiffServ/Port-based VLAN/802.1Q Tag-based VLAN
- Port Trunking with LACP/Port mirroring
- Supports Web/Telnet/CLI management

Reliable Power Design
- Metal case complies with IP-30 housing standard
- DIN-Rail or wall mounting installation

Robust Industrial Design
- Equipped with redundant power inputs
- Power input of 12 to 48VDC
- 1500Vrms for Ethernet Isolation

Specifications

Hardware Specifications

Interface

Total Ports: 8 ports
RJ-45 Ports: 6 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, auto MDI/MDI-X
Fiber Ports: 2 x single-mode 100FX, SC connector
Console Port: RS-232 (RJ-45 interface)
Digital I/O: 3 digital input channels and 3 digital output channels
DIP Switch: For firmware upgrading
Reset Button: Reset to factory default
LEDs: Power 1, Power 2, Master
Fiber Ports: P1_Link, P2_Link
RJ-45 Ports: Link/Activity, Speed
Alarm Contact: 1A@24VDC

Power Requirements

Power Input: 12 to 48VDC, redundant power inputs
Power Consumption: 8 watts max.
Power Protection:
Power reverse polarity, frame ground for EMS, protection, 1500Vrms for Ethernet Isolation

Physical

Dimensions: IP-30 standard, 47mm (W) x 175mm (H) x 140mm (D)
Installation: DIN-Rail or wall mounting

Environmental

Operating Temperature: -40 to 75ºC
Storage Temperature: -40 to 85ºC
Operating Humidity: 5% to 95% RH (Non-condensing)

Technical

Standard:
IEEE 802.3 10Base-T Ethernet
IEEE 802.3u 100Base-TX/100Base-FX
IEEE 802.3x Flow Control
IEEE 802.3ad Port Trunk with LACP
IEEE 802.1D Spanning Tree
IEEE 802.1p Class of Service
IEEE 802.1Q VLAN Tagging
Protocol Technology: CSMA/CD
Switching Architecture: Store and Forward

Management

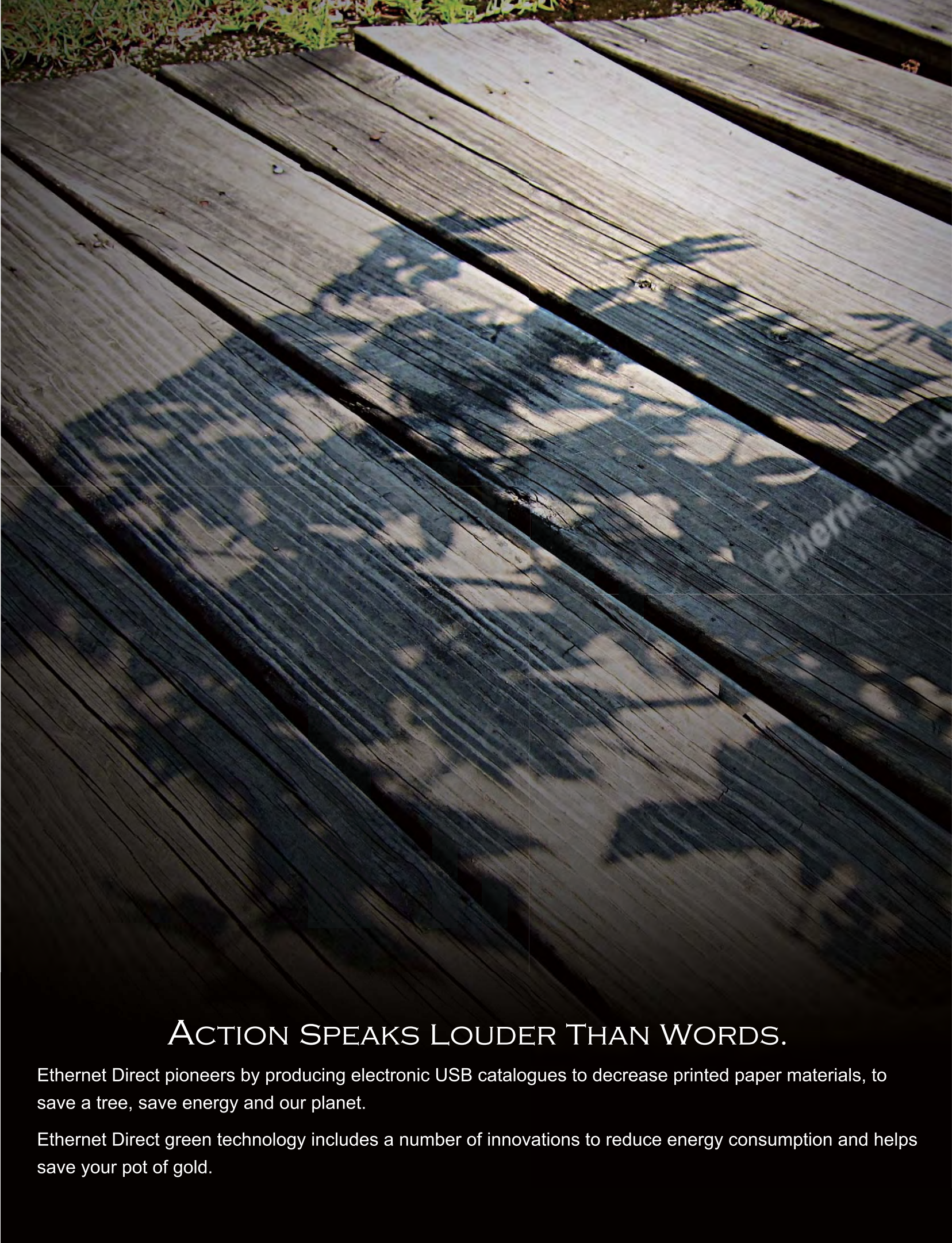
Redundancy: Direct Ring with recovery time < 300ms, STP
Management: Web/Telnet/CLI management, Modbus/TCP configurations
Port Trunk: EEE802.3ad with LACP function
Port Trunk: Max. 4 trunk groups, Max. 4 ports per group (including 2 uplink ports)
VLAN: Port based VLAN and Tag VLAN (256 entries), VID: 1 to 4094
Static VLAN groups up to 256
QoS: Port based with IEEE 802.1p, QoS determined by port, per port 4 queues
Tag and IPv4 ToS, IPv4 DiffServ
Port Mirror: RX, TX and Both packet
SMTP: Up to 6 E-mail accounts with pre-defined warning events
Firmware Upgrade: Via Web browser

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

MRM-623E	Industrial 6 x 10/100Base-T(X) and 2 x Single-mode (SC) 100FX Managed Redundant Modbus Switch, -40 to 75ºC
MRM-62EC	Industrial 6 x 10/100Base-T(X) and 2 x Single-mode (SC) 100FX Managed Redundant Modbus Switch, -40 to 75ºC, Conformal Coated



Action Speaks Louder Than Words.

Ethernet Direct pioneers by producing electronic USB catalogues to decrease printed paper materials, to save a tree, save energy and our planet.

Ethernet Direct green technology includes a number of innovations to reduce energy consumption and helps save your pot of gold.

PANDA

Solutions

Industrial PROFIBUS & PROFINET

PROFIBUS (Process Field Bus) is an open standard for field bus communication in automation technology. There are two variations of PROFIBUS; the most commonly used DP (Decentralized Peripherals) and the lesser used PA (Process Automation). PROFIBUS is the only field bus that can be used in equal measure in production automation and process automation.

Ethernet Direct Panda Series PROFIBUS DP products are in production technology as well as in the connection of distributed intelligence such as the networking of multiple controllers to one another. The data rates are up to 12 Mbit/s on twisted pair cables and fiber optics are also possible. Panda Series PROFIBUS converters and gateways are designed for a wide range of applications, particularly in the fields of factory and process automation. It is suitable for both fast, time-critical applications and complex communication tasks with safety and stability when use in industrial applications.

The Panda converters are designed specifically for the slave device of PROFIBUS DP protocol. It offers RS-232, RS-422, and RS-485 three kinds of communication way. With the Hybrid COM 1 design, users can readily choose one type of com ports to use. By using this module, users can put their RS-232/422/485 devices into PROFIBUS network very easily.

The Panda gateways are also designed for the slave device of PROFIBUS DP protocol. It allows the PROFIBUS master to access the Modbus devices. These Modbus devices may be a PLC, a sensor, modules and other equipments. In addition, Ethernet Direct also provides the utility software for users to configure the Panda gateways. By using this module, users can put their Modbus devices into PROFIBUS network very easily.

Naming Rules

PXP-5XX

P	X	M	-	5XX
Panda	U: Unmanaged	P: PROFIBUS		550: PROFIBUS to RS-232/422/485 Converter 552: PROFIBUS/Modbus Gateway

Model	PUP-550	PUP-552
	Industrial PROFIBUS to Serial Converter	Industrial PROFIBUS to Modbus Gateway
Interface		
Serial Interface	RS-232/422/485 with terminal block connector	RS-232/422/485 with terminal block connector
PROFIBUS Interface	DB9	DB9
Hardware		
Power Input	10 to 30VDC	10 to 30VDC
PROFIBUS Protection	3000VDC	3000VDC
ESD Protection	4000VDC	4000VDC
Operating Temperature	-25 to 75°C	-25 to 75°C
Applications		
	Conversion from end devices w/ serial interface to PROFIBUS slave devices	Conversion from end devices w/ Modbus protocol to PROFIBUS slave devices
Regulatory Approvals		
CE/FCC	√	√

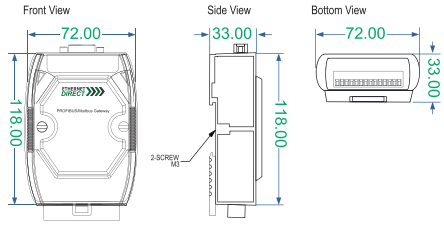
PUP-550

Introduction

Overview

The Panda PUP-550 is a PROFIBUS to RS-232/422/485 converter especially designed for the slave devices of PROFIBUS DP protocol. PUP-550 comes with RS-232/422/485 serial communication interface. It is equipped with Hybrid COM1 port design for users to easily choose one type of COM port to integrate serial devices into PROFIBUS network without difficulties. PROFIBUS is used at the field level and provides benefits for almost any application in factory automation, process automation, drives & motor control and functional safety. Devices such as remote I/O, drives, motor starters, weighing & dosing systems, human machine interfaces, energy-systems can be connected.

Dimensions (unit=mm)



Features

- Protocol & Hierarchy: DP-V0 Slave
- Automatic transmission rate (9.6 to 12000kbps) detection
- 128 bytes max input data length
- 126 sets of addresses by DIP switch or EEPROM
- Several baud rates for COM1 from 1.2 to 115.2kbps
- Built-in self-tuner ASIC controller on RS-422/485 port
- Network Isolation Protection: High Speed iCoupler
- 3000VDC isolation protection on PROFIBUS side
- 4000VDC ESD protection
- Mountable on DIN-Rail
- Watchdog supported

Specifications

Hardware Specifications

Interface

Serial Ports: 1x RS-232/422/485 serial port,
terminal block connector (can't be used simultaneously)
PROFIBUS Interface: DB9 female connector (3000VDC isolation protection)
LEDs: Power, Error, Run

Serial Specifications

Signals: RS-232: TxD, GND, RS-422: TxD+, TxD-, RxD+, RxD-RS-485: Data+, Data-
Baud Rate: 1,200 to 115,200bps
Parity: None, Even, Odd
Data Bit: 7, 8
Stop Bit: 1, 2

PROFIBUS Specifications

PROFIBUS Controller: Siemens SPC3
PROFIBUS Transceiver: ADI ADM2486 iCoupler Isolated Transceiver
Baud Rate: 1,200 to 115,200bps
Protocol: DP-V0

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 2.5 watts max. @ 24VDC
Power Protection: Reverse power polarity, over current protection, over voltage protection

Physical

Dimensions: 72mm (W) x 118mm (H) x 33mm (D)
Installation: DIN-Rail

Environmental

Operating Temperature: -25 to 75°C
Storage Temperature: -40 to 85°C
Operating Humidity: 5% to 95% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

PUP-550	Industrial PROFIBUS to RS-232/422/485 Converter

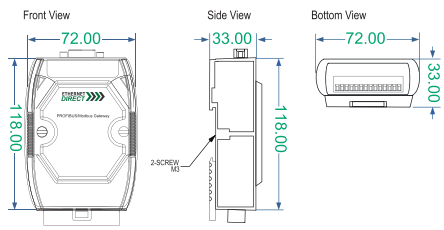
PUP-552

Introduction

Overview

The Panda PUP-552 is a PROFIBUS to Modbus gateway especially designed for the slave devices of PROFIBUS DP protocol. PUP-552 allows the PROFIBUS master to access Modbus devices which may be a PLC or a sensor. PROFIBUS is used at the field level and provides benefits for almost any application in factory automation, process automation, drives & motor control and functional safety. Devices such as remote I/O, drives, motor starters, weighing & dosing systems, human machine interfaces, energy-systems can be connected.

Dimensions (unit=mm)



Features

- Protocol & Hierarchy: DP-V0 Slave
- Automatic transmission rate (9.6 to 12000kbps) detection
- 128 bytes max input data length
- 130 bytes max output data length
- Supports Modbus Master and Slave mode
- Supports Modbus RTU and ASCII format
- 126 sets of addresses by DIP switch or EEPROM
- Several baud rates for COM1 from 1.2 to 115.2kbps
- Network Isolation Protection: High Speed iCoupler
- 3000VDC isolation protection on PROFIBUS side
- 4000VDC ESD Protection
- Watchdog supported

Specifications

Hardware Specifications

Interface

Modbus Interface: 1 x RS-232/422/485 serial port, terminal block connector (can't be used simultaneously)
PROFIBUS Interface: DB9 female connector (3000VDC isolation protection)
LEDs: Power, Error, Run

Serial Specifications

Signals: RS-232: TxD, GND, RS-422: TxD+, TxD-, RxD+, RxD-, RS-485: Data+, Data-
Baud Rate: 1,200 to 115,200bps
Parity: None, Even, Odd
Data Bit: 7, 8
Stop Bit: 1, 2

PROFIBUS Specifications

PROFIBUS Controller: Siemens SPC3
PROFIBUS Transceiver: ADI ADM2486 iCoupler Isolated Transceiver
Baud Rate: 9,600 to 12Mbps
Protocol: DP-V0

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 2.5 watts max. @ 24VDC
Power Protection: Reverse power polarity, over current protection, over voltage protection

Physical

Dimensions: 72mm (W) x 118mm (H) x 33mm (D)
Installation: DIN-Rail

Environmental

Operating Temperature: -25 to 75ºC
Storage Temperature: -30 to 85ºC
Operating Humidity: 5% to 95% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

PUP-552	Industrial PROFIBUS to Modbus Gateway

Solutions

Industrial CAN Bus

Controller-area network (CAN bus) is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts. These features can improve the network reliability and transmission efficiency. Furthermore, CAN supplies the multi-master capabilities, and is especially suited for networking “intelligent” devices as well as sensors and actuators within a system or sub-system.
Ethernet Direct offers Canary Series Industrial CAN Bus Solutions for industrial environments with higher performance products used in applications involving factory automation, industrial machine control, maritime electronic, building management system, and aircraft engines. The Canary Series includes CAN Bus isolated repeaters, CAN to fiber converters, intelligent serial to CAN converters, Ethernet to CAN/serial converters, and USB to CAN converters.

CAN repeaters are used to establish a physical coupling of two or more segments of a CAN Bus system.

CAN to fiber converters are used for applications which require protecting the data transmission from electrical exposure, surges, lightning or chemical corrosion in a CAN network.

CAN to serial converters are used to communicate with CAN devices easily from any PC or devices with RS-232/485/422 interface.

CAN to USB converters are a cost-efficient device for connecting CAN Bus to PC using the standard USB interface which is present in every new PC and is supported by the MS-Windows 98, ME, 2000 and XP operating systems.

Naming Rules

CXC-5XX

C	X	C	-	5XX
Canary	U: Unmanaged W: Web-managed	C: CAN Bus		531: CAN Bus Isolated Repeater 532: CAN to Fiber Converter w/ ST Fiber Connector 530A: Intelligent RS-232/485/422 to CAN Converter 540: Ethernet to CAN/RS-232/RS-485 Converter 565: USB to CAN Converter

Model	CUC-531	CUC-532	CWC-530A	CWC-540	CWC-565
	Industrial CAN Isolated Repeater	Industrial CAN to Fiber Converter	Industrial CAN to Serial Converter	Industrial CAN to Ethernet Gateway	Industrial CAN to USB Converter
Number of Ports					
CAN Port	2	1	1	1	1
10/100Base-T(X)	-	-	-	1	-
Multi-mode 100Base-FX	-	1	-	-	-
RS-232/422/485 Serial Port	-	-	1	1 x RS-232 1 x RS-485	-
USB Type B	-	-	-	-	1
Hardware					
Power Input	10 to 30VDC	10 to 30VDC	10 to 30VDC	10 to 30VDC	By USB Interface
Power Consumption	2 watts	0.5 watts	1 watts	2.5 watts	1.5 watts
CAN Channel	2	1	1	1	1
CAN Baud Rate	5k to 800kbps	10k to 500kbps	10k to 1Mbps	10k to 1Mbps	10k to 1Mbps
CAN Connector	3-pin terminal block	8-pin terminal block	9-pin male D-Sub	2-pin terminal block	9-pin male D-Sub
Isolation Protection	3000VDC for DC-to-DC 2500Vrms for photo-couple	-	-	1000VDC for DC-to-DC 2500Vrms for photo-couple	3000Vrms for CAN interface
Terminator Resistor	120Ω	120Ω	120Ω	120Ω	120Ω
Operating Temperature	-25 to 75°C	-25 to 75°C	-25 to 75°C	-25 to 75°C	-25 to 75°C
Regulatory Approvals					
CE/FCC	√	√	√	√	√

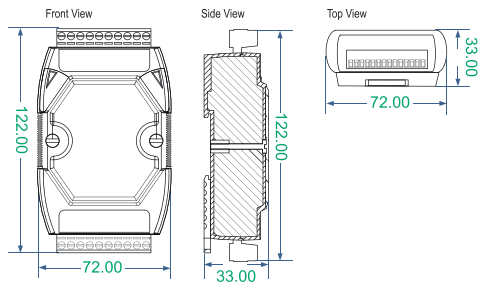
CUC-531

Introduction

Overview

The Canary CUC-531 is a CAN isolated repeater especially designed to establish a physical coupling of two or more segments in a CAN bus system. With CUC-531, users can implement tree or star topologies as well as long drop lines and increase the maximum number of bus nodes. For added protection, CUC-531 comes with 2500Vrms optical isolation to separate and protect critical segments of a system from the CAN network. CAN bus is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts.

Dimensions (unit=mm)



Features

- Compatible with CAN specification 2.0A/2.0B
- Fully compatible with the ISO 11898-2 standard
- 880kbps max communication baud
- 2500Vrms photo-couple isolation on the CAN side
- 3KV galvanic isolation among the power supply and 2 CAN ports
- Jumper for 120Ω terminator resistor of CAN bus
- Two CAN channels
- Automatic baud rate detection
- Up to 100 nodes on each CAN port

Specifications

Hardware Specifications

Interface

CAN Ports: 3-pin terminal block connector (CAN_GND, CAN_L, CAN_H)
LEDs: Power

CAN Specifications

Transceiver: NXP 82C250
Channel Number: 2
Baud Rate: 5k to 800kbps
Isolation: 3000VDC for DC-to-DC, 2500Vrms for photo-couple
Terminator Resistor: Jumper for 120Ω terminator resistor
Standard: ISO-11898-2, CAN 2.0A and CAN 2.0B

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 2 watts max.
Power Protection: Power reverse polarity protection, over-voltage brown-out protection

Physical

Dimensions: 72mm (W) x 122mm (H) x 33mm (D)
Installation: DIN-Rail

Environmental

Operating Temperature: -25 to 75°C
Storage Temperature: -40 to 85°C
Operating Humidity: 5% to 95% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

CUC-531	Industrial CAN Bus Isolated Repeater

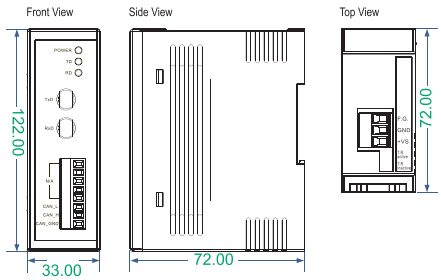
CUC-532

Introduction

Overview

The Canary CUC-532 is a CAN to fiber optic converter especially designed to extend CAN bus signals to fiber cables. It secures data transmission via fiber optic transmission to provide immunity from EMI/RFI interferences. CAN bus is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts. CUC-532 is used for CAN applications for transmitting signal up to 1.4 km and is an ideal device for applications where the transmission must be protected from surges, lighting, electrical contact or chemical corrosion.

Dimensions (unit=mm)



Features

- Compatible with CAN specification 2.0A/2.0B
- Fully compatible with the ISO 11898-2 standard
- Supports baud rate up to 500Kbps
- Jumper for 120Ω terminator resistor of CAN bus
- Multi-mode fiber port with ST connector
- 850 nm wave Length
- Automatic baud rate detection
- Up to 100 nodes on CAN port

Specifications

Hardware Specifications

Interface

Fiber Ports: 1 x multi-mode 100FX , ST connector
CAN Ports: 1 x 8-pin removable screw terminal
LEDs: Power, Transmit, Receive

CAN Specifications

Baud Rate: 10K to 500Kbps
Terminator Resistor: Selectable 120Ω terminator resistor by jumper
Support Protocol: CAN 2.0A/2.0B
Propagation Delay: 125ns max (125ns delay shortens bus line length by 25m)

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 0.5 watts max.
Power Protection: Power reverse polarity protection, over-voltage brown-out protection

Physical

Dimensions: 72mm (W) x 122mm (H) x 33mm (D)
Installation: DIN Rail

Environmental

Operating Temperature: -25 to 75°C
Storage Temperature: -40 to 85°C
Operating Humidity: 5% to 95% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 year

Ordering Information

CUC-532	Industrial CAN to Multi-mode 100FX (ST connector) Fiber Converter

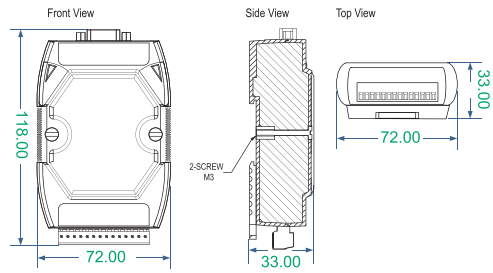
CWC-530A

Introduction

Overview

The Canary CWC-530A is a CAN to RS-232/422/485 converter especially designed to convert messages in CAN applications. With CWC-530A, CAN devices can easily communicate with programmable RS-232/422/485 devices (PC, PLC or PAC) PC or serial devices. CAN bus is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts. CWC-530A is an ideal device for applications where the transmission must be protected from surges, lighting, electrical contact or chemical corrosion.

Dimensions (unit=mm)



Features

- Compatible with CAN specification 2.0A/2.0B
- Fully compatible with ISO 11898-2 standard
- Supports Web configuration
- Baud rates range from 10kbps to 1Mbps
- Jumper for 120Ω terminator resistor
- Software configurable CAN and RS-232/422/485 communication parameters
- 1000 frames in CAN received buffer
- 900 frames in RS-232/422/485 received buffer
- Watchdog supported
- Transparent communication between the RS-232/422/485 devices via CAN bus
- Enable different RS-232/422/485 devices into an individual group in CAN bus networks (Full-duplex communication mode of RS-232/422 devices is not supported)
- CAN Bus baud rate and CAN acceptance filter with utility configuration
- Software configuration CAN 2.0A or 2.0B
- Serial COM baud rate and data bit setting
- Serial COM command error response selection
- Utility tool for transmitting/receiving CAN messages
- Shows CAN messages by hex or decimal format with utility
- CAN messages with time stamp
- Easy-to-use data logger for the diagnosis of CAN networks and recording of the received data
- Sends the predefined CAN messages manually or cyclically

Specifications

Hardware Specifications

Interface

CAN Ports: 9-pin male D-Sub (CAN_L, CAN_SHLD, CAN_H, N/A for others)
Serial Ports: 1 x RS-232/422/485 serial port, terminal block connector
(can't be used simultaneously)
LEDs: On, Error

CAN Specifications

Transceiver: NXP 82C250
Channel Number: 1
Baud Rate: 10k to 1Mbps
Isolation: 3000VDC for DC-to-DC, 2500Vrms for photo-couple
Terminator Resistor: Jumper for 120Ω terminator resistor
Standard: ISO-11898-2, CAN 2.0A and CAN 2.0B

Serial Specifications

Signals: RS-232: TxD, RxD, GND, RS-422: Tx+, Tx-, Rx+, Rx-, RS-485: Data+, Data-
Baud Rate: 110 to 115,200bps
Parity: None, Even, Odd
Data Bit: 7, 8
Stop Bit: 1, 2

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 1 watts max.
Power Protection: Power reverse polarity protection, over-voltage brown-out protection

Physical

Dimensions: 72mm (W) x 118mm (H) x 33mm (D)
Installation: DIN-Rail

Environmental

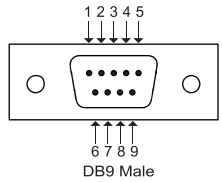
Operating Temperature: -25 to 75°C
Storage Temperature: -40 to 85°C
Operating Humidity: 5% to 95% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 year

Pin Assignments

PIN	
1	Not used
2	CAN Low
3	Not used
4	Not used
5	Not used
6	Not used
7	CAN High
8	Not used
9	Not used



Ordering Information

CWC-530A	Industrial CAN to Serial Converter

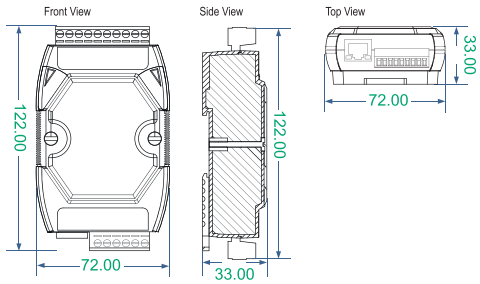
CWC-540

Introduction

Overview

The Canary CWC-540 is a CAN to Ethernet gateway especially designed to enable CAN networks to be coupled together over the Internet/Ethernet to make remote monitoring & control possible. CWC-540 controls network communication and makes a transparent CAN-based application interface available to users since it supports a transparent, protocol independent transfer of CAN messages and virtual COM technology. CAN bus is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts. CWC-540 is an ideal device for applications where the transmission must be protected from surges, lighting, electrical contact or chemical corrosion.

Dimensions (unit=mm)



Features

- Compatible with CAN specification 2.0A/2.0B
- 10/100Base-T(X) Ethernet controller
- Supports Web configuration
- Message transmitted using TCP/IP protocol
- COM driver supports interrupt and 1K QUEUE input & output buffer
- One RS-232 port, one RS-485 port and one CAN port can be used simultaneously
- 2500Vrms photo-isolation protection on CAN side
- Jumper for 120Ω terminator resistor for CAN channel
- Max transmission speed up to 1Mbps for CAN and 115.2Kbps for RS-232/485
- Software configuration for CAN and RS-232 communication parameters
- Provides max 25 Ethernet client connections
  Support Virtual COM technology
- CAN Bus baud rate and CAN acceptance filter with utility configuration
- Serial COM baud rate and data bit setting
- Serial COM command error response selection
- Utility tool for transmitting/receiving CAN messages
- Shows CAN messages by hex or decimal format with utility
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically

Specifications

Hardware Specifications

Interface

CAN Ports: 2-pin screwed terminal block (CAN_L, CAN_H)
Serial Ports:
1 x RS-232 serial port, 5-pin Terminal block connector
1 x RS-485 serial port, 2-pin Terminal block connector
RJ-45 Port: 1 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, auto MDI/MDI-X
LEDs: On, Error, 10/100Base-T(X): Link/Activity, Full duplex/Collision

CAN Specifications

Controller: NXP SJA1000T with 16MHz clock
Transceiver: NXP 82C250
Channel Number: 1
Baud Rate: 10k to 1Mbps
Isolation: 1000VDC for DC-to-DC, 2500 Vrms for photo-couple
Terminator Resistor: Jumper for 120Ω terminator resistor
Standard: ISO-11898-2, CAN 2.0A and CAN 2.0B

Serial Specifications

Signals: RS-232: TxD, RxD, RTS, CTS, GND, RS-485: Data+, Data-
Baud Rate: 110 to 115,200bps
Parity: None, Even, Odd
Data Bit: 7, 8
Stop Bit: 1, 2

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 2.5 watts max.
Power Protection: Power reverse polarity protection, over-voltage brown-out protection

Physical

Dimensions: 72mm (W) x 122mm (H) x 33mm (D)
Installation: DIN-Rail

Environmental

Operating Temperature: -25 to 75°C
Storage Temperature: -40 to 85°C
Operating Humidity: 5% to 95% RH (Non-condensing)

Technology

Network Protocol: TCP, UDP, HTTP, IP, ICMP, ARP
Configuration Mode: IP address, CAN bus baud rate, CAN BTR0/BTR1, CAN acceptance filter, CAN 2.0A/2.0B, Error code response,transmitting/receiving CAN message
Virtual COM Mode: Supports Windows 98/2000/XP
Configuration Mode: Configure utility, Web browser

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 year

Ordering Information

CWC-540	Industrial CAN to Ethernet Gateway

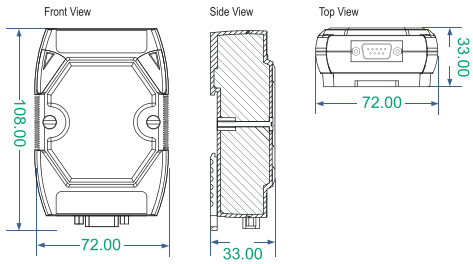
CWC-565

Introduction

Overview

The Canary CWC-565 is a CAN to USB converter especially designed for coupling the CAN bus network to PC via USB interface. CWC-565 allows a connection to be established with a PC to automatically load relevant device drivers in a plug and play mode. The PC can be the CAN host, monitor or HMI to access/control the CAN device through the CAN network by using CWC-565. CAN bus is a serial communication way, which efficiently supports distributed real-time control with a very high level of security. It provides the error process mechanisms and message priority concepts.

Dimensions (unit=mm)



Features

- Microprocessor inside with 20MHz
- Fully compliant with USB 1.1/2.0 (Full Speed)
- Fully compatible with the ISO 11898-2 standard
- Powered by the USB bus
- 82C250 CAN transceiver
- Transmission speed up to 1Mbps for CAN and 921.6kbps for USB
- Compatible with CAN specification 2.0A/2.0B
- Built-in jumper to select 120 ohm terminal resister
- Watchdog supported
- Supports Windows 98/ME/2000/XP/Linux OS
- CAN bus baud rate and CAN acceptance filter with utility configuration
- Serial COM baud rate and data bit setting
- Serial COM command error response selection
- Utility tool for transmitting/receiving CAN messages
- Shows CAN messages by hex or decimal format with utility
- CAN messages with timestamp
- Easy-to-use data logger for the diagnosis of the CAN networks and recording of the received data
- Send the predefined CAN messages manually or cyclically

Specifications

Hardware Specifications

Interface

CAN Ports: 9-pin male D-Sub (CAN_L, CAN_H, CAN_GND, CAN_SHLD, N/A for others)
USB Port: USB Type B
LEDs: On, Error

CAN Specifications

Controller: Microprocessor inside with 20MHz
Transceiver: NXP 82C250
Channel Number: 1
Baud Rate: 10k to 1Mbps
Isolation: 3000Vrms for CAN interface
Terminator Resistor: Jumper for 120Ω terminator resistor
Standard: ISO-11898-2, CAN 2.0A and CAN 2.0B

User Interface

Transmission Speed: 921.6kbps
Specifications: USB1.1 and USB2.0
Receive Buffer: 900 data frames

Power Requirements

Power Input: By USB interface
Power Consumption: 1.5 watts max.

Physical

Dimensions: 72mm (W) x 108mm (H) x 33mm (D)
Installation: DIN-Rail

Environmental

Operating Temperature: -25 to 75°C
Storage Temperature: -40 to 85°C
Operating Humidity: 5% to 95% RH (Non-condensing)

Technology

Configuration Mode: CAN bus baud rate, CAN acceptance filter, CAN 2.0A/2.0B, Error code response, transmitting/receiving CAN message Configuration utility

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 year

Ordering Information

CWC-565	Industrial CAN to USB Converter

World Class Sales & Support

Worldwide Coverage:
The Global Ethernet Direct team is continuously expanding presence throughout the world with global locations, network, sales & support, technical assistance and local partnership to create the maximum value for customers. Our high quality products and professional knowledge service set us apart from others and make Ethernet Direct an innovative leader in Industrial Ethernet. Ethernet Direct is an alliance partner of IntraVUE™ and members of various well-recognized industrial organizations.

Forefront in Technology:
Every year, Ethernet Direct pioneers in innovative solutions. The speed of Ethernet Direct penetration in mission critical applications justifies our reliability and capabilities. A wide variety of connectivity options, industrial certifications, extended temperature ranges, high scalability, easy interoperability and user-friendly installation are what make Ethernet Direct devices an attractive selection for vertical integration. Ethernet Direct offers everything an industrial application may need and we are committed to long term product supply backed up with extended 5 year warranty on industrial Ethernet equipments.

Rugged ◦ Upgraded ◦ Certified

Ethernet Direct industrial Ethernet switches are designed specifically to operate reliably in some of the most hostile environments.
Selected products on the Husky series, Cobra series and Retriever series comply with Class 1 Division 2, UL 508, IEC 61850-3, IEEE 1613, DNV, ATEX and more.

Ethernet Direct products are built to meet and exceed recognized industry standards to provide safety and efficiency in various applications.
Many major Defense and Security companies are relying of the quality and performance of our Ethernet switches as they design next generation equipment.

Please refer to our Industrial Ethernet solutions - Special edition section for full product details.

BOXER

Solutions

Industrial Serial to Ethernet

Boxer Series Industrial Device Servers are the best solution for legacy devices to be converted into Ethernet devices which offer monitoring and control from any network location. Device servers enable you to easily connect any equipment with an RS-232, RS-422 or RS-485 serial port to Ethernet. It can convert or extend your serial communications over various forms of Ethernet such as Wi-Fi 802.11b, 10BaseT or 10/100BaseT(X) networks. A device server can be used in various types of remote monitoring devices and network enabled equipments like ASCII terminals, time attendance devices, CNC controllers, printers, key card entry systems, modems, POS, console ports industrial equipment to serial-based COM port, UDP or TCP socket-based applications.

Ethernet Direct offers Boxer Series High Speed Device Server designed specifically for serial communications across the Ethernet. Boxer Series products provide a reliable connection supporting RS-232/422/485 without changing any existing serial program. This is accomplished by using the Virtual COM device driver installed on the host computer or using a pair of device servers. Boxer Series device servers can be configured as TCP Client/Server or UDP, and can be operated in Direct IP Mode, Virtual COM mode or Paired mode. Protocols supported include TCP, UDP, HTTP, Telnet, IP, ICMP and ARP.

The new generation device server incorporates digital input and digital output in one device. Virtual I/O is the extension of virtual COM and the difference lies on that virtual I/O can turn the device server's digital I/Os into the computer's COM ports. In addition, users can do some basic function tests or applications through the digital I/O in a convenient way.

For wireless applications, Ethernet Direct also offers the Wireless Industrial Serial Server which serves as a gateway between TCP/IP via wireless and RS-232/422/485 communications. It makes it easy to network-enable serial devices to a wireless IEEE 802.11b or 802.11g infrastructure, and allows almost any serial device to be connected to a new or existing wireless network.

Naming Rules

BXS-XXXX

B	X	S	-	X	X	X	X
Boxer	U: Unmanaged W: Web-managed M: Managed	Serial		Number of Serial Ports	Serial Type 1: RS-232 2: RS-422/485 3: RS-232/422/485	Ethernet Type 4: USB 5: Fiber 6: 10/100BaseT(X)	Other Specifications D: DIO POE: PoE V2: Customized Version WL: Wireless

Model	BWS-136	BMS-136	BMS-236	BMS-436	BMS-836
	Industrial 1-port Serial Device Server	Industrial 1-port High Speed Device Server	Industrial 2-port High Speed Device Server	Industrial 4-port High Speed Device Server	Industrial 8-port High Speed Device Server
Number of Ports					
10/100Base-T(X)	1	1	1	1	1
RS-232/422/485	1	1	1	4	-
RS-232	-	-	1	-	8
Digital I/O Port	1	-	-	-	-
Hardware					
Power Input	9 to 40VDC	9 to 15VDC	9 to 15VDC	9 to 15VDC	9 to 15VDC
Baud Rate	1.2 to 38.4Kbps	110bps to 230.4Kbps	110bps to 230.4Kbps	110bps to 230.4Kbps	110bps to 230.4Kbps
Data Bit	7, 8	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8
Stop Bit	1, 2	1, 1.5, 2	1, 1.5, 2	1, 1.5, 2	1, 1.5, 2
Power Consumption	0.84 watts	2.25 watts	3 watts	4.8 watts	6 watts
Operating Temperature	0 to 70°C	0 to 60°C	0 to 60°C	0 to 60°C	0 to 60°C
Software					
TCP/UDP Transmission Mode	√	√	√	√	√
Virtual COM Mode	-	√	√	√	√
DHCP	√	√	√	√	√
Web Configuration	-	√	√	√	√
Configureation Utility	√	√	√	√	√
Telnet	√	√	√	√	√
Regulatory Approvals					
CE/FCC	√	√	√	√	√

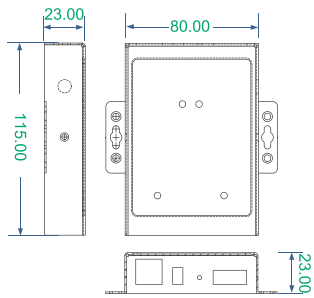
BWS-136

Introduction

Overview

The Boxer BWS-136 is a 1-port serial device server. It is designed to translate data between the serial and Ethernet formats, allowing users to access, manage and configure remote facilities or equipments over the Internet from any location. BWS-136 provides quick, reliable and seamless integration of existing RS-232/422/485 devices to an Ethernet network. The unique hardware and software design of BWS-136 enables you to connect RS-232/422/485 serial devices to Ethernet network at a minimal transition cost. It is equipped with versatile operation modes which provide a transparent data channel between serial device and the TCP/IP network, so that the serial device can be accessed through standard TCP/IP protocols. The BWS-136 can function as a TCP Server or a TCP Client.

Dimensions (unit=mm)



Features

- Connect RS-232/422/485 devices to TCP/IP network
- Eight programmable digital I/Os
- 10/100Base-T(X) Ethernet; 38.4Kbps serial data rate
- Supports TCP/Server and TCP/Client mode
- Telnet/Serial consoles for device configuration
- Windows utility for device configuration and
- management
- Programmable Digital I/O
- Firmware upgradeable

Specifications

Hardware Specifications

Interface

Serial Port :
1 x RS-232/422/485 serial port, DB9 male connector, DIP switch selectable
RJ-45 Port: 1 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, RJ-45 connector
Digital I/Os:
8 programmable I/Os, DB9 female connector
PIO0 to PIO5: TTL level compatible
PIO6 to PIO7: CMOS level compatible
LEDs: Tx/Rx, Power, Ready, Link/Act

Serial Specifications

Signals:
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: TxD+, TxD-, RxD+, RxD-, GND
RS-485: Data+, Data-, GND
Baud Rate: 1.2 to 38.4Kbps
Parity: None, Even, Odd
Data Bit: 7, 8
Stop Bit: 1, 2
Flow Control: None, RTS/CTS, XON/OFF

Power Requirements

Power Input: 9 to 40VDC
Power Consumption: 0.84 watts max.

Physical

Dimensions: 80mm (W) x 115mm (H) x 23mm (D)
Installation: Wall mounting

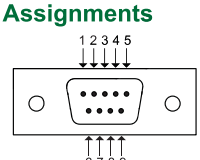
Technology

Network Protocol: TCP, UDP, HTTP, Telnet, IP, ICMP, ARP
Operation Mode: TCP Server, TCP Client
Configuration Mode: Configuration Utility, Serial Console, Telnet Console

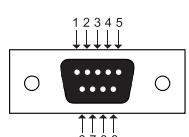
Regulatory Approvals

EMI: FCC Class A
EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Shock: IEC 60068-2-27
Vibration: IEC 60068-2-6
Free Fall: IEC 60068-2-32
Environmental: WEEE, RoHS
Warranty: 5 years

Pin Assignments



DB9 Male



DB9 Female

DB9 M Male	RS-232	RS-422	RS-485
1	DCD	TX-	---
2	RXD	TX+	---
3	TXD	RX+	Data+
4	DTR	RX-	Data-
5	GND	GND	GND
6	DSR	---	---
7	RTS		
8	CTS	---	---
9	RI	---	---

PIN	GPIO
1	PIO0
2	PIO1
3	PIO2
4	PIO3
5	PIO4
6	PIO5
7	PIO6
8	PIO7
9	GND

Ordering Information

BWS-136	Industrial 1-Port Serial Device Server

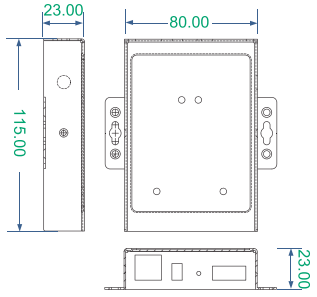
BMS-136

Introduction

Overview

The Boxer BMS-136 is a 1-port high speed serial device server. It is designed to translate data between the serial and Ethernet formats, allowing users to access, manage and configure remote facilities or equipments over the Internet from any location. BMS-136 provides quick, reliable and seamless integration of existing RS-232/422/485 devices to an Ethernet network. The unique hardware and software design of BMS-136 enables you to connect RS-232/422/485 serial devices to Ethernet network at a minimal transition cost. It is equipped with versatile operation modes which provide a transparent data channel between serial device and the TCP/IP network, so that the serial device can be accessed through standard TCP/IP protocols. The BMS-136 can function as a TCP Server, a TCP Client or an UDP Mode, and can re-establish the TCP connection every 5 seconds in case network malfunction occurs, keeping the device staying connected as soon as possible.

Dimensions (unit=mm)



Features

- Connects RS-232/422/485 devices to a TCP/IP network
- Provides 1 x RS-232/422/485 serial port
- Provides 1 x 10/100Base-T(X) with RJ-45 connector
- Supports 230.4Kbps serial data rate
- Supports TCP/Server, TCP/Client, UDP and Paired Connection mode with heart-beat checking mechanism
- Supports Virtual COM driver for backward compatibility
- Supports Telnet/Serial consoles for device configuration
- Supports Windows utility for device configuration and management
- Supports up to 8 TCP connection in TCP Server mode
- Management access password protected
- Supports loop back mode
- Firmware upgradeable

Specifications

Hardware Specifications

Interface

Serial Port:
1 x RS-232/422/485 serial port, DB9 male connector, software selectable
RJ-45 Port: 1 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, RJ-45 connector
LEDs: Link, Ready, P1

Serial Specifications

Signals:
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+, RTS-, GND
RS-485: Data+, Data-, GND
Baud Rate: 110bps to 230.4Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: None, RTS/CTS, XON/OFF

Power Requirements

Power Input: 9 to 15VDC
Power Consumption: 2.25 watts max.

Physical

Dimensions: 80mm (W) x 115mm (H) x 23mm (D)
Installation: Wall mounting

Technology

Network Protocol:
TCP, UDP, HTTP, Telnet, IP, ICMP, ARP, DHCP (client)
Operation Mode:
TCP Server, TCP Client, UDP Mode, Virtual COM, Pair Connection, Heartbeat Checking
Virtual COM Mode: Supports Windows 98/2000/XP/Vista(32-bit)/Win7(32-bit)
Configuration Mode: Configuration Utility, Serial Console, Telnet Console

Environmental

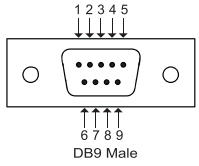
Operating Temperature: 0 to 60ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 80% RH (Non-condensing)

Regulatory Approvals

EMI: FCC Class A
EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Shock: IEC 60068-2-27
Vibration: IEC 60068-2-6
Free Fall: IEC 60068-2-32
Environmental: WEEE, RoHS
Warranty: 5 years

Pin Assignments

	RS-232	RS-422	RS-485
1	DCD	RX-	---
2	RXD	RX+	---
3	TXD	TX+	Data+
4	DTR	TX-	Data-
5	GND	GND	---
6	DSR	CTS-	---
7	RTS	CTS+	---
8	CTS	RTS+	---
9	RI	RTS-	---



Ordering Information

BMS-136	Industrial 1-Port High Speed Serial Device Server

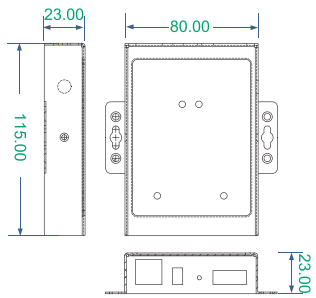
BMS-236

Introduction

Overview

The Boxer BMS-236 is a 2-port high speed serial device server. It is designed to translate data between the serial and Ethernet formats, allowing users to access, manage and configure remote facilities or equipments over the Internet from any location. BMS-236 provides quick, reliable and seamless integration of existing RS-232/422/485 devices to an Ethernet network. The unique hardware and software design of BMS-236 enables you to connect RS-232/422/485 serial devices to Ethernet network at a minimal transition cost. It is equipped with versatile operation modes which provide a transparent data channel between serial device and the TCP/IP network, so that the serial device can be accessed through standard TCP/IP protocols. The BMS-236 can function as a TCP Server, a TCP Client or an UDP Mode, and can re-establish the TCP connection every 5 seconds in case network malfunction occurs, keeping the device staying connected as soon as possible.

Dimensions (unit=mm)



Features

- Connects RS-232/422/485 devices to a TCP/IP network
- Provides 1 x RS-232/422/485 port and 1 x RS-232 port
- Provides 1 x 10/100Base-T(X) with RJ-45 connector
- Supports 230.4Kbps serial data rate
- Supports TCP/Server, TCP/Client, UDP and Paired Connection mode with heart-beat checking mechanism
- Supports Virtual COM driver for backward compatibility
- Supports Telnet/Serial consoles for device configuration
- Supports Windows utility for device configuration and management
- Supports up to 8 TCP connection in TCP Server mode
- Management access password protected
- Supports loop back mode
- Firmware upgradeable

Specifications

Hardware Specifications

Interface

Serial Port:
1 x RS-232/422/485 serial port, DB9 male connector, software selectable
1 x RS-232 serial port, DB9 male connector
RJ-45 Port: 1 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, RJ-45 connector
LEDs: Link, Ready, P1, P2

Serial Specifications

Signals:
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+, RTS-, GND
RS-485: Data+, Data-, GND
Baud Rate: 110bps to 230.4Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: None, RTS/CTS, XON/OFF

Power Requirements

Power Input: 9 to 15VDC
Power Consumption: 3 watts max.

Physical

Dimensions: 80mm (W) x 115mm (H) x 23mm (D)
Installation: Wall mounting

Technology

Network Protocol:
TCP, UDP, HTTP, Telnet, IP, ICMP, ARP, DHCP (client)
Operation Mode:
TCP Server, TCP Client, UDP Mode, Virtual COM, Pair Connection, Heartbeat Checking
Virtual COM Mode: Supports Windows 98/2000/XP/Vista(32-bit)/Win7(32-bit)
Configuration Mode: Configuration Utility, Serial Console, Telnet Console

Environmental

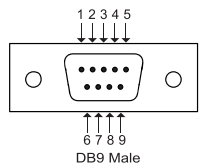
Operating Temperature: 0 to 60ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 80% RH (Non-condensing)

Regulatory Approvals

EMI: FCC Class A
EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Shock: IEC 60068-2-27
Vibration: IEC 60068-2-6
Free Fall: IEC 60068-2-32
Environmental: WEEE, RoHS
Warranty: 5 years

Pin Assignments

	RS-232	RS-422	RS-485
1	DCD	RX-	---
2	RXD	RX+	---
3	TXD	TX+	Data+
4	DTR	TX-	Data-
5	GND	GND	---
6	DSR	CTS-	---
7	RTS	CTS+	---
8	CTS	RTS+	---
9	RI	RTS-	---



Ordering Information

BMS-236	Industrial 2-Port High Speed Serial Device Server

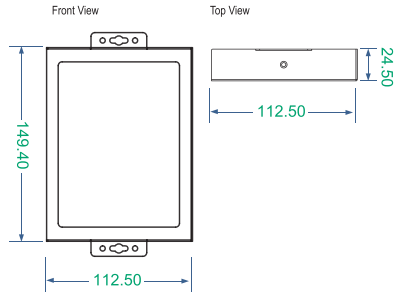
BMS-436

Introduction

Overview

The Boxer BMS-436 is a 4-port high speed Serial device server. It is designed to translate data between the serial and Ethernet formats, allowing users to access, manage and configure remote facilities or equipments over the Internet from any location. BMS-436 provides quick, reliable and seamless integration of existing RS-232/422/485 devices to an Ethernet network. The unique hardware and software design of BMS-436 enables you to connect RS-232/422/485 serial devices to Ethernet network at a minimal transition cost. It is equipped with versatile operation modes which provide a transparent data channel between serial device and the TCP/IP network, so that the serial device can be accessed through standard TCP/IP protocols. The BMS-436 can function as a TCP Server, a TCP Client or an UDP Mode, and can re-establish the TCP connection every 5 seconds in case network malfunction occurs, keeping the device staying connected as soon as possible.

Dimensions (unit=mm)



Features

- Connects RS-232/422/485 devices to a TCP/IP network
- Provides 4 x RS-232/422/485 ports
- Provides 1 x 10/100Base-T(X) with RJ-45 connector
- Supports 230.4Kbps serial data rate
- Supports TCP/Server, TCP/Client, UDP and Paired Connection mode with heart-beat checking mechanism
- Supports Virtual COM driver for backward compatibility
- Supports Telnet/Serial consoles for device configuration
- Supports Windows utility for device configuration and management
- Supports up to 8 TCP connection in TCP Server mode
- Management access password protected
- Supports loop back mode
- Firmware upgradeable

Specifications

Hardware Specifications

Interface

Serial Ports:
4 x RS-232/422/485 serial port, DB9 male connector, software selectable
RJ-45 Port: 1 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, RJ-45 connector
LEDs: Link, Ready, P1, P2, P3, P4

Serial Specifications

Signals:
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: TxD+, TxD-, RxD+, RxD-, CTS+, CTS-, RTS+, RTS-, GND
RS-485: Data+, Data-, GND
Baud Rate: 110bps to 230.4Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: None, RTS/CTS, XON/OFF

Power Requirements

Power Input: 9 to 15VDC
Power Consumption: 4.8 watts max.

Physical

Dimensions: 149.4mm (W) x 112.5mm (H) x 24.5mm (D)
Installation: Wall mounting

Technology

TCP, UDP, HTTP, Telnet, IP, ICMP, ARP, DHCP (client)
Operation Mode:
TCP Server, TCP Client, UDP Mode, Virtual COM, Pair Connection, Heartbeat Checking
Virtual COM Mode: Supports Windows 98/2000/Vista(32-bit)/Win7(32-bit)
Configuration Mode: Configuration Utility, Serial Console, Telnet Console

Environmental

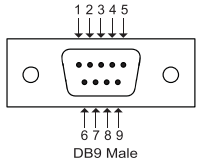
Operating Temperature: 0 to 60ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 80% RH (Non-condensing)

Regulatory Approvals

EMI: FCC Class A
EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Shock: IEC 60068-2-27
Vibration: IEC 60068-2-6
Free Fall: IEC 60068-2-32
Environmental: WEEE, RoHS
Warranty: 5 years

Pin Assignments

	RS-232	RS-422	RS-485
1	DCD	RX-	---
2	RXD	RX+	---
3	TXD	TX+	Data+
4	DTR	TX-	Data-
5	GND	GND	---
6	DSR	CTS-	---
7	RTS	CTS+	---
8	CTS	RTS+	---
9	RI	RTS-	---



Ordering Information

BMS-436	Industrial 4-Port High Speed Serial Device Server

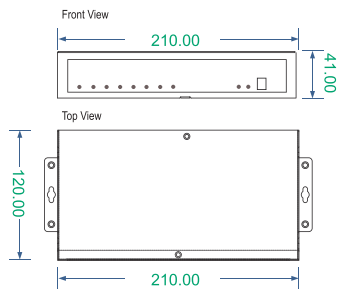
BMS-836

Introduction

Overview

The Boxer BMS-836 is an 8-port high speed Serial device server. It is designed to translate data between the serial and Ethernet formats, allowing users to access, manage and configure remote facilities or equipments over the Internet from any location. BMS-836 provides quick, reliable and seamless integration of existing RS-232 devices to an Ethernet network. The unique hardware and software design of BMS-836 enables you to connect RS-232 serial devices to Ethernet network at a minimal transition cost. It is equipped with versatile operation modes which provide a transparent data channel between serial device and the TCP/IP network, so that the serial device can be accessed through standard TCP/IP protocols. The BMS-836 can function as a TCP Server, a TCP Client or an UDP Mode, and can re-establish the TCP connection every 5 seconds in case network malfunction occurs, keeping the device staying connected as soon as possible.

Dimensions (unit=mm)



Features

- Connects RS-232 devices to a TCP/IP network
- Provides 8 x RS-232 ports
- Provides 1 x 10/100Base-T(X) with RJ-45 connector
- Supports 230.4Kbps serial data rate
- Supports TCP/Server, TCP/Client, UDP and Paired Connection mode with heart-beat checking mechanism
- Supports Virtual COM driver for backward compatibility
- Supports Telnet/Serial consoles for device configuration
- Supports Windows utility for device configuration and management
- Supports up to 8 TCP connection in TCP Server mode
- Management access password protected
- Supports loop back mode
- Firmware upgradeable

Specifications

Hardware Specifications

Interface

Serial Port:
8 x RS-232 serial ports, DB9 male connector, software selectable
RJ-45 Port: 1 x 10/100Base-T(X) auto-negotiation speed, Full/Half duplex, RJ-45 connector
LEDs: Link, Ready, P1, P2, P3, P4, P5, P6, P7, P8

Serial Specifications

Signals:
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
Baud Rate: 110bps to 230.4Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: None, RTS/CTS, XON/OFF

Power Requirements

Power Input: 9 to 15VDC
Power Consumption: 6 watts max.

Physical

Dimensions: 210mm (W) x 41mm (H) x 120mm (D)
Installation: Wall mounting

Technology

Network Protocol: TCP, UDP, HTTP, Telnet, IP, ICMP, ARP, DHCP (client)
Operation Mode:
TCP Server, TCP Client, UDP Mode, Virtual COM, Pair Connection, Heartbeat Checking
Virtual COM Mode: Supports Windows 98/2000/XP/Vista(32-bit)/Win7(32-bit)
Configuration Mode: Configuration Utility, Serial Console, Telnet Console

Environmental

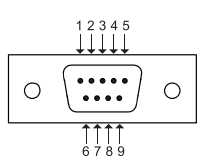
Operating Temperature: 0 to 60ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 80% RH (Non-condensing)

Regulatory Approvals

EMI: FCC Class A
EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Shock: IEC 60068-2-27
Vibration: IEC 60068-2-6
Free Fall: IEC 60068-2-32
Environmental: WEEE, RoHS
Warranty: 5 years

Pin Assignments

DB9 M Male	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



Ordering Information

BMS-836	Industrial 8-Port High Speed Serial Device Server

ROOSTER

Solutions

Industrial Remote I/O

Remote I/O modules are used to provide a remote method of acquiring sensor-based data. There is a variety of models according to the type and range of input. The unit is not only a standard I/O, but also an intelligent system designed with local control functions and a Modbus/TCP standard for users to easily develop various applications over Ethernet.

Ethernet Direct Rooster Series Industrial Remote I/O modules are designed specifically for reliable operations in harsh environments. The RUM Series modules accept any unregulated power source between 10 and 30VDC and protected from accidental power supply reversals. The watchdog timer function will automatically reset the RUM data acquisition modules for maintenance purpose if needed.

RUM Series are compact, versatile sensor to computer interface devices with embedded microprocessors enclosed in a robust industrial grade plastic with DIN Rail mounting option. It provides intelligent signal conditioning, analog I/O, digital I/O, data display and serial, Ethernet or field bus communication. Signal connections are made through plug-in screw-terminal blocks, ensuring simple installation, modification and maintenance.

RWM Series are a plug & play web-based I/O to Ethernet module with no more programming or HTML skills are needed. It allows creating dynamic and attractive web pages for I/O monitoring and I/O control hassle free. All RWM models support Modbus/TCP protocol that makes perfect integration to SCADA software.

Naming Rules

RUM-XXXX

R	X	M	-	X	X	X	X
Rooster	U: Unmanaged W: Web-managed	Modbus		9017F: 8 A/I channels supporting Modbus 9024: 4 A/O channels supporting Modbus 9043D: 16 output channels supporting Modbus 9053D: 16 Input channels supporting Modbus 9060D: 4 Output channels 4 Input channels supporting Modbus 9065D: 5 Output channels 4 Input channels supporting Modbus			

RWM-XXXXX

R	X	M	-	XX	X	X	X
Rooster	U: Unmanaged W: Web Managed	Modbus		No. of Channels	1: Digital IN 2: Digital OUT 3: Analog IN 4: Analog OUT 5: Thermocouple IN	1: Input Type WET 2: Input Type DRY 3: Output Type SINK 4: Output Type SOURCE	POE: POE

Model	RUM-9017F	RUM-9024	RUM-9043D
	8-channel (Diff) Analog Input Module	4-channel (14 bit) Analog Output Module	16-channel Open Collector Digital Output Module
I/O Interface			
Serial Interface	RS-485	RS-485	RS-485
Analog Input	8	-	-
Analog Output	-	4	-
Digital Input	-	-	-
Digital Output	-	-	16
Hardware			
Power Input	10 to 30VDC	10 to 30VDC	10 to 30VDC
Power Consumption	1.3 watts	2 watts	1.1 watts
Isolation Protection	3000V	-	-
Watchdog Timer	√	√	√
Input Impedance	-	-	-
Surge Protection	-	-	-
Operating Temperature	-25 to 75°C	-25 to 75°C	-25 to 75°C
Regulatory Approvals			
CE/FCC	√	√	√

Model	RUM-9053D	RUM-9060D	RUM-9065D
	16-channel Digital Input Module	4-channel D/I and 4-channel D/O Relay I/O Module	4-channel D/I and 5-channel D/O Relay I/O Module
I/O Interface			
Serial Interface	RS-485	RS-485	RS-485
Analog Input	-	-	-
Analog Output	-	-	-
Digital Input	16	4	4
Digital Output	-	4	5
Hardware			
Power Input	10 to 30VDC	10 to 30VDC	10 to 30VDC
Power Consumption	0.9 watts	1.9 watts	2.2 watts
Isolation Protection	-	3750Vrms	3750Vrms
Watchdog Timer	√	√	√
Input Impedance	820 Ohms	3000 Ohms	3000 Ohms
Surge Protection	-	500V	4000V
Operating Temperature	-25 to 75°C	-25 to 75°C	-25 to 75°C
Regulatory Approvals			
CE/FCC	√	√	√

Model	RWM-824
	Industrial 8-channel Source Type Digital Output and 8-channel Digital Input Ethernet Module
Number of Ports	
10/100Base-T(X)	1
10/100Base-T(X) with PoE	-
Analog Input	-
Analog Output	-
Digital Input	8
Digital Output	8
Hardware	
Power Input	10 to 30VDC
Power Consumption	1.92 watts
Isolation Protection	3750Vrms
Watchdog Timer	√
Digital Ouput Type	Source, Open Collector
Digital Input type	
Input Impedance	10K Ohms
Surge Protection	1500Vrms
Modbus Supported	√
Operating Temperature	-25 to 75°C
Regulatory Approvals	
CE/FCC	√

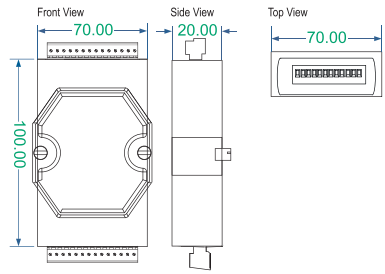
RUM-9017F

Introduction

Overview

The Rooster Series RUM-9017F is 12bit, 8 channel analog input module. The RUM Series offers a complete analog I/O selection, including analog input and analog output modules. These modules can be easily configured for different types and ranges of input or output to support versatile applications in an industrial environment. RUM-9017F is an extremely cost-effective solution for industrial measurement, monitoring and distributed applications. It can transmit and receive data at high rates over long distances. With a robust industrial grade plastic housing, RUM-9017F provides intelligent signal conditioning, analog I/O, digital I/O, data display and serial/Ethernet/field bus communication.

Dimensions (unit=mm)



Features

High Performance Design
- 12-bit resolution with 8 differential inputs
- Built-in dual watchdog timer
- Software configurable
- Supports 3000V isolation

Robust Industrial Design
- Robust ABS housing with captive mounting hardware
- Supports wide operating temperature -25 to 75ºC

Reliable Power Design
- Supports 10 to 30VDC power input

Specifications

Hardware Specifications

I/O Interface

Serial Interface: RS-485
Resolution: 12 bit
Analog I/P Channel: 8 diff
Sampling Rate: 75Hz
Voltage I/P: +/- 150mV, +/- 500mV, +/-1V, +/-5V, +/-10V
Current I/P: +/-20mA
Isolation: 3000V
Dual Watchdog Timer: Yes

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 1.3 watts

Physical

Housing: ABS with captive mounting hardware
Accessories: NYLON DIN-Rail Mounting Adapter, SECC Panel Mounting Bracket
Dimensions: 70mm (W) x 100mm (H) x 20mm (D)
Weight: 0.4kg

Environmental

Operating Temperature: -25 to 75ºC
Storage Temperature: -40 to 80ºC
Operating Humidity: 5% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 5 year

Ordering Information

RUM-9017F	8-channel (Diff) Analog Input Module

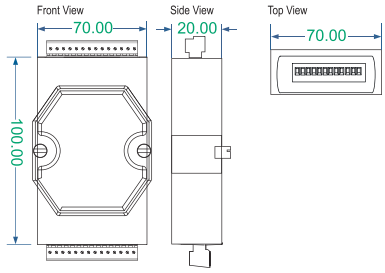
RUM-9024

Introduction

Overview

The Rooster Series RUM-9024 is 14-bit, 4 channel analog output module. The RUM Series offers a complete analog I/O selection, including analog input and analog output modules. These modules can be easily configured for different types and ranges of input or output to support versatile applications in an Industrial environment. RUM-9024 is an extremely cost-effective solution for industrial measurement, monitoring and distributed applications. It can transmit and receive data at high rates over long distances. With a robust industrial grade plastic housing, RUM-9024 provides intelligent signal conditioning, analog I/O, digital I/O, data display and serial/Ethernet/fieldbus communication.

Dimensions (unit=mm)



Features

High Performance Design
- 14-bit resolution with 4 channel outputs
- Built in dual watchdog timer
- Software configurable

Robust Industrial Design
- Robust ABS housing with captive mounting hardware
- Supports wide operating temperature -25 to 75ºC

Reliable Power Design
- Supports 10 to 30VDC power input

Specifications

Hardware Specifications

I/O Interface

Serial Interface: RS-485
Resolution: 14 bit
Analog O/P Channel: 4
Voltage I/P: +/-10V, 0-10V, +/-5V, 0-5V
Current I/P: 0-20mA, 4-20mA
Safe Value: When Host fails/Comm. fails
Power-on Value: Yes
Dual WDT: Yes
Dual Watchdog Timer: Yes

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 2 watts

Physical

Housing: ABS with captive mounting hardware
Accessories: NYLON DIN-Rail Mounting Adapter, SECC Panel Mounting Bracket
Dimensions: 70mm (W) x 100mm (H) x 20mm (D)
Weight: 0.4kg

Environmental

Operating Temperature: -25 to 75ºC
Storage Temperature: -40 to 80ºC
Operating Humidity: 5% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 5 year

Ordering Information

RUM-9024	4-channel (14 bit) Analog Output Module

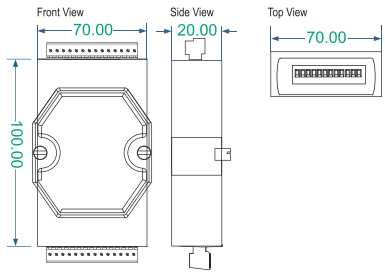
RUM-9043D

Introduction

Overview

The Rooster Series RUM-9043D is a data acquisition module with 16 open collector digital output channels. The RUM Series offers a complete analog I/O selection, including analog input and analog output modules. These modules can be easily configured for different types and ranges of input or output to support versatile applications in an Industrial environment. RUM-9043D is an extremely cost-effective solution for industrial measurement, monitoring and distributed applications. It can transmit and receive data at high rates over long distances. With a robust industrial grade plastic housing, RUM-9043D provides intelligent signal conditioning, analog I/O, digital I/O, data display and serial/Ethernet/fieldbus communication.

Dimensions (unit=mm)



Features

High Performance Design
- 16 open collector digital output channels
- Built-in dual watchdog timer
- Software configurable

Robust Industrial Design
- Robust ABS housing with captive mounting hardware
- Supports wide operating temperature -25 to 75ºC

Reliable Power Design
- Supports 10 to 30VDC power input

Specifications

Hardware Specifications

I/O Interface

Serial Interface: RS-485
Digital O/P Channel: 16 open collector
Load Voltage: 30V max.
Load Current: 100mA max. load
Dual Watchdog Timer: Yes

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 1.1 watts

Physical

Housing: ABS with captive mounting hardware
Accessories: NYLON DIN-Rail Mounting Adapter, SECC Panel Mounting Bracket
Dimensions: 70mm (W) x 100mm (H) x 20mm (D)
Weight: 0.4kg

Environmental

Operating Temperature: -25 to 75ºC
Storage Temperature: -40 to 80ºC
Operating Humidity: 5% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 5 year

Ordering Information

RUM-9043D	16-channel Open Collector Digital Output Module

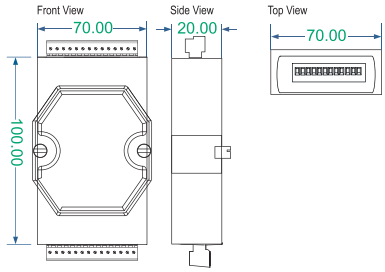
RUM-9053D

Introduction

Overview

The Rooster Series RUM-9053D is a data acquisition module with 16 digital input channels. The RUM Series offers a complete analog I/O selection, including analog input and analog output modules. These modules can be easily configured for different types and ranges of input or output to support versatile applications in an Industrial environment. RUM-9053D is an extremely cost-effective solution for industrial measurement, monitoring and distributed applications. It can transmit and receive data at high rates over long distances. With a robust industrial grade plastic housing, RUM-9053D provides intelligent signal conditioning, analog I/O, digital I/O, data display and serial/Ethernet/fieldbus communication.

Dimensions (unit=mm)



Features

High Performance Design
- 16 digital input channels
- Built-in dual watchdog timer
- Software configurable

Robust Industrial Design
- Robust ABS housing with captive mounting hardware
- Supports wide operating temperature -25 to 75ºC

Reliable Power Design
- Supports 10 to 30VDC power input

Specifications

Hardware Specifications

I/O Interface

Serial Interface: RS-485
Digital O/P Channel: 16 open collector
Load Voltage: 30V max.
Load Current: 100mA max. load
Dual Watchdog Timer: Yes

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 1.1 watts

Physical

Housing: ABS with captive mounting hardware
Accessories: NYLON DIN-Rail Mounting Adapter, SECC Panel Mounting Bracket
Dimensions: 70mm (W) x 100mm (H) x 20mm (D)
Weight: 0.4kg

Environmental

Operating Temperature: -25 to 75ºC
Storage Temperature: -40 to 80ºC
Operating Humidity: 5% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 5 year

Ordering Information

RUM-9053D	16-channel Digital Input Module

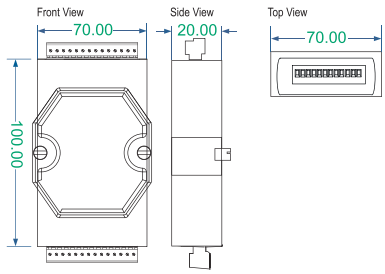
RUM-9060D

Introduction

Overview

The Retriever Series RUM-9060D is a data acquisition module with 4 digital output channels and 4 digital input channels. The RUM Series offers a complete analog I/O selection, including analog input and analog output modules. These modules can be easily configured for different types and ranges of input or output to support versatile applications in an Industrial environment. RUM-9060D is an extremely cost-effective solution for industrial measurement, monitoring and distributed applications. It can transmit and receive data at high rates over long distances. With a robust industrial grade plastic housing, RUM-9060D provides intelligent signal conditioning, analog I/O, digital I/O, data display and serial/Ethernet/fieldbus communication.

Dimensions (unit=mm)



Features

High Performance Design
- 4 digital output channels
- 4 digital input channels
- Built-in dual watchdog timer
- Software configurable
- Supports 3750Vrms isolation with common source

Robust Industrial Design
- Robust ABS housing with captive mounting hardware
- Supports wide operating temperature -25 to 75ºC

Reliable Power Design
- Supports 10 to 30VDC power input

Specifications

Hardware Specifications

I/O Interface

Serial Interface: RS-485
Digital O/P Channel: 4
Relay Type: Form A
Contact Rating: RL1, RL2: Form A, RL3, RL4: Form C
Surge Strength: 500V
Digital I/P Channel: 4
Isolation: Isolation with Common Source
Isolation Voltage: 3750Vrms
Digital Level 0: 1V max.
Digital Level 1: 4 to 30V
Input Impedance: 3K Ohms
Dual Watchdog Timer: Yes

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 1.9 watts

Physical

Housing: ABS with captive mounting hardware
Accessories: NYLON DIN-Rail Mounting Adapter, SECC Panel Mounting Bracket
Dimensions: 70mm (W) x 100mm (H) x 20mm (D)
Weight: 0.4kg

Environmental

Operating Temperature: -25 to 75ºC
Storage Temperature: -40 to 80ºC
Operating Humidity: 5% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 5 year

Ordering Information

RUM-9060D	4-channel D/I and 4-channel D/O Relay I/O Module

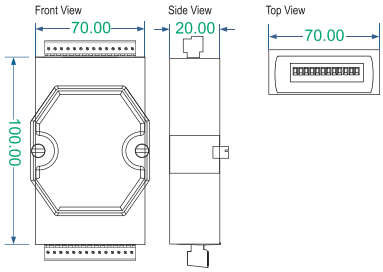
RUM-9065D

Introduction

Overview

The Retriever Series RUM-9065D is a data acquisition module with 5 digital output channels and 4 digital input channels. The RUM Series offers a complete analog I/O selection, including analog input and analog output modules. These modules can be easily configured for different types and ranges of input or output to support versatile applications in an Industrial environment. RUM-9065D is an extremely cost-effective solution for industrial measurement, monitoring and distributed applications. It can transmit and receive data at high rates over long distances. With a robust industrial grade plastic housing, RUM-9065D provides intelligent signal conditioning, analog I/O, digital I/O, data display and serial/Ethernet/fieldbus communication.

Dimensions (unit=mm)



Features

High Performance Design
- 5 digital output channels
- 4 digital input channels
- Built-in dual watchdog timer
- Software configurable
- Supports 3750Vrms isolation with common source

Robust Industrial Design
- Robust ABS housing with captive mounting hardware
- Supports wide operating temperature -25 to 75ºC

Reliable Power Design
- Supports 10 to 30VDC power input

Specifications

Hardware Specifications

I/O Interface

Serial Interface: RS-485
Digital O/P Channel: 5
Relay Type: Form A
Contact Rating: 5A@250VAC; 5A@30VDC
Surge Strength: 4000V
Digital I/P Channel: 4
Isolation: Isolation with Common Source
Isolation Voltage: 3750Vrms
Digital Level 0: 1V max.
Digital Level 1: 4 to 30V
Input Impedance: 3K Ohms
Dual Watchdog Timer: Yes

Power Requirements

Power Input: 10 to 30VDC
Power Consumption: 2.2 watts

Physical

Housing: ABS with captive mounting hardware
Accessories: NYLON DIN-Rail Mounting Adapter, SECC Panel Mounting Bracket
Dimensions: 70mm (W) x 100mm (H) x 20mm (D)
Weight: 0.4kg

Environmental

Operating Temperature: -25 to 75ºC
Storage Temperature: -40 to 80ºC
Operating Humidity: 5% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 5 year

Ordering Information

RUM-9065D	4-channel D/I and 5-channel D/O Relay I/O Module

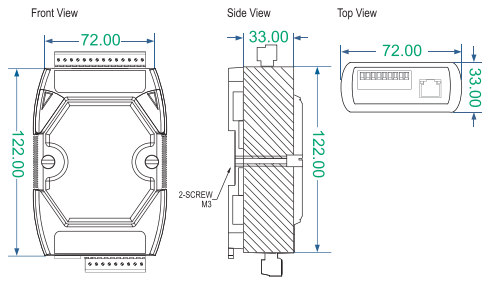
RWM-824

Introduction

Overview

The RWM-824 is a Web-based Ethernet I/O module featuring a built-in web server which provides 8 isolated open collector (source type) output and 8 isolated wet contact (sink, source type) digital input channels. Each output channel supports 300mA current driving @ 10 to 40VDC and each digital input channel supports counter input (32 bits and 500Hz max.). RWM-824 allows configuration, I/O monitoring and I/O control by simply using a regular web browser. In addition to web HMI function, RWM-824 is a plug & play I/O to Ethernet module without the need for programming or HTML skills. It allows users to create a dynamic and attractive web page for I/O monitoring and I/O control hassle free. RWM-824 also supports Modbus/TCP protocol that makes perfect integration to SCADA software.

Dimensions (unit=mm)



Features

- 8 isolated open collector (source type) output
- 8 isolated wet contact (sink, source type) digital input channels
- Easy configuration, I/O monitoring and I/O control
- Plug & play I/O to Ethernet module without the need for programming or HTML skills
- Embedded Web Server and Web HMI
- Supports Modbus/TCP protocol that makes perfect integration to SCADA software
- Equipped with two way isolation protection on Ethernet and I/O
- Equipped with power isolation protection
- Comes with dual watchdog feature

Specifications

Hardware Specifications

Interface

I/O Channels: 8-channel digital output and 8-channel digital input
Ethernet Port: 1 x 10/100Base-T(X) auto MDI/MDI-X
LEDs: L1(run), L2(link/act), L3(10/100M)

Digital Output

Output Channels: 8
Output Type: Source, Open Collector
Output Voltage: 10 to 40VDC
Max. Load Current: 300mA/channel, direct drive power relay module

Digital Input

Input Channels: 8
Input Type: Wet Contact (Sink, Source)
On Voltage Level: 10 to 50VDC
Off Voltage Level: 4VDC max.
Input Impedance: 10K Ohms
Counters:
Max. Count: 4,294,967,285 (32 bits)
Max. Input Frequency: 500Hz
Min. Pulse Width: 1ms
Over Voltage Protection: 70VDC

2 Way Isolation

Ethernet: 1500Vrms
I/O: 3750Vrms

Power Requirements

Required Supply Voltage: 10 to 30VDC
Power Consumption: 1.92 watts max.
Protection: Power reverse polarity protection

Physical

Dimensions: 72mm (W) x 122mm (H) x 33mm (D)
Installation: DIN-Rail or wall mounting

Environmental

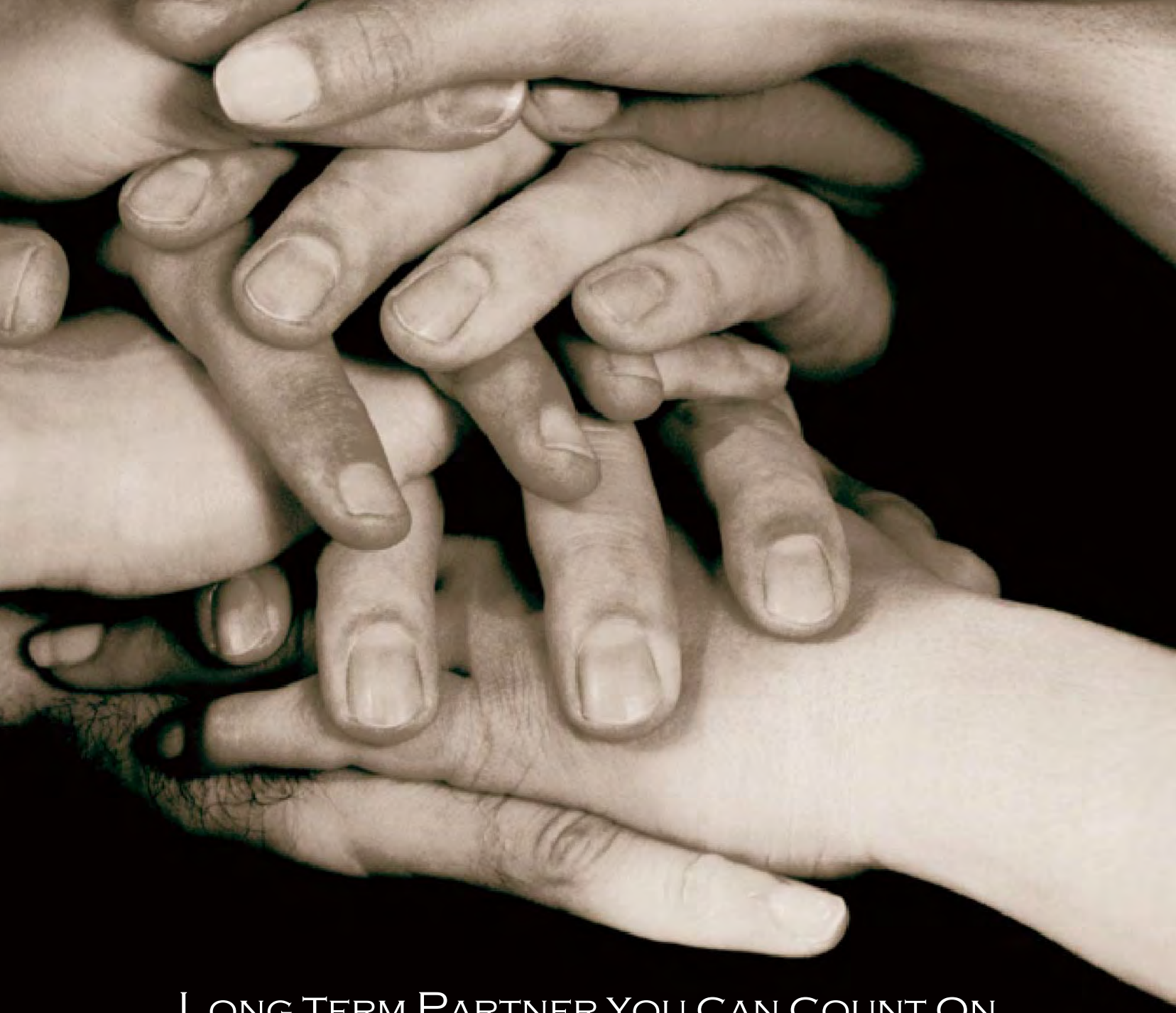
Operating Temperature: -25 to 75°C
Storage Temperature: -30 to 80°C
Relative Humidity: 5% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Environmental: WEEE, RoHS
Warranty: 2 years

Ordering Information

RWM-824	Industrial 8-channel Source Type Digital Output and 8-channel Digital Input Ethernet Module with 32-bit Counters



Long Term Partner You Can Count On

Quality is everything. The lowest price or the latest technology counts for nothing when product quality is not reliable at all.As a leading supplier in the industrial networking arena, Ethernet Direct does not only offer great value but provides premium support and technical assistance.

Creating an easy to use website:
Allowing you to clearly see what they are getting and allowing you to compare features with other suppliers.

Providing the best value:
Not all products are equal. Many suppliers source their products in places where manufacturing cost are low, however quality may be suspected.
Ethernet Direct products are manufactured in Taiwan, where over 50% of the Ethernet chips are produced. Our value comes from providing real quality for your money.

Offering superior service and support:
Many people are interested in learning more about the technology and applications. We have created an entire section of our website for providing free education. In addition our site is monitored and help via email or even a phone call is available. Worldwide channel partners help us keep our support open 24 hours a day.

Global Recognition & Certifications

Major corporations deploy Ethernet Direct products in their applications not just for having products with great value, premium support and technical assistance. Global recognition and specialized product certifications are also one of the main concerns. Ethernet Direct products have passed several industrial standards specifically targeting at safe operation in hazardous environments. Ethernet Direct's product design concept focuses on reliability and environmental suitability to penetrate major industries such as intelligent transportation, building automation, factory automation, power and utilities, mining, process control, security & surveillance and more.

RHINO

Solutions

Embedded Network Appliance

Embedded system is a special-purpose computer designed to perform dedicated functions used in industrial applications. Ethernet applications in the industrial marketplace are continually evolving. Shifting from traditional IT-based high level communications to real-time applications in separate and isolated networks, Ethernet support by local resources is now becoming more important.

Ethernet Direct Rhino Series Industrial Embedded Platform is designed for flexible deployment in any applications and come with robust fan-less design, which is an ideal solution for video applications, POS systems, kiosks and embedded gaming computers. Ethernet Direct offers different Rhino models to cater the different application requirements depending on memory capacity, I/O interfaces, expansion slot and optional accessories. Special automotive is compliant with E13 certification mark. All Rhino hardware comes with rugged aluminum chassis for maximum protection.

Rhino 600 Series are especially designed for transportation application with better vibration protection. It complies to in-vehicle standard eMark with GPS function integrated.

Rhino RISC-based models are embedded Linux computer using ARM9 systems equipped with Ethernet ports, TTY serial ports, USB ports and memory card slot. RISC-based Rhino supports both wire and wireless networking via USB Wi-Fi dongle. An open source GNU tool chain is included to allow users to do easy application development.

Naming Rules

Rhino-XXX

Rhino	-	X	XX		X
Rhino (Windows-based)		Running number			A: Automotive IL: with IntraVUE Lite
Rhino (RISC-based)		No. of LAN Ports	No. of TTY	No. of USB Ports	

Model	Rhino-100e	Rhino-110	Rhino-120	Rhino-150e
	Industrial PC/Intel® Pentium® M/Celeron® M Fan-less System with PCI Expansion Slot	Industrial PC/Intel® Core™ 2 Duo, Core Duo, Celeron® M Fan-less System with PCI Expansion Slot	Industrial PC/AMD Geode™ LX800 Fan-less System with IEEE 1394, Mini-PCI and PCI104 Expansion Slot	Industrial PC/Intel® Pentium® M/Celeron® M Fan-less System with DVD Combo and Parallel Port
Main Board				
CPU	Intel® Pentium® M/Celeron® M	Intel® Core 2 Duo, Core Duo, Celeron® M	AMD Geode™ LX800	Intel® Pentium® M/Celeron® M
Chipset	Intel® 910GMLE/ICH6-M	Intel® 945GME/ICH7-M	AMD Geode™ CS5536	Intel® 910GMLE/ICH6-M
Max.Memory	2GB DDR2 (2 x DIMM)	4GB DDR2 (2 x DIMM)	1GB DDR (1 x DIMM)	2GB DDR2 (2 x DIMM)
Storage & Expansion				
HDD	1 x 2.5" SATA HDD Bay	1 x 2.5" HDD Bay	1 x 2.5" HDD Bay	1 x 2.5" HDD Bay
CF Socket	1 (Internal)	1 (Internal)	1 (Internal)	1 (Internal)
DVD ROM	-	-	-	1 x Slim Type DVD Combo
Expansion	1 x PCI	1 x PCI	1 x Mini-PCI, 1 x PCI104-Plus (without -12 & -5 V)	-
Upgrade Expansion Kit	-	-	Optional	-
Interface				
VGA Interface	1	1	1	1
DVI Interface	DVI-D	1	-	1
LVDS Interface	-	-	-	-
TV-out	-	-	-	-
IEEE 1394 Interface	-	-	1	-
USB Ports	6	6	4	6
Parallel Port	-	-	1	1
RS-232	3	3	4	3
RS-422/485	1	1	-	1
NVRAM	-	-	-	-
LAN Ports	2 x 10/100/1000Base-T(X)	2 x 10/100/1000Base-T(X)	2 x 10/100Base-T(X)	2 x 10/100Base-T(X)
Audio In/Out Support	√	√	Audio-out	√
SIM Card Socket	-	-	-	-
Other Functions				
GPIO	-	-	-	-
GPS	-	-	-	-
3.5G	-	-	-	-
Wireless	-	-	Optional	-
Bluetooth	-	-	-	-
Hardware				
Power Input	16 to 30VDC	12 to 30VDC	100 to 240VAC	16 to 30VDC
Power Output	19VDC	19VDC	12VDC	19VDC
AC/DC Adapter	Optional	Optional	AC/DC Adapter 60W	Optional
Operating Temperature	-5 to 55°C	-5 to 55°C	0 to 40°C	-5 to 55°C
Software				
IntraVUE Lite	Optional	Optional	-	Optional
Regulatory Approvals				
Certifications	CE/FCC	CE/FCC	CE/FCC	CE/FCC

Model	Rhino-200	Rhino-270	Rhino-200A
	Industrial PC/AMD Geode™ LX800 Fan-less System with NVRAM and PCMCIA	Industrial PC/Intel® Atom™ N270 Fan-less System with NVRAM and PCMCIA	Industrial Vehicle PC/Intel® Atom™ N270 1.6GHz Processor with 1GB RAM & GPS (GPS module & antenna included)
Main Board			
CPU	AMD Geode™ LX800	Intel® Atom™ N270	Intel® Atom™ N270 1.6GHz
Chipset	AMD Geode™ CS5536	-	Intel® 945GSE/ICH7-M
Max.Memory	1GB DDR (1 x SO-DIMM)	1GB DDR (1 x SO-DIMM)	2GB DDR2 (1 x SO-DIMM)
Storage & Expansion			
HDD	1 x 2.5" HDD Bay	1 x 2.5" HDD Bay	1 x 2.5" SATA HDD Bay
CF Socket	1 (Internal)	1 (Internal); 1 (External)	1 (Internal)
DVD ROM	-	-	-
Expansion	1 x PCMCIA	1 x PCMCIA 1 x PC/104 or PC/104 or PC/104-Plus	-
Upgrade Expansion Kit	Optaional	Optaional	-
Interface			
VGA Interface	1	1	1
DVI Interface	-	-	DVI-D
LVDS Interface	-	-	-
TV-out	-	-	-
IEEE 1394 Interface	-	-	-
USB Ports	4	4	3
Parallel Port	1	1	-
RS-232	2	2	2
RS-422/485	2	2	1 x RS-232/485
NVRAM	√	√	-
LAN Ports	2 x 10/100Base-T(X)	2 x 10/100Base-T(X)	1 x 10/100/1000Base-T(X)
Audio In/Out Support	√	√	√
SIM Card Socket	-	-	Internal
Other Functions			
GPIO	-	-	4 x Input, 4 x Output
GPS	-	-	√
3.5G	-	-	Optional
Wireless	-	-	Optional
Bluetooth	-	-	Optional
Hardware			
Power Input	9 to 36VDC	9 to 36VDC	6 to 36VDC
Power Output	-	-	5 to 12VDC, SMBus
AC/DC Adapter	-	-	-
Operating Temperature	5 to 45°C (w/ HDD) -10 to 50°C (w/ CF)	5 to 40°C (w/ HDD) -10 to 50°C (w/ CF)	-10 to 45°C
Software			
IntraVUE Lite	-	Optional	-
Regulatory Approvals			
Certifications	CE/FCC	CE/FCC	CE/FCC/e13 Mark/EN 50155

Model	Rhino-600A	Rhino-610A
	Industrial Vehicle PC/Intel® Atom™ Z500 Series Processor with 1GB RAM & GPS (GPS module & antenna included)	**Industrial Vehicle PC/Intel® Atom™ N270 1.6GHz Processor with 1GB RAM & GPS (GPS module & antenna included)**
Main Board		
CPU	Atom Z500 Series CPU 1.1GHz (Z510) or 1.6GHz(Z530)	Intel® Atom™ N270 1.6GHz
Chipset	US15W SCH	Intel® 945GSE/ICH7-M
Max.Memory	2GB DDR2 (1 x SO-DIMM)	2GB DDR2 (1 x SO-DIMM)
Storage & Expansion		
HDD	1 x 2.5" SATA HDD Bay	1 x 2.5" SATA HDD Bay
CF Socket	1 (Internal)	1 (Internal)
DVD ROM	-	-
Expansion	2 x Mini-PCIe, 1 x PCI104	2 x Mini-PCIe, 1 x PCI104
Upgrade Expansion Kit	-	-
Interface		
VGA Interface	1	1
DVI Interface	-	DVI-D
LVDS Interface	1	1
TV-out	1	-
IEEE 1394 Interface	-	-
USB Ports	3	3
Parallel Port	-	-
RS-232	2	2
RS-422/485	1 x RS-232/485	1 x RS-232/485
NVRAM	-	-
LAN Ports	1 x 10/100/1000Base-T(X)	1 x 10/100/1000Base-T(X)
Audio In/Out Support	√	√
SIM Card Socket	External	External
Other Functions		
GPIO	4 x Input, 4 x Output	4 x Input, 4 x Output
GPS	√	√
3.5G	Optional	Optional
Wireless	Optional	Optional
Bluetooth	Optional	Optional
Hardware		
Power Input	6 to 36VDC	6 to 36VDC
Power Output	5 to 12VDC, SMBus	5 to 12VDC, SMBus
AC/DC Adapter	-	-
Operating Temperature	-30 to 60°C with CF or Automotive HDD	-30 to 60°C with CF or Automotive HDD
Software		
IntraVUE Lite	-	-
Regulatory Approvals		
Certifications	CE/FCC/e13 Mark	CE/FCC/e13 Mark/EN 50155

Model	Rhino-142	Rhino-242	Rhino-282
	RISC-based Embedded Linux Computer with 1 LAN, 4 TTY and 2 USB	RISC-based Embedded Linux Computer with 2 LAN, 4 TTY, 2 USB and 21 pins GPIO	RISC-based Embedded Linux Computer with 2 LAN, 8 TTY, 2 USB, 21 pins GPIO and Audio Out
Main Board			
CPU	ATMEL 180MHz AT91RM9200	ATMEL 180MHz AT91RM9200	ATMEL 180MHz AT91RM9200
Memory	64MB SDRAM, 16MB Flash	64MB SDRAM, 16MB Flash	64MB SDRAM, 16MB Flash
Interface			
10/100Base-T(X)	1	2	2
Serial Ports	4	4	8
USB Ports	2	2	2
GPIO	-	√	√
Watchdog Timer	√	√	√
Real Time Clock	√	√	√
Buzzer	√	√	√
Serial Baud Rate	921.6Kbps	921.6Kbps	921.6Kbps
Hardware			
Power Input	9 to 48VDC	9 to 40VDC	9 to 40VDC
Power Consumption	3.6 watts	3.6 watts	3.6 watts
Operating Temperature	0 to 70°C	0 to 70°C	0 to 70°C
Functions			
OS	Linux, Kernel 2.6.x	Linux, Kernel 2.6.x	Linux, Kernel 2.6.x
Boot Loader	U-Boot 1.1.2	U-Boot 1.1.2	U-Boot 1.1.2
File Systems	JFFS2, ETX2/ETX3, VFAT/FAT, NFS	JFFS2, ETX2/ETX3, VFAT/FAT, NFS	JFFS2, ETX2/ETX3, VFAT/FAT, NFS
Protocol Stacks	IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP v1/v2, SSL, SSH 1.0/2.0	IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP v1/v2, SSL, SSH 1.0/2.0	IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP v1/v2, SSL, SSH 1.0/2.0
Utilities	tinylogin: login and user manager utility telnet: Telnet client program busybox: Linux utility collection ftp: FTP Client program	tinylogin: login and user manager utility telnet: Telnet client program busybox: Linux utility collection ftp: FTP Client program	tinylogin: login and user manager utility telnet: Telnet client program busybox: Linux utility collection ftp: FTP Client program
Tool Chain for Linux	GCC: C/C++ PC cross compiler GLIBC: POSIX library	GCC: C/C++ PC cross compiler for Linux, CygWin GLIBC: POSIX library	GCC : C/C++ PC cross compiler for Linux, CygWin GLIBC : POSIX library
Device Drivers	SD/MMC, UART, Real Time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer	SD/MMC, UART, Real Time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer	SD/MMC, UART, Real Time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer
Regulatory Approvals			
Certifications	CE/FCC	CE/FCC	CE/FCC

Rhino-100e

Introduction

Overview

The Rhino Series Rhino-100e is an Industrial Network Appliance (embedded computer) featuring low power fan-less module design. The product is equipped with Intel® Pentium® M/Celeron® M processor with 400MHz FSB and DDR2 400 memory up to 2GB. Rhino-100e offers I/O ports with flexible connection options and provides three RS-232 ports, one RS-232/422/485 port and one PCI expansion slot. For data storage, a compact flash socket and 2.5" HDD drive bay are supported. Rhino system supports ATX power supply and accepts a wide range of power input from 16 to 30VDC. Rhino Series is especially designed for mission critical embedded computing applications and comes in protected aluminum chassis for reliability and easy maintenance.

Features

- Supports Intel® Pentium® M or Celeron® M processors with 400MHz FSB
- Designed with Intel 910GMLE and ICH6-M chipset for reliability
- 2 x 10/100/1000Base-T(X) Ethernet with RJ-45 connectors
- 3 x RS-232 and 1 x RS-232/422/485 serial interfaces via DB44 connector
- Equipped with USB 2.0/VGA/DVI-D interfaces
- On board DC to DC power design supporting 16 to 30VDC
- Supports ATX power mode and PXE/WOL
- 1 x PCI expansion slot

Specifications

Hardware Specifications

CPU & Memory

Main Board:
Intel® Pentium® M or Celeron® M Processors up to 1.8GHz
Low Voltage and Ultra Low Voltage Intel® Pentium® M or Celeron® M
400MHz FSB CPUs only
Intel® 910GMLE and ICH6-M chipsets
Memory: 2 x 240-pin DDR2 DIMM socket,
up to 2GB un-buffered non-ECC DDR2 400 SDRAM module

Storage & Expansion

Storage:
1 x On-board internal compact flash socket
1 x Internal 2.5" SATA HDD driver bay
Expansion Slot: One 32-bit/33MHz PCI card
PCI length support: Max. 169mm with HDD installed

Interface

I/O Interface-Front :
2 x USB 2.0 ports
HDD Access/Power/LAN status LEDs
ATX Power on/off switch
I/O Interface-Rear:
1 x PS/2 connector for keyboard/mouse
4 x USB 2.0 ports
1 x DB44 connector (3 x RS-232 and 1 x RS-232/422/485)
1 x Mic-in and 1 x Speaker-out (3.5mm audio connector)
1 x DVI-D interface
2 x 10/100/1000Base-T(X) Ethernet with RJ-45 connectors
1 x VGA connector (DB15-female)
1 x 16 to 30VDC power input
1 x 2-pin connector for remote power on/off switch

Power Requirements

Power Input: DC to DC power on-board, 16 to 30VDC (Max: 120 watts)
Power Output: 19VDC

Physical

Dimensions: 195mm (W) x 268mm (D) x 80mm (H)

Environmental

Operating Temperature: -5 to 55ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 93% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Warranty: 3 years

Ordering Information

Rhino-100e	Industrial PC/Intel® Pentium® M/Celeron® M Fan-less System with PCI Expansion Slot
CPU Options	Intel® Pentium® M 1.8GHz CPU; Intel® Celeron® M 1.5GHz CPU
RAM Option	1GB DDR2 400 SDRAM Module
Storage Options	SATA 160GB HDD
Optional Accessories	Power Adapter (19V, 120W); Power Cord (US, EU or UK)

Rhino-110

Introduction

Overview

The Rhino Series Rhino-110 is an Industrial Network Appliance (embedded computer) featuring low power fan-less module design. The product is equipped with Intel Core 2 Duo/Celeron M processor with 533/667MHz FSB and DDR2 667/533 memory. Rhino-110 offers I/O ports with flexible connection options, and provides three RS-232 ports, one RS-232/422/485 port and one PCI expansion slot. For data storage, a compact flash socket and 2.5" HDD drive bay are supported. Rhino-110 supports ATX power supply and accepts a wide range of power input from 12 to 30VDC. Rhino Series is especially designed for mission critical embedded computing applications, and comes in protected aluminum chassis for reliability and easy maintenance.

Features

- SupportsIntel® Core™ 2 Duo, Core Duo or Celeron® M family processors 533/667 MHz FSB CPU
- Designed with Intel 945GME and ICH7-M chipset for reliability
- 2 x 10/100/1000Base-T(X) Ethernet with RJ-45 connectors
- 3 x RS-232 and 1 x RS-232/422/485 serial interfaces via DB44 connector
- Equipped with USB 2.0/VGA/DVI interfaces
- On board DC to DC power design supporting 12 to 30VDC
- Supports ATX power mode and PXE/WOL
- 1 x PCI expansion slot

Specifications

Hardware Specifications

CPU & Memory

Main Board:
Intel® Core™ 2 Duo or Core Duo, Celeron® M family processors
533/667 MHz FSB CPU
Intel® Embedded Processor Reference List (Intel® Longevity CPU):
Core Duo Processor (T2500) 2.0G; Celeron® M 440 1.86G
Intel® 945GME Graphics Memory Controller Hub (GMCH)
Intel® 82801 ICH7-M
Memory: 2 x 240-pin DDR2 533/667 DIMM sockets,
up to 4GB, dual channel un-buffered non-ECC

Storage & Expansion

Storage:
1 x On-board internal compact flash socket
1 x Internal 2.5" SATA HDD driver bay
Expansion Slot:
One 32-bit/33MHz PCI card
PCI Length support: Max. 160mm with 2.5" HDD installed;
Max. 240mm without 2.5" HDD installed

Interface

I/O Interface-Front :
2 x USB 2.0 ports
6 x LEDs for HDD Access, Power, LAN status
1 x ATX Power on/off switch
1 x VGA connector (DB15-female)
1 x 16 to 30VDC power input
1 x 2-pin connector for remote power on/off switch

I/O Interface-Rear:
2 x PS/2 connectors for keyboard/mouse
4 x USB 2.0 ports
1 x DB44 connector (3 x RS-232 and 1 x RS-232/422/485)
1 x Mic-in and 1 x Speaker-out (3.5mm phone jack)
1 x DVI interface
2 x 10/100/1000Base-T(X) Ethernet with RJ-45 connectors
1 x VGA connector (DB15-female)
1 x 12 to 30VDC power input
1 x 2-pin connector for remote power on/off switch

Power Requirements

Power Input: DC to DC power on-board, 12 to 30 VDC (Max: 120 watts)
Power Output: 19VDC

Physical

Dimensions: 195mm (W) x 268mm (D) x 80mm (H)

Environmental

Operating Temperature: -5 to 55ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 93% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Warranty: 3 year

Ordering Information

Rhino-110	Industrial PC/Intel® Core™ 2 Duo, Core Duo, Celeron® M Fan-less System with PCI Expansion Slot

Ordering Options

CPU Options	Intel® Core™ 2 Duo 1.5GHz CPU; Intel® Core™ Duo 2GHz CPU; Intel® Celeron® M 1.8GHz CPU
RAM Options	1GB DDR2 SDRAM Module; 2GB DDR2 SDRAM Module
Storage Option	SATA 160GB HDD
Optional Accessories	Power Adapter (19V, 120W); Power Cord (US, EU or UK)

Rhino-120

Introduction

Overview

The Rhino Series Rhino-120 is an Industrial Network Appliance (embedded computer) featuring low power fan-less module design. The product is equipped with AMD™ Geode LX800 processor with DDR memory up to 1GB and one 2.5" HDD drive bay. Rhino-120 offers I/O ports with flexible connection options, and provides two 10/100Base-T(X) Ethernet LAN ports, four USB 2.0 ports, IEEE 1394, VGA and Audio out. For flexibility, Rhino 120 is equipped with four RS-232 ports, one compact flash socket, PCI104 expansion slot and one Mini PCI. Rhino Series is especially designed for mission critical embedded computing applications, and comes in protected aluminum chassis for reliability and easy maintenance.

Features

- Supports AMD Geode™ LX800 400/500MHz with 128KB L2 cache
- 2 x 10/100Base-T(X) Ethernet with RJ-45 connectors
- Equipped with USB 2.0/VGA/IEEE 1394/Audio out interface
- 4 x RS-232 serial interfaces
- 1 x on-board Mini-PCI socket for Wireless LAN
- 1 x PCI104 expansion slot

Specifications

Hardware Specifications

CPU & Memory

Main Board:
AMD Geode™ LX800 500MHz with 128KB L2 cache
AMD Geode™ CS5536 companion chip
Memory: 1 x 184-pin non-ECC non-registered DDR DIMM, Max up to 1GB

Storage & Expansion

Storage:
1 x On-board internal compact flash socket
1 x Internal 2.5" HDD driver bay
Expansion Slot: 1 x PCI104 (without -12V and -5V) 1 x Mini-PCI socket

Interface

I/O Interface-Front :
2 x RS-232 serial ports (DB9-male connector)
4 x USB 2.0 ports
6 x LEDs for HDD Access, Power, LAN status
1 x Programmable Alarm LED
1 x Programmable Status LED

I/O Interface-Rear:
1 x PS/2 connector for keyboard/mouse
2 x RS-232 serial ports (DB9-male connector)
1 x Audio out (3.5mm phone jack)
1 x IEEE 1394 connector
2 x 10/100Base-T(X) Ethernet with RJ-45 connectors
1 x VGA connector (DB15-female)
1 x Parallel port
1 x 12VDC power input

Power Requirements

Power Input: 100 to 240VAC, 2A 50/60Hz (60 watts AC Adapter)
Power Output: 12VDC

Physical

Dimensions: 195mm (W) x 150mm (D) x 80mm (H)

Environmental

Operating Temperature: 0 to 40ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Warranty: 3 years

Ordering Information

Rhino-120	Industrial PC/AMD Geode™ LX800 Fan-less System with IEEE 1394, Mini-PCI and PCI104 Expansion Slot

Ordering Options

RAM Options	512MB DDR SDRAM Module; 1GB DDR SDRAM Module
Storage Option	IDE 80GB HDD
Optional Accessories	Power Adapter; Power Cord (US, EU or UK)

Rhino-150e

Introduction

Overview

The Rhino Series Rhino-150e is an Industrial Network Appliance (embedded computer) featuring low power fan-less module design. The product is configured with Intel® Pentium® M/Celeron® M processor with 400MHz FSB and DDR2 400 memory up to 2GB. Rhino-150e offers I/O ports with flexible connection options and provides three RS-232 ports, one RS-232/422/485 port and one parallel port. For data storage, a compact flash socket and 2.5" HDD drive bay plus a slim DVD combo are supported. Rhino system supports ATX power mode and accepts a wide range of power input from 16 to 30VDC. Rhino Series is especially designed for mission critical embedded computing applications and comes in protected aluminum chassis for reliability and easy maintenance.

Features

- Supports Intel® Pentium® M or Celeron® M processors with 400MHz FSB
- Designed with Intel 910GMLE and ICH6-M chipset for reliability
- 2 x 10/100/1000Base-T(X) Ethernet with RJ-45 connectors
- 3 x RS-232 and 1 x RS-232/422/485 serial interfaces via DB44 connector
- Equipped with USB 2.0/VGA/DVI/Parallel interfaces
- 1 x Slim DVD combo
- On board DC to DC Power design supporting 16 to 30VDC
- Supports ATX power mode and PXE/WOL

Specifications

Hardware Specifications

CPU & Memory

Main Board:
Intel® Pentium® M or Celeron® M processors
Low Voltage and Ultra Low Voltage Intel® Pentium® M or Celeron® M 400MHz FSB CPUs only
Intel® 910GMLE and ICH6-M chipsets
Memory: 2 x 240-pin DDR2 DIMM socket,
up to 2GB un-buffered non-ECC DDR2 400 SDRAM module

Storage & Expansion

Storage:
1 x On-board internal compact flash socket
1 x Internal 2.5" SATA HDD driver bay
1 x Slim DVD combo

Interface

I/O Interface-Front :
2 x USB 2.0 ports
1 x Slim DVD combo
6 x LEDs for HDD Access, Power, LAN status
1 x ATX power on/off switch

I/O Interface-Rear:
1 x PS/2 connector for keyboard/mouse
4 x USB 2.0 ports
1 x DB44 connector (3 x RS-232 and 1 x RS-232/422/485)
1 x Mic-in and 1 x Speaker-out (3.5mm phone jack)
1 x DVI interface
2 x 10/100/1000Base-T(X) Ethernet with RJ-45 connectors
1 x VGA connector (DB15-female)
1 x Parallel port
1 x 16 to 30VDC power input
1 x 2-pin connector for remote power on/off switch

Power Requirements

Power Input: DC to DC power on-board,
Power Input: supports 16 to 30 VDC (Max: 120 watts)
Power Output: 19VDC

Physical

Dimensions: 195mm (W) x 268mm (D) x 80mm (H)

Environmental

Operating Temperature: -5 to 55ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 1 0% to 93% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Warranty: 3 years

Ordering Information

Rhino-150e	Industrial PC/Intel® Pentium® M/Celeron® M Fan-less System with DVD Combo and Parallel Port

Ordering Options

CPU Option	Intel® Pentium® M 1.8GHz CPU; Intel® Celeron® M 1.8GHz CPU
RAM Options	1GB DDR2 400 SDRAM Module
Storage Options	SATA 160GB HDD
Optional Accessories	Power Adapter (19V, 120W); Power Cord (US, EU or UK)

Rhino-270

Introduction

Overview

The Rhino-270 is a fan-less Industrial Network appliance featuring low power fan-less ETX module design. Rhino-270 has built-in 1GB SO-DIMM memory. The Intel® 10/100 Ethernet controller provides sufficient network traffic for data exchanges. The special designed I/O supports four serial ports for legacy device connection that includes two RS422/RS485 interfaces with Automatic Flow Control, ±15 KV ESD protected and Optical Isolation with 2000VDC through a 10-pin screw terminal connector. For memory back-up, an optional NVRAM socket is reserved which offers optional dedicated plug-in NVRAM memory. Rhino Series is especially designed for mission critical embedded computing application, and comes in protected aluminum chassis for reliability and easy maintenance.

Features

- On board Intel® Atom™ N270 processor, 1.6GHz
- 2 x 10/100Base-T(X) Ethernet with RJ-45 connectors
- Equipped with USB 2.0/VGA/parallel interface
- 2 x RS-232 serial interfaces
- 2 x RS-422/485 interfaces supports automatic flow control and isolation
- 1 x Type I/II PCMCIA slot
- Optional expansion kit for PC/104(ISA), PCI104 (PCI) or PC/104 Plus module with defined I/Os

Specifications

Hardware Specifications

CPU & Memory

Main Board:
ETX Module with Intel® Atom™ N270 processor, 1.6GHz
Memory: 1 x 200-pin SODIMM socket for up to 1 GB Non-ECC Non-Registered DDR2 400/533 SDRAM memory

Storage & Expansion

Storage:
1 x Compact Flash socket
1 x Internal 2.5" IDE HDD driver bay
1 x PCMCIA Socket (Front access)
1 x NVRAM socket (reserved for optional memory backup SRAM)
Expansion Slot:
Optional expansion kit for PC/104(ISA), PCI104 (PCI) or PC/104 Plus module with defined I/Os

Interface

I/O Interface-Front :
1 x Type I/II PCMCIA slot
1 x Compact Flash slot
2 x RS-232 serial ports (DB9-male connector)
1 x Terminal block (for 2 x RS-422/485 serial interfaces, supports automatic flow control and isolation up to 2000VDC)
2 x USB 2.0 ports
2 x LEDs for HDD Access, Power states
2 x LEDs connect to GPIO, programmable for alarms or other purposes defined by developer

I/O Interface-Rear:
1 x PS/2 connector for keyboard/mouse
2 x USB 2.0 ports
1 x Audio-out and 1 x Mic-in (3.5mm phone jack)
2 x 10/100Base-T(X) Ethernet with RJ-45 connectors
1 x VGA connector (DB15-female)
1 x Parallel port
1 x 9 to 36VDC power input

Power Requirements

Power Input: 9 to 36VDC

Physical

Dimensions: 260mm (W) x 176mm (D) x 55mm (H)

Environmental

Operating Temperature: 5 to 40°C (w/ HDD), -10 to 50°C (w/ CF)
Storage Temperature: -20 to 80°C
Operating Humidity: 10% to 90% RH (Non-condensing)

Regulatory Approvals

Certifications: CE/FCC
Warranty: 3 years

Ordering Information

Rhino-270	Industrial PC/Intel® Atom™ N270 Fan-less System with NVRAM and PCMCIA

Ordering Options

RAM Options	512MB DDR SDRAM Modul; 1GB DDR SDRAM Module
Storage Option	IDE 80GB HDD
Expansion Options	Expansion kit for PC/104 (ISA), PCI104 (PCI) or PC/104 Plus module (defined I/Os)

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Rhino-200A

Introduction

Overview

The Rhino Series Rhino-200A is an innovative and cost-effective version in-vehicle computer for use in any car, truck, or even for maritime applications. The design itself makes the system available as a complete system, allowing users to easily define and build requirements. With the extremely low power consumption from Intel Atom processor, the Rhino-200A mechanical design is even more compact with wide operating temperature. The Rhino-200A fulfills vehicle industry requirements by being in compliance with vehicle industrial standard such as eMark, and featuring functions required for in-vehicle operations, such as power ignition delay control, low-power protection and SMBus connection. The GPS function navigates drivers to specified destinations. Optional 802.11b/g/n and GPRS/3.5G availability make the Rhino-200A ready for wider coverage and future trend. Multiple display connections make the Rhino-200A an ideal choice for in-vehicle signage platforms.

Features

- e13 Mark certified
- Built-in Intel® Atom™ N270 1.6GHz processor
- Availability of GSM/GPRS/UMTS/HSDPA/GPS/BT
- Power ignition on/off delay-time control
- Low voltage protection
- High anti-vibration performance
- 6 to 36VDC power input
- Multiple display interface connections (VGA, DVI-D)

Specifications

Hardware Specifications

CPU & Memory

Main Board: 945GSE + ICH-7M; Intel® Atom™ N270 1.6GHz
Memory: DDR2 533/667 SO-DIMM up to 2GB

Storage & Expansion

Storage:
1 x On-board internal compact flash socket
1 x Internal 2.5" SATA HDD driver bay
Expansion Slot:
1 x Bluetooth module (Optional)
1 x GPS module
2 x Mini PCI express socket (For WLAN and GRPS/3G modules)
1 x Internal SIM card socket

Interface

I/O Interface-Front : 2 x LEDs for Power & HDD
I/O Interface-Rear:
2 x RS-232 (DB9-male connector)
1 x RS-232/485 with auto flow control (DB9-male connector)
4 x SMA-type antenna connector for GPS, WLAN, GRPS/3.5G and BT
3 x USB 2.0 ports
1 x VGA connector (DB15-female)
1 x DVI-D interface
1 x 10/100/1000Base-T(X) Ethernet with RJ-45 connector
1 x Mic-in & 1 Line-out (3.5mm audio connector)
1 x GPIO (4 input & 4 output)
1 x 6 to 36VDC through 3-pin connector (ignition, power & ground)
1 x 5 or 12VDC output, SMBus; 1 x Power button

Power Requirements

Power Input: 6 to 36VDC through 3-pin connector
Power Output: 5 or 12VDC, SMBus
Power Management:
Selectable for boot-up & shut-down voltage for low power protection
Selectable 8-level on/off delay time
Status of ignition and low voltage detectable by software

Physical

Dimensions: 272mm (W) x 195mm (D) x 44mm (H)

Environmental

Operating Temperature: -10 to 45°C
Storage Temperature: -20 to 80°C
Operating Humidity: 10% to 90% RH (Non-condensing)
Vibration: Operating:
2G @ 5 to 500Hz random with CF/SSD
1G @ 5 to 500Hz random with Automotive HDD

Regulatory Approvals

Certifications: CE/FCC/e13 Mark/EN 50155
Warranty: 3 years

Ordering Information

Rhino-200A	Industrial Vehicle PC/Intel® Atom™ N270 1.6GHz Processor with 1GB DDR2 RAM & GPS function (GPS module & antenna included)

Ordering Options

RAM Option	1GB DDR2 533 200-pin SO-DIMM SDRAM Module
Storage Options	Seagate 2.5" SATA, automotive 40GB, 5400rpm, -30 to 85°C, vibration 2G (ST940817SM) Seagate 2.5" SATA, automotive 80GB, 5400rpm, -30 to 85°C, vibration 2G (ST980817SM) 512MB CF card (-40 to 85°C) 1GB CF card (-40 to 85°C)
Communication Options	Wireless Mini Card, 802.11 a/b/g/n, Intel: 4965AGN, with antenna & cable 3.5G Module, Sierra MC8790V, GPRS/UMTS/HSDPA, with internal cable and antenna
Optional Accessories	Internal cable for GSM/WLAN/GPS antenna connection, Power Adapter, Power Cord (US, EU or UK)

Rhino-600A

Introduction

Overview

The Rhino Series Rhino-600A is an innovative in-vehicle computer for use in any car, truck, or even for maritime applications. The design itself makes the system available as a complete system, allowing users to easily define and build requirements. With the extremely low power consumption from Intel Atom processor, the Rhino-600A mechanical design is even more compact with wide operating temperature. The Rhino-600A fulfills vehicle industry requirements by being in compliance with vehicle industrial standard such as eMark, and featuring functions required for in-vehicle operations, such as power ignition delay control, low-power protection and SMBus connection. The GPS function navigates drivers to specified destinations. Optional 802.11b/g/n and GRPS/3.5G availability make the Rhino-600A ready for wider coverage and future trend.

Features

- e13 Mark certified
- Built-in Intel® Atom™ Z510 or Z530 processor
- Availability of GSM/GPRS/WCDMA/HSDPA/GPS
- External smart battery back up support
  Power ignition on/off delay control
- Circuitry design for low-power protection
- 6 to 36VDC power input
- 1 x PCI104 Expansion Slot
- Multiple display interface connections (VGA, TV-out and LVDS)
- Optional IP-65 enclosure

Specifications

Hardware Specifications

CPU & Memory

Main Board: US15W SCH chipset Atom Z500 Series CPU 1.1GHz (Z510) or 1.6GHz (Z530)
Memory: DDR2 400/533 SO-DIMM up to 2GB

Storage & Expansion

Storage: 1 x On-board Internal compact flash socket, 1 x Internal 2.5" SATA II HDD driver bay
Expansion Slot:
1 x PCI-104; 1 x Bluetooth module (optional)
2 x Mini PCI express socket (1 x PCIe interface, 1 x PCIe & USB interface)

Interface

I/O Interface-Front :
4 x SMA-type antenna connector for WLAN, HSDPA
1 x Power button; 1 x Reset switch; 1 x SIM socket; 1 x USB port
4 x LEDs for Stand-by, HDD, WLAN/HSDPA and GPO
I/O Interface-Rear:
2 x RS-232 (DB9-male connector)
1 x RS-232/485 with auto flow control (DB9-male connector)
1 x DB26 LVDS (with +12V for backlight power & USB 2.0)
1 x VGA port (DB15-female); 1 x RCA TV-out; 2 x USB 2.0 ports
1 x 10/100/1000Base-T(X) Ethernet with RJ-45 connector
2 x Mic-in & 2 Line-out (3.5mm audio connector)
1 x SMA- type antenna connector for GPS
1 x GPIO (4 input & 4 output)
1 x 6 to 36VDC through 3-pin connector (ignition, power & ground)
1 x 5 or 12VDC output, SMBus

Power Requirements

Power Input: 6 to 36VDC through 3-pin connector
Power Output: 5 or 12VDC, SMBus
Power Management:
Selectable for boot-up & shut-down voltage for low power protection
HW design ready Selectable 8-level on/off delay time
Power on/off ignition status detectable by software
S3, S4 suspend mode supported

Physical

Dimensions: 260mm (W) x 176mm (D) x 50mm (H)

Environmental

Operating Temperature: -30 to 60°C with CF or Automotive HDD
Storage Temperature: -40 to 80°C
Operating Humidity: 10% to 90% RH (Non-condensing)
Vibration: Operating:
2G @ 5 to 500Hz random with CF, 1G @ 5 to 500Hz random with Automotive HDD
2G @ 5 to 500Hz random with Automotive HDD (with anti-vibration kit)
3G @ 5 to 500Hz random with CF (with anti-vibration kit)
MIL-STD-810F, Method 514.5 C-1, Category 20,
Ground Vehicle-Highway Truck (in operation)
Shock: Operating: MIL-STD-810F Method 516.5, Procedure I, Trucks and semitrailers=20g
Non-Operating: MIL-STD-810F, Method 516.5, Procedure V, Ground equipment=75g

Regulatory Approvals

Certifications: CE/FCC/e13 Mark
Warranty: 3 years

Ordering Information

Rhino-600A	Industrial Vehicle PC/Intel® Atom™ Z500 Series processor with 2GB RAM & GPS (GPS module & antenna included)

Ordering Options

CPU Options	Intel® Atom™ Z510 1.1GHz CPU; Intel® Atom™ Z530 1.6GHz CPU
RAM Option	1GB DDR2 533 200-pin SO-DIMM SDRAM Module
Storage Options	Seagate 2.5" SATA, automotive 40GB, 5400rpm, -30 to 85°C, vibration 2G (ST940817SM) Seagate 2.5" SATA, automotive 80GB, 5400rpm, -30 to 85°C, vibration 2G (ST980817SM) 512MB CF card (-40 to 85°C) 1GB CF card (-40 to 85°C)
Communication Options	Wireless Mini Card, 802.11 a/b/g/n, Intel: 4965AGN, with antenna & cable 3.5G Module, Sierra MC8790V, GPRS/UMTS/HSDPA, with internal cable and antenna
Optional Accessories	Internal cable for GSM/WLAN/GPS antenna connection, Power Adapter, Power Cord (US, EU or UK)

Rhino-610A

Introduction

Overview

The Rhino Series Rhino-610A is an innovative in-vehicle computer for use in any car, truck, or even for maritime applications. The design itself makes the system available as a complete system, allowing users to easily define and build requirements. With the extremely low power consumption from Intel Atom processor, the Rhino-610A mechanical design is even more compact with wide operating temperature. The Rhino-610A fulfills vehicle industry requirements by being in compliance with vehicle industrial standard such as eMark, and featuring functions required for in-vehicle operations, such as power ignition delay control, low-power protection and SMBus connection. The GPS function navigates drivers to specified destinations. Optional 802.11b/g/n and GRPS/3.5G availability make the Rhino-610A ready for wider coverage and future trend.

Features

- e13 Mark certified
- Built-in Intel® Atom™ N270 16GHz processor
- Availability of GSM/GPRS/WCDMA/HSDPA/GPS
- External smart battery back up support
- Power ignition on/off delay control
- Circuitry design for low-power protection
- 6 to 36VDC power input
- 1 x PCI104 expansion slot
- Multiple display interface connections (VGA, DVI-D and LVDS)
- Optional IP-65 enclosure

Specifications

Hardware Specifications

CPU & Memory

Main Board: 945 GSE + ICH-7M; Intel® Atom™ N270 1.6GHz
Memory: DDR2 533/667 SO-DIMM up to 2GB

Storage & Expansion

Storage: 1 x On-board Internal compact flash socket, 1 x Internal 2.5" SATA II HDD driver bay
Expansion Slot: 1 x PCI104 ,1 x Bluetooth module (Optional), 2 x Mini PCI express socket

Interface

I/O Interface-Front :
4 x SMA-type antenna connector for WLAN, HSDPA and Bluetooth
1 x Power button; 1 x Reset switch; 1 x SIM Socket
1 x USB port; 4 x LED's for Stand-by, HDD, WLAN/HSDPA and GPO
1 x Mic-in & 1 Line-out (3.5mm audio connector)
I/O Interface-Rear:
2 x RS-232 (DB9-male connector)
1 x RS-232/485 with auto flow control (DB9-male connector)
1 x DB26 LVDS (with +12V for backlight power & USB 2.0)
1 x VGA connector (DB15-female)
1 x DVI-D interface; 2 x USB 2.0 ports
1 x 10/100/1000Base-T(X) Ethernet with RJ-45 connector
1 x SMA- type antenna connector for GPS
1 x GPIO (4 input & 4 output)
1 x 6 to 36VDC through 3-pin connector (ignition, power & ground)
1 x 5 or 12VDC output, SMBus
1 x 6 to 36VDC through 3-pin connector (ignition, power & ground)

Power Requirements

Power Input: 6 to 36VDC through 3-pin connector
Power Output: 5 or 12VDC, SMBus
Power Management:
Selectable for boot-up & shut-down voltage for low power protection
HW design ready Selectable 8-level on/off delay time
Power on/off ignition status detectable by software
S3, S4 suspend mode supported

Physical

Dimensions: 260mm (W) x 176mm (D) x 50mm (H)

Environmental

Operating Temperature: -30 to 60°C with CF or Automotive HDD
Storage Temperature: -40 to 80ºC
Operating Humidity: 10% to 90% RH (Non-condensing)
Vibration: Operating:
2G @ 5 to 500Hz random with CF
1G @ 5 to 500Hz random with Automotive HDD
2G @ 5 to 500Hz random with Automotive HDD (with vibration kit)
3G @ 5 to 500Hz random with CF (with anti-vibration kit)
MIL-STD-810F, Method 514.5 C-1, Category 20, Ground Vehicle-Highway Truck (in operation)
Operating: MIL-STD-810F Method 516.5, Procedure I, Trucks and semitrailers=20g
Non-Operating: MIL-STD-810F, Method 516.5, Procedure V, Ground equipment=75g

Regulatory Approvals

Certifications: CE/FCC/e13 Mark/EN 50155
Warranty: 3 years

Ordering Information

Rhino-600A	Industrial Vehicle PC/Intel® Atom™ N270 1.6GHz processor with 1GB RAM & GPS (GPS module & antenna included)

Ordering Options

RAM Option	1GB DDR2 533 200-pin SO-DIMM SDRAM Module
Storage Options	Seagate 2.5" SATA, automotive 40GB, 5400rpm, -30 to 85°C, vibration 2G (ST940817SM) Seagate 2.5" SATA, automotive 80GB, 5400rpm, -30 to 85°C, vibration 2G (ST980817SM) 512MB CF card (-40 to 85°C) 1GB CF card (-40 to 85°C)
Communication Options	Wireless Mini Card, 802.11 a/b/g/n, Intel: 4965AGN, with antenna & cable 3.5G Module, Sierra MC8790V, GPRS/UMTS/HSDPA, with internal cable and antenna
Optional Accessories	Internal cable for GSM/WLAN/GPS antenna connection Power Adapter, Power Cord (US, EU or UK) IP-65 Enclosure, Anti-Vibration & Fan Kit Smart Battery Kit

Rhino-142

Introduction

Overview

The Rhino Series Rhino-142 is a RISC-based Embedded Linux Computer with built-in ARM9 CPU that comes equipped with one Ethernet port, four TTY serial ports, two USB ports and one internal SD memory card slot. Rhino-142 is 100% Linux compatible, and supports both wire and wireless networking by simply plugging in an USB Wi-Fi dongle. The four TTY ports with RS-232/422/485 run at 921.6Kbps high speed. For data storage, SD flash memory card up to 2GB is supported to hold huge amount of data or web pages for web-based remote monitoring & control. In addition, an open source GNU tool chain including C/C++ cross compiler and POSIX standard C/C++ library is bundled in Rhino-142 for application development.

Features

- Linux operating system with memory of 64MB SDRAM and 16MB Flash
- Optional storage using SD memory card
- Supports USB 2.0 ports as hosts
- Provides 1 x 10/100Base-T(X) Ethernet with RJ-45 connectors
- 4 x TTY (serial) ports with 921.6Kbps baud rate
- GNU C/C++ tool chain included
- Wide power input of 9 to 48VDC

Specifications

Hardware Specifications

CPU & Memory

CPU: ATMEL 180MHz AT91RM9200 (ARM9 with MMU)
Memory: 64MB SDRAM, 16MB Flash

Interface

Network Interface
Interface: 1 x 10/100Base-T(X), RJ-45 connector
Protection: 1.5KV magnetic isolation

Serial Interface
TTY Port 1: RS-232, RS-422 or RS-485 (RJ-45 connector)
TTY Port 2, 3, 4: RS-232
Baud Rate: Up to 921.6Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: RTS/CTS, XON/OFF, None

USB Interface
No. of USB Ports: 2 (supports USB Host operation)
Speed: USB 2.0 compliant supporting low speed (1.5 Mbps) & full speed (12 Mbps) data rate

Others
Watchdog Timer: Yes, supported for kernel use
Real Time Clock: Yes
Buzzer: Yes

Power Requirements

Power Input: 9 to 48VDC
Power Consumption: 3.6 watts

Physical

Housing: Metal
Dimensions: 78mm (W) x 108mm (H) x 24mm (D)
Weight: 300g

Environmental

Operating Temperature: 0 to 70ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 80% RH (Non-condensing)

Regulatory Approvals

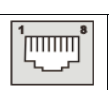
Certifications: CE/FCC
Warranty: 2 years

Technical

OS: Linux, Kernel 2.6.x
Boot Loader: U-Boot 1.1.2
File Systems: JFFS2, ETX2/ETX3, VFAT/FAT, NFS
Protocol Stacks: IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP v1/v2, SSL, SSH 1.0/2.0
Utilities:
tinylogin: login and user manager utility
telnet: Telnet client program
busybox: Linux utility collection
ftp: FTP Client program
Daemon:
pppd: Dial in/out over serial port & PPPoE
snmpd: SNMP agent program
telnetd: Telnet server program
inetd: TCP server program
ftpd: FTP server program
boa: Web server program
sshd: Secured shell server
iptables: Firewall service manager
Tool Chain for Linux: GCC: C/C++ PC cross compiler
GLIBC: POSIX library
Device Drivers: SD/MMC, UART, Real time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer
USB Host Drivers: Flash disk, Wi-Fi (IEEE 902.11b/g), RS-232 adaptor

Ping Assignments

PIN	RS-232	RS-422	RS-485
1	DSR*	---	---
2	RTS	Tx+	Data+
3	GND	GND	GND
4	Tx	Tx-	Data-
5	Rx	Rx+	---
6	DCD*	Rx-	---
7	CTS	---	---
8	DTR*	---	---



* Port 2 Only

Ordering Information

Rhino-142	RISC-based Embedded Linux Computer with 1 LAN, 4 TTY and 2 USB

Rhino-242

Introduction

Overview

The Rhino Series Rhino-242 is a RISC-based Embedded Linux Computer with built-in ARM9 CPU that comes equipped with two Ethernet ports, four TTY serial ports, one GPIO port, two USB ports and one SD memory card slot. Rhino-242 is 100% Linux compatible and supports both wire and wireless networking by simply plugging in an USB Wi-Fi dongle. The four TTY ports with RS-232/422/485 run at 921.6Kbps high speed. For data storage, SD flash memory card up to 2GB is supported to hold huge amount of data or web pages for web-based remote monitoring & control. In addition, an open source GNU tool chain including C/C++ cross compiler and POSIX standard C/C++ library is bundled in Rhino-242 for application development.

Features

- Linux operating system with memory of 64MB SDRAM and 16MB Flash
- Optional storage using SD memory card
- Supports USB 2.0 ports as hosts
- Provides 2 x 10/100Base-T(X) Ethernet with RJ-45 connectors
- 4 x TTY (serial) ports with 921.6Kbps baud rate
- Provides 21 pins programmable GPIO
- GNU C/C++ tool chain included
- Wide Power input of 9 to 40VDC

Specifications

Hardware Specifications

CPU & Memory

CPU: ATMEL 180 MHz AT91RM9200 (ARM9 with MMU)
Memory: 64MB SDRAM, 16MB Flash

Interface

Network Interface
Interface: 2 x 10/100Base-T(X), RJ-45 connectors
Protection: 1.5KV magnetic isolation
Serial Interface
TTY Port 1, 2, 3, 4: RS-232/422/485 ports,
TTY Port 1, 2, 3, 4: software select (DB9-male connector)
TTY Port 2: Supports full modem signals
Baud Rate: Up to 921.6Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: RTS/CTS, XON/OFF, None
USB Interface
No. of USB Ports: 2 (supports USB Host operation)
Speed: USB 2.0 compliant supporting low speed (1.5 Mbps) & full speed (12 Mbps) data rate
Digital I/O (GPIO)
No. of Pins: 21 pins (each pin can be programmed as input or output)
Signal Level: CMOS/TTL compatible
Others
Watchdog Timer: Yes, supported for kernel use
Real Time Clock: Yes
Buzzer: Yes

Power Requirements

Power Input: 9 to 40VDC
Power Consumption: 3.6 watts

Physical

Housing: Metal
Dimensions: 160mm (W) x 104mm (H) x 32mm (D)
Weight: 450g

Environmental

Operating Temperature: 0 to 70ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 80% RH (Non-condensing)

Regulatory Approvals

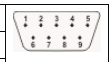
Certifications: CE/FCC
Warranty: 2 years

Technical

OS: Linux, Kernel 2.6.x
Boot Loader: U-Boot 1.1.2
File Systems: JFFS2, ETX2/ETX3, VFAT/FAT, NFS
Protocol Stacks: IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP v1/v2, SSL, SSH 1.0/2.0
Utilities:
tinylogin: login and user manager utility
telnet: Telnet client program; busybox: Linux utility collection
ftp: FTP Client program
Daemon:
pppd: Dial in/out over serial port & PPPoE
snmpd: SNMP agent program; telnetd: Telnet server program
inetd: TCP server program; ftpd: FTP server program
boa: Web server program; sshd: Secured shell server
iptables: Firewall service manager
Tool Chain for Linux:
GCC: C/C++ PC cross compiler for Linux, CygWin
Tool Chain for Linux: GLIBC: POSIX library
Device Drivers: SD/MMC, UART, Real time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer
USB Host Drivers: Flash disk, Wi-Fi (IEEE 902.11b/g), RS-232 adaptor

Ping Assignments

PIN	RS-232	RS-422	RS-485
1	DCD*	Tx-	---
2	Rx	Tx+	---
3	Tx	Rx-	Data+
4	DTR*	Rx-	Data-
5	GND	GND	GND
6	DSR*	---	---
7	RTS	---	---
8	CTS	---	---
9	---	---	---



* Port 2 Only

Ordering Information

Rhino-242	RISC-based Embedded Linux Computer with 2 LAN, 4 TTY, 2 USB and 21 pins GPIO

Rhino-282

Introduction

Overview

The Rhino Series Rhin-282 is a RISC-based Embedded Linux Computer with built-in ARM9 CPU that comes equipped with two Ethernet ports, eight TTY serial ports, one GPIO port, two USB ports and one SD memory card slot. Rhino-282 is 100% Linux compatible and supports both wire and wireless networking by simply plugging in an USB Wi-Fi dongle. Rhino-282 provides eight high speed TTY ports. Ports 1, 5, 6, 7 & 8 can be configured as RS-232, RS-422 or RS-485. Ports 2, 5, 6, 7, 8 features full RS-232 supporting modems connection. Port 3 & 4 supports standard RS-232. For data storage, SD flash memory card up to 2GB is supported to hold huge amount of data or web pages for web-based remote monitoring & control. In addition, an open source GNU tool chain including C/C++ cross compiler and POSIX standard C/C++ library is bundled in Rhino-282 for application development.

Features

- Linux operating system with memory of 64MB SDRAM and 16MB Flash
- Optional storage using SD memory card
- Supports USB 2.0 ports as hosts
- Provides 2 x 10/100Base-T(X) Ethernet with RJ-45 connectors
- 8 x TTY (serial) ports with 921.6Kbps baud rate
- Provides 21 pins programmable GPIO
- 1 x Audio out
- GNU C/C++ tool chain included
- Wide power input of 9 to 40VDC

Specifications

Hardware Specifications

CPU & Memory

CPU: ATMEL 180 MHz AT91RM9200 (ARM9 with MMU)
Memory: 64MB SDRAM, 16MB Flash

Interface

Network Interface
Interface: 2 x 10/100Base-T(X), RJ-45 connectors
Protection: 1.5KV magnetic isolation
Serial Interface
TTY Port 1, 5, 6, 7, 8: RS-232, RS-422, or RS-485 (RJ-45 connector)
TTY Port 2, 3, 4: RS-232
TTY Port 2, 5, 6, 7, 8: Supports full modem signals
Baud Rate: Up to 921.6Kbps
Parity: None, Even, Odd, Mark, Space
Data Bit: 5, 6, 7, 8
Stop Bit: 1, 1.5, 2
Flow Control: RTS/CTS, XON/OFF, None
USB Interface
No. of USB Ports: 2 (supports USB Host operation)
Speed: USB 2.0 compliant supporting low speed (1.5 Mbps) & full speed (12 Mbps) data rate
Digital I/O (GPIO)
No. of Pins: 21 pins (each pin can be programmed as input or output)
Signal Level: CMOS/TTL compatible
Audio Interface
1 Audio out. MP3 and WAV format supported.
Others
Watchdog Timer: Yes, supported for kernel use
Real Time Clock: Yes
Buzzer: Yes

Power Requirements

Power Input: 9 to 40VDC
Power Consumption: 3.6 watts

Physical

Housing: Metal
Dimensions: 160mm (W) x 104mm (H) x 32mm (D)
Weight: 450g

Environmental

Operating Temperature: 0 to 70ºC
Storage Temperature: -20 to 80ºC
Operating Humidity: 10% to 80% RH (Non-condensing)

Technical

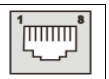
OS: Linux, Kernel 2.6.x
Boot Loader: U-Boot 1.1.2
File Systems: JFFS2, ETX2/ETX3, VFAT/FAT, NFS
Protocol Stacks: IPv4, ICMP, ARP, DHCP, NTP, TCP, UDP, FTP, Telnet, HTTP, PPP, PPPoE, CHAP, PAP, SMTP, SNMP v1/v2, SSL, SSH 1.0/2.0
Utilities:
tinylogin: login and user manager utility
telnet: Telnet client program
busybox: Linux utility collection
ftp: FTP Client program
Daemon:
pppd: Dial in/out over serial port & PPPoE
snmpd: SNMP agent program; telnetd: Telnet server program
inetd: TCP server program; ftpd: FTP server program
boa: Web server program; sshd: Secured shell server
iptables: Firewall service manager
Tool Chain for Linux: GCC: C/C++ PC cross compiler for Linux, CygWin
GLIBC: POSIX library
Device Drivers: SD/MMC, UART, Real time Clock, Buzzer, Digital I/O, Ethernet, Watchdog Timer
USB Host Drivers: Flash disk, Wi-Fi (IEEE 902.11b/g), RS-232 adaptor

Regulatory

Certifications: CE/FCC
Warranty: 2 years

Ping Assignments

PIN	RS-232	RS-422	RS-485
1	DSR*	---	---
2	RTS	Tx+	Data+
3	GND	GND	GND
4	Tx	Tx-	Data-
5	Rx	Rx+	---
6	DCD*	Rx-	---
7	CTS	---	---
8	DTR*	---	---



* Port 2, 5, 6, 7, 8 Only

Ordering Information

Rhino-282	RISC-based Embedded Linux Computer with 2 LAN, 8 TTY, 2 USB, 21 pins GPIO and Audio out

Solutions

SCADA

PcVue V8.2 is the latest generation of supervisory software from ARC Informatique. Its modern ergonomics and tools based on object technology make application development quick and effective. Developed using the latest tools from Microsoft® (Visual C#, MFC, ActiveX® and .Net™ technologies), it complies with the user interface standards recommended by Microsoft® and benefits from the security approach of Windows Vista™, Windows XP™ Professional Edition et 2003 Server™.

This latest version benefits from ARC Informatique's extensive experience in the industrial automation sector and from the recommendations of users, integrators and OEMs, while remaining compatible with PcVue versions 6 and 7.

As from version 8, PcVue innovates by being the first supervisory software to offer a facility for easily creating a 3D HMI. It also introduces a Web Services suite to facilitate portal creation and integration with other enterprise applications. These include MES (Manufacturing Execution System), CMMS (Computerized Maintenance Management System), SCM (Supply Chain Management) and ERP (Enterprise Resource Planning). PcVue V8.20 supports data recording to a Microsoft® SQL Server 2005 corporate database and is delivered with SQL Server 2005 Express Edition.

With WebVue software, PcVue V8.20 offers a light client solution that is accessible from an ordinary Web browser, whether via an intranet or across the Internet. The WebVue server is fully integrated with the controls and safeguards of the enterprise firewall system.

PcVue V8.20 is a flexible solution for supervision of industrial processes, centralized site/building and infrastructure management. While attaining industrial standards of reliability and performance, it meets the demands of simple single-station applications and equally those of client-server applications with capabilities for redundancy and security.

PcVue supports OPC as well as Web Services for data exchange with third party packages. ARC Informatique employs a central database that is shared among the nodes in a client/server model. The configuration of each station can be stored on the server and downloaded at start-up. It can also be used in conjunction with WebVue for remote display and control via the Internet or an intranet connection. Features for FDA 21 CFR Part 11 plus redundancy mechanisms improve the overall security and availability of the system.

A native historical data server using Microsoft® SQL Server 2005 corporate database is implemented since the 8.1 version.

To reinforce the security level, integration of Windows' Domain Authentication and Active Directory within the Supervisor's User Rights has been implemented in the latest release, version 8.2.

In this latest version, Arc Informatique has also launched the concept of PcVue SmartGenerator. The aim is to facilitate and accelerate the development of a PcVue project. Its wizards guide you through the process of extracting data from third party applications (FactoryLink® mimics & variables, AutoCAD® drawing files, LON database) and using it to generate elements of PcVue's configuration (variable database, communication configuration, mimics etc.).

ARC Informatique has introduced several new applications including PlantVue as a low cost, stand-alone HMI software for Windows Vista and XP. Designed for panel PCs, it is an OPC client that has many pre-configured features. It also has a configuration option in which all the pre-configured settings become available for modification as required. PlantVue includes support of Microsoft® SQL Server 2005 Express Edition and Microsoft VBA. An optional driver pack can be provided, with Serial and Ethernet drivers for most major manufacturers.

PcVUE SCADA/Modbus Software

PcVUE is a new generation of 32 bit SCADA software characterized by its modern and powerful ergonomics developed using the latest software technology (Visual C++, MFC, OLE2, ActiveX). PcVue is more than simple software for graphic animation; it is a product able to meet industrial standards of reliability and performance while still maintaining the user-friendliness of an office application. It is a flexible solution intended for the supervision of industrial processes, utilities and infrastructures.

WebVue is client-server application designed to display mimics from PcVue on a Web Browser (Internet Explorer, Netscape etc.). WebVue is composed of a thin client (known as the WebVue Client) that runs under a Java virtual machine in a Web Browser and a server (known as the WebVue Server) that is a component of PcVue. The client and server communicate using IP (Internet Protocol) over an Intranet, Internet or RAS connection.

DataVue is a tool for the extraction of historic, trend, log and report data generated by PcVue. It supports PcVue proprietary file formats as well as standard database formats such as Access, Oracle version 8 and SQL Server. DataVue offers many pre-defined functions and configures extraction or report requests, which may be launched via DDE from other applications such as PcVue.

PlantVue is a stand-alone, soft HMI (Human Machine Interface) designed to offer a simple, flexible and powerful solution in the Windows environment. Real time data may be collected using OPC servers provided by the equipment manufacturers and build in serial and Ethernet drivers that cover the major products on the market.

APPENDIX

Power Consumptions

Industrial Modbus over TCP Switch Solutions	
BMM-101	2.25 watts
MRM-800E(C)	5.76 watts max.
MRM-621E(C)	8 watts max.
MRM-622E(C)	8 watts max.
MRM-623E(C)	8 watts max.
Industrial PROFIBUS & PROFINET Solutions	
PUP-550	2.5 watts max.
PUP-552	2.5 watts max.
Industrial CAN Bus Solutions	
CUC-531	2 watts max.
CUC-532	0.5 watts max.
CWC-530A	1 watts max.
CWC-540	2.5 watts max.
CWC-565	1.5 watts max.

Industrial Serial to Ethernet Solutions	
BWS-136	0.84 watts max.
BMS-136	2.25 watts max.
BMS-236	3 watts max.
BMS-436	4.8 watts max.
BMS-836	6 watts max.
Industrial Remote I/O Solutions	
RUM-9017F	1.3 watts
RUM-9024	2 watts
RUM-9043D	1.1 watts
RUM-9053D	0.9 watts
RUM-9060D	1.9 watts
RUM-9065D	2.2 watts
RWM-824	1.92 watts max.
Industrial Embedded Network Appliance Solutions	
Rhino-142	3.6 watts
Rhino-242	3.6 watts
Rhino-282	3.6 watts

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