DOCUMENTATION

NPort® 5100 Series

1-port RS-232/422/485 serial device servers

NPort® 5150   NPort® 5110   NPort® 5130

> Small size for easy installation
> Real COM/TTY drivers for Windows and Linux
> Standard TCP/IP interface and versatile operation modes
> Easy-to-use Windows utility for configuring multiple device servers
> Built-in 15 KV ESD protection for all serial signals
> SNMP MIB-II for network management
> Configure by Telnet or web browser
> Adjustable termination resistor for RS-485 ports

Specifications

Serial Interface
Number of Ports: 1
Serial Standards:
NPort 5110: RS-232
NPort 5130: RS-422/485
NPort 5150: RS-232/422/485
Connector: DB9 male
Serial Line Protection: 15 KV ESD protection for all signals
RS-485 Data Direction Control: ADDC® (automatic data direction control)
Pull High/Low Resistor for RS-485: 1 KΩ, 150 KΩ

Serial Communication Parameters
Data Bits: 5, 6, 7, 8
Stop Bits: 1, 1.5, 2
Parity: None, Even, Odd, Space, Mark
Flow Control: RTS/CTS and DTR/DSR (RS-232 only), XON/XOFF
Baudrate:
NPort 5110: 110 bps to 230.4 Kbps
NPort 5130/5150: 50 bps to 921.6 Kbps

Serial Signals
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
RS-422: Tx+, Tx-, Rx+, Rx-, GND
RS-485-4w: Tx+, Tx-, Rx+, Rx-, GND
RS-485-2w: Data+, Data-, GND

Ethernet Interface
Number of Ports: 1
Speed: 10/100 Mbps, auto MDI/MDIX
Connector: 8-pin RJ45
Magnetic Isolation Protection: 1.5 KV built-in

Software
Network Protocols: ICMP, IP, TCP, UDP, DHCP, BOOTP, Telnet, DNS, SNMP V1, HTTP, SMTP
Configuration Options: Web Console, Serial Console (NPort 5110/5150 only), Telnet Console, Windows Utility

Power Requirements
Input Voltage: 12 to 48 VDC
Power Consumption:
NPort 5110: 128.7 mA @ 12 V, 72 mA @ 24 V
NPort 5130/5150: 200 mA @ 12 V, 106 mA @ 24 V

NPort® 5150

IP address

Setting	Factory Default	Necessity
E.g., 192.168.1.1 (IP addresses of the form x.x.x.0 and x.x.x.255 are invalid.)	192.168.127.254	Required

TCP Server Mode
TCP/IP Ethernet
TCP Server
RS-232
①Request a connection
②Proceed with data transmission
Device
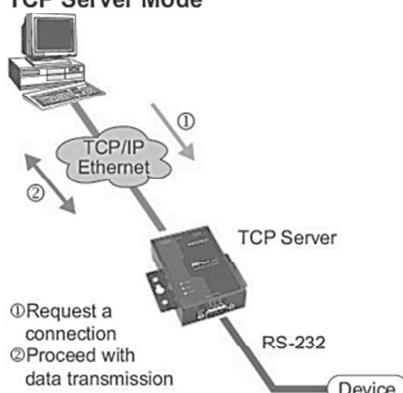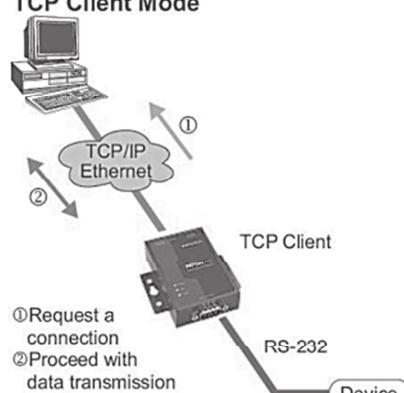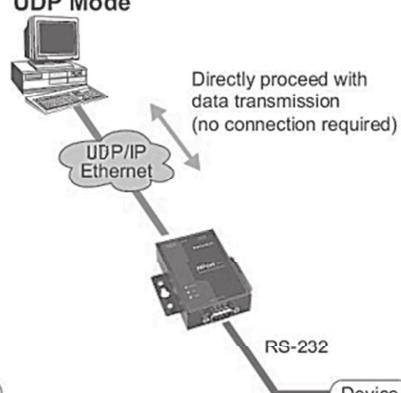
TCP Client Mode
TCP/IP Ethernet
TCP Client
RS-232
①Request a connection
②Proceed with data transmission
Device

UDP Mode
UDP/IP Ethernet
Directly proceed with data transmission (no connection required)
RS-232
Device

PROMAG™ WEC200 Ethernet Access Controller

Introduction:

WEC200 is a compact networkable access controller that can be fitted to one door access. It features the interface conversion from Wiegand to Ethernet, which allows WEC200 being able to connect to any kind of Wiegand reader, such as magnetic stripe reader, RFID reader or fingerprint reader. With the networkable access, it gives the advantages of central control, and easily viewing the event log reports.

Features:

☆ **2K memory capacity, maximum can store 50 users, 10 visitors and 20 time log.**

☆ **Provide master card for appending or deleting visitor authority from external reader directly.**

☆ **Feature 2 input sensors for the detection of door unlocked and exit button pressed.**

● Provide 2 relay outputs for external alarm and electric lock.

● Door left open alarm function.

● Separate control unit and reader for higher security demand

● With Ethernet connection to PC and able to work independently at off line with PC.

Specifications:

| Communication | One Wiegand port
One 10/100 BaseT Ethernet Port |
|---|---|
| **Available Wiegand format** | 26, 30, 34, 35, 37, 38, 42 bits |
| **Power consumption** | 140mA 12VDC |
| **Protocols** | Communicates with server on the networking using TCP or UDP protocols |
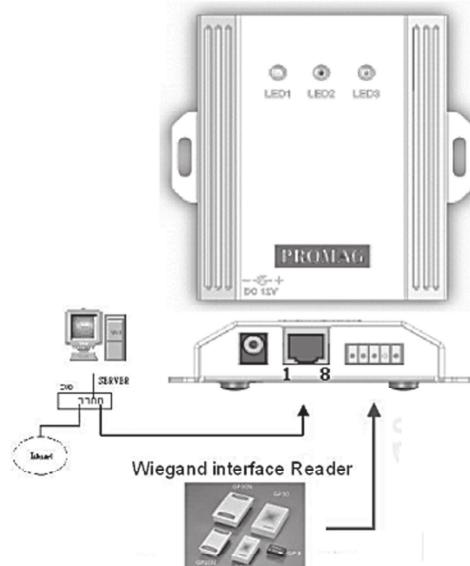
IP-address

It is necessary to indicate the IP of the WEC200 that you want to connect to. If the connected WEC200 is the first time use, then it is needed to change the IP to meet the needs of network setting. To do this, click the right side button ⊡ of the IP entry text box.

1. Select the connected device of WEC200. The default IP of the WEC200 is 127.0.0.1.
2. Click **Change IP**.
3. Enter a valid IP. In general, the first three digits of IP should be same to PC's under the LAN (Local Area Network). To get the PC's IP, you can view the caption of **Device List** window, which PC's IP will be displayed on it.
4. Click **OK** to save the change.
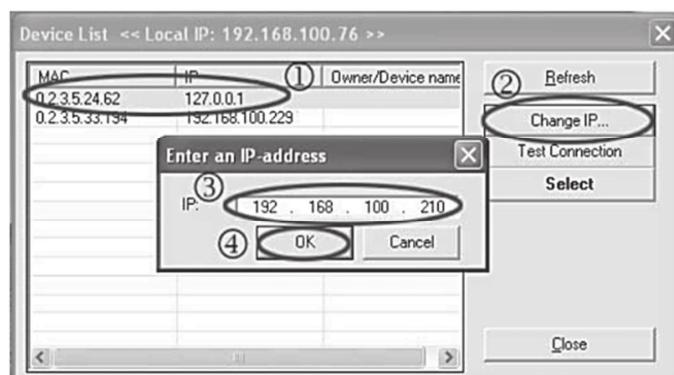
ioLogik E1212

Remote Ethernet I/O with 2-port Ethernet switch, 8 DIs, and 8 DIOs
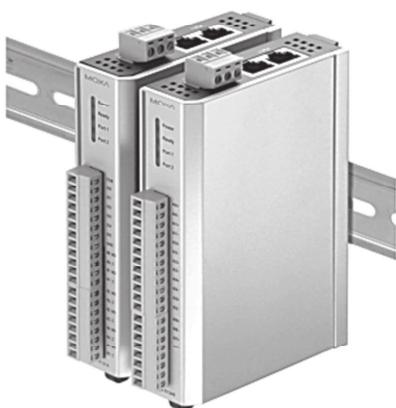
> Built-in 2-port Ethernet switch for daisy-chain topologies
> Free support of Moxa's push-based Active OPC Server Lite
  - Seamlessly connect to any SCADA system
  - Save 80% on network bandwidth
  - I/O response that's seven times faster
> User-defined Modbus/TCP addressing
> MXIO programming library for Windows and WinCE VB/VC.NET and Linux C APIs
> Web configuration with Import/Export function

> www.moxa.com > info@moxa.com

: Specifications

LAN
Ethernet: 2 x 10/100 Mbps switch ports, RJ45
Protection: 1.5 KV magnetic isolation
Protocols: Modbus/TCP, TCP/IP, UDP, DHCP, Bootp, HTTP

Digital Input
Sensor Type: NPN, PNP, and Dry contact
I/O Mode: DI or Event Counter
Dry Contact:
• Logic 0: short to GND
• Logic 1: open
Wet Contact:
• Logic 0: 0 to 3 VDC
• Logic 1: 10 to 30 VDC (DI COM to DI)
Isolation: 3K VDC or 2K Vrms
Counter/Frequency: 250 Hz, power off storage

Digital Output
I/O Mode: DO or Pulse Output
Pulse Wave Width/Frequency: 1 ms/500 Hz
Over-voltage Protection: 45 VDC
Over-current Limit: 600 mA per channel
Over-temperature Shutdown: 175°C (typical), 150°C (min.)
Output Current Rating: Max. 200 mA per channel
Isolation: 3K VDC or 2K Vrms

Power Requirements
Power Input: 24 VDC nominal, 12 to 36 VDC
Power Consumption: 130 mA typical @ 24 VDC

Physical Characteristics
Wiring: I/O cable max. 14 AWG
Dimensions: 27.8 x 124 x 84 mm (1.09 x 4.88 x 3.31 in)
Weight: under 200 g

Environmental Limits
Operating Temperature: -10 to 60°C (14 to 140°F)
Storage Temperature: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)

Regulatory Approvals
EMI: FCC Part 15, CISPR (EN55022) class A
EMS: IEC 61000-4, IEC 61000-6
Safety: UL508
Shock: IEC 60068-2-27
Freefall: IEC 60068-2-32
Vibration: IEC 60068-2-6
Note: Please check Moxa's website for the most up-to-date certification status.

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

ioLogik E1200 series products are configured with the following factory default settings:

Default IP address	192.168.127.254
Default Netmask	255.255.255.0
Default Gateway	0.0.0.0
Communication watchdog	Disable
Modbus/TCP Alive Check	On
Modbus/TCP Timeout Interval	60 sec
DI Mode	DI
Filter time	100 ms
Trigger for counter	Lo to Hi
Counter status	Stop
DO Mode	DO
DO Safe Status	Disable
DIO Mode	DO

Channels
DI : Digital Input
D0 : Digital Output
**DIO** : Digital Input/Output

# MOXA ioLogik E1212 - I/O Connexion Diagrams

I/O Channel Jumper Setting

The following table shows jumper setting for each model of the ioLogik E1200 Series. We provide a more detailed description of three different jumper settings.

Model	Jumper Setting
E1212	DIO direction (DI, DO)
E1213	1. DIO direction (DI, DO)
	2. EXT Power Configuration
E1240	AI mode (Voltage, Current)
E1242	1. DIO direction (DI, DO)
	2. AI mode (Voltage, Current)

DIO Direction (DI, DO)

DI Mode   DO Mode
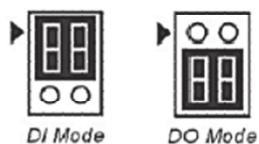
The default setting is DO Mode.

Pin Assignment of Terminal Block
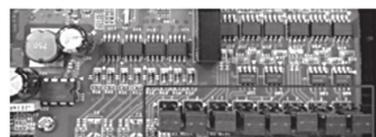
ioLogik E1212
(Top to Bottom)
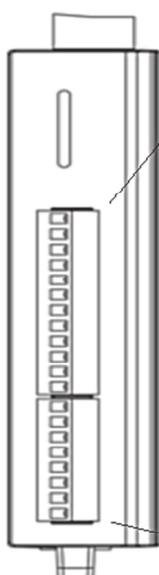
1	COM 0
2	DI0
3	DI1
4	DI2
5	DI3
6	GND
7	DI4
8	DI5
9	DI6
10	DI7
11	COM1
12	DIO0
13	DIO1
14	DIO2
15	DIO3
16	GND
17	DIO4
18	DIO5
19	DIO6
20	DIO7

DIO Wiring

DO (Sink Type)
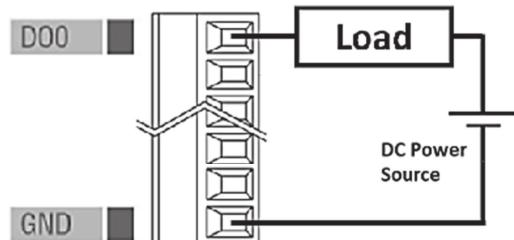
DO0   Load
GND   DC Power Source
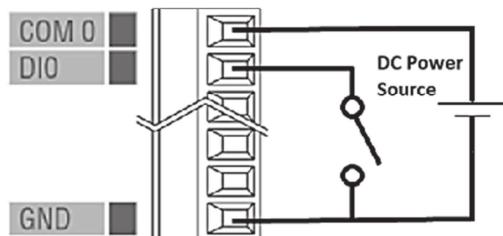
DI Dry Contact

COM 0
DI0   DC Power Source
GND

DO Circuit (DIO channels)
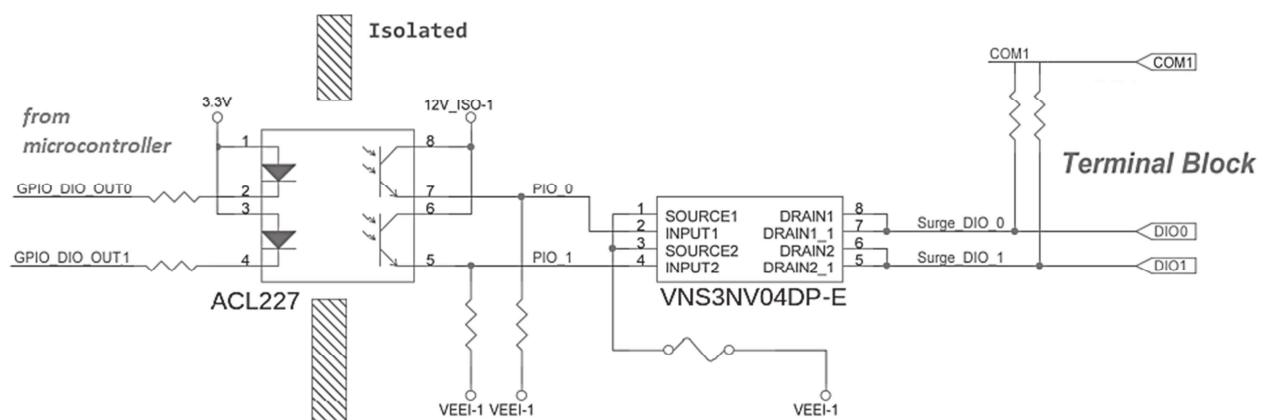
Isolated

from microcontroller

3.3V   12V_ISO-1

GPIO_DIO_OUT0   PIO_0

GPIO_DIO_OUT1   PIO_1

ACL227

SOURCE1 DRAIN1
INPUT1   DRAIN1_1   Surge_DIO_0
SOURCE2 DRAIN2
INPUT2   DRAIN2_1   Surge_DIO_1

VNS3NV04DP-E

VEEI-1 VEEI-1   VEEI-1

COM1

Terminal Block

COM1
DIO0
DIO1

Automate Programmable MITSUBISHI

Programmable Controller

Product Outline

Figure 3.1: Features of the FX1N PLC

Typical Wiring

Sink (+ve S/S)

Source (-ve S/S)
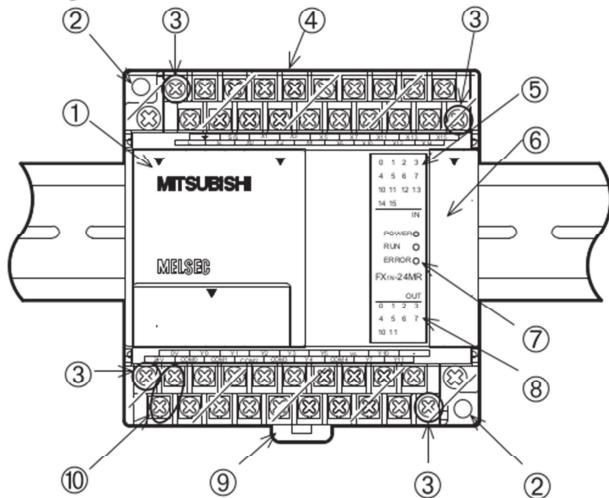
Table 3.1 : Features table

1	Top cover
2	Direct mounting holes (4.5 mm <0.17"> diameter)
3	I/O terminal block securing screws
4	Input terminals (24V DC) and power supply terminals
5	Input LED status indicators
10	Output terminals and power supply source terminals
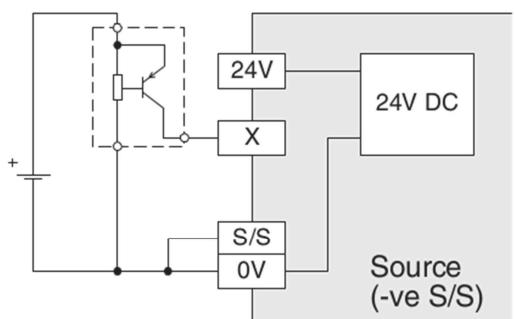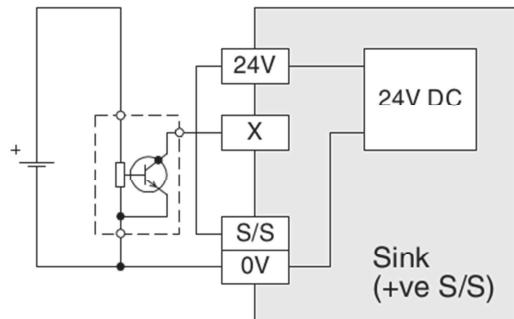
MODBUS Messaging on TCP/IP implementation

Ex: ModBus TCP

Modbus TCP Frame Format

2 bytes	2 bytes	2 bytes	1 byte	8 bits	0-252 bytes
Transaction Identifier	Protocol Identifier	Length (Unit Identifier +Function Code + Data)	Unit Identifier	**Function Code**	Data

ModBus Application Protocol Header — Protocol Data Unit

Modbus TCP ADU

Application

ADU — Application User-Data (ADU) (1460 Bytes Max)

LAYER 5 (Application)

TCP Frame — TCP Header (Port Numbers) (20 Bytes) — TCP Data Array

TCP - LAYER 4 (Transport Layer)

IP Frame — IP Header (IP Addresses) (20 Bytes) — IP Data Array

IP - LAYER 3 (Network layer)

Ethernet Frame — Ethernet Header (Ethernet Addresses) (14 Bytes) — Ethernet Data Array — FCS (Checksum) (4 Bytes)

Ethernet - LAYER 2 (Data Link Layer)

LAYER 1 (Physical Layer) — Cable Types (Fiber, Copper), Signal Form, etc.

CONSTRUCTION OF A TCP/IP-ETHERNET DATA PACKET

TCP Segment Header Format

Bit #	0	7	8	15	16	23	24	31
0	Source Port				Destination Port			
32	Sequence Number							
64	Acknowledgment Number							
96	Data Offset	Res	Flags		Window Size			
128	Header and Data Checksum				Urgent Pointer			
160...	Options							

IPv4 Packet Header Format

Bit #	0	7	8	15	16	23	24	31
0	Version	IHL	DSCP	ECN	Total Length			
32	Identification				Flags	Fragment Offset		
64	Time to Live		Protocol		Header Checksum			
96	Source IP Address							
128	Destination IP Address							
160	Options (if IHL > 5)							

Ethernet (802.3) Frame Format

7 bytes	1 byte	6 bytes	6 bytes	2 bytes	42 to 1500 bytes	4 bytes	12 bytes
Preamble	Start of Frame Delimiter	Destination MAC Address	Source MAC Address	Type	Data (payload)	CRC	Inter-frame gap

Some usefull IP Protocol numbers :

Decimal	Keyword	Protocol	Reference
1	ICMP	Internet Control Message	[RFC792]
2	IGMP	Internet Group Management	[RFC1112]
4	IPv4	IPv4 encapsulation	[RFC2003]
6	TCP	Transmission Control	[RFC793]
17	UDP	User Datagram	[RFC768][Jon_Postel]
41	IPv6	IPv6 encapsulation	[RFC2473]
94	IPIP	IP-within-IP Encapsulation Protocol	[John_Ioannidis]
97	ETHERIP	Ethernet-within-IP Encapsulation	[RFC3378]

(https://www.iana.org/assignments/protocol-numbers/protocol-numbers.xhtml)

MODBUS Write Coil Function

ModBus Function Code Description
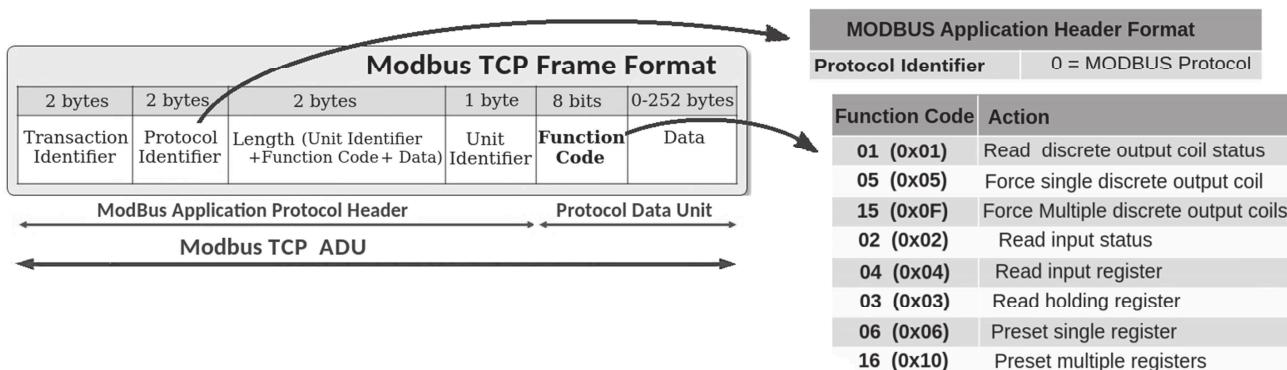
05 (0x05) Write Single Coil

This function code is used to write a single output to either ON or OFF in a remote device. The requested ON/OFF state is specified by a constant in the request data field. A value of FF 00 hex requests the output to be ON. A value of 00 00 requests it to be OFF.

The Request PDU specifies the address of the coil to be forced. Coils are addressed starting at zero. Therefore coil numbered 1 is addressed as 0. The requested ON/OFF state is specified by a constant in the Coil Value field. A value of **0xFF00** requests the coil to be ON.

A value of **0x0000** requests the coil to be OFF.

All other values are illegal and will not affect the coil.

| Request	Function code	1 Byte	0x05
(PDU)	Output Address	2 Bytes	0x0000 to 0xFFFF
	Output Value	2 Bytes	0x0000 or 0xFF00

Coil

Coils are used to force the ON/OFF state of discrete outputs (DO) to the field, or to modify the mode or status of slave devices. Coil data is either ON or OFF.

Trame NMEA   « GPGGA »
« GGA – Global positioning system (GPS) fix data »

Trame NMEA partielle capturée sur la liaison RS232 (début de la trame)
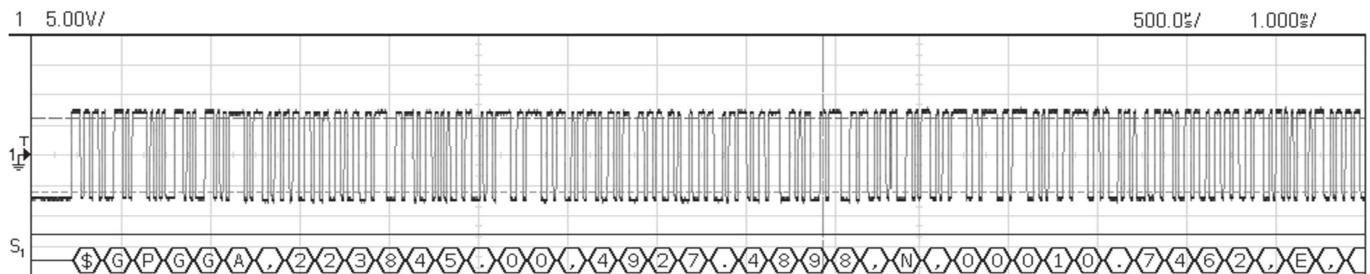
Contenu de la trame NMEA complète

Rep	En code hexadecimal		En code ASCII
0000	24 47 50 47 47 41 2C 32	32 33 38 34 35 2E 30 30	$ G P G G A , 2 2 3 8 4 5 . 0 0
0010	2C 34 39 32 37 2E 34 38	39 38 2C 4E 2C 30 30 30	, 4 9 2 7 . 4 8 9 8 , N , 0 0 0
0020	31 30 2E 37 34 36 32 2C	45 2C 32 2C 30 37 2C 31	1 0 . 7 4 6 2 , E , 2 , 0 7 , 1
0030	2E 30 32 2C 31 35 2E 31	2C 4D 2C 2D 31 2E 32 2C	. 0 2 , 1 5 . 1 , M , - 1 . 2 ,
0040	4D 2C 30 2E 31 2C 30 30	30 31 2A 35 37 0D 0A	M , 0 . 1 , 0 0 0 1 * 5 7

Description de la trame GPGGA   (Global positioning system fix data)

Nombre de satellites disponibles, altitude, qualité de la réception, ….

Caractère '*' = 0x2A

-- = **GP** : Global Positioning

0x0D   0x0A

$--GGA, hhmmss.ss, llll.ll, a, yyyyy.yy, a, x, xx, x.x, x.x, M, x.x, M, x.x, xxxx*hh<CR><LF>

Heure UTC
hhmmss.ss :
heures / minutes /
secondes et décimales

Longitude   E ou **W :** Est ou Ouest (West)
yyyyy.yy :   degrés / minutes et décimales
- trois chiffres fixes pour les degrés,
- deux chiffres fixes pour les minutes et un nombre variable de chiffres pour la fraction décimale des minutes.
Les zéros au début sont toujours inclus pour les degrés et les minutes afin de conserver une longueur fixe.

Caractère '**$**' = 0x24

Latitude   N ou **S :** Nord ou Sud
llll.ll :   degrés / minutes et décimales
- deux chiffres fixes pour les degrés, deux chiffres fixes pour les minutes et un nombre variable de chiffres pour la fraction décimale des minutes. Les zéros au début sont toujours inclus pour les degrés et les minutes afin de conserver une longueur fixe.

hh : champ 'Checksum'
Le champ 'checksum' est le dernier champ transmis d'une trame et suit le caractère délimiteur "*". La somme de contrôle 'checksum' est construite par OU exclusif (sur huit bits) entre tous les caractères de la trame, y compris les délimiteurs "," (code 0x2C), à l'exclusion des délimiteurs "$" (code 0x24) et "*" (code 0x2A).
La valeur hexadécimale des quatre bits les plus significatifs et les moins significatifs du résultat est convertie en deux caractères ASCII (0 à 9, de A à F) pour la transmission. Le caractère le plus significatif est transmis en premier.

Rappel : <**CR**> : Carriage Return = 0x0D   <**LF**> : Line Feed = 0x0A

NTAG 216

1. General description
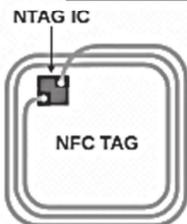
1.1 Contactless energy and data transfer

NTAG IC

NFC TAG

← ENERGY

← DATA →

Communication to NTAG21x can be established only when the IC is connected to an antenna. Form and specification of the coil is out of scope of this document.

When NTAG21x is positioned in the RF field, the high speed RF communication interface allows the transmission of the data with a baud rate of 106 kbit/s.

2. Features and benefits

■ Contactless transmission of data and supply energy
■ Operating frequency of 13.56 MHz
■ Data transfer of 106 kbit/s
■ Data integrity of 16-bit CRC, parity, bit coding, bit counting
■ Operating distance up to 100 mm (depending on various parameters as e.g. field strength and antenna geometry)

8. Functional description

8.1 Block description

NTAG21x ICs consist of a 180 (NTAG213), 540 bytes (NTAG215) or 924 bytes (NTAG216) EEPROM, RF interface and Digital Control Unit (DCU). Energy and data are transferred via an antenna consisting of a coil with a few turns which is directly connected to NTAG21x. No further external components are necessary. Refer to Ref. 4 for details on antenna design.

- NTAG213 EEPROM: 180 bytes, organized in 45 pages of 4 byte per page.
  - 26 bytes reserved for manufacturer and configuration data
  - 34 bits used for the read-only locking mechanism
  - 4 bytes available as capability container
  - 144 bytes user programmable read/write memory
- NTAG215 EEPROM: 540 bytes, organized in 135 pages of 4 byte per page.
  - 26 bytes reserved for manufacturer and configuration data
  - 28 bits used for the read-only locking mechanism
  - 4 bytes available as capability container
  - 504 bytes user programmable read/write memory
- NTAG216 EEPROM: 924 bytes, organized in 231 pages of 4 byte per page.
  - 26 bytes reserved for manufacturer and configuration data
  - 37 bits used for the read-only locking mechanism
  - 4 bytes available as capability container
  - 888 bytes user programmable read/write memory

8.2 RF interface

The RF-interface is based on the ISO/IEC 14443 Type A standard.

During operation, the NFC device generates an RF field. The RF field must always be present (with short pauses for dat communication) as it is used for both communication and as power supply for the tag.

NTAG213_215_216

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Product data sheet
COMPANY PUBLIC

Rev. 3.2 — 2 June 2015
265332

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CR95HF

13.56-MHz multi-protocol contactless transceiver IC with SPI and UART serial access

Datasheet - production data

VFQFPN32 (5x5 mm)

- Communication interfaces with a Host Controller
  - Serial peripheral interface (SPI) Slave interface
  - Universal asynchronous receiver/transmitter (UART)
  - Up to 528-byte command/reception buffer (FIFO)
- 32-lead, 5x5 mm, very thin fine pitch quad flat (VFQFPN) ECOPACK®2 package
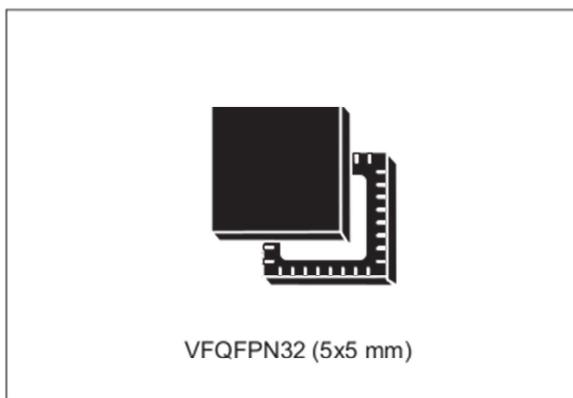
Features

- CR95HF belongs to the ST25 family which includes all ST's NFC/RFID tag and reader products
- Operating modes supported:
  - Reader/Writer
- Hardware features
  - Dedicated internal frame controller
  - Highly integrated Analog Front End (AFE) for RF communications
  - Transmission and reception modes
  - Optimized power management
  - Tag Detection mode
- RF communication @13.56 MHz
  - ISO/IEC 14443 Type A and B
  - ISO/IEC 15693
  - ISO/IEC 18092
 - MIFARE® Classic compatible [a] [b]

Applications

Typical protocols supported:

- ISO/IEC 14443-3 Type A and B tags
- ISO/IEC 15693 tags
- ISO/IEC 18000-3M1 tags
- NFC Forum tags: Types 1, 2, 3 and 4
- ST short-range interface (SRI) tags
- ST long-range interface (LRI) tags
- ST Dual Interface EEPROM

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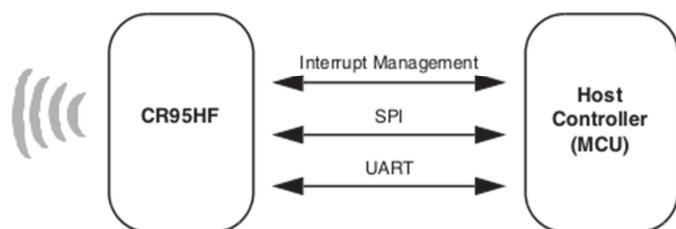
a. MIFARE and MIFARE Classic are registered trademarks of NXP B.V. and are used under license.

b. Parity Framing mode is compatible with MIFARE® Classic requirements. However, access to Authenticated state must be supported by an external secure host which embeds the MIFARE® Classic library.

This is information on a product in full production.

www.st.com

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MOXA MiiNePort E3 Series

MiiNePort E3 Series

10/100 Mbps embedded serial device servers

> IEEE 802.3af compliant PoE pass-through
> Use Moxa's high quality and reliable second generation MiiNe SoC
> Versatile choice of operation modes fulfill specific application requirements
> Green design with extremely low power consumption
> Support IPv6

Serial Signals
TTL: TxD, RxD, RTS, CTS, DTR, DSR, DCD, RST (reset circuit)

Power Requirements
Input Voltage: 3.3 to 5 VDC (±5%)
Power Consumption: 157 mA @ 3.3 VDC, 119 mA @ 5 VDC input

Module Pin Assignment

Bottom of the MiiNePort E3 Series Module
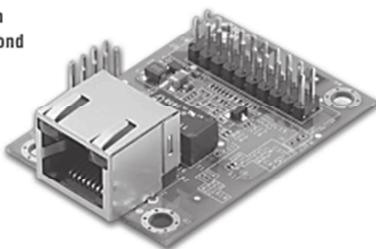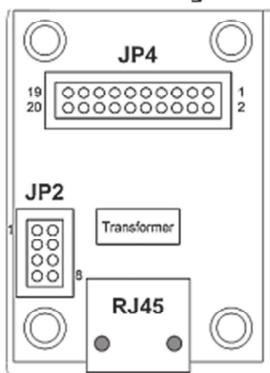
Ethernet Pins (JP2)

Pin	Signal Name	Function
1	Reserve	N/A
2	Reserve	N/A
3	Reserve	N/A
4	Reserve	N/A
5	PoE signal pair 1	PoE power from Tx signal
6	PoE spare pair 1	PoE power from RJ45 4, 5 pin
7	PoE signal pair 2	PoE power from Rx signal
8	PoE spare pair 2	PoE power from RJ45 7, 8 pin

PoE Pass-through: 802.3af compliant

Serial Pins and Power Pins (JP4)

| Pin	Signal Name	Function
1	Serial Rx	Receive Serial Data
2	Ready LED	System to Ready LED
3	Serial Tx	Transmit Serial Data
4	GPIO	Programmable I/O
5	DCD	Receive Line Signal Detector
6	GPIO	Programmable I/O
7	RS485_EN0	RS-485 Enabled
8	GPIO	Programmable I/O
9	RTS	Request to Send
10	GPIO	Programmable I/O
11	DTR	Data Terminal Ready
12	Reserve	N/A
13	DSR	Data Set Ready
14	Reserve	N/A
15	CTS	Clear to Send
16	SW_Reset	Reset to Factory Default
17	Reserve	N/A
18	Reserve	N/A
19	GND	Circuit Ground
20	VCC	Power Supply

DIGILENT ChipKITCMod

chipKIT™ Cmod™

Revised April 15, 2016
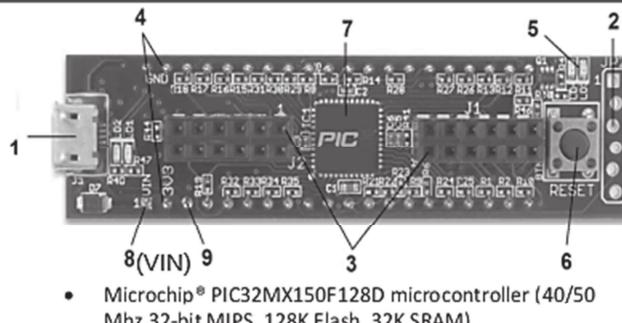
- Microchip® PIC32MX150F128D microcontroller (40/50 Mhz 32-bit MIPS, 128K Flash, 32K SRAM)

Call Out	Component Description
1	J3 USB Connector for USB Serial Converter
2	JP2 Microchip ICSP Connector
3	J1-J2 Digilent Pmod ports
4	40 Pin DIP connector
5	User LEDs
6	Reset Button
7	PIC32 Microcontroller
8	DIP Pin 1 External Power Connector
9	DIP Pin3 USB 5.0V Power Connector
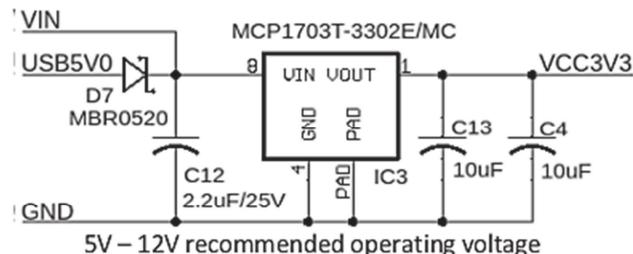
Power Supply

The chipKIT Cmod is designed to be powered via USB (J3) or from an external power supply connected to pin 1 of the DIP package.
The chipKIT Cmod has a single voltage regulator to provide power to the VCC3V3 bus that powers the PIC32 microcontroller.
The output of the on-board 3.3V regulator is available at DIP pin 2 and can be used to power external circuitry.

5V – 12V recommended operating voltage

The 3.3V regulator is a Microchip MCP1703. The regulator is rated for a maximum output current of 250mA. The absolute maximum input voltage for the MCP1703 is 16V. This regulator has internal short circuit protection and thermal protection.
It will get noticeably warm when the current consumed by the VCC3V3 bus is close to the 250mA maximum.

Power over Ethernet (PoE)

Where to apply the power : how PoE works

Power over Ethernet uses standard Category 5 (CAT 5) Ethernet cables as specified by the IEEE 802.3af standard. Although CAT 5 cables are composed of four twisted pairs, only two of these pairs are used for 10BaseT and 100BaseT data transmission. There are two ways to use CAT 5 cables to simultaneously transmit data and power : power through the spare pair or power through the signal pair.

In the lefthand diagram, the twisted pair on pins 4 and 5 is connected to form the positive electric power supply, while the pair on pins 7 and 8 is connected to form the negative supply. Each pair can accommodate either polarity.


Alternative A

Alternative B
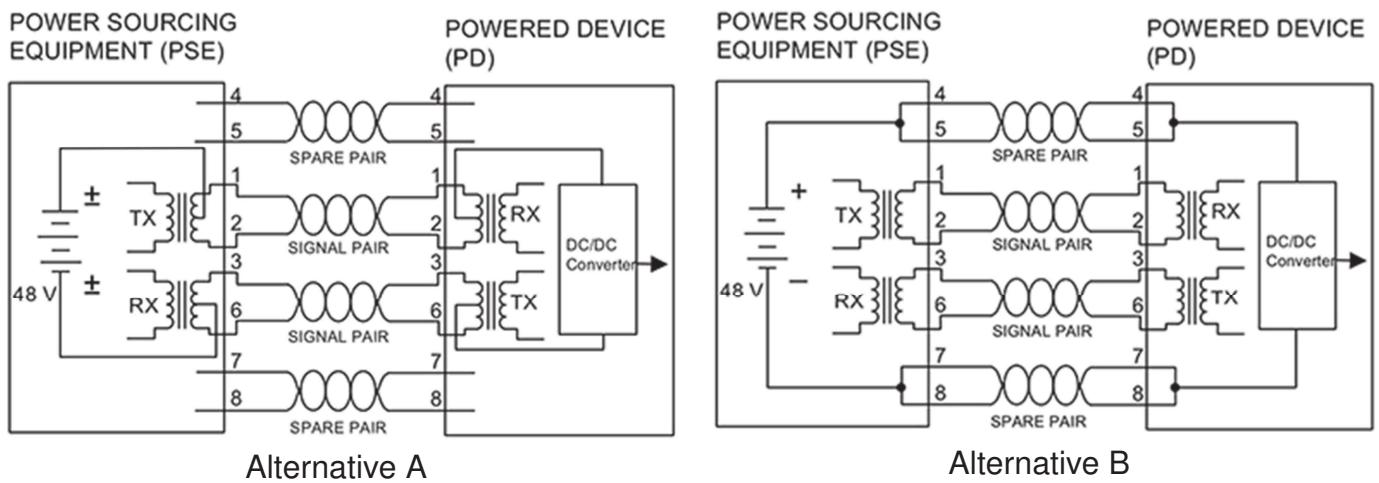
Figure 1. PoE Power feeding techniques

When transfering power over the signal pair, DC power can be applied to the centre tap of the isolation transformer without upsetting the data transfer since CAT 5 pairs are transformer-coupled at each end. As shown in the righthand diagram, the twisted pair on pins 3 and 6 and the pair on pins 1 and 2 can be of either polarity.

The IEEE 802.af standard specifies that all power sourcing equipment (PSE) and powered devices (PD) must be compatible with both methods. However, only one of the methods may be used at a time.

Silvertel
V2.5 Feb 2019
Datasheet

Ag9700
Power-Over-Ethernet Module

1. Features

➤ IEEE802.3af compliant
➤ Input voltage range 36V to 57V
➤ Short-circuit protection

2. Description

The Ag9700 series of modules are designed to extract power from a conventional twisted pair Category 5 Ethernet cable, conforming to the IEEE 802.3af Power-over-Ethernet (PoE) standard.

The Ag9700-2BR and Ag9700-FL are physically the same size as the Ag9700-S, but they have the two input bridge rectifiers on-board (see Figure 1).
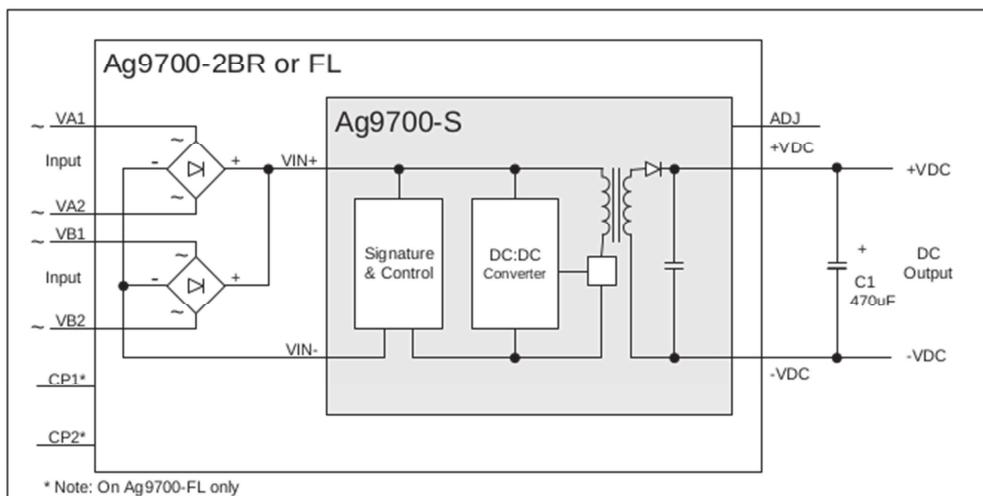

Figure 1: Block Diagram

3. Ag9700 Product Selector

Part Number†	Nominal Output Voltage	Maximum Output Power *	Marking
Ag9712-S	12.0V	12 Watts	12S
Ag9705-S	5.0V	9 Watts	5S
Ag9703-S	3.3V	6 Watts	3S
Ag9712-2BR	12.0V	12 Watts	12B
Ag9705-2BR	5.0V	9 Watts	5B
Ag9703-2BR	3.3V	6 Watts	3B
Ag9724-FL	24.0V	12 Watts	24FL
Ag9712-FL	12.0V	12 Watts	12FL
Ag9705-FL	5.0V	9 Watts	5FL
Ag9703-FL	3.3V	6 Watts	3FL

1

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Ag9700
Power-Over-Ethernet Module

5.4 Power Classification Programming (Ag9700-FL only)

This feature is optional from the PSE and is used for power management. The Ag9700-FL allows the Class to be externally programmed by connecting a resistor between the CP1 and CP2 pins, see Figure 4. If no resistor is fitted the Ag9700-FL will default to Class 0, a full list of programming resistor values are shown in Table 5.

Figure 4: Class Programming Option
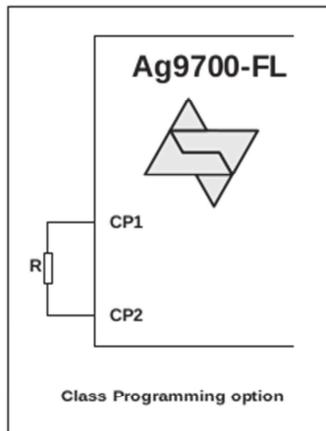
CLASS	Programming Resistance (Ohms)	Min Power (W)	Max Power (W)
0	Do not fit	0.44	12.95
1	698 ±1%	0.44	3.84
2	383 ±1%	3.84	6.49
3	249 ±1%	6.49	12.95
4	TBD	Reserved	Reserved

Table 5: Class Programming

11.3   DC Electrical Characteristics

	DC Characteristic	Sym	Min	Typ[1]	Max	Units	Test Comments
1	Nominal Output Voltage	+VDC	3.1	3.3	3.5	V	Ag9703
			4.75	5.0	5.25	V	Ag9705
			11.5	12.0	12.5	V	Ag9712
			23.5	24	24.5	V	Ag9724-FL
2	Output Current (V_{IN} = 48V)	PWR			1.8	A	Ag9703
					1.8	A	Ag9705
					1.0	A	Ag9712
					0.5	A	Ag9724-FL
8	Peak Efficiency Ag9703-S	EFF		80		%	
	Ag9705-S			84		%	
	Ag9712-S			87		%	
	Ag9703-2BR and FL			76		%	
	Ag9705-2BR and FL			80		%	
	Ag9712-2BR and FL			84		%	
	Ag9724-FL			85		%	
9	Isolation Voltage (I/O)	V_{ISO}			1500	V_{PK}	Impulse Test

Note 1: Typical figures are at 25°C with a nominal 48V supply and are for design aid only. Not Guaranteed
2: The output ripple and noise can be reduced with an external filter, see Section 5.8.

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