SM100 Series HART Smart Converter

user's manual

SM100-A (B) HART communications devices may be smart converter (all by field test)

1) Rosemount Series HART instruments		
3300 radar level gauge	1700 (2700) Transmitter	8700 Series Magnetic Flowmeter
5400 Series radar level gauge	248 a temperature transmitter off	Multivariable Transmitter
1151 Series Pressure Transmitter	8800C Vortex Flowmeter	
2) Department of Siemens HART instruments		
MG6000 electromagnetic flow meter	FUS06 ultrasonic flowmeter	FUS010 ultrasonic flowmeter
MASS6000 mass flowmeter	7ME5033 gas flow meter	7ME5034 gas flow meter
HR02 (FN34) level meter		
3) Cologne Series HART instruments		
IF100 electromagnetic flowmeter	IF300 electromagnetic flowmeter	IF090 electromagnetic flowmeter
OPTISWIRL 4070 meter	BM700 radar level gauge	VFC070 gas flow meter
UFC500 flowmeter		
4) ABB series HART instruments		
WateMasterFEX10 flowmeter	FEP300 flowmeter	2600T Pressure Transmitters
FEP 300 meter	FEH 300 meter	AM54 rotameter
5) E + H series HART devices		
NMS 53X Series flow meters	FMR 53X Series Level Meter	FMU 40X Series level meter
PDM 23X (26X) differential pressure transmitter	FMR 23X (24x) series level gauge	Mass flow meter Prowirl 72
6) series Yokogawa HART instruments		
YOKOGAWA AX Series electromagnetic flow meter EJA Series pressure transmitter		
7) other types of HART instruments		
LD301 Series Intelligent pressure gauge	MSP400R ultrasonic level transmitter	VT5000 Fisher Porter Vortex Flowmeter
F56 series metal tube float flow meter	HT50 series of metal tube	Radar level gauge VAG
Toshiba electromagnetic flow meter		

1, SM100 series HART Smart Converter Introduction

1.1 Introduction

HART Smart SM100 series converters are employed ARM microprocessor, HART protocol modem ASIC binding lot of practical experience and developed products. Which is designed according to the requirements of industrial products, with high reliability and stability. Smart converter with standard RS232 and RS485, with a smart meter can be performed with the HART protocol or transparent data transmission protocol is converted to MODBUS_RTU read data, to ensure real-time data transmission.

Bell202 HART protocol uses frequency shift keying (FSK) standard, the superposition modulated digital signal on the basis of 4 ~ 20mA, so that the HART protocol while not interfering instrument 4 ~ 20mA analog signal allows two-way data communication. SM100 series of intelligent digital signal converter is a bidirectional analog signal converter intelligent modem.

1.2 Features

- With a standard RS232 and RS485 communication interface, you can configure the parameters, change the baud rate and parity bits. It is independent of the communication speed 1200 HART bus, thereby increasing the operating speed of the entire system.
- A common module housing industrial use, easy installation and commissioning.
- With a special configuration software can configure the parameters of the SM100 series intelligent switch, and may be data communication with the smart meter smart HART protocol converter.
- MODBUS_RTU supports standard protocols.
- It supports multiple simultaneous connections HART protocol intelligent instrument.
- HART protocol supports a variety of special intelligent instrument, and customize special HART instrument reading instruction.

1.3 The main parameters

- Power supply input voltage: DC 12 ~ 24V, the power supply ripple is not more than 200mA, the current required 100mA.
- Housing dimensions: length 103 mm × width 71 mm × a high 43 mm.
- Working temperature: -20 ℃ ~ + 80 ℃.
- Relative humidity: 10% to 80%.

2, SM100 series HART smart switches and indicator functions physical map

2.1 physical map

2.2 Product Selection

model	Applications
SM100-A	RS232 Collector interface is adapted to close and SM100-A Converter communication bus mode need not be employed, collector (or PLC) + SM100-A + An intelligent switch or a plurality of HART Protocol smart meters
SM100-B	RS485 Interface is adapted to collector distance and SM100-B Converter communications, networking mode bus may be employed, collector (or PLC) + Multiple SM100-B + An intelligent switch or a plurality of HART Protocol smart meters
SM100-AB	RS232 Interface with RS485 The interface is independent of the communication channel, with a HART Converter, data communication can be performed, two different systems with different acquisition collector (or PLC) + SM100-AB + An intelligent switch or a plurality of HART Protocol smart meters
+ D Built-in power supply The main power supply is less than a DC 24V And then DC 24V Wire HART meter	

Introduction 2.3 port

- GND, POW: power interface terminal, POW the positive supply, GND negative one.
- GND, R232RX, R232TX: RS232 communication interface terminal.
- BR485D-, BR485D +: RS485 communication interface A terminal.
- AR485D-, AR485D +: RS485 communication interface B terminals.
- LOOP1 +, LOOP1- ~ LOOP4 +, LOOP4-: four groups of HART device communication interface terminal.

2.4 indicators

- POW Power Indicator: After power is on.
- RS485 communication indicator: flashes when RS485A serial port for data exchange.
- RS232 communication indicator: flashes when RS232 serial port for data exchange.
- HART communication indicator: flashes when data exchange with the HART converter HART instruments.

3, SM100 series HART intelligent switch wiring diagram and precautions

3.1 wiring diagram with different meters

(1) and the two-wire HART protocol smart meter wiring diagram

(2) And four-wire HART protocol smart meter wiring diagram

(3) simultaneously with the two-wire and four-wire HART protocol smart meter wiring diagram

(. 4) HART converter with built-in two-wire HART protocol DC24V smart meter wiring diagram

3.2 the difference between four-wire and two-wire HART protocol instrument

- Four-wire HART protocol Instrumentation: four-wire HART devices are individually powered, the power cord 4 ~ 20mA input and output lines are separated.
- Wire HART protocol Instrumentation: wire HART device and its power cord 4 ~ 20mA input and output lines are two common lines.

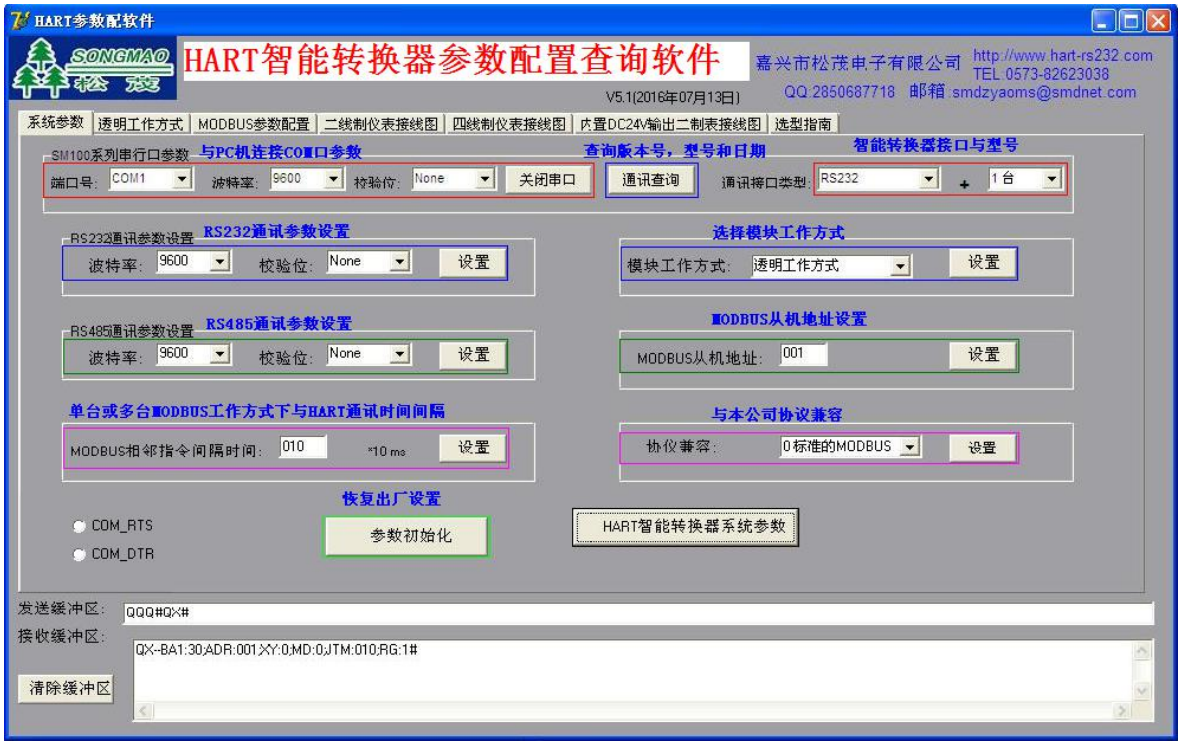
3.3 HART intelligent converter connected to more than one meter HART protocol debugging steps

- '-1' is connected to a smart meter station HART protocol, HART address defaults to zero, you need not be modified.
- '4' is connected to a smart meter 4 HART protocol, HART address to be changed to four, when all the current sensor outputs are HART 4mA, then only a 250Ω resistor resistance.
- '8' is connected to the smart meter 8 HART protocol, HART address to be changed to 1,2,3,4,5,6,7,8, when all the current sensor outputs are HART 4mA, simply resistance then a 250Ω resistor.
- After using USB / RS232 converter, then the connection RS232 / RS485 converter, then the RS232 / RS485 converter requires power DC5V connected.

- Siemens PLC programming cable, USB-PPI (USB-RS485 cable) is 3 feet D +, 8 feet D-.

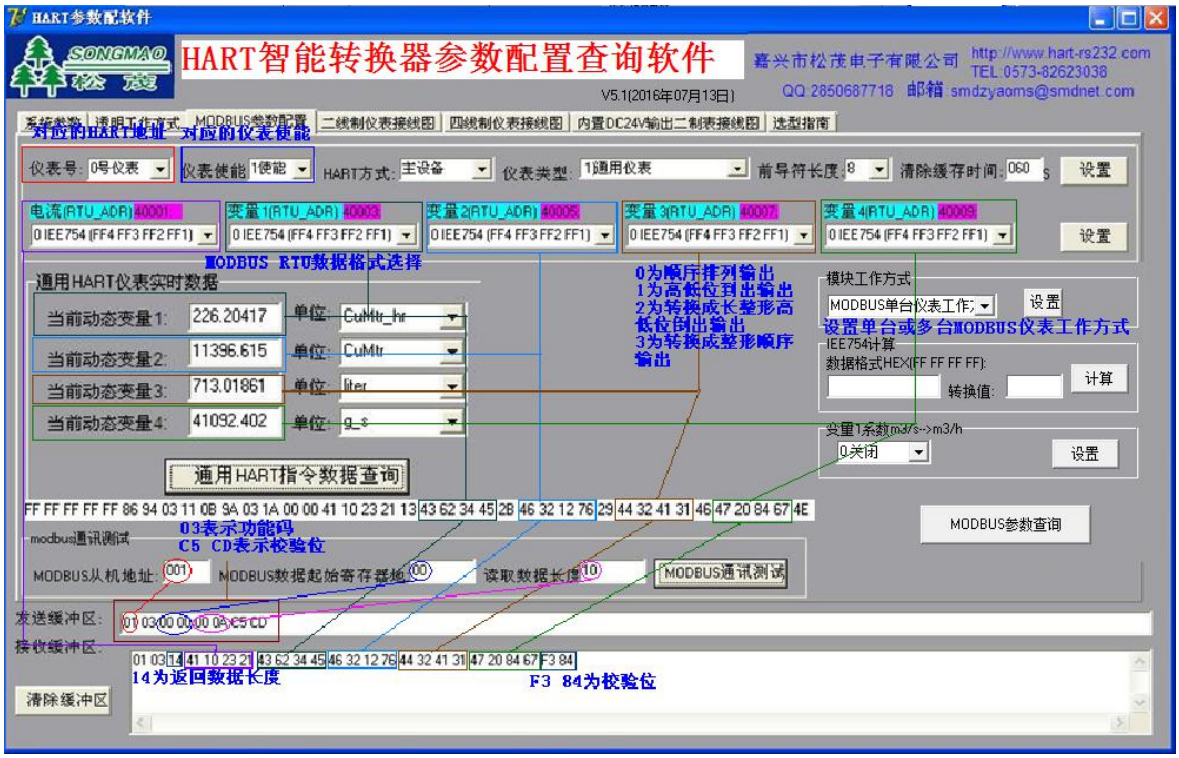
4, and the configuration software Application Procedure

4.1 System Parameters Interface Features



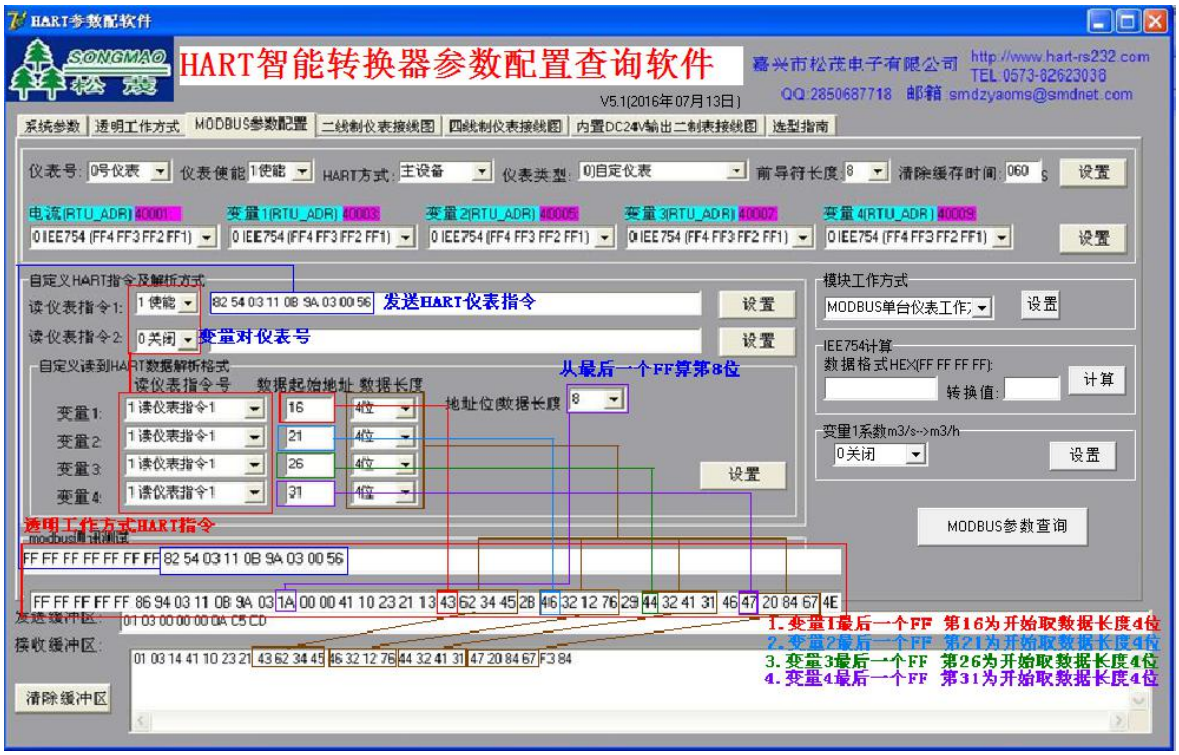
4.2 transparent interface works Features

4.3 Universal HART Protocol Interface Features

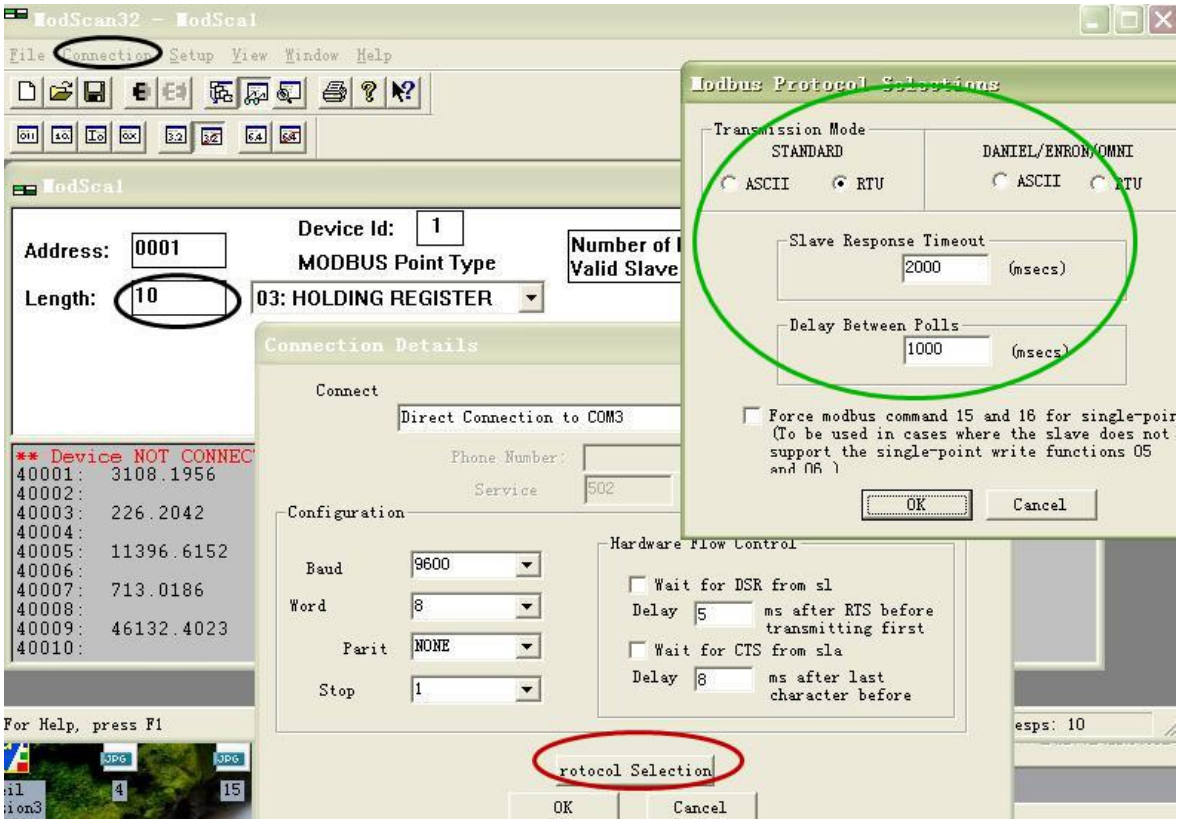


4.4 Special Features HART protocol interface

4.5 Custom HART Protocol Interface Features



4.6 test software to read the data ModScan32



5, the address data register

Instrument No. 0 Current 40001 variables 140 003 Variable 240 005 Variable 340 007 Variable 440 009 meter No. 1
current 40011 variables 140 013 Variable 240 015 Variable 340 017 Variable 440 019 meter 2 Current 40021 variables
140 023 Variable 240 025 Variable 340 027 Variable 4 40,029 meter 3 current 40031 variables 140 033 variable 240
035 variable 340 037 variable 440 039 meter 4 current 40041 variables 140 043 variable 240 045 variable 340 047
variable 440 049 meter 5 current 40051 variables 140 053 variable 240 055 variable 340 057 variable 440059 meter 6
current 40061 variables 140 063 variable 240 065 variable 340 067 variable 440 069 meter 7 current 40071 variables
140 073 variable 240 075 variable 340 077 variable 440 079 meter 8 current 40081 variables 140 083 variable 240 085
variable 340087 variable 440 089