Технические характеристики на систему мониторинга Moore Industries CPMS

По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72
Брянск (4832)59-03-52
Вологда (8172)26-41-59
Иваново (4932)77-34-06
Калининград (4012)72-03-81
Киров (8332)68-02-04
Курск (4712)77-13-04
Москва (495)268-04-70
Нижний Новгород (831)429-08-12
Орел (4862)44-53-42
Пермь (342)205-81-47
Самара (846)206-03-16
Смоленск (4812)29-41-54
Тверь (4822)63-31-35
Тюмень (3452)66-21-18
Челябинск (351)202-03-61
Астана +7(7172)727-132
Владивосток (423)249-28-31
Воронеж (473)204-51-73
Ижевск (3412)26-03-58
Калуга (4842)92-23-67
Краснодар (861)203-40-90
Липецк (4742)52-20-81
Мурманск (8152)59-64-93
Новокузнецк (3843)20-46-81
Оренбург (3532)37-68-04
Ростов-на-Дону (863)308-18-15
Санкт-Петербург (812)309-46-40
Сочи (862)225-72-31
Томск (3822)98-41-53
Ульяновск (8422)24-23-59
Череповец (8202)49-02-64
Белгород (4722)40-23-64
Волгоград (844)278-03-48
Екатеринбург (343)384-55-89
Казань (843)206-01-48
Кемерово (3842)65-04-62
Красноярск (391)204-63-61
Магнитогорск (3519)55-03-13
Набережные Челны (8552)20-53-41
Новосибирск (383)227-86-73
Пенза (8412)22-31-16
Рязань (4912)46-61-64
Саратов (845)249-38-78
Ставрополь (8652)20-65-13
Тула (4872)74-02-29
Уфа (347)229-48-12
Ярославль (4852)69-52-93

Эл. почта: mpr@nt-rt.ru || Сайт: http://moore.nt-rt.ru/

CPMS

Cathodic Protection Monitoring System

Description

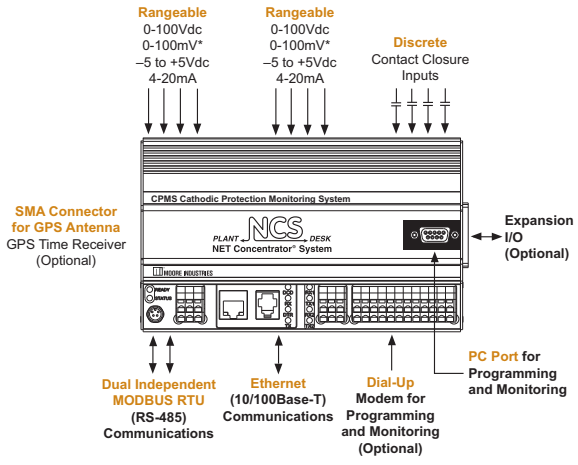
The CPMS Cathodic Protection Monitoring System monitors above and below ground impressed current cathodic protection systems to ensure that proper corrosion protection is in place and operating at the right levels.

Part of Moore Industries' NET Concentrator System® family of intelligent distributed I/O, the CPMS monitors the critical current and voltage levels of one or two transformer rectifiers used in cathodic protection systems. Each module provides four or eight, fully-isolated analog input channels and four discrete (contact closure) inputs. It "concentrates" this data onto one or multiple communication links, and transmits it long distances back to one or more host DCS, PLC or PC-based control systems.

Alarm Inputs— The CPMS accepts up to four discrete (contact closure) inputs from the monitored system. Using an internal control engine, the CPMS can be programmed with internal set points that relate to normal operating conditions within the cathodic protection system. Should monitored parameters go outside of selected limits, or if power to the cathodic protection system is lost, the CPMS alerts of the unwanted conditions at the control system over the data link.

Expansion I/O & GPS—In addition to operating in a stand-alone mode, the CPMS integrates with any of Moore Industries' NET Concentrator System's analog, temperature, discrete and relay I/O modules (see Pages 4 and 7). When coupled with the ROM (Relay Output Module), relay outputs can control rectifiers using accurate GPS time to facilitate taking cathodic protection reference electrode readings.

Figure 1. *The stand-alone CPMS accepts four or eight analog inputs and four discrete (contact closure) inputs.*



*VIM module has one (1) 0-100VDC & three (3) 0-100mV channels

The DIN-rail mount CPMS *features rugged metal construction that stands up to the daily rigors of demanding process and factory automation applications.*

Features

- **Simultaneous dual MODBUS RTU and Ethernet communications.** The CPMS comes standard with dual MODBUS RTU (RS-485) ports and one Ethernet (MODBUS/TCP) port. An industry-standard OPC interface delivers plug-and-play integration with popular PC-based HMI/SCADA software packages.
- **MODBUS RTU master capability.** One or both of the CPMS MODBUS RTU (RS-485) ports can be configured as MODBUS master ports.
- **Installs in harsh environments.** The CPMS features rugged metal construction, superior RFI/EMI protection and an industry-best ambient operating temperature of –40°C to +85°C (–40°F to +185°F).
- **Quick and simple programming.** Using the Internet Explorer web browser, all input and operating parameters can be selected and set in minutes.
- **Data logger with battery back-up.** For historical performance trending and analysis, the CPMS can archive up to 64,000 time and date stamped values.
- **Advanced control and math capabilities.** Using ISaGRAF Control Engine Software from ICS Triplex, the CPMS delivers complex control, such as PID, and computation functions (see Page 8 for details).
- **GPS Time feature.** The GPS Time feature provides an optional method for keeping accurate time when an SNTP network is not available.

CE Conformant—EMC Directive 2004/108/EC EN61326; Low Voltage Directive 2006/95/EC EN61010

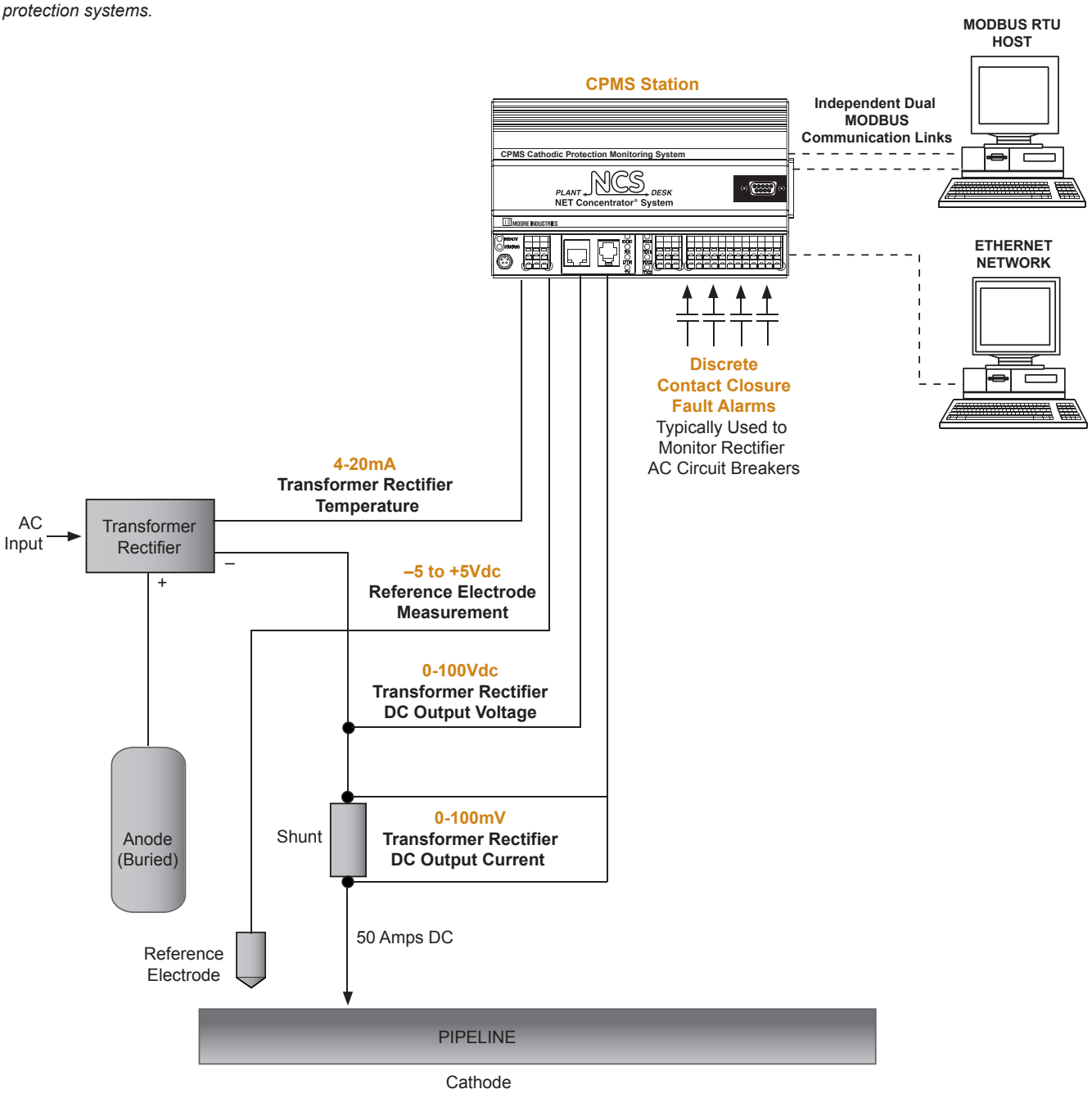
CPMS

Cathodic Protection Monitoring System

MODBUS RTU Network Master or Slave

Each CPMS MODBUS RTU (RS-485) port can be programmed to act as a master or slave within a network (each port is configured by the factory as a MODBUS slave port). When set as the master, the module performs all network polling functions. This includes polling of up to 32 (without repeaters) CPMS stations, Moore Industries NET Concentrator System stations and/or third-party MODBUS slave devices per port. The CPMS will handle up to 64 slave devices if both MODBUS RTU ports are used. With repeaters, additional CPMS stations and MODBUS slave devices can be integrated into a network to accommodate hundreds of monitoring and control points.

Figure 2. *In this CIM module example, the CPMS monitors the analog and discrete signals critical for tracking impressed current cathodic protection systems.*



System Architecture

The CPMS can be used to send just a few, or hundreds of, process signals between the field and a control system. Industrially-hardened and configurable interface stations mount throughout a site, or in dispersed locations throughout the world, to provide cost-effective distributed data acquisition and, with expansion I/O, control capabilities (see Pages 4 and 7).

The saves time and money when used in place of hard-wired schemes. Concentrate just a few, or hundreds of process signals, onto a single digital data link. This saves cable, conduit, connection, and wire tray costs. You can even use an existing Ethernet and/or MODBUS network, and eliminate the time and expense of creating a new network.

A CPMS network is made up of one or more stand-alone stations. Any combination of NCS NET Concentrator System distributed I/O expansion modules may be used within a CPMS station.

The CPMS' peer-to-host architecture provides a cost-effective method to transfer monitoring and control signals to and from a host DCS, PLC or PC-based system. CPMS stations are distributed along a MODBUS RTU serial and/or Ethernet (MODBUS/TCP) network. Once the data is delivered to the host system, third-party HMI or SCADA software packages can be used to create user interface strategies that may include data acquisition, alarm summary and management, data -logging, historical data collection and trending and supervisory control functions.

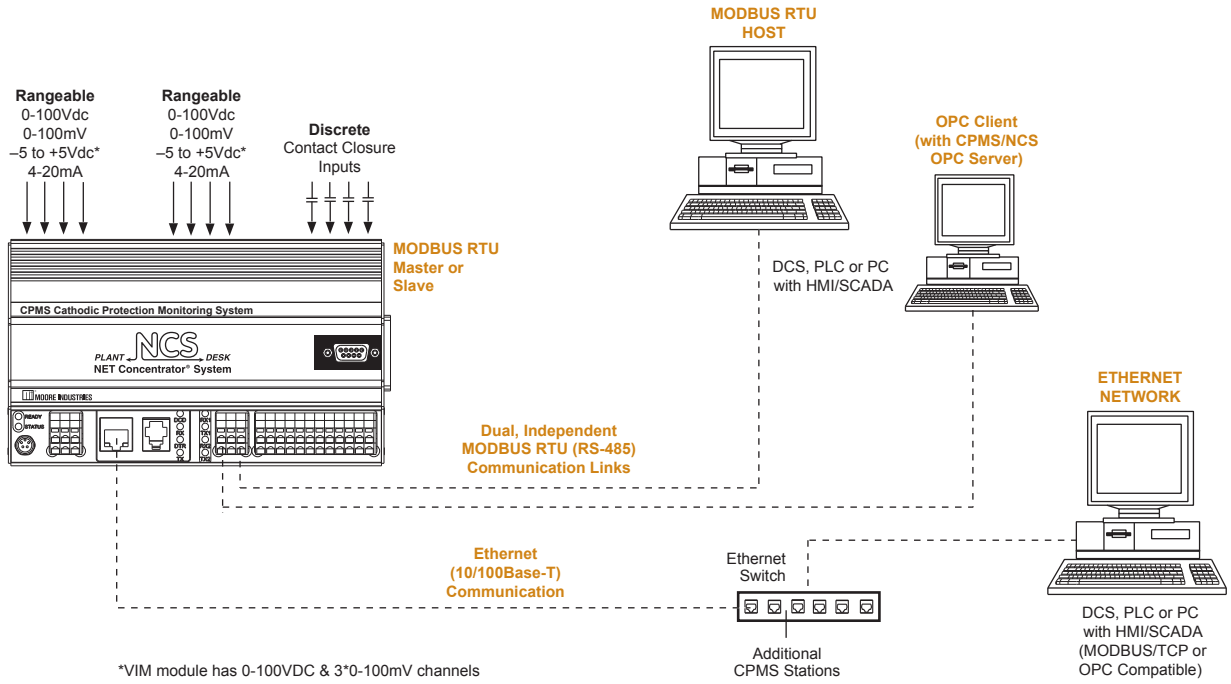
Simultaneous Dual MODBUS RTU and Ethernet Communications

The CPMS communicates its data using dual MODBUS RTU data links and standard Ethernet.

Dual MODBUS RTU Networks—When the CPMS uses MODBUS for communications, each of its two MODBUS ports can be set up as a master or as a slave. The ports can also be set up identically to provide network redundancy. Up to 64 (32 per MODBUS port) CPMS stations and/or third-party MODBUS devices can be distributed throughout a plant multi-dropped on the dual MODBUS RS-485 data links (without repeaters). Depending on the type of expansion I/O modules used, a station can accommodate just a few or as many as 124 points when using expansion I/O (see Pages 4 and 7). With repeaters, additional CPMS stations and MODBUS devices can be added to a system.

Ethernet (IEEE 802.3) Communications—The number of CPMS stations that can be used on an Ethernet (MODBUS/TCP) network is limited only by the architecture of a specific network (taking into account the physical limitations of Ethernet). Standard industrial Ethernet switches or hubs are available to interconnect large numbers of CPMS stations. Ethernet switches also minimize message collisions, improving determinism in the Ethernet network (Figure 3).

Figure 3. *Simultaneous dual MODBUS RTU and Ethernet data communications.*



CPMS

Cathodic Protection Monitoring System

Figure 4. *Expansion I/O (see Page 7) allows each stand-alone CPMS station to handle up to 124 signals in a MODBUS network. The number of CPMS stations that can be used in a Ethernet network is limited only by the architecture of a specific network (taking into account the physical limitations of Ethernet).*

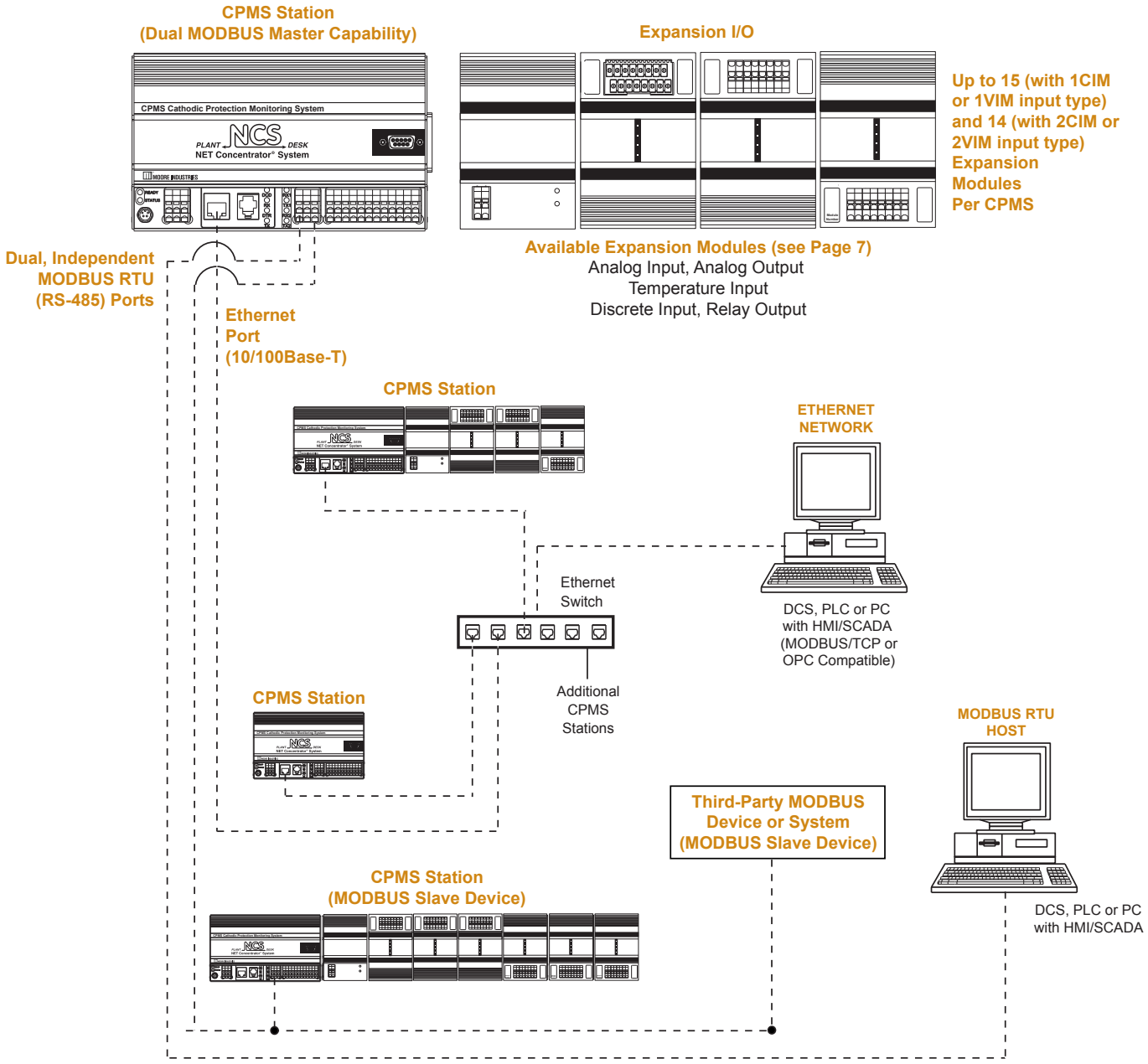


Table 1. *Long-Term Stability*

Error (% of maximum span)	Input (Years)		
	1	3	5
Current Inputs	0.08	0.14	0.18
Voltage Inputs	0.09	0.16	0.21

Table 2. *Normal Mode Rejection Ratio*

Input	Max. p-p signal injection for 60dB at 50/60Hz
Current	20mA
0 to 100mV	10mV
-5 to 5V	1V
0 to 100V	10V

Specifications

Communications

Ethernet:
Ethernet Port: 10/100Base-T supports speeds up to 100Mb/sec
Ethernet Connection Type: Standard RJ-45
Protocol Type: MODBUS/TCP

MODBUS:
Type: Two independently configurable RS-485 ports (according to EIA-485, 1993)
Protocol Type: MODBUS RTU
Baud Rates: 1200, 2400, 4800, 9600, 19.2k, 38.4k and 57.6k (userselectable; default is 9600)
Parity: Even, Odd or No Parity (1 stop bit, fixed; default is No Parity)
Device Address: 1-255 (Default is 1)
Character Timeout: 5, 10, 25, 50,100, 200 and 255 character times (user-selectable; factory set to default)
Response Delay: 1-255 character times (user-selectable; factory set to default)

Discrete Inputs:
Contact Closure: 24V@3.7mA, internally powered
Input Logic Threshold: 8V lowgoing; 16V high-going
Maximum Input Over Range: 24Vdc
Signal Response Time: 15mS

Performance

Analog Inputs:
Input Accuracy: Current, ±0.1% of 20mA span; Voltage, ±0.1% of maximum span
Stability: Refer to Table 1
Filter Configuration: 50/60Hz rejection selection (user-selectable)
Input Channel Update Time: 150msec
Data Access Time: Time to detect or effect a change in an I/O signal from a MODBUS master polling a CPMS is the sum of 3 timing components:
1. Network Communication Time: Depends on network architecture and traffic. For a PC locally networked to a CPMS, this time isnegligible
2. Scan Time: Time required by the CPMS to scan real-time data in all I/O modules connected to it (see *Module Scan Time* specification for each I/O module type and add times for each I/O module connected to the CPMS)
3. Signal Response Time: Time to convert between physical I/O and digital signals (see specification for specific I/O type)

Performance (continued)

Isolation: 1000Vrms between case, input, output, each MODBUS port, each discrete input channel and power, continuous, and will withstand a 1200Vac dielectric strength test for one minute (with no breakdown). 500Vrms between analog input channels.
Power Supply: 24Vdc, 20-30Vdc; Uac, 90-260Vac
Power Consumption: Vdc, 7.0W maximum; Uac, 8.0W maximum
Input Impedence: Current, 20 ohms, nominal; Voltage, 10 Mohms, nominal
Maximum Input Over Range: Current inputs, ±100mA, maximum; 0 to 100mV inputs, ±250Vdc, maximum; -5 to 5V inputs, ±200Vdc, maximum; 0 to 100V inputs, 200Vdc, maximum
Diagnostic Data: Refer to Table 11 in Installation Manual

Status and Fault Indicators

System:
READY: Green when ready; Off when not ready; Red during CPU reset
STATUS: Green when OK; Red when not OK
Ethernet:
LINK: Amber LED indicates a network link is present
ACT: Flashes green in response to data reception and transmission
MODBUS:
TX1: Green blinks when Transmit activity on MODBUS 1 occurs; Off when no Transmit activity on MODBUS 1
RX1: Green blinks when Receive activity on MODBUS 1 occurs; Off when no Receive activity on MODBUS 1
TX2: Green blinks when Transmit activity on MODBUS 2 occurs; Off when no Transmit activity on MODBUS 2

Status and Fault Indicators (continued)

RX2: Green blinks when Receive activity on MODBUS 2 occurs; Off when no Receive activity on MODBUS 2
TX: Green blinks when Transmit activity on Remote COM occurs; Off when no Transmit activity on Remote COM
RX: Green blinks when Receive activity on Remote COM occurs; Off when no Receive activity on Remote COM
DCD: Green when Remote COM connection is established; Off when no Remote COM connection is present
DTR: Green when modem/GSM/radio connection is active and status is OK; Off when no modem/GSM/radio connection active; Red blinks when radio alarm is occuring.

System Time Accuracy

Real Time Clock (RTC): ±1 Minute/Month (when not connected to an authoritative time source)
SNPT/GPS: <100ms of authoritative time source

Data Logger

Records up to 64,000 timestamped data points; minimum sample period, 100msec; maximum sample period, 24 hour
Non-volatile memory holds timestamped data; measurement parameters are software configurable; 18,000 data points stored in BBRAM

Ambient Conditions

Operating Range: -40°C to +85°C (-40°F to +185°F)
Storage Range: -50°C to +100°C (-58°F to +212°F)
Relative Humidity: 0-95%, non-condensing
Ambient Temperature Effect: 100ppm of full scale/°C
RFI/EMI Protection: 20V/m@80-1000MHz, 1kHz AM when tested according to EN61326 with errors of 0.5% or span or less
Noise Rejection: Common Mode: 100dB@50/60Hz; Normal Mode: Refer to Table 2

Weight

1.26 kg (44.3 oz)

CPMS

Cathodic Protection Monitoring System

Ordering Information

Unit	Input	Output	Power	Options	Housings
CPMS Cathodic Protection Monitoring System Module	**1CIM** Four rangeable cathodic protection monitoring channels with four discrete (contact closure) input channels (see Table 3) **2CIM** Eight rangeable cathodic protection monitoring channels with four discrete (contact closure) input channels (see Table 3) **1VIM** Four rangeable voltage input channels with four discrete (contact closure) input channels (see Table 4) **2VIM** Eight rangeable voltage input channels with four discrete (contact closure) input channels (see Table 4)	**COM** Redundant (Dual) MODBUS RTU (RS-485) communication links and one Ethernet (MODBUS/TCP) communication link	**20-30VDC** **UAC** Accepts any range between 90-260Vac	**-DM** Dial-up modem for programming and monitoring inputs and outputs **-GPST** GPS time receiver option allows the CPMS to set its internal time clock to GPS satellite network; SMA female connector	**DIN** Aluminum DIN-style rail-mount housing mounts on G-type (EN50035) and 35mm Top Hat (EN50022) rails

To order, specify: Unit / Input / Output / Power / Options [Housing]
Model number examples: CPMS / 2CIM / COM / 20-30VDC / -DM [DIN]

See Page 7 for Expansion I/O Ordering Information

Table 3. Input Channel Designations with Typical Measurement Descriptions for CPMS Cathodic Protection Monitoring System Module (Analog Channels 1-4 are for the 1CIM Input Type; Analog Channels 1-8 are for the 2CIM Input Type).

		Input Type	Description
Analog Channels	1	0-100Vdc	Measures DC Output Voltage of Transformer Rectifier #1
	2	0-100mV*	Measures DC Output Current of Transformer Rectifier #1
	3	–5 to +5Vdc	Measures DC Output of Reference Electrode for Rectifier #1
	4	4-20mA	User-Assigned for Specific Application or Temperature of Transformer Rectifier #1
	5	0-100Vdc	Measures DC Output Voltage of Transformer Rectifier #2
	6	0-100mV*	Measures DC Output Current of Transformer Rectifier #2
	7	–5 to +5Vdc	Measures DC Output of Reference Electrode for Rectifier #2
	8	4-20mA	User-Assigned for Specific Application or Temperature of Transformer Rectifier #2
Discrete Channels	1	Contact Closure	Monitors the Status of the AC Circuit Breaker of Transformer Rectifier #1
	2	Contact Closure	Monitors the Status of the AC Circuit Breaker of Transformer Rectifier #2
	3	Contact Closure	User-Assigned for Specific Application
	4	Contact Closure	User-Assigned for Specific Application

*Current is measured in mV across a shunt resistor.

Table 4. Input Channel Designations with Typical Measurement Descriptions for CPMS Cathodic Protection Monitoring System Module (Analog Channels 1-4 are for the 1VIM Input Type; Analog Channels 1-8 are for the 2VIM Input Type).

		Input Type	Description
Analog Channels	1	0-100Vdc	Measures DC Output Voltage of Transformer Rectifier #1
	2	0-100mV*	Measures DC Output Current of Transformer Rectifier #1
	3	0-100mV*	Measures DC Output Current of Transformer Rectifier #1
	4	0-100mV*	Measures DC Output Current of Transformer Rectifier #1
	5	0-100Vdc	Measures DC Output Voltage of Transformer Rectifier #2
	6	0-100mV*	Measures DC Output Current of Transformer Rectifier #2
	7	0-100mV*	Measures DC Output Current of Transformer Rectifier #2
	8	0-100mV*	Measures DC Output Current of Transformer Rectifier #2
Discrete Channels	1	Contact Closure	Monitors the Status of the AC Circuit Breaker of Transformer Rectifier #1
	2	Contact Closure	Monitors the Status of the AC Circuit Breaker of Transformer Rectifier #2
	3	Contact Closure	User-Assigned for Specific Application
	4	Contact Closure	User-Assigned for Specific Application

*Current is measured in mV across a shunt resistor.

System Accessories

Industrial Ethernet Switches—Intelligent multi-port communications switches automatically determine and remember where a CPMS is located, and routes messages only through the appropriate port to that Station. This minimizes network loading and improves deterministic communications over Ethernet.

Ethernet Routers—Connects multiple CPMS segments or sub-networks, forwards messages from one network to another, and provides message traffic isolation between segments.

RS-485 to RS-232C/RS-422 Converter—For MODBUS RTU (RS-485) networks, converts the RS-485 signal to either RS-232C or RS-422 standard to allow direct interface with a modem or computer-based systems, such as a PC.

RS-485 to Fiber Optics Converter—Converts the CPMS module's RS-485 signal to light for signal transmission over a fiber optic cable.

Ethernet/RS-485 Repeater—Use when applications require longer distances that what standard Ethernet and RS-485 support.

Wireless RF Modems—Where wires can't be run for practical or economic reasons, spread spectrum wireless radio (RF) communication provides accurate and reliable connectivity between sites. Distances between modems can be up to 20 miles, and repeaters can extend coverage even further (see the WLM Wireless Link Module data sheet for details).

Short Haul Modem—For MODBUS RTU (RS-485) networks, the Short Haul Modem extends the CPMS's allowable transmission distance to 10 miles (16km).

Dial-Up Modem—The Dial-Up (or Dedicated Modem) permits unlimited transmission distances over a regular switched telephone line or leased dedicated line.

Data Line (Surge) Protectors—Mounts on a G-type rail next to the CPMS to protect the data link from damaging voltage and current surges caused by lightning, welding, heavy electrical equipment and switch gears.

Instrument Power Supplies—Moore Industries offers a complete line of instrument power supplies for mounting alongside and powering the CPMS.

Expansion I/O

The CPMS integrates with any of Moore Industries' NET Concentrator System's analog, temperature, discrete and relay distributed I/O modules. Using just one CPMS module with expansion I/O, up to 124 signal inputs and outputs can be transmitted long distances on one low cost data communication link. Expansion I/O programs using the Internet Explorer web browser via Ethernet, using the PC port or using the optional dial-up modem. All operating parameters can be viewed, selected and set in minutes. See the NCS NET Concentrator System data sheet for details.

Important Note:

If the CPMS is a 4-channel input model (1CIM or 1VIM), it will supply power to one additional expansion I/O module. If additional expansion I/O modules will be used in a station, a CPM Concentrator Power Module is required (see Ordering Information below). If the CPMS is an 8-channel input model (2CIM or 2VIM), a CPM is required to power any additional NCS expansion I/O in a station. The CPM may be installed at any position within a CPMS station. It works in conjunction with the CPMS to power up to eight expansion I/O modules. If more than 8 I/O modules are used in a station, two CPMs will be needed. The CPM will only power units that are mounted to its left (from the user's front view perspective, this would be the right side of the CPM).

For specifications and additional information on expansion I/O, see "Module Types" in the NCS NET Concentrator System data sheet.

Ordering Information (Continued)

Unit	Module Type	Input/Output Configuration	Power	Options	Housing
INPUT/OUTPUT MODULES (Up to 15 Maximum per CPMS with 1CIM or 1VIM input, 14 with 2CIM or 2VIM input)					
AIM* Analog Input Module	**IO** Input/Output Module	**AI4** Four Configurable Analog Input Channels (0-20mA, -10V to 10V)	**IP** Input and Output Modules are powered by the CPMS or CPM Module (see the note above)	**-NB** Spare or replacement Input/Output Module Electronics without the Mounting Base **-NM** Spare or replacement Mounting Base without Input/Output Module Electronics	**DIN** Aluminum DIN-style rail-mount housing mounts on G-type (EN50035) and 35mm Top Hat (EN50022) rails
AOM* Analog Output Module	**IO** Input/Output Module	**AO4** Four Configurable Analog Output Channels (0-20mA, 0-10V)			
TIM* Temperature Input Module	**IO** Input/Output Module	**TI4** Four Configurable Temperature Input Channels (RTD, T/C, mV, ohms, Pot; see Table 1 for details)			
DIM* Discrete Input Module	**IO** Input/Output Module	**CC8** Eight Discrete Contact Closure Input Channels (24V/3.7mA, internally-powered)			
		HV8 Eight Discrete Voltage Input Channels (High Range: 120/240Vac)			
		LV8 Eight Discrete Voltage Input Channels (Low Range: 30Vac/Vdc)			
ROM* Relay Output Module	**IO** Input/Output Module	**RNC8** Eight (Normally Closed) Relay Output Channels, SPST relay, 1 form A , rated 2A@250Vac, 50/60Hz, non-inductive or 2A@30Vdc			
		RNO8 Eight (Normally Open) Relay Output Channels SPST relay, 1 form B, rated 2A@250Vac, 50/60Hz, non-inductive or 2A@30Vdc			
POWER SUPPLY MODULE (See Important Note Above)					
CPM Concentrator Power Module	**20-30Vdc**	**NCSPWR** Up to Eight I/O Modules (See Important Note above)		No Options	**DIN** (see description above)

*Input/Output Modules come with a Mounting Base unless the **-NB** or **-NM** option is specified.

To order, specify: Unit / Module Type / Input/Output Configuration / Power / Options [Housing]
Model number examples (see the NCS NET Concentrator System data sheet for additional examples and information):

Analog Output Module
AOM / IO / AO4 / IP [DIN]

Temperature Input Module
TIM / IO / TI4 / IP [DIN]

System Advantages

Fast and Simple Set Up

The CPMS employs a web browser-based configuration interface which is used to configure and retrieve information. You can change operating parameters over your intranet (or the internet) from any PC, with proper security password clearance. Programming can be performed over the Ethernet data link, using the PC port or via the optional dial-up modem port.

Standard OPC Server

When installed on a PC, an OPC (OLE for Process Control) data server acts as a centralized location for communicating with local CPMS stations, and remote CPMS subnets. Our standard topology lets you run our OPC server on computer-based systems along with OPC-compliant servers from other manufacturers.

Compatible with HMI and SCADA Software

Once the data is delivered to the host PC or DCS, leading third-party HMI software packages can be used to create custom data acquisition and control strategies.

Data Logging Capabilities

CPMS stations are capable of storing 64,000 points of time-stamped data. A station can be configured to store data from one, or all, of its input channels. Sampling rate is user-selectable for any period between once every 100 milliseconds, to once every 24 hours.

Advanced Control and Math Capabilities

Using ISaGRAF Control Engine Software from ICS Triplex (available from Moore Industries), the CPMS can be configured to deliver additional control, computation, and functional capabilities including:

- The ability to act as a single or multiple PID loop controller with simple, cascade, split action and inverse capabilities.
- Sequential control language programmability based on IEC 61131-3, including ladder, function block diagrams, and structured text, sequential flow charts and instruction list.
- Complex math capabilities including: add, subtract, multiply, divide; absolute value; square root; integrate and totalize; exponential; natural logarithm, base$_{10}$ logarithm; comparison; sine, cosine and tangent; arc sine, arc cosine and arc tangent.

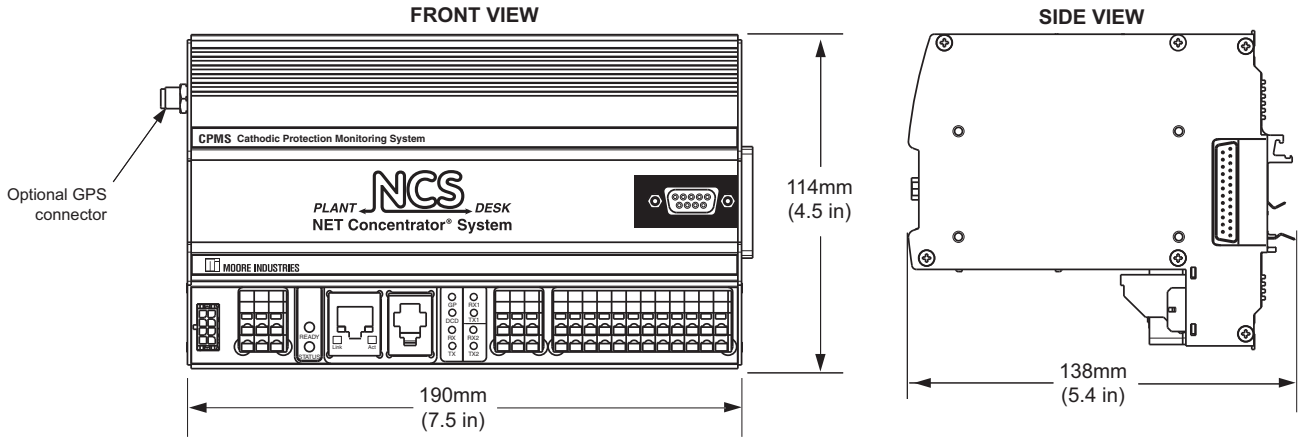
On-Line Diagnostics Speed Troubleshooting

The CPMS continuously monitors its inputs, the data link and itself, to identify and report potential problems to the control system.

Precise Digital Input and Output Trimming

To produce highly accurate readings, analog input channels and analog output channels (with expansion I/O) can be precisely trimmed to essentially eliminate measurement errors introduced by the input and compensate for readout device inaccuracies.

Figure 4. *CPMS Dimensions (see the NCS NET Concentrator System data sheet for installation dimensions for expansion I/O).*



По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72
Брянск (4832)59-03-52
Вологда (8172)26-41-59
Иваново (4932)77-34-06
Калининград (4012)72-03-81
Киров (8332)68-02-04
Курск (4712)77-13-04
Москва (495)268-04-70
Нижний Новгород (831)429-08-12
Орел (4862)44-53-42
Пермь (342)205-81-47
Самара (846)206-03-16
Смоленск (4812)29-41-54
Тверь (4822)63-31-35
Тюмень (3452)66-21-18
Челябинск (351)202-03-61
Астана +7(7172)727-132
Владивосток (423)249-28-31
Воронеж (473)204-51-73
Ижевск (3412)26-03-58
Калуга (4842)92-23-67
Краснодар (861)203-40-90
Липецк (4742)52-20-81
Мурманск (8152)59-64-93
Новокузнецк (3843)20-46-81
Оренбург (3532)37-68-04
Ростов-на-Дону (863)308-18-15
Санкт-Петербург (812)309-46-40
Сочи (862)225-72-31
Томск (3822)98-41-53
Ульяновск (8422)24-23-59
Череповец (8202)49-02-64
Белгород (4722)40-23-64
Волгоград (844)278-03-48
Екатеринбург (343)384-55-89
Казань (843)206-01-48
Кемерово (3842)65-04-62
Красноярск (391)204-63-61
Магнитогорск (3519)55-03-13
Набережные Челны (8552)20-53-41
Новосибирск (383)227-86-73
Пенза (8412)22-31-16
Рязань (4912)46-61-64
Саратов (845)249-38-78
Ставрополь (8652)20-65-13
Тула (4872)74-02-29
Уфа (347)229-48-12
Ярославль (4852)69-52-93

Эл. почта: mpr@nt-rt.ru || Сайт: http://moore.nt-rt.ru/