iSN-101 / iSN-104

Liquid Leak Detection Module

User Manual



iSN-101



iSN-101/DIN



iSN-104

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Edited by Jerry Tseng

Warranty

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

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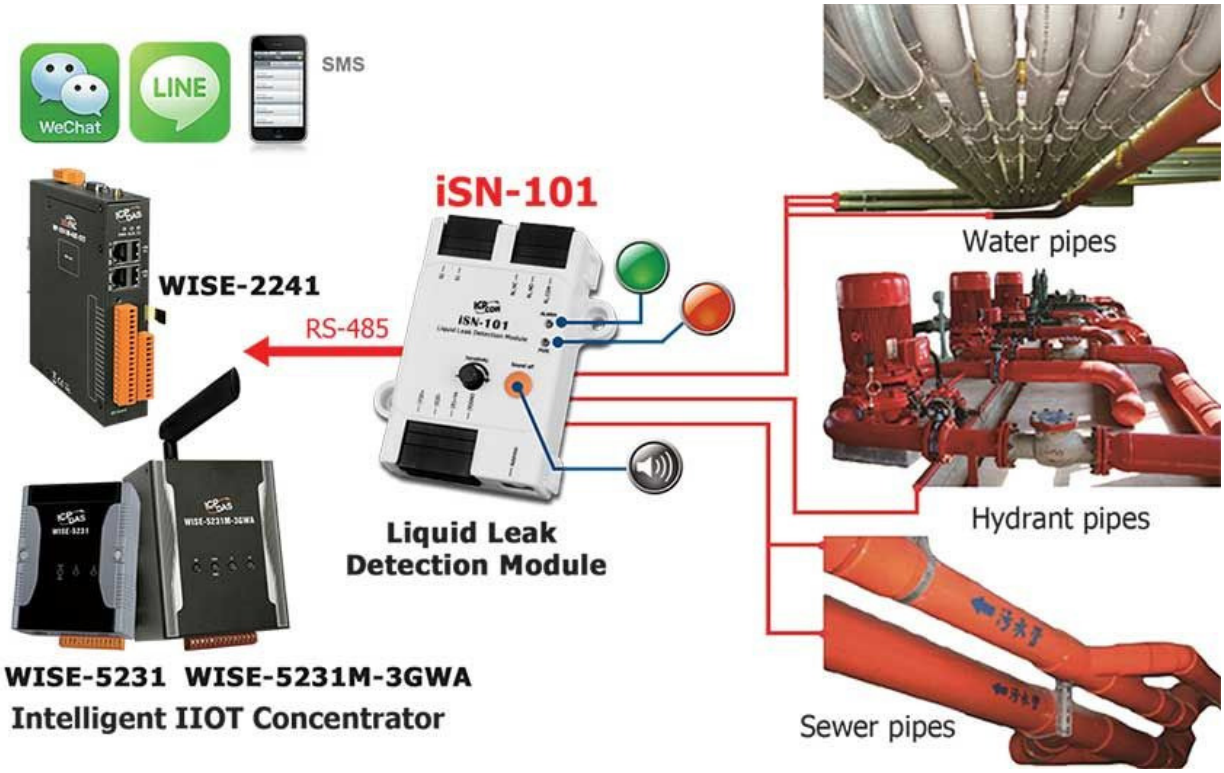
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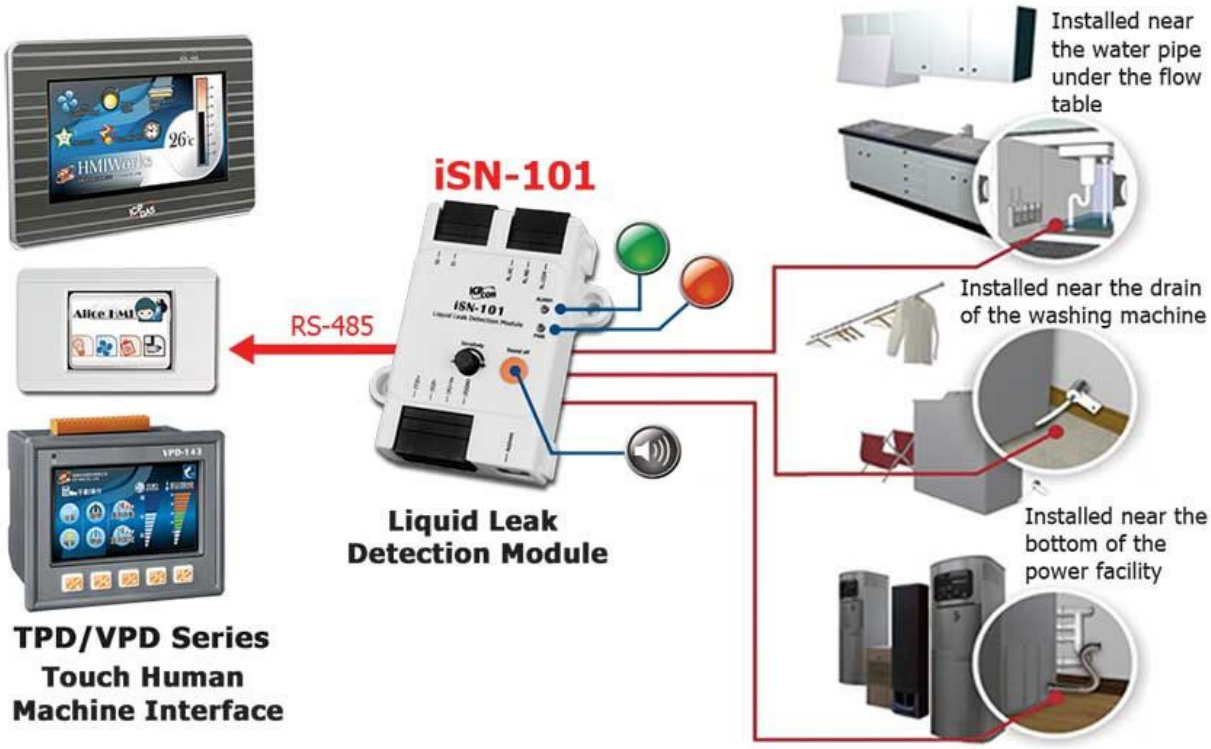
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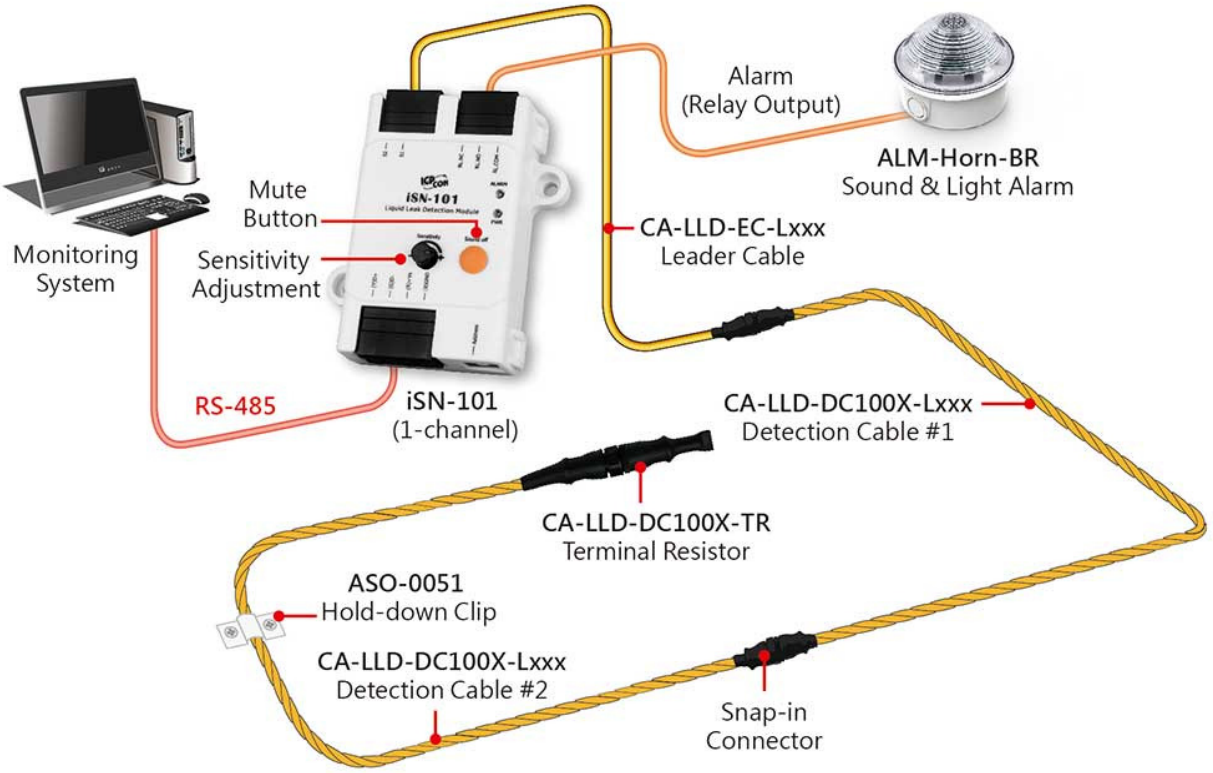
1. Introduction

The iSN-101/104 Liquid Leak Detection Module is a low-cost intelligent liquid leak detection device that iSN-101 can be used to directly control Relay Output. No additional conversion module is needed and the iSN-101/104 can be easily integrated with a variety of monitoring systems to achieve remote alarm and remote device control. The iSN-101/104 Liquid Leak Detection module can be used to monitor double-core leader cable lengths of up to 500 meters, and can be used with both the Liquid Leak Detection Cable and its included Leakage Probe. If liquid is detected, the controller immediately activates the output relay - the normally open, normally closed passive output signal. The module can be easily integrated with other collection hosts connected to the network. The iSN-101/104 is suitable for real-time leak detection in critical locations, such as computer room base stations, warehouses, libraries, museums and industrial sites, and also for air handling equipment, refrigeration units, liquid containers, or pump tanks, etc., where there is a need to monitor any leakage of the equipment.

When required, communication with the iSN-101/104 can be programmed based on the Modbus RTU protocol, with the added benefit that different addresses can be configured via hardware to allow for Modbus RTU communication.




iSN-101
RS-485
Liquid Leak
Detection Module
TPD/VPD Series
Touch Human
Machine Interface
Installed near
the water pipe
under the flow
table
Installed near the drain
of the washing machine
Installed near the
bottom of the
power facility


Monitoring
System
Mute
Button
Sensitivity
Adjustment
RS-485
iSN-101
(1-channel)
Alarm
(Relay Output)
ALM-Horn-BR
Sound & Light Alarm
CA-LLD-EC-Lxxx
Leader Cable
CA-LLD-DC100X-Lxxx
Detection Cable #1
CA-LLD-DC100X-TR
Terminal Resistor
ASO-0051
Hold-down Clip
CA-LLD-DC100X-Lxxx
Detection Cable #2
Snap-in
Connector

Features

- **Leak detection triggers and audible alarm**
- **Open wire detection triggers and audible alarm**

  (iSN-101 Only for after 2021,Q1(FW:A1.3 or later) and used with CA-LLD-DC100X-Lxxx + CA-LLD-DC100X-TR to have Open wire detection.)
- **A mute button to silence the alarm**
- **Two LED indicators to display the status of the power and the alarm (iSN-104 have Five LED)**
- **A configurable Output Relay (only iSN-101)**
- **Leader cables and Liquid Leak Detection Cable can be up to 500 meters.**
- **Adjustable detection sensitivity**
- **Supports the DCON and the Modbus RTU Protocols**
- **Embedded Dual Watchdog**
- **Wide Operating Temperature Range: -25 to +75°C**
- **Tiny Form Factor with Easy Screw Mounting**

2. Hardware

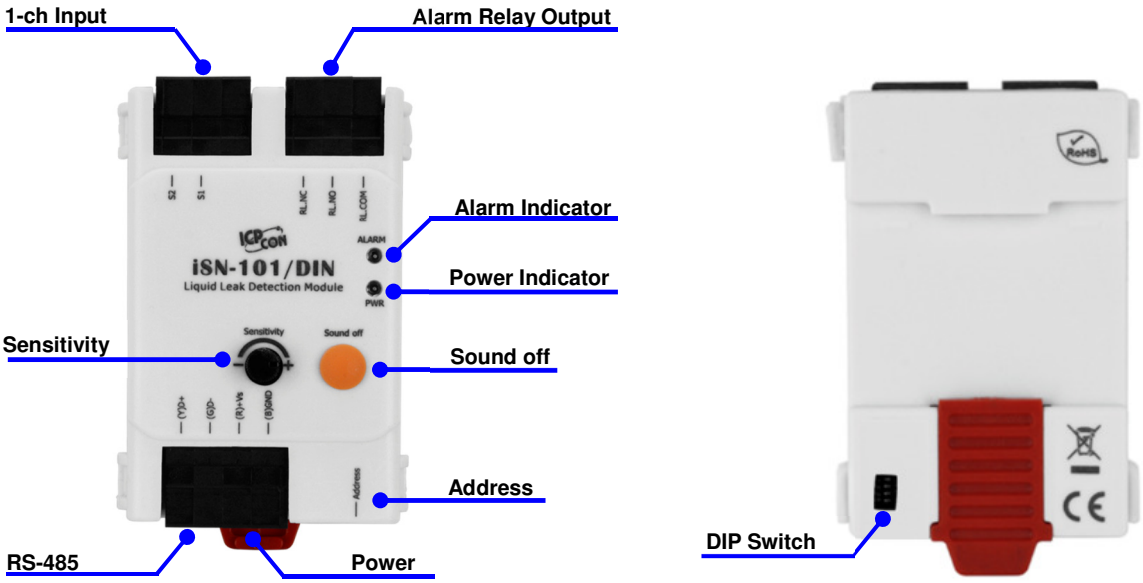
2.1 Specifications

Model	iSN-101	iSN-101/DIN	iSN-104
Analog Input			
Channels	1		4
Wiring Cables Length	500 meters(include Liquid Leak Detection Cable)		
Adjustment of the Detection Sensitivity	26KΩ~580KΩ		
Communication			
Interface	RS-485		
Data Format	N,8,1 / O,8,1 / E,8,1 / N,8,2		
Baud Rate	Software Configuration: 1200 ~ 115200 bps		
Protocol	Modbus RTU or DCON		
Node Addresses	96 ~ 127 for hardware configuration 0 ~ 255 for software configuration		
LED Indicators			
Power	1 as Power Indicator(Green LED)		1 as Power Indicator (Red LED)
Alarm	1 as Alarm Indicator (Red LED)		4 as Alarm Indicator (Red LED)
Audible alarm			
Audible alarm	70 dB Audible alarm with silence button(switch)		
Relay Output			
Form C Relay	0.25A @ 250VAC 0.5 A @ 125 VAC 2 A @ 30 VDC		- -
EMS Protection			
ESD (IEC 61000-4-2)	±8 kV Air for Random Point		
EFT (IEC 61000-4-4)	±4 kV for Power		
Power Requirements			
Reverse Polarity Protection	Yes		
Input Voltage Range	+10 ~ +30 VDC		
Consumption	1.5 W Max.		1.6 W Max.
Mechanical			
Dimensions (L x W x H)mm	80 x 70 x 28	85 x 52 x 31	72 x 95 x 57

Installation	Wall Mount	DIN-Rail	DIN-Rail
Environment			
Operating Temperature	0 ~ +50℃		
Storage Temperature	-30 ~ +75℃		
Humidity	10 ~ 90% RH, Non-condensing		

2.2 Appearance & Settings

iSN-101 Appearance



LED Indicators

The two LED indicators from up to down are:

- Alarm: red for leak alarm condition.
  blinking red for open wire alarm condition.
  *(iSN-101 Only for after 2021,Q1(FW:A1.3 or later) and used with CA-LLD-DC100X-Lxxx + CA-LLD-DC100X-TR to have Open wire detection.)
- PWR: green for normal operation.

Sound off Button

The button is used to stop the audible alarm.

Audible alarm

70 dB Audible alarm with silence button

Sensitivity Adjustment

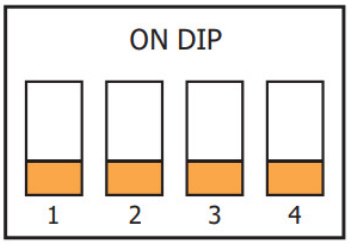


Sensitivity Adjustment Range: 26KΩ ~ 580KΩ

- **1-ch Input**

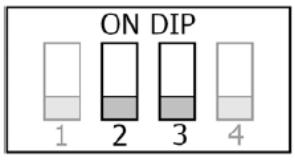
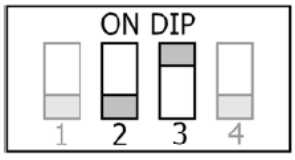
  Insert Leader Cable. As cable termination is not polarity conscious

DIP Switch

DIP Switch Description			
	SW1	ON	DCON Protocol
		OFF	Modbus RTU Protocol
	SW2	ON	Software Configuration
		OFF	Hardware Configuration
	SW3	ON	High Node Address
		OFF	Low Node Address
	SW4	ON	INIT Mode
		OFF	Normal Mode

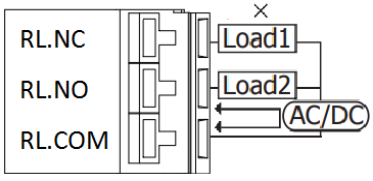
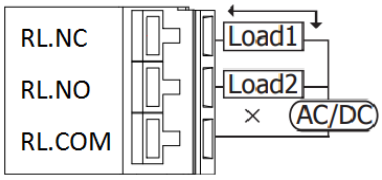
Address

Address Settings via Hardware Configuration

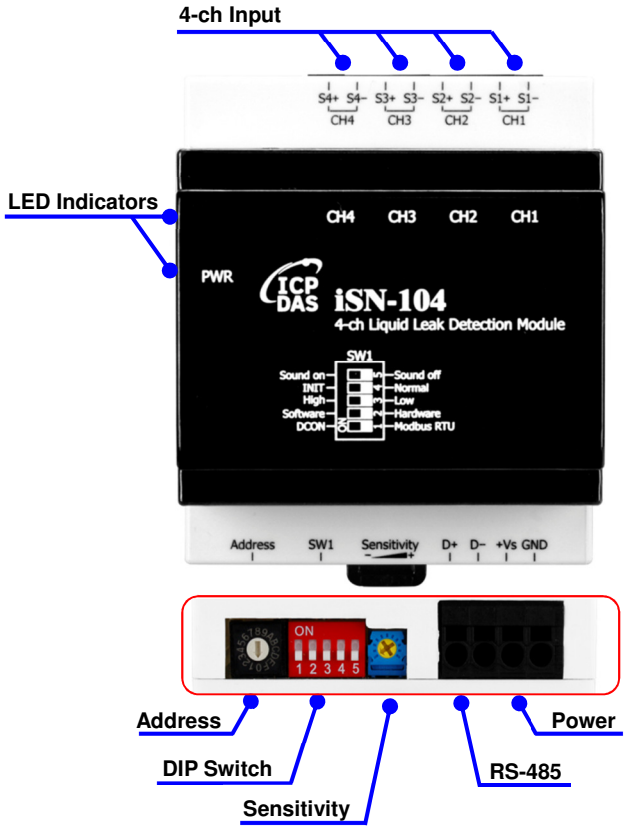
		0 ~ F for Addresses 96 ~ 111 (Low Node Address)
		0 ~ F for Addresses 112 ~ 127 (High Node Address)

Relay Output

Wire Connection:

Output Type	ON State Readback as 1	OFF State Readback as 0
Relay Output		

iSN-104 Appearance



LED Indicators

The five LED indicators:

- Alarm: LED light leak alarm condition.
  LED blinking for open wire alarm condition.
- PWR: Power LED.

Audible alarm

70 dB Audible alarm with silence button

Sensitivity Adjustment

Sensitivity Adjustment Range: 26KΩ ~ 580KΩ



4-ch Input

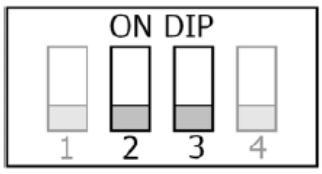
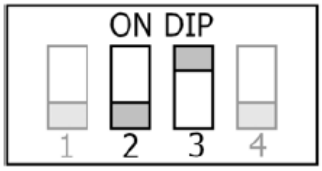
Insert Leader Cable. As cable termination is not polarity conscious

DIP Switch

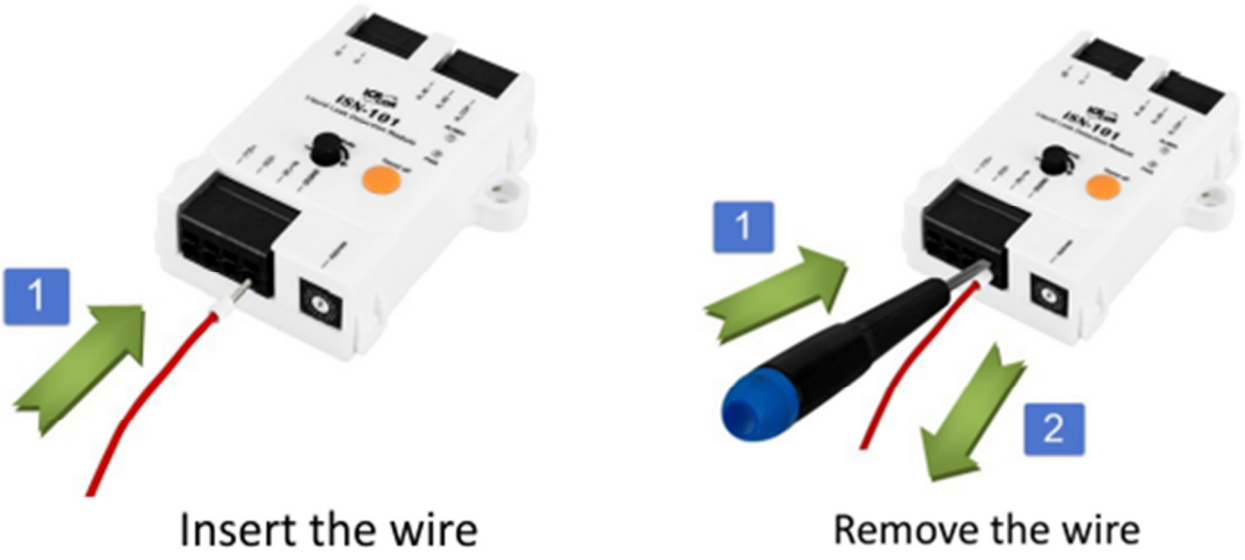
DIP Switch Description			
	SW1	ON	DCON Protocol
		OFF	Modbus RTU Protocol
	SW2	ON	Software Configuration
		OFF	Hardware Configuration
	SW3	ON	High Node Address
		OFF	Low Node Address
	SW4	ON	INIT Mode
		OFF	Normal Mode
	SW5	ON	Sound On
		OFF	Sound Off

Address

Address Settings via Hardware Configuration

		0 ~ F for Addresses 96 ~ 111 (Low Node Address)
		0 ~ F for Addresses 112 ~ 127 (High Node Address)

2.3 Connector for Power/ RS-485 / Liquid Leak Detection Cable / Relay



Connect the Leader Plug to Liquid Leak Detection Plug



CA-LLD-DC100X-Lxxx



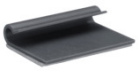
CA-LLD-EC-L030



CA-LLD-DC100X-TR



ASO-0051



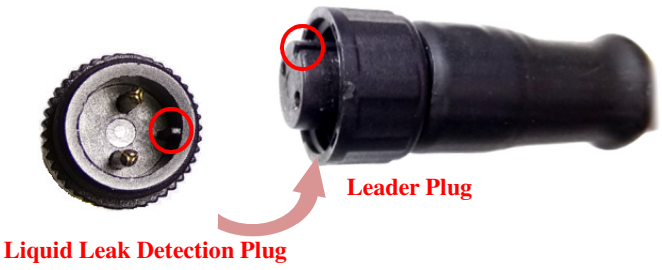
ASO-0052



CA-LLD-DP100

CA-LLD-DC100X-Lxxx	Liquids Leak Detection Cable, w/o Position and can be connected in series
CA-LLD-EC-L030	The leader cable can be extended with a shielded twiced pair cable, AWG 18~14. The total cable length that includes leader cable and Liquid Leak Detection Cables is 500 m max.
CA-LLD-DC100X-TR	Terminal Resistor, for CA-LLLD-DC100X-Lxxx
CA-LLD-DP100	Leakage Probe
ASO-0051	180 Hold-Down Clip (include 50 pcs)
ASO-0052	90 Hold-Down Clip (include 50 pcs)

The fool-proofing groove (as red circle) is useful for easy connection of Liquid Leak Detection Plug and Leader Plug. Please make sure they are located in the same direction when connecting these two items.



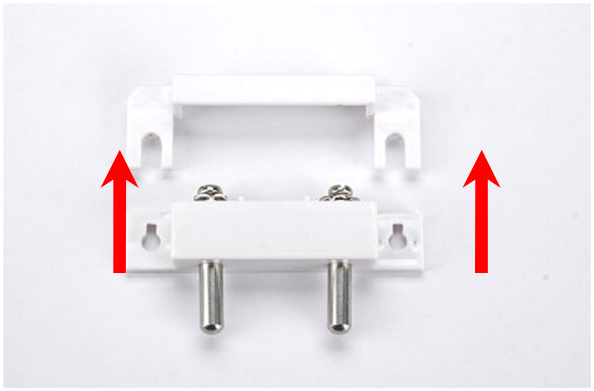
Make sure to tighten firmly



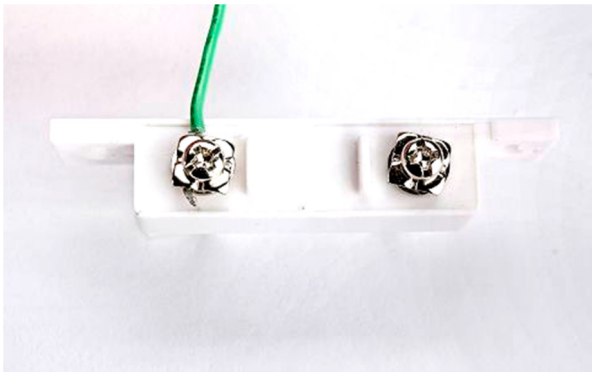
Connect the Leakage Probe with Wires

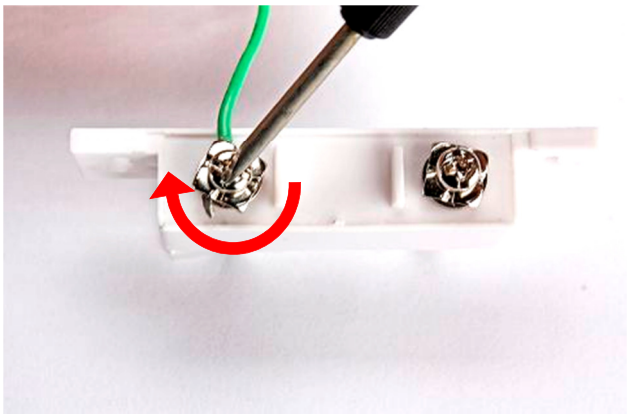


Take off cover

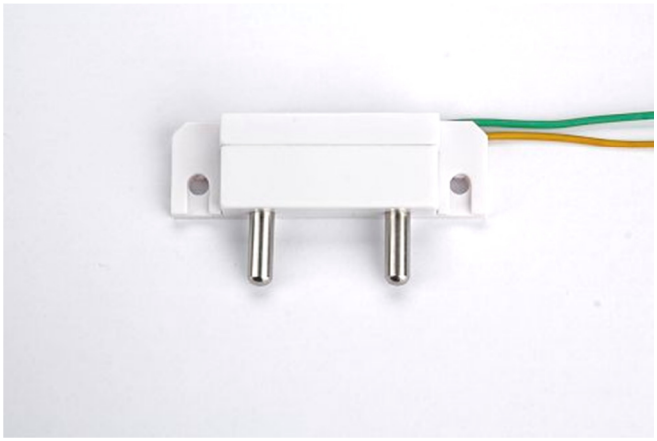


Put wire and tighten the screw down

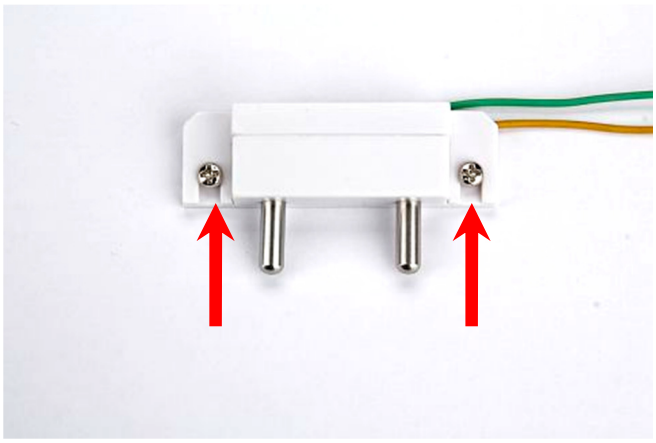




Put cover back

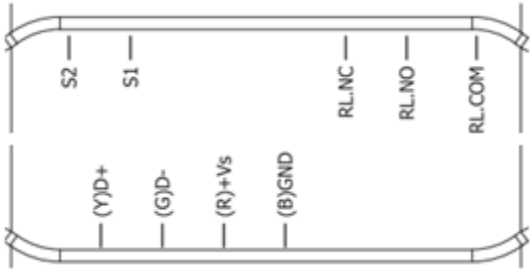


Install the two mounting screws into the 2 keyhole mounting holes.

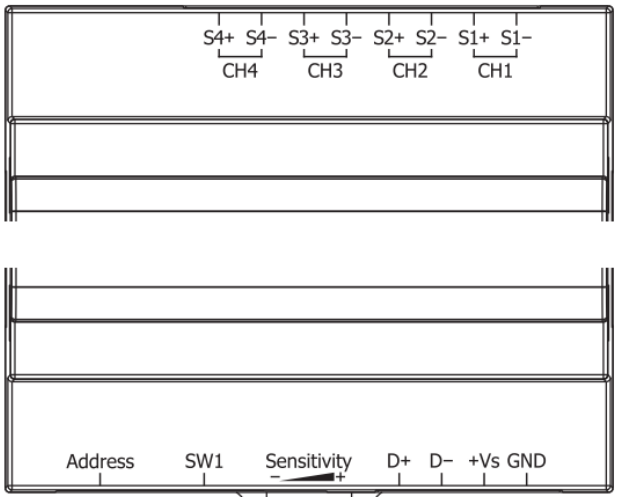


2.4 Pin Assignments

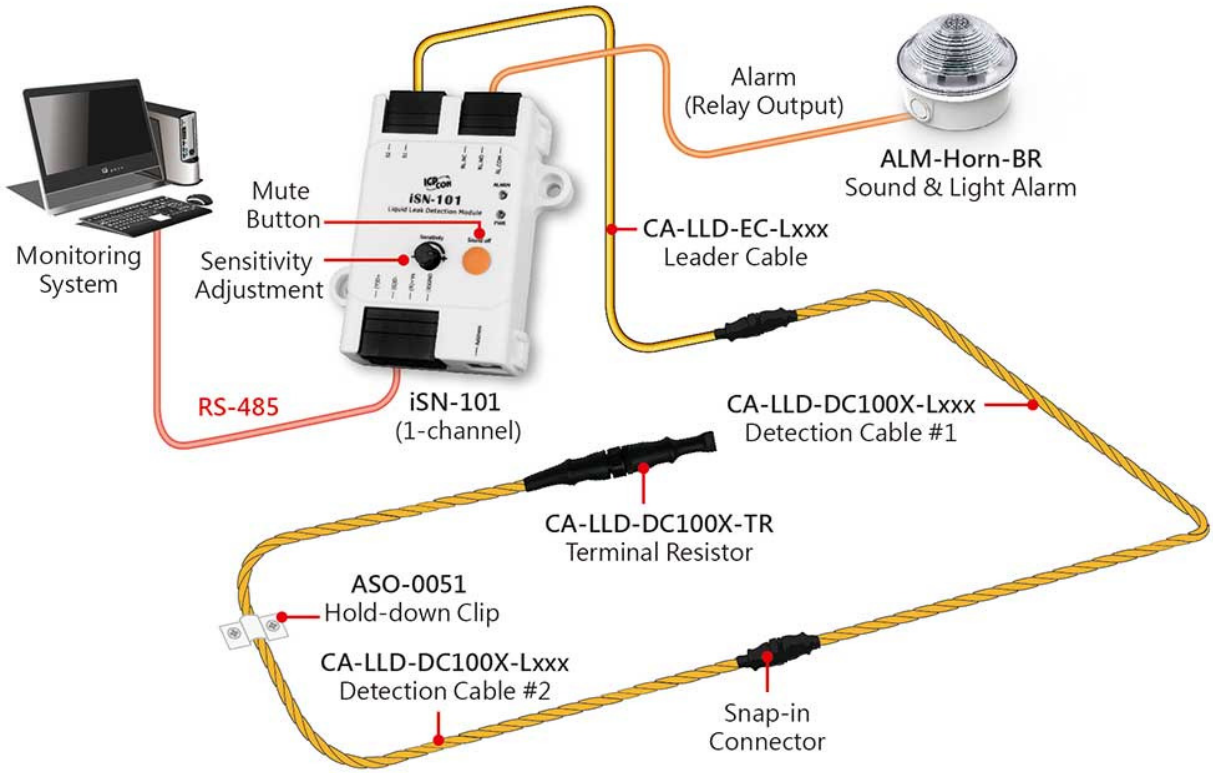
iSN-101

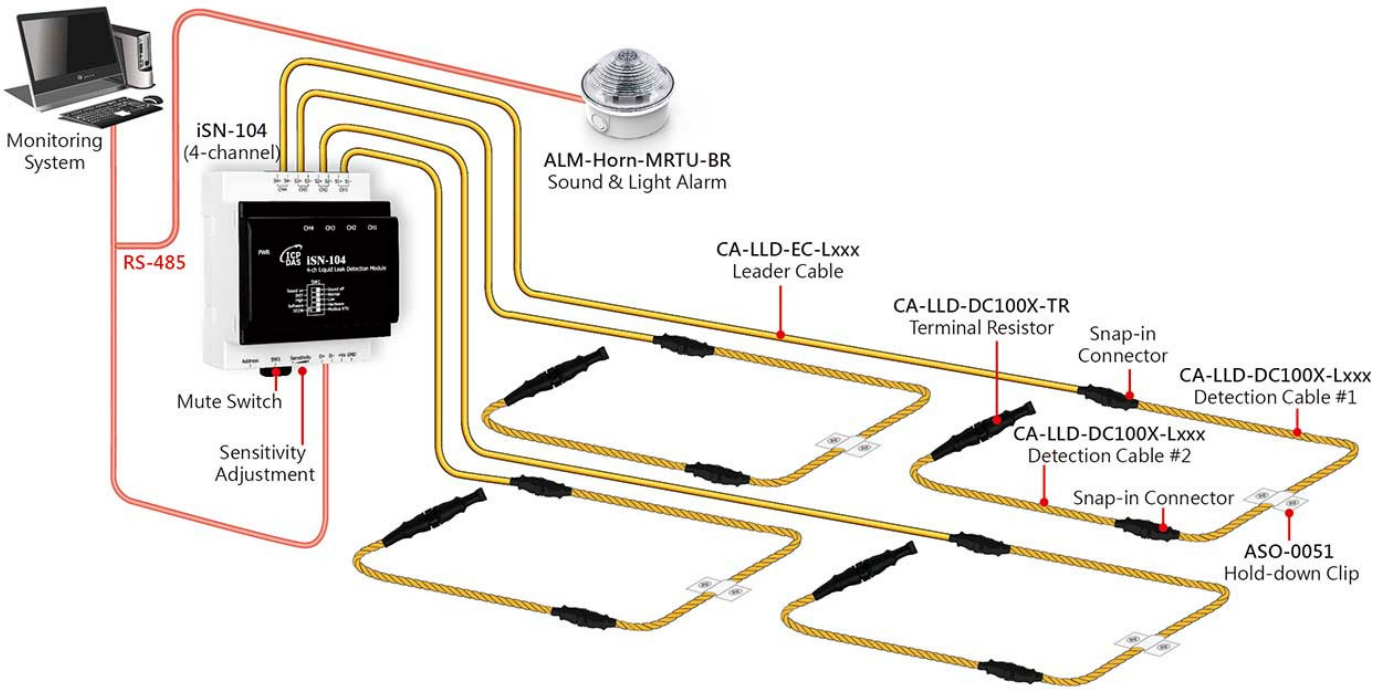


iSN-104

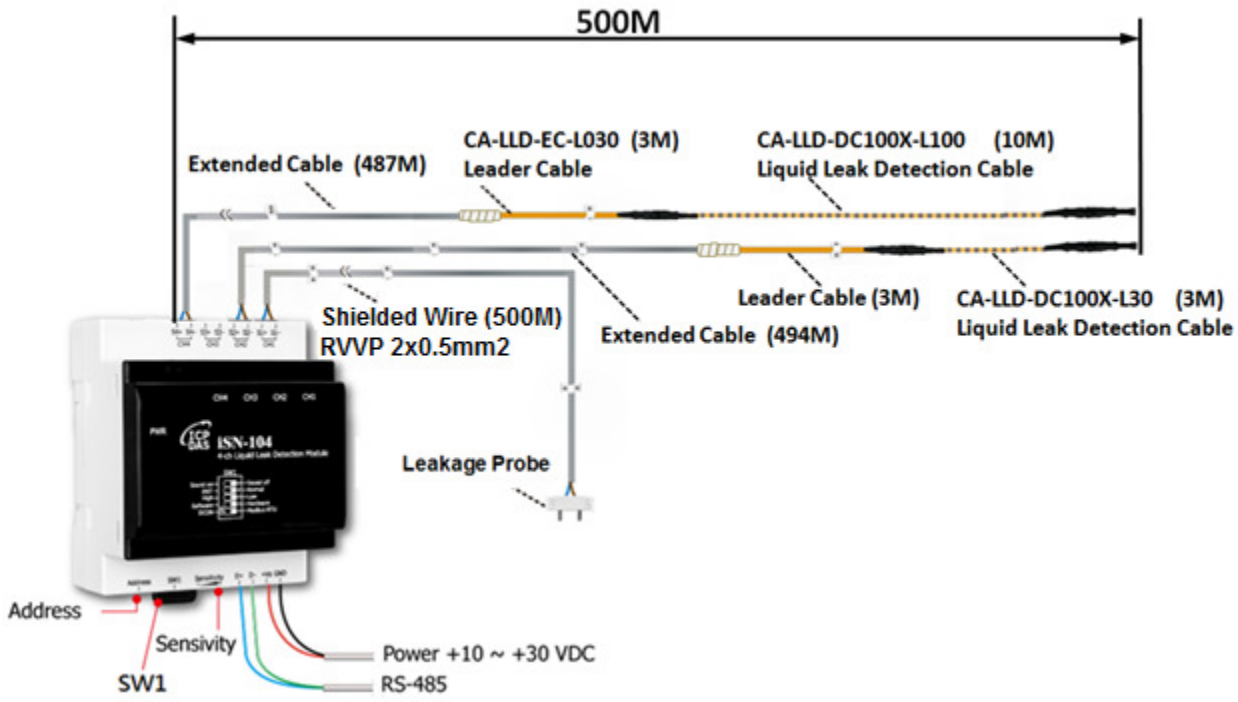


2.5 Wire Connections





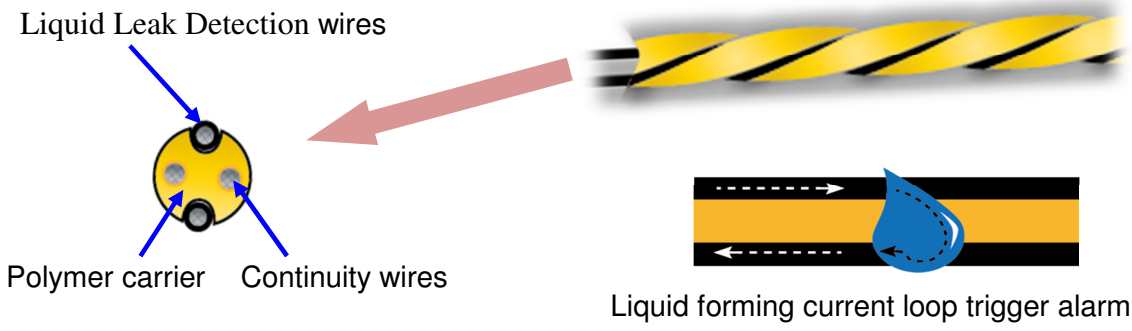
Extended Cable : We suggest to use twisted pair cable Shielded Wire RVVP 2x0.5 mm2(AWG 20). The Leader Cable can be increased in length with an extended cable, up to 500 meters including the Liquid leak Cable.

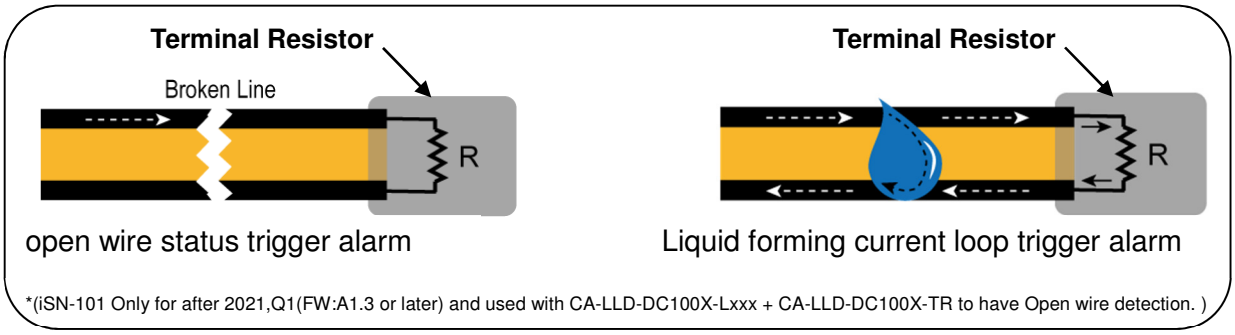


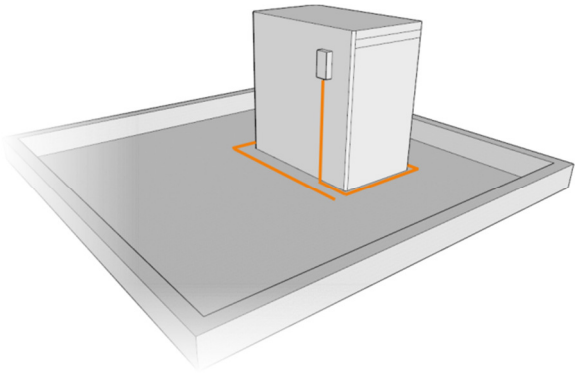
2.6 Application

Liquid Leak Detection Cable

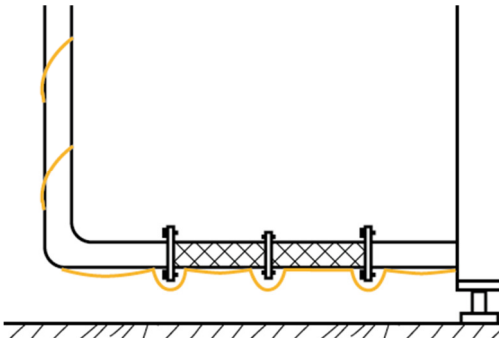
Liquid Leak Detection Cable is designed to detect leaks over a wider area, and the path of the leak is not easily predetermined. The Liquid Leak Detection Cable is ideal for open areas. The Liquid Leak Detection Cable can even be fixed directly to the water supply and return lines. Liquid Leak Detection Cable is suitable for larger surface areas with multiple leak points.







Server Room Floor

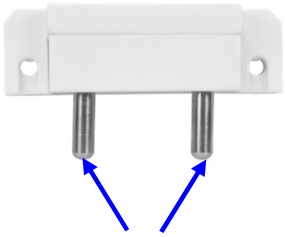


Water supply

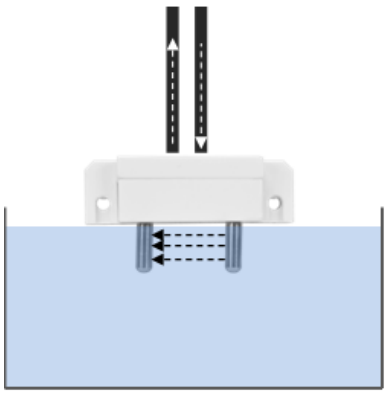
Leakage Probe

Leakage Probe are designed to detect leaks at specific locations and specific water levels.

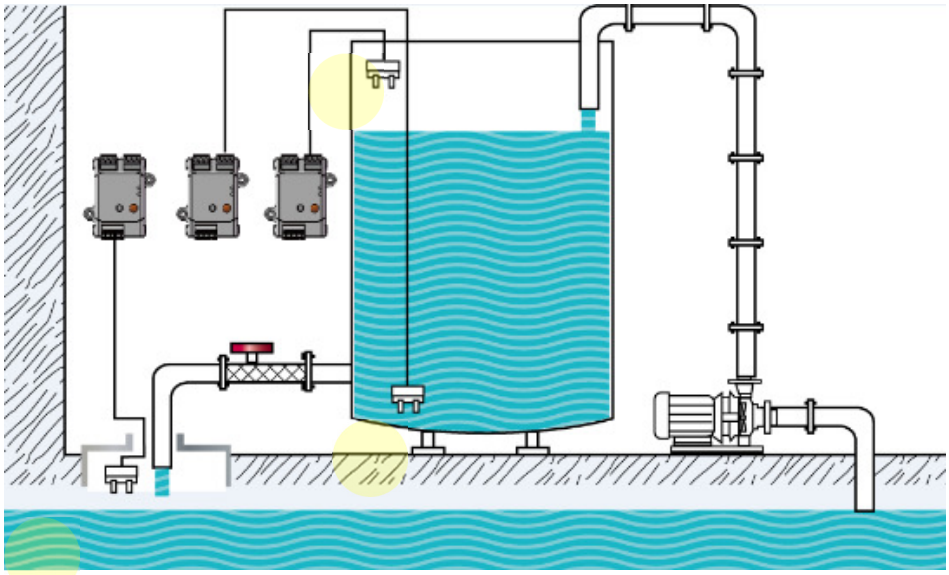
The base of the Leakage Probe has two probes. To detect a leak, the water must touch both probes at the same time, thus completing a circuit and triggering an alarm. Leakage Probe are ideal for drains, Water storage tank , containers and other restricted areas.



Stainless steel probes



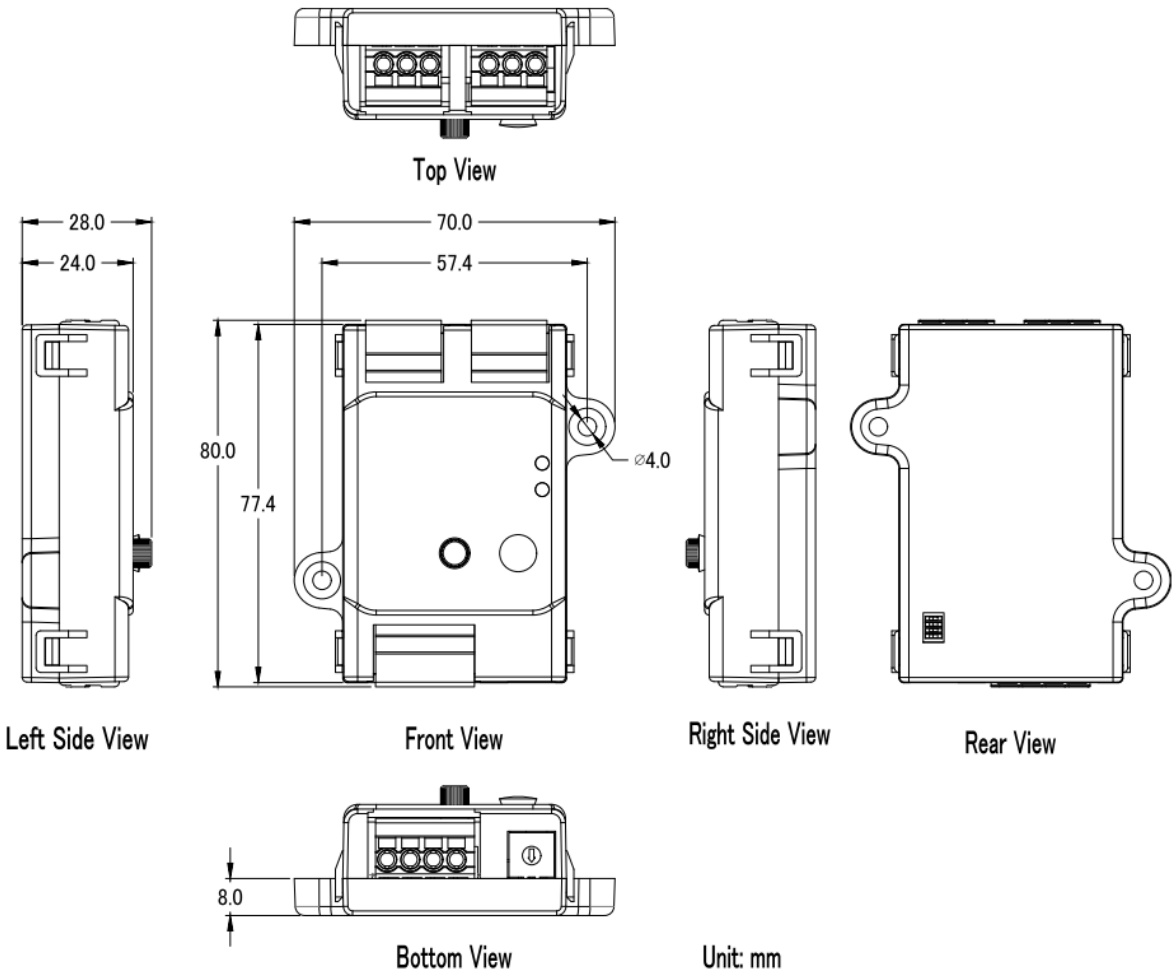
Liquid forming current loop trigger alarm



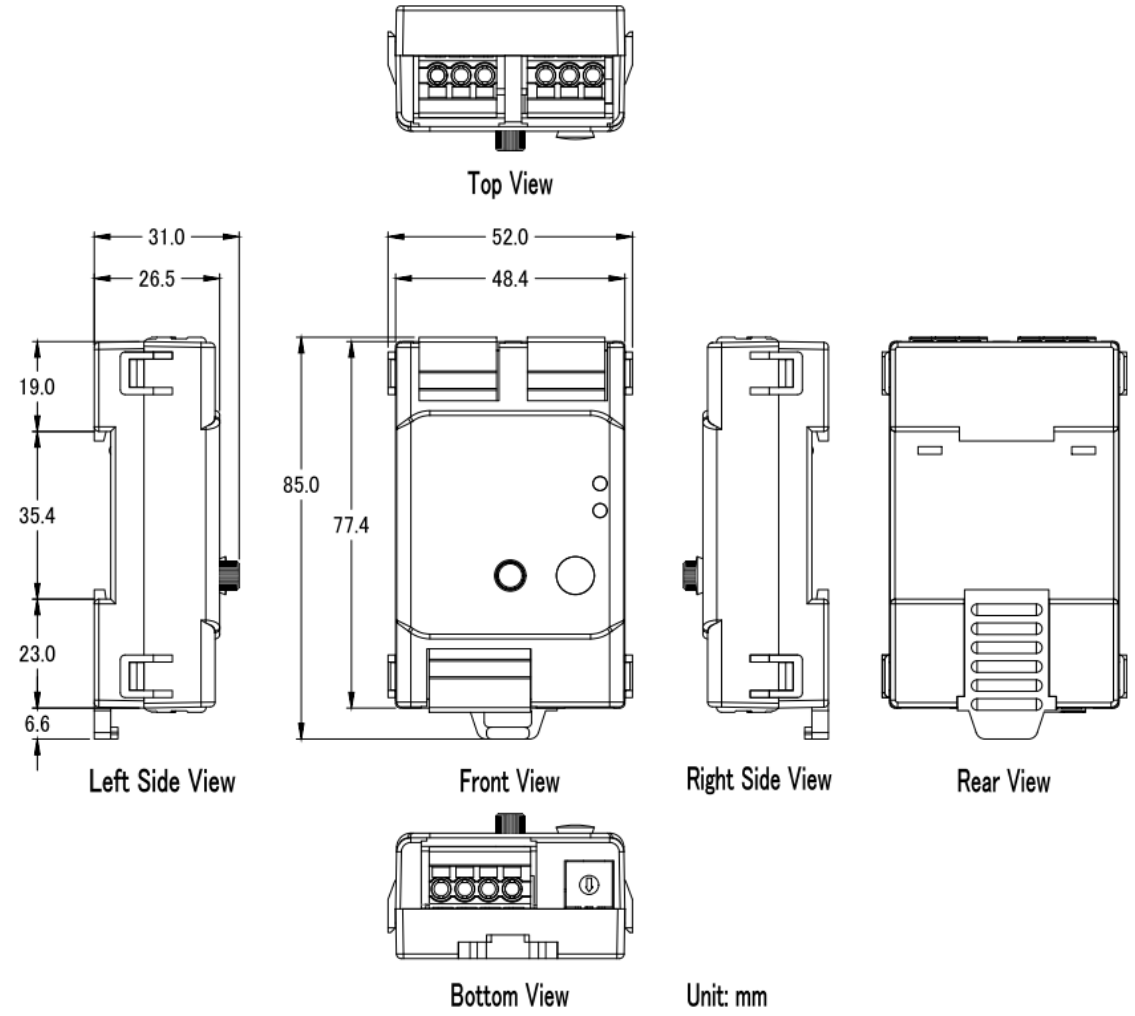
iSN-101/104 senses various water levels through the Leakage Probe

2.7 Dimensions (unit: mm)

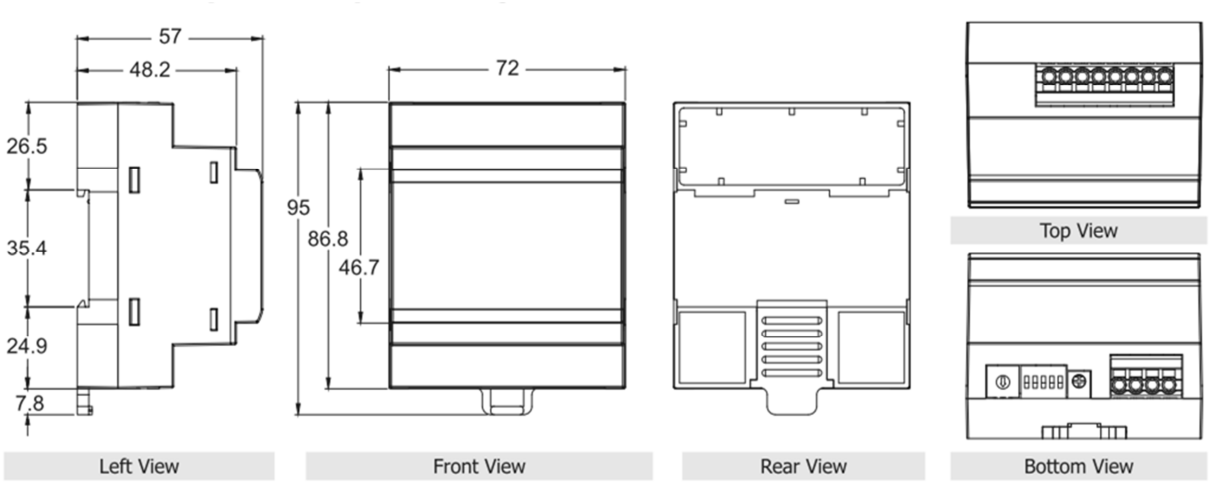
iSN-101



iSN-101/DIN



iSN-104



3. Configuration via RS-485

➢ The factory default settings for RS-485 communication
- Address: 1
- Protocol: Modbus/RTU
- Baudrate: 9600
- Parity: N,8,1
- Response Delay (ms): 0

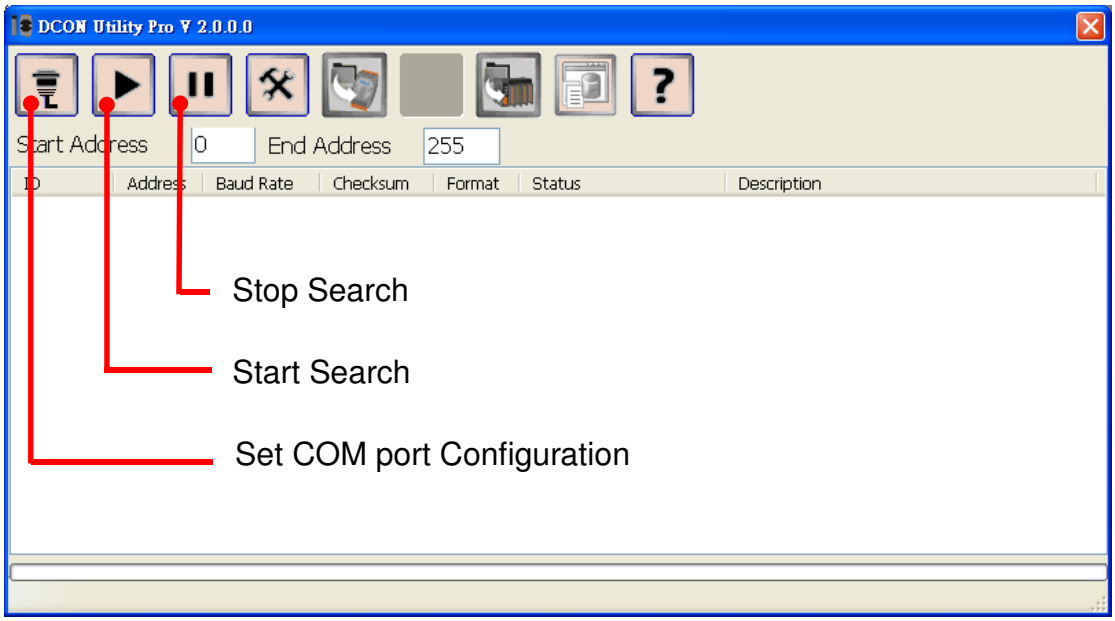
Note

If there are multiple iSN-101/104 connected to the same RS-485 network, each module needs be set with a unique RS-485 address. More than one module having the same address will cause communication failure

➢ Testing RS-485 Communication

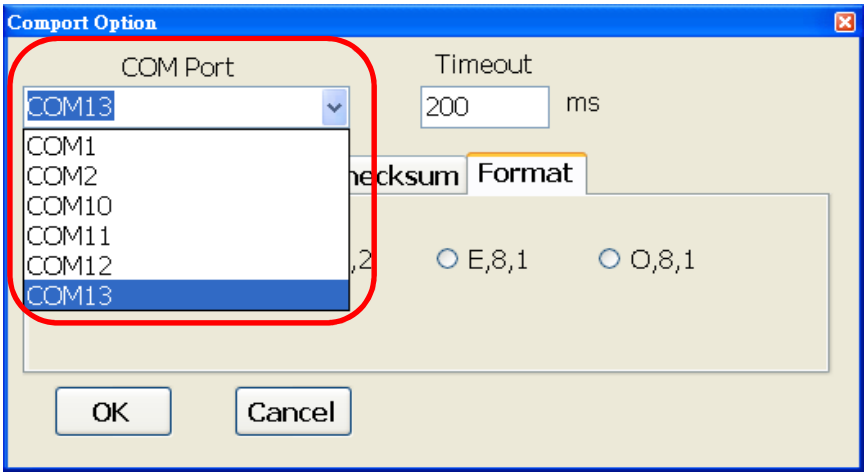
1. Download the DCON Utility Pro from
https://www.icpdas.com/en/product/guide+Software+Utility_Driver+DCON_Utility_Pro

2. Launch the DCON_Utility_Pro.exe.

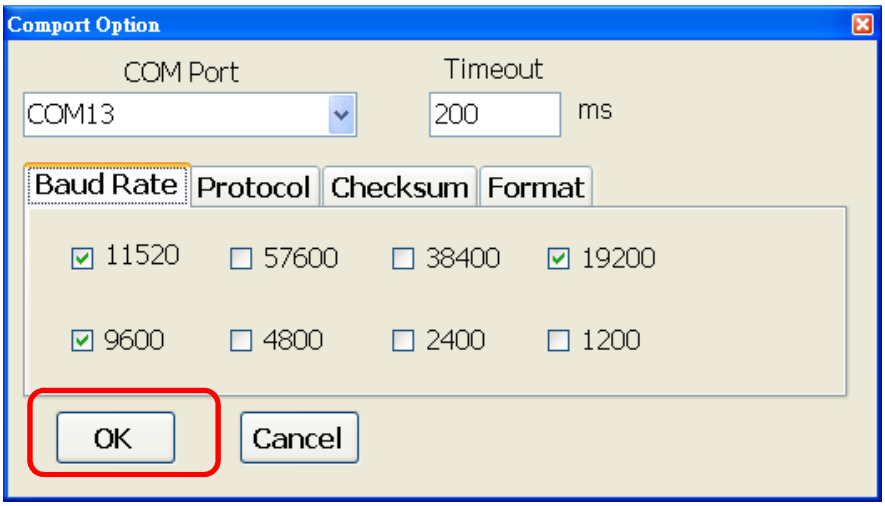


3. Click the icon  to configure the COM port.

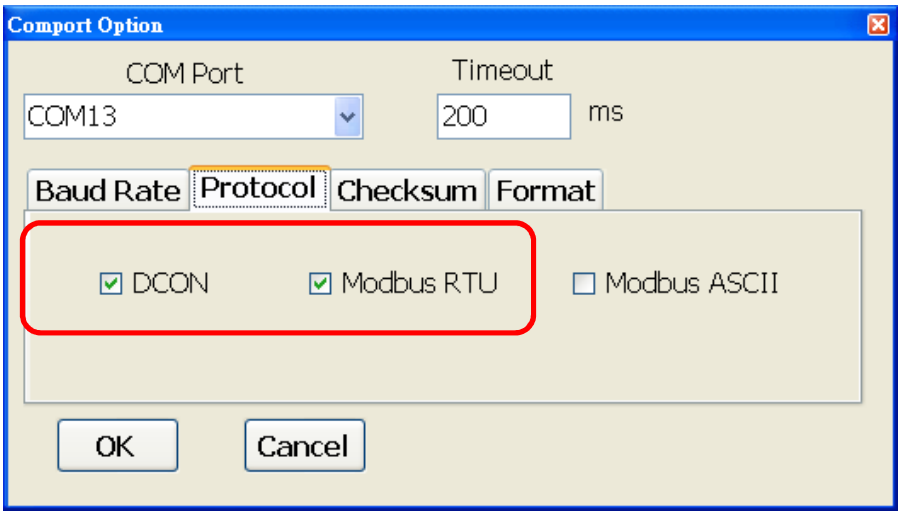
4. Select the COM Port number used to connect the iSN-101/104 logger.



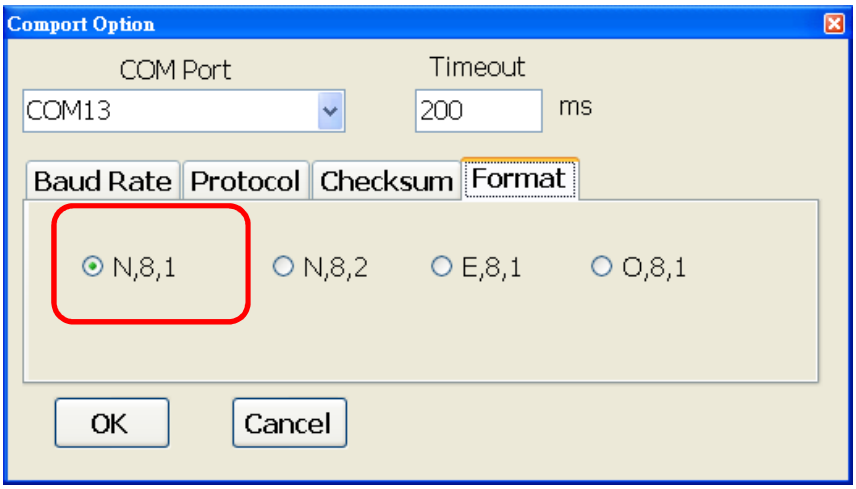
5. The Baud Rate is factory default to 9600 bps.



6. Select the Protocol tab.

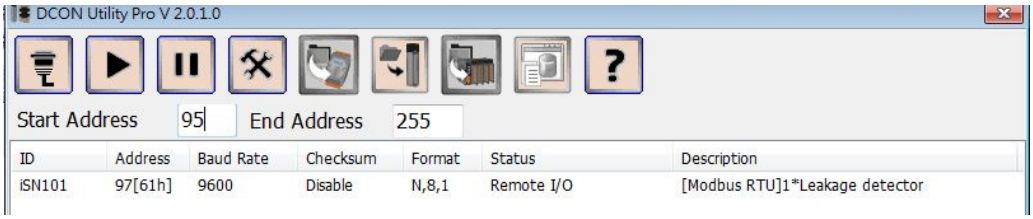


7. Select the Format tab and check the parity that set in the logger.

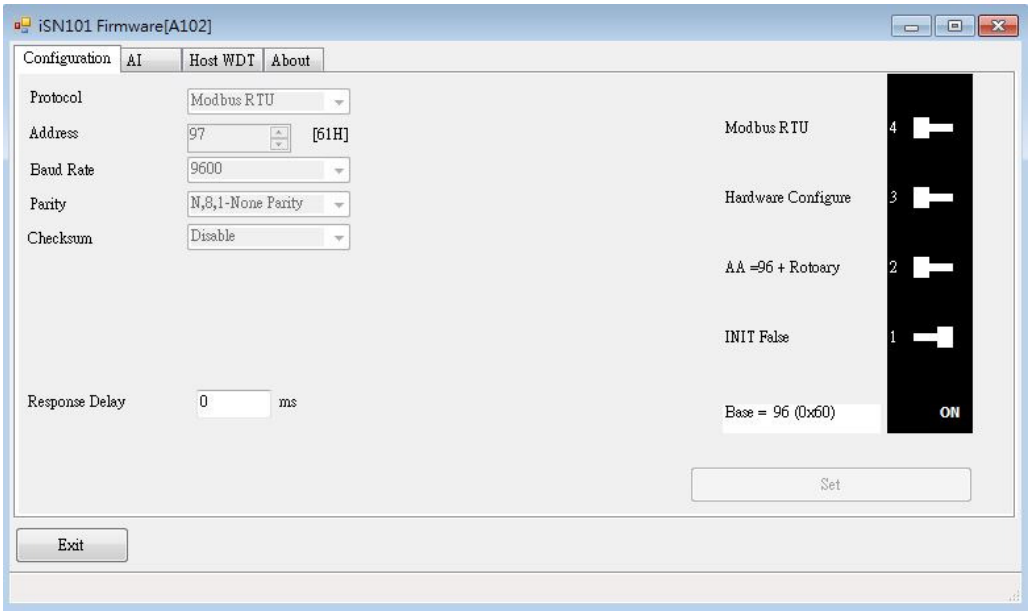


8. Click the Start Search icon. 

9. The iSN-101/104 logger searched out will be listed as below.



10. Click the module name to configure the logger.



Note

The Protocol/Baud Rate/Parity/Checksum items marked with ”(INIT*)” means that when any of those items needs be modified, the pin 4.INIT needs to be set in ON position and power cycle the logger, then the item can be modified. After complete setting, set the pin 4.INIT back to OFF position and power cycle the logger again to take the setting effect.

- **AI tab (iSN-101)**

Adjust the Beeper On Alarm Time

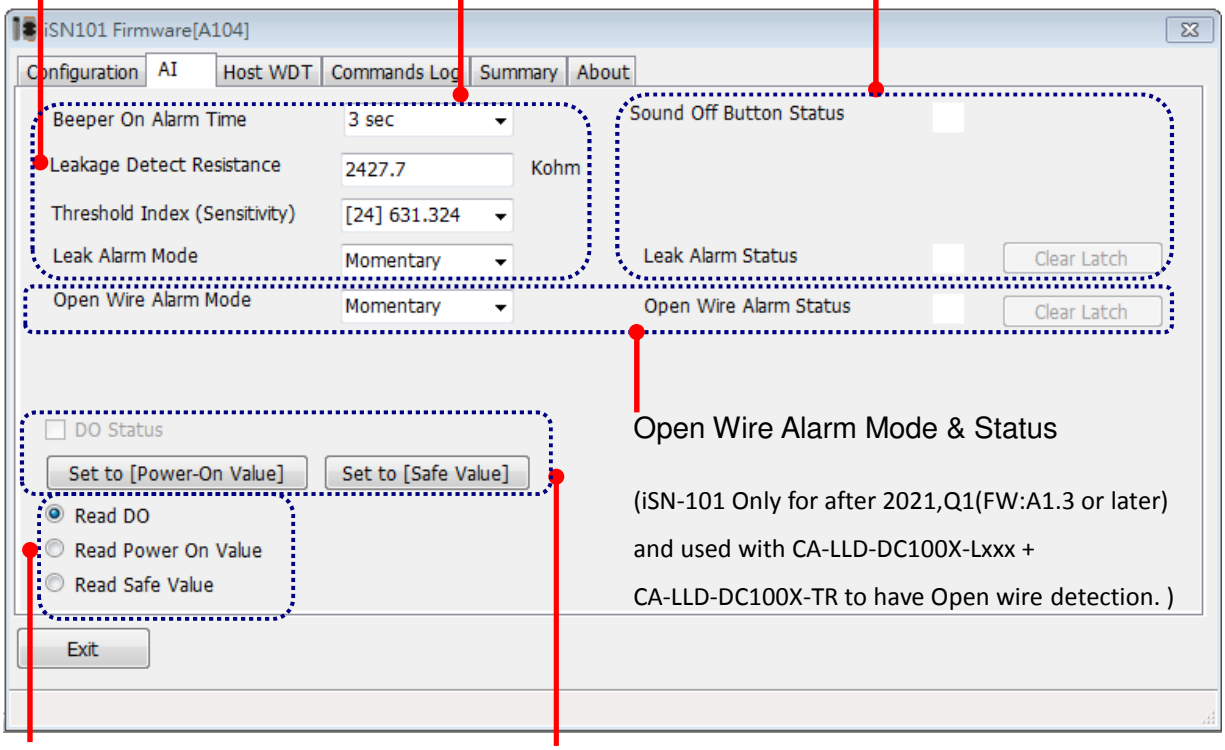
Threshold Index(Sensitivity)

Leak Alarm Mode

Sound Off Button Status

Leak Alarm Mode & Status

Leakage Detect Resistance



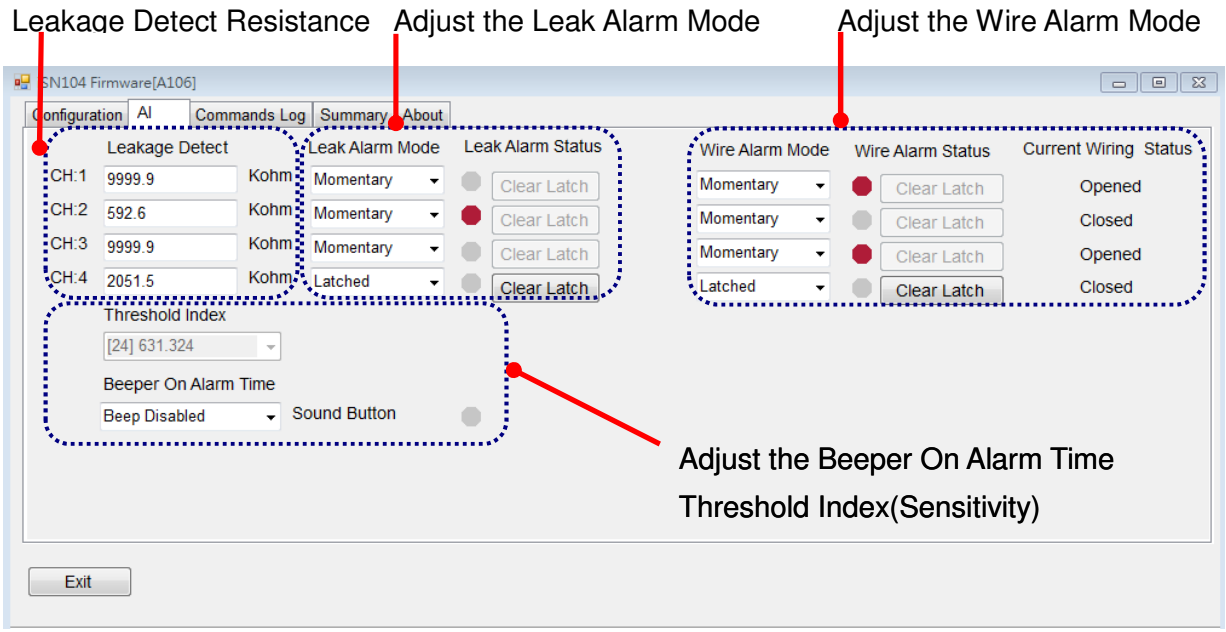
Open Wire Alarm Mode & Status

(iSN-101 Only for after 2021,Q1(FW:A1.3 or later) and used with CA-LLD-DC100X-Lxxx + CA-LLD-DC100X-TR to have Open wire detection.)

Select one of the radio button and the checkbox next to DO will display the setting for selected item.

DO Status (On/Off)
When the buttons are clicked, the DO status will be set as the Power On value or Safe value.

➢ AI tab (iSN-104)

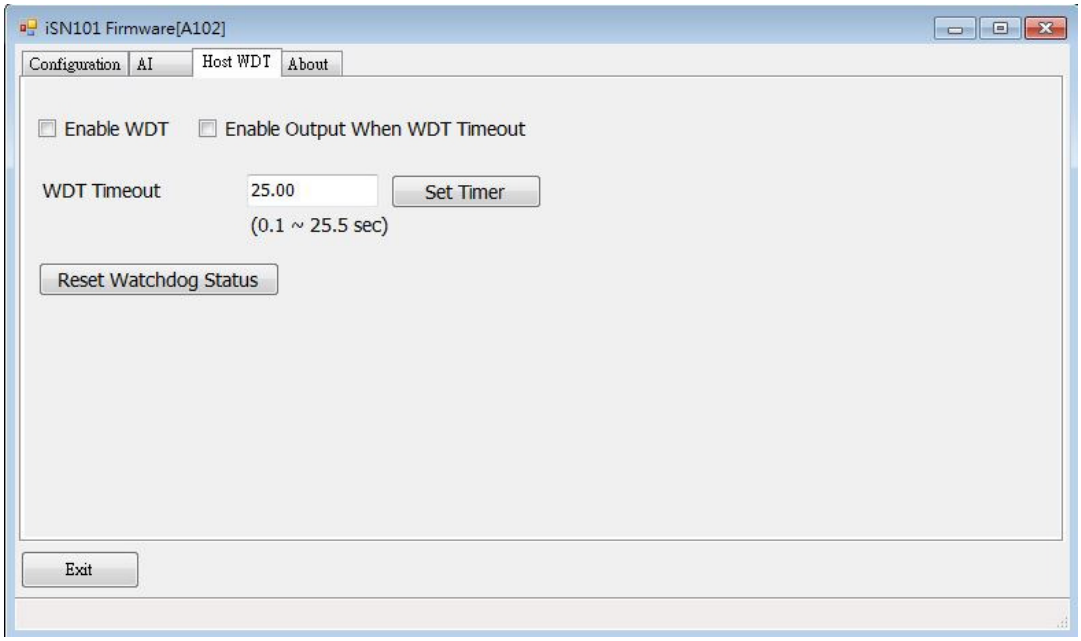


➢ Host Watchdog

Host Watchdog is used to monitor the RS-485 communication status; if the host (PC) does not send command "~**" in the time period of WDT Timeout setting, the enabled Host Watchdog will announce the timeout error and turn the relay output to Safe value to avoid an unsafe act. Users can not control the relay until the command "~AA1" is sent to clear the WDT timeout status.

On this tab:

1. Set the time period for WDT timeout, check the checkbox next to Enable WDT and click the Set WDT button to enable the Host watchdog.
2. Check the checkbox next to Send Host OK to send the "~**" command.
3. Uncheck the checkbox next to Send Host OK to stop sending ~** command, the Host watchdog timeout will occur and relay will turn to Safe value.
4. Click the Reset WDT button to clear the Host watchdog timeout status.
5. Uncheck the checkbox next to Enable WDT and click the Set WDT button to disable the Host watchdog.

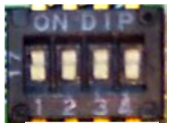


Note

The relay will not turn to Safe value when alarm for detected liquid is enabled. If the alarm is enabled, the relay will be linked to the Alarm status. In case an Alarm occurs, the relay turns ON, it can be used to turn on the user's alarm light or beeping alarm or other device.

- INIT

In case of the following situations, users have to set the pin 4.INIT on DIP Switch in the ON position and Power-cycle the iSN-101/104 module:

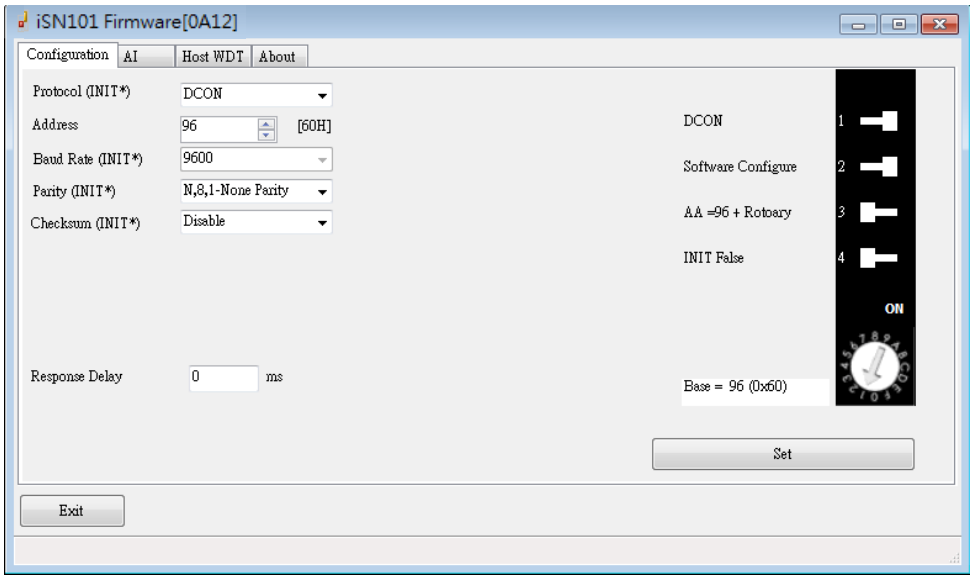


iSN-101



iSN-104

- Change protocol from PC
- Change DCON configuration such as baud rate, parity and checksum
- Communication failure with an iSN-101/104 module.



When an iSN-101/104 module is powered-on with the pin 4.INIT in ON position, the protocol is DCON, address is 0, Baud Rate is 9600 bps, Parity is set to N/8/1 and Checksum is disabled.

After configuring the communication parameters, click the *Set Module Configurations* button, set the INIT to OFF position and power-cycle the iSN-101/104 to take the settings effect.

Note

The INIT switch does not need to be set in the ON position when changing the address, baud rate and parity for ModbusRTU communication; users only have to power-cycle the module after complete configuration.

Appendix A: DCON Command Sets

A-1. iSN-101 / 104 DCON Command Sets

Command	Description
#AA	Read All Analog Inputs response iSN-101: >(resistance in k ohm)(threshold index by VR) in engineering format iSN-104: >(resistance of ch0 in k ohm)(resistance of ch1 in k ohm)(resistance of ch2 in k ohm)(resistance of ch3 in k ohm)(threshold index by VR) in engineering format
#AAi	Read Channel Analog Inputs iSN-101: I = 0 for resistance in k ohm, 1 for threshold index by VR iSN-104: I = 0 to 3 for channel resistance in k ohm, 4 for threshold index by VR
@AABA	Read beep on alarm time response !aahh, hh in hex, 0: disabled, 1 ~ 250: beep on alarm time in seconds, 251: beep on alarm continuously
@AABAhh	Set beep on alarm , hh in hex, 0: disabled, 1 ~ 250: beep on alarm time in seconds, 251:beep on alarm continuously
@AACH	Clear all high latch (to current)
@AACHi	Clear channel high latch (to current) iSN-101: I = 0 for resistance in k ohm, 1 for threshold index by VR, iSN-104: I = 0 to 3 for channel resistance in k ohm, 4 for threshold index by VR,
@AACL	Clear all low latch (to current)

Command	Description
@AACLi	Clear channel low latch (to current) iSN-101: I = 0 for resistance in k ohm, 1 for threshold index by VR, iSN-104: I = 0 to 3 for channel resistance in k ohm, 4 for threshold index by VR,
@AACLC0	Clear low latched alarm of channel 0
@AADACi	iSN-101: I = 0 for leak alarm, 1 for open wire alarm iSN-104: I = 0 to 3 for leak alarm, 4 to 7 for open wire alarm of channel 0 to 3
@AADI	Read DI & DO Response !AA0OOII
@AADOhh	Set DO (For iSN-101 Only)
@AAEATCi*	Enable AI alarm of channel I, T->M: momentary alarm, L: latched alarm iSN-101: I = 0 for leak alarm I = 1 for open wire alarm* iSN-104: I = 0 to 3 for leak alarm, 4 to 7 for open wire alarm of channel 0 to 3
@AAIL	Read IIR level
@AAILh	Set IIR level
@aaLT	Read leak threshold index
@aaLTV	Read leak threshold index by VR
@aaLTxx	Set leak threshold index, xx in hex, 00 ~ 18
@AARACi	Read AI alarm enabled/disabled status of a channel @AARACi response !Aan, 0: disabled, 1: momentary, 2: latched iSN-101: I = 0 for leak alarm I = 1 for open wire alarm* iSN-104: I = 0 to 3 for leak alarm, 4 to 7 for open wire alarm of channel 0 to 3

@AARAO	**Read AI alarm status** **@AARAO** **response** **!AAHHLL** **iSN-101:** **bit 0 of LL: leak alarm** **bit 1 of LL: open wire alarm*** **iSN-104:** **bit 0 to 3 of LL: leak alarm** **bit 4 to 7 of LL: open wire alarm**
@AARH	**Read all high latch values**
@AARHi	**Read channel high latch value**
@AARL	**Read all low latch values**
@AARLi	**Read channel low latch value**
%AANNTTCCFF	**Set configuration FF: bit 6: 1-> checksum enabled**
$AAB*	**Read open wire status** **response** **iSN-101:** **!AAHH, bit 0 of HH: open wire status, 1 for open wire** **iSN-104:** **!AAHH, bit 0 to 3 of HH: open wire status, 1 for open wire**
$aa0Ci	**Span calibration**
$aa1Ci	**Zero calibration**
$aa2	**Read configuration**
$aa5	**Read reset status**
$aaF	**Read firmware version**
$aaI	**Read INIT status**
$aaM	**Read module name**
$aaPN	**Set Modbus RTU/DCON protocol**
$aaP	**Read Modbus RTU/DCON protocol**
$aaS1	**Reload factory calibration parameters**
~aaAi	**Read ADC raw data**
~aaE0	**Disable calibration**
~aaE1	**Enable calibration**
~aaI	**Soft INIT**

~aaM	**Read OEM module name**
~aaO(data)	**Set module name**
~aaRD	**Read response delay time in ms**
~aaRDxx	**Set response delay time in ms, xx in hex, 00 ~ 1E**
~AARS	**Read DIP switch** **Response !Aadddd (rotary, DIP switch)**
~aaSR	**Software reset**
~aaTxx	**Set soft INIT timeout in s, xx in hex**
~aa0	**Read host watchdog status**
~aa1	**Clear host watchdog timeout status**
~aa2	**Read host watchdog setting**
~aa3ett	**Set host watchdog setting**
~aa4	**Read power on and safe DO** **Response !AAPPSS**
~aa5PPSS	**Set power on and safe DO**
***Note：DCON firmware must be version A103 or later with Terminal Resistor supports open wire function. (for iSN-101 only)**	

Baud Rate Setting (CC)

Bits 5:0

Baud rate, 0x03 ~ 0x0A

Code	0x03	0x04	0x05	0x06
Baud	1200	2400	4800	9600
Code	0x07	0x08	0x09	0x0A
Baud	19200	38400	57600	115200

Bits 7:6

00: no parity, 1 stop bit

01: no parity, 2 stop bits

10: even parity, 1 stop bit

11: odd parity, 1 stop bit

Data Format Setting (FF)

Bit 6

0: checksum disabled

1: checksum enable

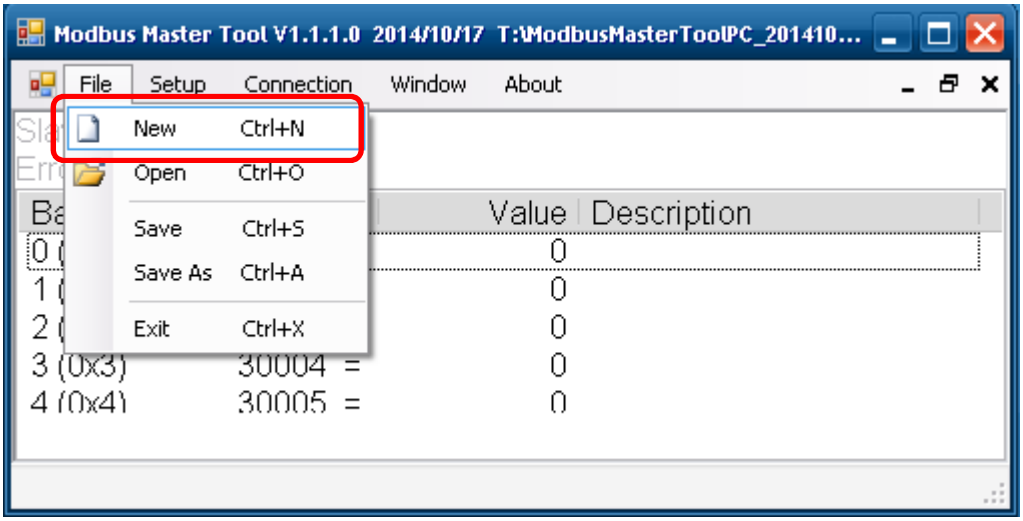
Appendix B: ModbusMasterToolPC

ModbusMasterToolPC is a free, easy-to-use tool for Modbus communication and diagnosing the wiring. It is located in the company CD:

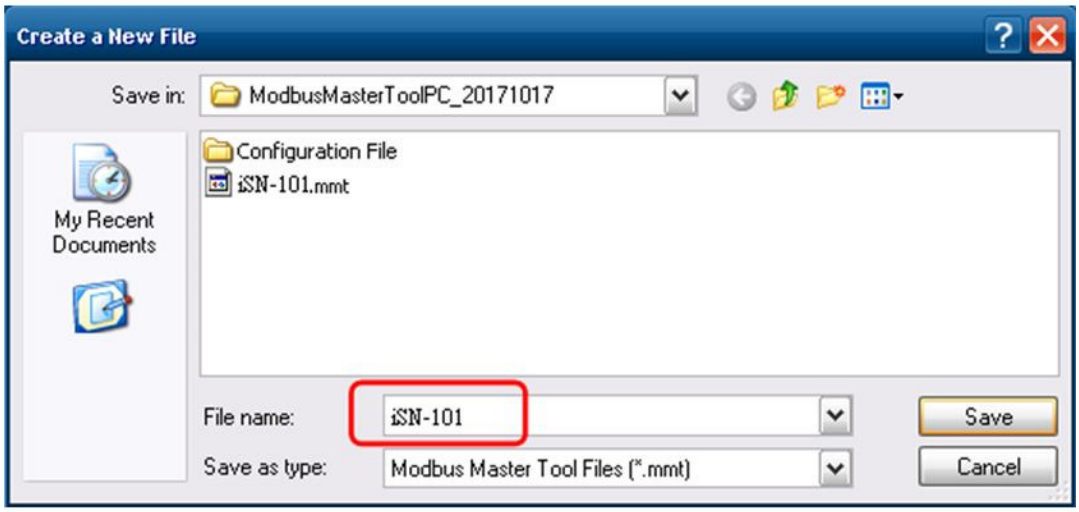
CD:\ Napdos\iSN-101/104\utility\ and needless to install

This section intends to guide the steps for creating the Modbus communication with iSN-101/104 logger.

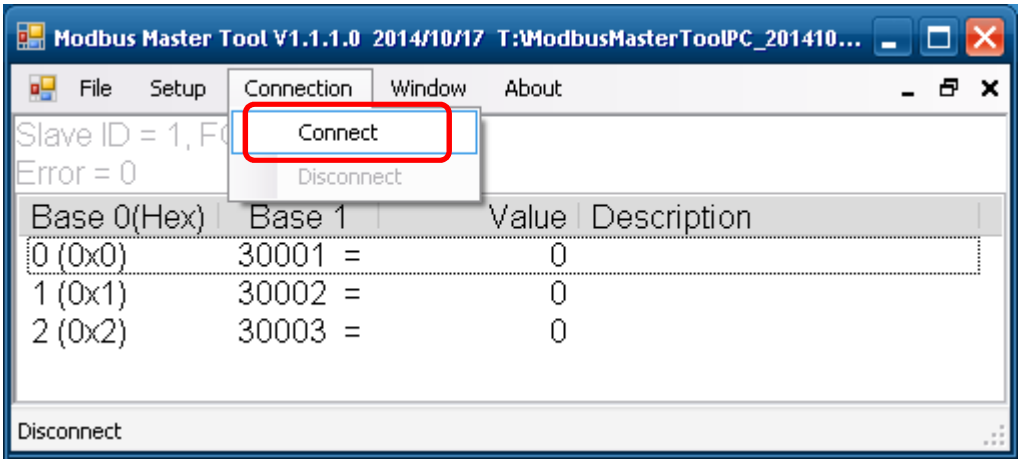
1. Launch the ModbusMasterToolPC.exe.
2. Select ***New*** in the File menu.



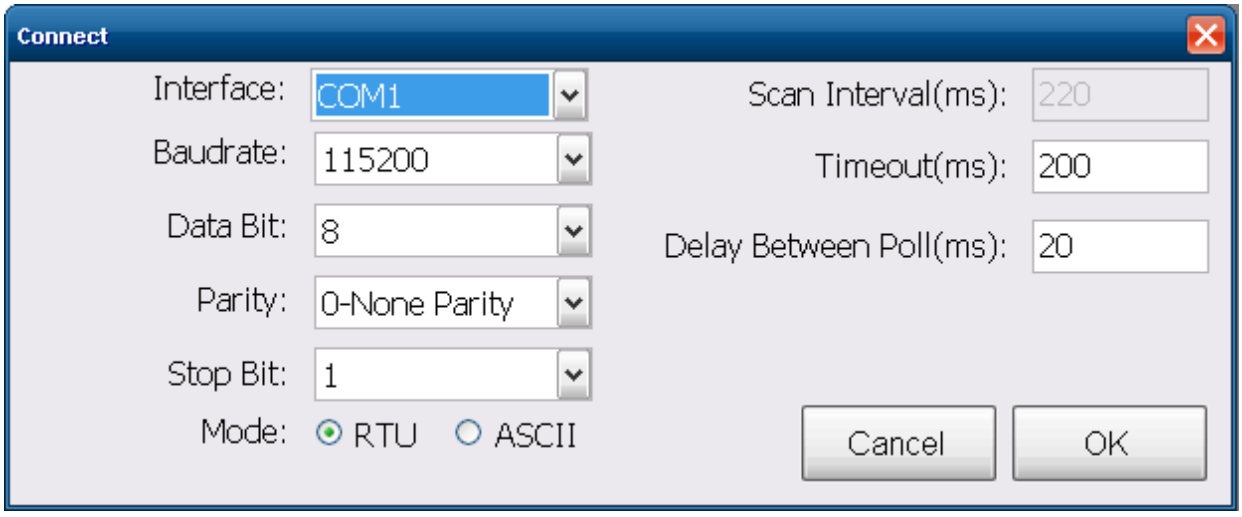
3. Input the file name and click on the ***Save*** button.



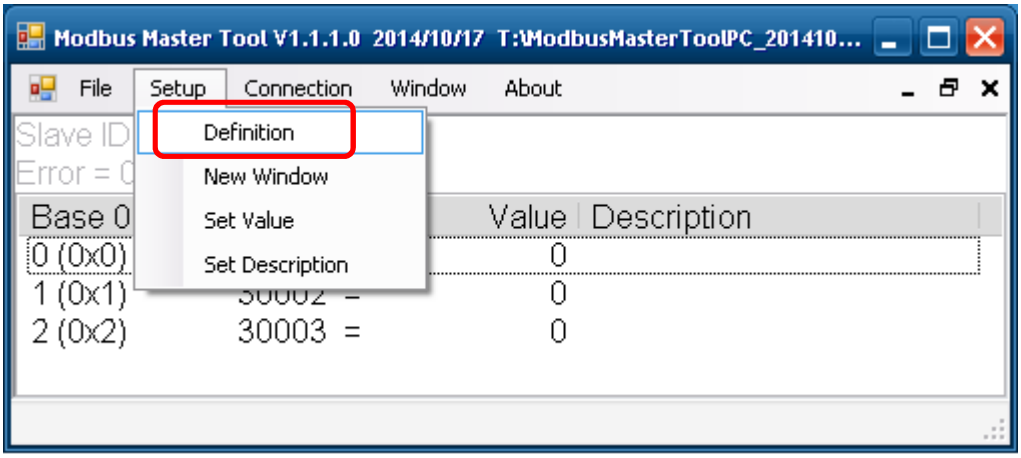
4. Select ***Connect*** in the *Connection* menu.



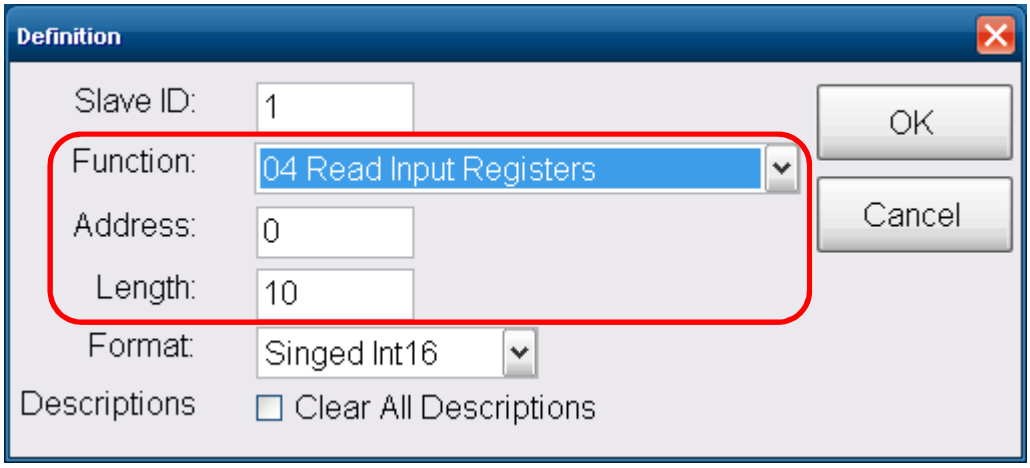
5. Select the communication interface. When using RS-485 as the interface, select the COM port, check the RTU mode and click on the ***OK*** button.



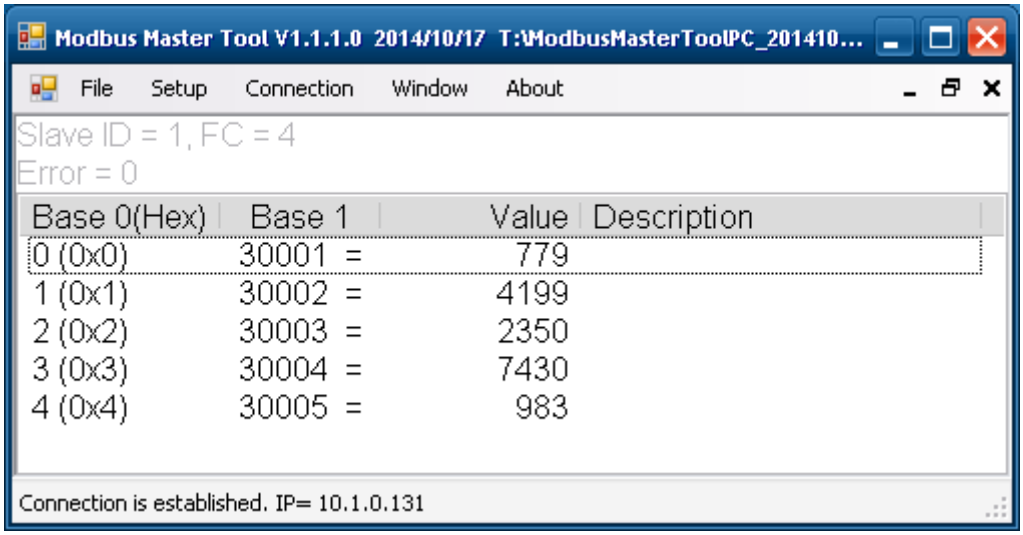
6. Select ***Definition*** in the *Setup* menu.



7. Select the Modbus function code, input the start address and length, and click on the ***OK*** button.

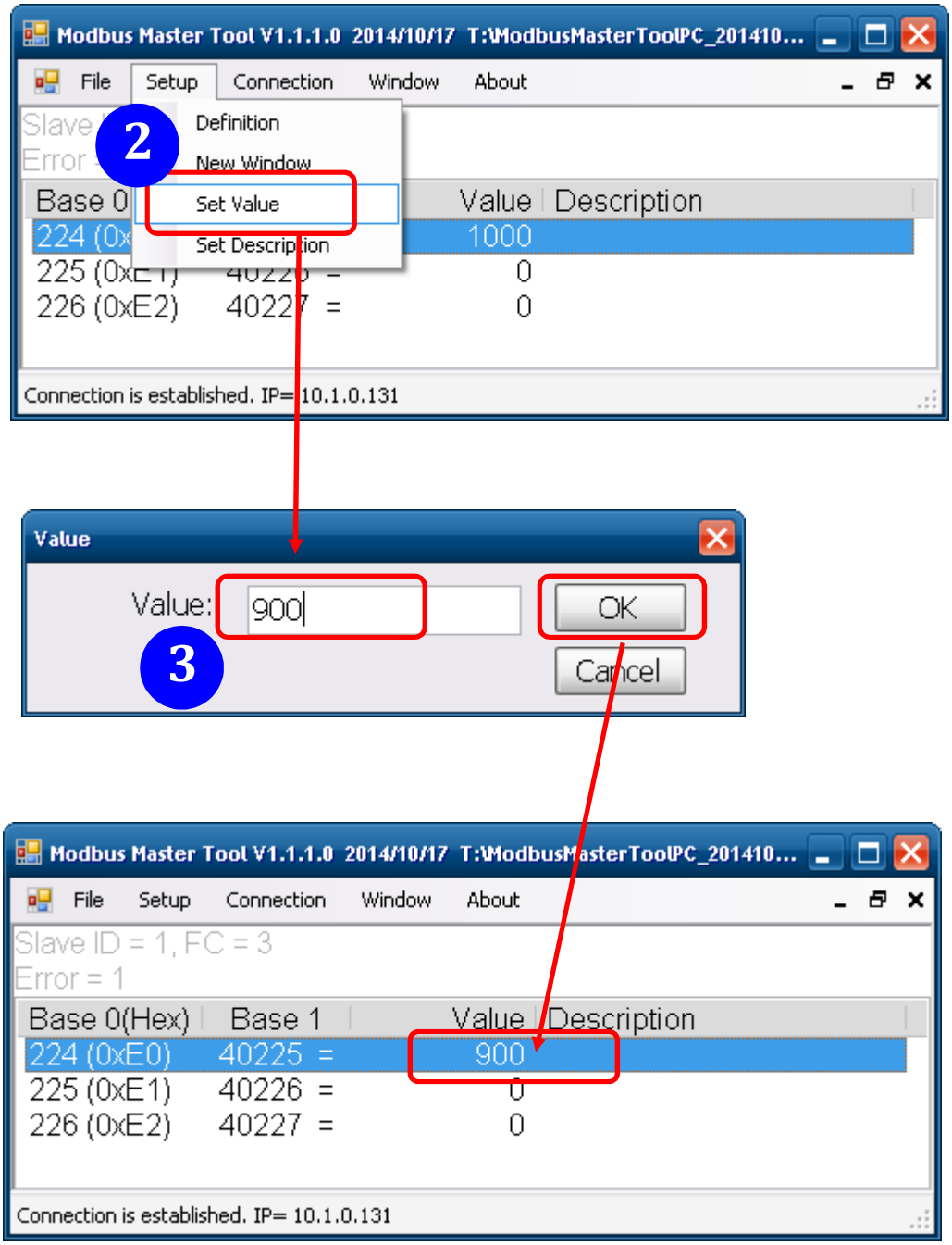


8. Read data.



9. Write data to Holding Register or Coil Status

1. Highlight the Modbus address in the Holding Register or Coil Status list
2. Select ***Set Value*** in the *Setup* menu.
3. Input the data in the Value box and click on the ***OK*** button



Appendix C: Modbus Address Table

C-1. iSN-101 / 104 Modbus Address Mappings (Base 1)

Address	Description	Attribute
30001 ~ 30004 40001 ~ 40004	Resistance of sensor 0 to 3 in 100 ohm (iSN-101:0)	R
30002 40002	Leak threshold index by VR, 0 to 24(iSN-101)	R
30005 40005	Leak threshold index by VR, 0 to 24 (iSN-104)	R
40481	Firmware version (low word)	R
40482	Firmware version (high word)	R
40483	Module name (low word)	R
40484	Module name (high word)	R
40485	RS-485 module address, 1 to 247	R/W
40486	RS-485 baud rate and parity settings Bits 5:0 Baud rate, valid range: 3 ~ 10 Bits 7:6 00: no parity, 1 stop bit 01: no parity, 2 stop bit 10: even parity, 1 stop bit 11: odd parity , 1 stop bit	R/W
40488	RS-485 response delay time in ms, valid range, 0 ~ 30	R/W
40489	RS-485 host watchdog timeout value, 0 ~ 255, in 0.1s	R/W
40492	RS-485 host watchdog timeout count, write 0 to clear	R/W
40496	Leak threshold index, 0 to 24	R/W
40497	Beep on alarm, 0: disable, 1 to 250: beep on alarm time in seconds, 251: beep on alarm continuously	R/W
30513 ~ 30516 40513 ~ 40516	High latched analog input value of resistance of sensor 0 to 3 in 100 ohm (iSN-101:0)	R

30545 ~ 30548 40545 ~ 40548	iSN-104: Low latched analog input value of resistance of sensor 0 to 3 in 100 ohm (iSN-101: 0)	R

Address	**Description**	**Attribute**
00001	Digital output value of channel 0	R/W
00033 10033	Status of the beep off switch	R
00129	Safe value of digital output channel 0	R/W
00161	Power on value of digital output channel 0	R/W
00225* 10225	Status of the open wire (iSN-101)	R
00225 ~ 00228 10225 ~ 10228	Open wire status of sensor 0 to 3 (iSN-104)	R
00257	Protocol, 0: DCON, 1: Modbus RTU	R/W
00260	Modbus RTU host watchdog mode 0: same as I-7000 1: can use AO and DO command to clear host watchdog timeout status Only for Modbus RTU protocol	R/W
00261	RS-485 host watchdog mode, 1: enable, 0: disable. Only for Modbus RTU protocol	R/W
00262	Write 1 to play notification sound	W
00270	Host watch dog timeout status, write 1 to clear host watch dog timeout status Only for Modbus RTU protocol	R/W
00273	Reset status, 1: first read after powered on, 0: not the first read after powered on	R
00280	Write 1 to clear all high latched analog input values	W
00281	Write 1 to clear all low latched analog input values	W
00289	Low alarm status of leak sensor for iSN-101. Write 1 to clear low latched alarm..	R/W

00290*	Alarm status of open wire for iSN-101. Write 1 to clear latched alarm.	R/W
00289 ~ 00292	Leak alarm status of leak sensor 0 to 3 for iSN-104. Write 1 to clear low latched alarm.	R/W
00293 ~ 00296	Open wire alarm status of leak sensor 0 to 3 for iSN-104. Write 1 to clear latched alarm.	R/W
00321 ~ 00324	Enable/disable leak alarm of leak sensor 0 to 3 (iSN-101:0)	R/W
00322*	Enable/disable alarm of open wire (for iSN-101 only)	R/W
00325 ~ 00328	Enable/disable open wire alarm of leak sensor 0 to 3 (for iSN-104 only)	R/W
00337 ~ 00340	Leak alarm type, momentary or latched, of leak sensor 0 to 3 (iSN-101:0)	R/W
00338*	Alarm type, momentary or latched, of open wire (for iSN-101 only)	R/W
00341 ~ 00344	Open wire alarm type, momentary or latched, of leak sensor 0 to 3(for iSN-104 only)	R/W
00385 ~ 00388	Write 1 to clear high latched analog input value of sensor 0 to 3(iSN-101:0)	W
00417 ~ 00420	Write 1 to clear low latched analog input value of sensor 0 to 3(iSN-101:0)	W
* iSN-101 for firmware version A103 and later only		

DIP Switch setting

1	Protocol	ON: DCON, OFF: Modbus RTU
2	Configuration	ON: by software, OFF: by hardware
3	Address	ON: added by 16, OFF: added by 0
4	INIT mode	ON: INIT, OFF: Normal
5	Sound	ON: turn on, OFF: turn off (for iSN-104 only)

Base address: 96 (0x60)

Revision History

Revision	Date	Description
1.0.0	2017/10	First released
1.1.0	2021/11	Add: open wire function (* iSN-101 for firmware version A103 and later only) Add: iSN-104
2.0.0	2022/02	Update
2.1.0	2022/08	Update Relay Output specification
2.2.0	2022/09	Update iSN-104 Modbus Address Table
2.3.0	2022/12	Update open wire Modbus Address Table
2.4.0	2024/10	Remove CA-LLD-DC100-LXXX Add iSN-101/DIN Dimensions
2.5.0	2025/11	Update Shielded Wire Specification