
V1.1 2010.2.2

RemoDAQ-8054

User's Manual



Beijing Gemotech Intelligent Technology Co., Ltd

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Acknowledgments

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Additional Information and Assistance

1. Visit the **gemotech** websites at **www.gemotech.cn** where you can find the latest information about the product.
2. Contact your distributor, sales representative, or **gemotech** 's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

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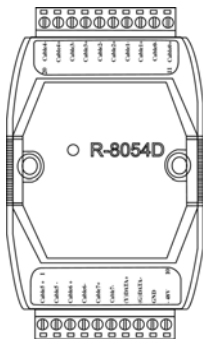
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1 Introduction

The RemoDAQ-8000 Series is a set of intelligent sensor to computer interface modules containing built in microprocessor. They are remotely controlled through a simple set of commands issued in ASCII format and transmitted in RS-485 protocol. They provide signal conditioning, isolation, ranging, A/D and D/A conversion, data comparison, digital communication, timer/counter, wireless communication, collection AC and other functions.

RemoDAQ-8054 is the 8-channel cable ON/OFF detection module that are used in telecommunications profession specially, LED shows the ON/OFF state of 8-channel cable, each channel has a LED state of instructing this road. When cable shorts , LED OFF;When cable broken road, LED ON. Its power supply also with other module is difference, for 44~58Vdc.

1.1 Pin Assignment & Specifications



Channel: 8

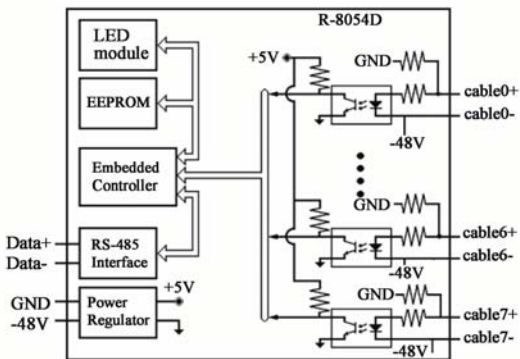
Power: 44V~58VDC

Power consumption: 1.6W

Operating Temperature: -20 ~ 70° C

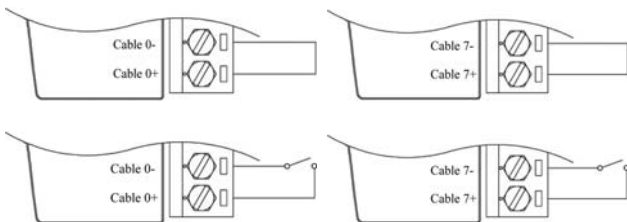
Humidity: 5 ~ 95%, non-condensing

1.2 Block Diagram



1.3 Application Wiring

Dry Contact Input



1.4 Default Setting

- Address: 01
- Baudrate: 9600 bps
- Type: 40
- Checksum disable
- JP1 disconnection: disconnection INIT* pin with the GND pin, natural work mode

1.5 Jumper Setting

JP1: Select INIT* pin with the GND pin whether connect
 Disconnection: Don't connect INIT* pin with the GND pin
 Connection: Connect INIT* pin with the GND pin

1.6 Install List

Baudrate Setting (CC)

Code	03	04	05	06	07	08
Baudrate	1200	2400	4800	9600	19200	38400

Type Setting (TT)

Type=40

Data format setting (FF)

7	6	5	4	3	2	1	0	
0	*1	0						

*1: Checksum: 0=Disabled 1=Enable

Read DIO data format

\$AA6: (Data1) (Data2)

@AA Data: (Data1) (Data2)

	Data1		Data2	
RemoDAQ-8054	DI(0-7)	00 ~ FF	00	00

2 Initialization & Installation

2.1 Installation Guideline

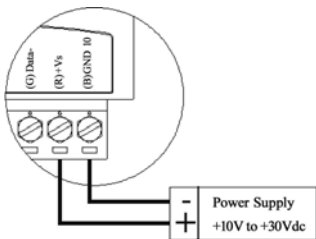


Figure 2-1 Power Supply Connections

We advise that the following standard colors (as indicated on the modules) be used for power lines:

+Vs (R)	Red
GND (B)	Black

We advise that the following standard colors (as indicated on the modules) be used for the communication lines:

DATA+ (Y)	Yellow
DATA- (G)	Green

2.2 Software Installation

1. If you have already installed “RemoDAQ-8000 Utility” then skip other steps.
2. Backup your software diskette.
3. Insert “RemoDAQ-8000 Utility” disc into CD-ROM:
4. Change drive to the path of CD-ROM. For example,

- your drive of CD-ROM is F: then change the drive to F:
5. Find the setup of “RemoDAQ-8000 Utility” and run it.
 6. Please follow the steps of setup program then you can successfully install the RemoDAQ-8000 Utility

2.3 Basic configuration and hook-up

Before placing a module in an existing network, the module should be configured. Though all modules are initially configured at the factory, it is recommended to check that the baud rate is set correctly.

Default Factory Settings

Baud rate: 9600 Bit/sec.

Address: 01 (hexadecimal)

Checksum: disable

The basic hook-up for module configuration is shown below.

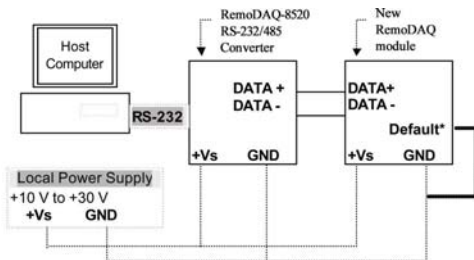


Figure 2-2 Layout for Initialization the RemoDAQ module
The following items are required to configure a module: a

RemoDAQ converter module, a personal computer with RS-232 port (baudrate set to 9600) and the RemoDAQ utility software.

Configuration with the RemoDAQ Utility Software

The easiest way to configure the RemoDAQ module is by using the RemoDAQ utility software: an easy-to-use menu-structured program will guide you through every step of the configuration.

Configuration with the RemoDAQ command set

RemoDAQ modules can also be configured by issuing direct commands from within a terminal emulation program that is part of the RemoDAQ utility software.

The following example guides you through the setup of an analog input module. Assume that RemoDAQ-8054 still has its default settings (baud rate 9600 and address 01h). Before the module is reconfigured, it is first requested to send its default settings.

To change the configuration setting of the analog input module, the following command is issued:

```
%0107400600(cr)
```

% = change configuration

01 = target module at address 00 to:

07 = change address to 07 hexadecimal

40 = set input range to Type 40

06 = set baud rate to 9600

00 = set integration time to 50 ms (60 Hz)

disable checksum

set data format to engineering units

(See Chapter 3, Command Set for a full description of the syntax of the configuration command for module)

When the module received the configuration command it will respond with its new address: !07(cr)

NOTICE: *All reconfiguration except changing of baud rate and checksum values can be done dynamically, i.e. the modules need not to be reset. When changing the baud rate or checksum, these changes should be made for all connected devices. After reconfiguration, all modules should be powered down and powered up to force a reboot and let the changes take effect.*

2.4 Baudrate and Checksum

RemoDAQ modules contain EEPROMs to store configuration information and calibration constants. The EEPROM replaces the usual array of switches and pots required to specify baudrate, input/output range etc.

All of the RemoDAQ modules can be configured remotely through their communication ports, without having to physically alter pot or switch settings.

Forcing the module in the INIT* state does not change any parameters in the module's EEPROM. When the module is in the INIT* state with its INIT* and GND terminals shorted, all configuration settings can be changed and the module will respond to all other commands normally.

Changing Baud rate and Checksum

Baud rate and checksum settings have several things in common:

- They should be the same for all modules and host computer.
- Their setting can only be changed by putting a module in the INIT* state.
- Changed settings can only take effect after a module is rebooted

To alter baudrate or checksum settings you must perform the following steps:

- Power on all components except the RemoDAQ Module.
- Power the RemoDAQ module on while shorting the INIT* and GND terminals
- Wait at least 7 seconds to let self calibration and ranging take effect.
- Configure the checksum status and/or the baud rate.
- Switch the power to the RemoDAQ Module OFF.
- Remove the grounding of the INIT* terminal and power the module on.
- Wait at least 7 seconds to let self calibration and ranging take effect.
- Check the settings (If the baud rate has changed, the settings on the host computer should be changed accordingly.)

3 Command Set

Introduction

To avoid communication conflicts when several devices try to send data at the same time, all actions are instigated by the host computer. The basic form is a command/response protocol with the host initiating the sequence.

When modules are not transmitting they are in listen mode. The host issues a command to a module with a specified address and waits a certain amount of time for the module to respond. If no response arrives, a timeout aborts the sequence and returns control to the host.

Changing RemoDAQ's configuration might require the module to perform auto calibration before changes can take effect. Especially when changing the range, the module has to perform all stages of auto calibration that it also performs when booted. When this process is under way, the module does not respond to any other commands.

The command set includes the exact delays that might occur when modules are reconfigured.

Syntax

[delimiter character][address][command][data][checksum]
[carriage return]

Every command begins with a delimiter character. There are four valid characters: a dollar sign \$, a pound sign #, a percentage sign % and an at sign @.

The delimiter character is followed by a two-character address (hexadecimal) that specifies the target module. The actual two-character command follows the address. Depending on the command, an optional data segment follows the command string. An optional two character checksum may be appended to the total string. Every command is terminated by a carriage return (cr).

Calculate Checksum:

1. Calculate ASCII sum of all characters of command(or response) string except the character return(cr).
2. Mask the sum of string with 0ffh.

Example:

Command string: \$012(cr)

Sum of string=' '\$'+ '0'+ '1'+ '2'=24h+30h+31h+32h=B7h

The checksum is B7h, and [CHK] = "B7"

Command string with checksum: \$012B7(cr)

Response string: !01200600(cr)

Sum of string: '!'+ '0'+ '1'+ '2'+ '0'+ '0'+ '6'+ '0'+ '0'
=1h+30h+31h+32h+30h+30h+36h+30h+30h=1AAh

The checksum is AAh, and [CHK] = "AA"

Response string with checksum: !01200600AA(cr)

General Command Sets			
Command Syntax	Command Name	Command Description	Notes
%AANNTTCCFF	Configuration	Sets the address,input range, baudrate,dataformat,checksum status	3.1
\$AA2	Configuration status	Return the configuration parameters for the module	3.2
\$AA6	Digital I/O value	Returns the values of the digital I/O channel in the addressed module	3.3
\$AAF	Read firmware version	Return the firmware version code	3.4
\$AAM	Read module name	Return the module name	3.5
@AA	Dight I/O status	Returns the status of the digital I/O channel in the addressed module.	3.6
~AAO(data)	Set module name	Return correct or error	3.7

3.1 %AANNTTCCFF

Name: Configuration

Description: Sets address, type code, baudrate, data format

Syntax: %AANNTTCCFF(cr)

% delimiter character.

AA address of setting module (00-FF)

NN New address (00-FF)

TT New type

CC New baudrate

FF New data format

When changing baudrate or checksum, we should INIT* termination land.

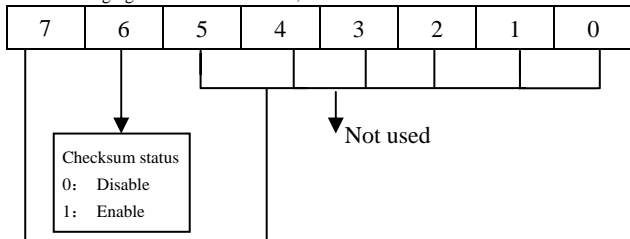


Figure 3-1 Data format setting of AI modules

Response: !AA(cr) if the command was valid.

?AA(cr) if an invalid operation was entered. If

the INIT* terminal was not grounded when attempting to change baud rate or checksum settings.

Syntax error or communication error may get no response.

! command is valid.

? command is invalid.

AA address of setting module (00-FF)

(cr) is the terminating character, carriage return (0Dh)

Example:

Command: %0102400600(cr) Response: !02(cr)

Change address from 01 to 02,type 40 , baud rate 9600, integration time 50 ms (60 Hz), engineering units data format and no checksum checking or generation.

The response indicates that the command was received.

Table 3-1 Input Rang Codes (Type Code)

TT=40

Table 3-2 Baudrate Code

Code	03	04	05	06	07	08
Baudrate	1200	2400	4800	9600	19200	38400

3.2 \$AA2

Name: Configuration Status

Description: The command requests the return of the configuration data from the analog input module at address AA.

Syntax: \$AA2(cr)

\$ delimiter character.

AA address of reading module(00~FF)

2 the Configuration Status command.

(cr) the terminating character, carriage return (0Dh).

Response: !AATTCCFF(cr) if the command is valid.

?AA(cr)if an invalid operation was entered.

Syntax error or communication error may get no response.

! command is valid.

? command is invalid.

AA address of module(00~FF)

TT represents the type code.

CC represents the baud rate code.

FF data format

(Also see the %AANNTTCCFF configuration command)

Example:

Command: \$012 Response: !01400600

Read address 01 configuration,return success.

3.3 \$AA6

Name: Read Digital I/O Value

Description: Asks a specified input module to return the status of the digital I/O channel.

Syntax: \$AA6 (cr)

\$ delimiter character.

AA address of reading module(00~FF)

6 read digital I/O statues command.

(cr) is the terminating character, carriage return (0Dh).

Response: !(data)(cr) if the command is valid.

?AA(cr) if an invalid operation was entered.

Syntax error or communication error may get no response.

! command is valid.

? command is invalid.

data digital input/output value

Example:

Command: \$016 Response: !0F0000

Read address 01 DIO state, return 0F0000

3.4 \$AAF

Name: Read Firmware Version

Description: The command requests the module at address AA to return the version code of its firmware.

Syntax: \$AAF (cr)

\$ delimiter character.

AA address of reading module(00~FF)

F identifies the version command.

(cr) is the terminating character, carriage return (ODh)

Response: !AA(data)(cr) if the command is valid.

?AA (cr) if an invalid command was issued.

Syntax error or communication error may get no response.

! command is valid.

? command is invalid.

AA address of response module(00~FF)

Data is the version code of the module's firmware.

Example:

Command: \$01F Receive: !0120051201

Read address 01 firmware version, return version 20051201

Command: \$02F Receive: !0120040101

Read address 02 firmware version, return version 20040101

3.5 \$AAM

Name: Read Module Name

Description: The command requests the module at address AA to return its name.

Syntax: \$AAM (cr)

\$ delimiter character.

AA address of reading module(00~FF)

M the Read Module Name command.

(cr) is the terminating character, carriage return (ODh)

Response: !AA(data)(cr) if the command is valid.

?AA(cr) if an invalid command was issued.

Syntax error or communication error may get no response.

! command is valid.

? command is invalid.

AA address of response module(00~FF)

data the name of the module

Example:

Command: \$01M Receive: !018054

Read address 01 module name, return name 8054.

3.6 @AA

Name: Read Digital I/O Status

Description: The addressed of module is instructed to return the value of its DI/O channels.

Syntax: @AA (cr)

@ delimiter character.

AA address of reading module(00~FF)

(cr) represents terminating character, carriage return (0Dh).

Response: >(data)(cr) if the command was valid

?AA(cr) if an invalid command was issued.

Syntax error or communication error may get no response.

! command is valid.

? command is invalid.

data DIO status

Example:

Command: @01 Receive: >0F00

Read address 01 DIO state, return 0F00, express Cable0—Cable3 channel open circuit, Cable4—Cable7 channel short circuit

3.7 ~AAO(Data)

Name: Set Module Name

Description: Set the module name and return success or error.

Syntax: ~AAO(Data) (cr)

\$ delimiter character.

AA address of setting module(00~FF)

O Set Module Name command.

Data new name for module, max 6 characters

(cr) is the terminating character, carriage return (ODh)

Response: !AA(cr) if the command is valid.

?AA(cr) if an invalid command was issued.

Syntax error or communication error may get no response.

! command is valid.

? command is invalid.

AA address of response module(00~FF)

Example:

Command: ~01O8054 Receive: !01

Set address 01 module name to 8054, return success.

Command: \$01M Receive: !018054

Read address 01 module name, return 8054.