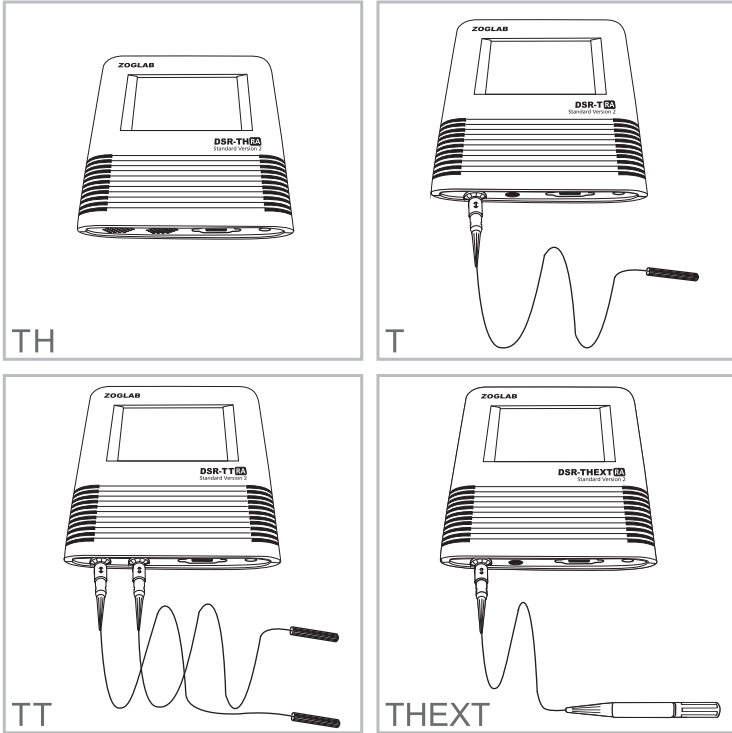


ZOGLAB



DSR series data logger for atmosphere and environment

User's Manual



Your environment is our focus

Declaration: This version of user's manual is specified for operation and installation of DSR series temperature and humidity data logger and the assorted data analysis software .The images and dimensions shown in this document may differ from the actual size depending on the product version in use ,please make products as standard only.

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CHAPTER 1

General information

Quality certification

The DSR series data logger has been tested and found to comply with the qualifications designed by China Meteorological Administration and China State Bureau of Quality and Technical Supervision .

The DSR series data logger possesses multiple international patents and obtains the CE and FCC certificates .In addition ,it has been assessed and found to meet the requirements of ISO 9001:2000 standard .The assorted data analysis software possesses independent intellectual property and achieves multiple national software certifications.



Safety and cautions

DSR series temperature and humidity digital data logger is a precision instrument , therefore do not repair or refit it except our professional engineers. Please replace the batteries or disassemble the data logger according to the user's manual . ZOGLAB Microsystem Co.,Ltd will not undertake any responsibility if any abnormal work ,failure or indirect economic loss resulted from any man-made causes . Please read this chapter carefully before you start to use the DSR data logger.



AC-DC adaptor

How to use AC-DC adaptor

DSR can be powered by 5~24V DC , we recommend that you choose the original AC-DC adaptor from our company .



How to use Li-ion battery

The ordinary "AA " battery is not suitable for DSR series data logger .It should use a 3.6V Li-ion battery . The battery can not be recharged or placed near to fire/water. Do not short-circuit the battery.



Not water resistant

This product is not water resistant . Cut down the external power supply or uninstall the battery immediately if the instrument is dropped into water. Please send the damaged products back to us.

The main part of DSR data logger can be used between $-30^{\circ}\text{C}\sim 70^{\circ}\text{C}$, and the external probe can be used between $-45^{\circ}\text{C} \sim 105^{\circ}\text{C}$. Please do not use them out of their safety temperature ranges .



Not recharge



Not short circuit



Not near to fire



Not water resistant



Recycling

Software license agreement

The DSR temperature and humidity data logger has an attached graphical data analysis software, which is able to acquire, display and store real-time data at the same time. Please read the following articles before using the software.

This agreement is a legal protocol between you (individual or single entity) and the ZOGLAB Microsystem Co., Ltd (Hereinafter referred to as "ZOGLAB"), regarding the use of DSR data analysis software. Please read it carefully.

This agreement is suitable for all versions of ZOGLAB DSR data analysis software. The software includes PC software and probably its related media and printed materials as well as online electronic documents (Hereinafter referred to as "software product or software"). Once installed, copied or used this software in other ways, it means that you agreed to accept the agreement and you are willing to obey. If you do not agree with any of the terms in the agreement, you do not have the rights to use this software.

Since ZOGLAB got the DSR data analysis software proprietary in 2006, the use and authorization of this software is protected by the laws of PRC and international copyright treaties. Users only have the right to use the software. ZOGLAB reserves all rights of this software and its document, any conferred license can not be detrimental to the right. You are not allowed to re-disseminate the authorized documents in text, electronic, or any other forms.

Individual user only allows personal use, he / she can only install the software to a specific computer.

Business users are allowed to install the product to one or more computers in authorized enterprises. But you shall not disclose, sell, authorize or disseminate the products in other forms. If the authorization information of the product is used by other non-authorized companies, it will be regarded as illegal dissemination and the authorized companies need to take responsibility.

You shall not transfer the software license, and you should make sure that you are agree with all the terms and conditions in this software license agreement.

Use the software at your own risk. ZOGLAB does not provide any express or implied guarantee, including but not limited to guarantee of product and guarantee in a specific purpose. Under no circumstances, even if foreseen the possibility of such loss, will ZOGLAB be liable for your loss, including accidental loss or loss resulted from the application of this software. You have to confirm that the license is fully understood and you are willing to accept.

ZOGLAB does not allow you to divulge, sell, authorize or disseminate the full version of this software. In addition, you may not :delete or remove the version information; dale, rental any part of the software; produce and deliver the authorization documents and software crackers; reverse the software, such as disassemble, decompile , etc. If you fail to comply with any provision of the agreement, ZOGLAB have the right to immediately terminate this agreement and you must immediately discontinue the use of this software and delete all copies of the software.

The users themselves shall bear responsibility for consequences caused by the use of pirated software. ZOGLAB and its distributor do not bear any responsibility for damages caused by the use of pirated software.

If you agree with the above terms, please use CD-ROM or download the file for DSR data analysis software installation and use. If not, please delete the software and it's copies.

Please read the agreement carefully to confirm that the license is fully understood and you are willing to accept. All rights reserved.

Senior developer agreement

Accept the following clauses to get the DSR advanced user manual. The rich instruction set allows you to integrate this type of equipment into your system easily.

This agreement is a legal protocol between you (individual or single entity) and the ZOGLAB Microsystem Co.,Ltd (Hereinafter referred to as "ZOGLAB "), regarding the secondary development of DSR temperature and humidity data logger. Please read it carefully.

Senior developer agreement will allow the end-user using the DSR machine language, communications protocol or even the kernel function. This is a fee-based licensing agreement . Meanwhile , ZOGLAB will provide to legitimate users a wide range of technical support including e-mail, telephone and fax.

The senior developer agreement is a non-proliferation agreement . The authorized users may not disseminate , copy or modify the advanced use's manual , technological data and application software . Otherwise , all of the product technical support and warranty service will be deemed to have waived.

If you accept the above-mentioned clauses , please contact us or our local distributor for the print and electronic version of DSR series temperature and humidity data logger advanced user's manual. All rights reserved.

CHAPTER 2

Product description

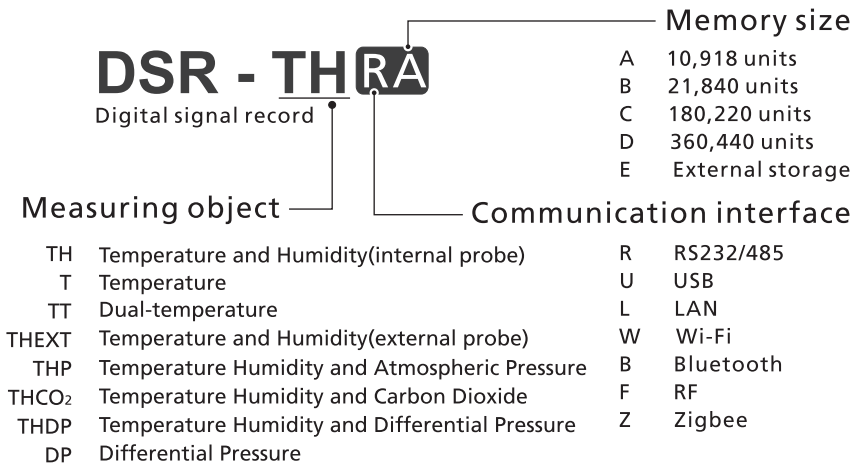
Introduction

DSR data logger is a digital signal recording instrument based on the mixed-signal processor. The DSR (abbreviation for the "Digital Signal Record") data logger is a new low-power digital instrument integrating analog signal acquisition, display, storage with data analysis function.

As the environmental monitoring is increasingly important nowadays, DSR series data logger provides parameters' display, logging, analysis in conventional environments, such as temperature, humidity, barometric pressure, wind speed, wind direction, rainfall, radiation and CO₂ concentration changes.

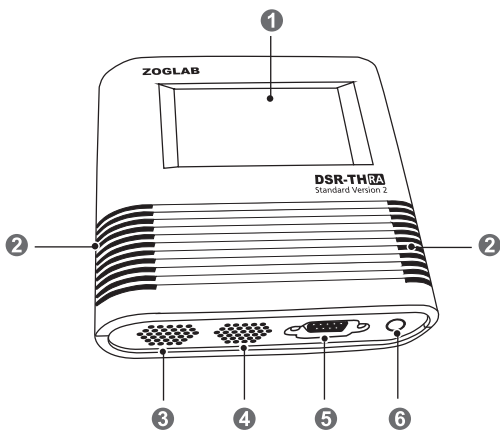
DSR series digital data logger has 8 models, consisted of DSR-T :data logger for temperature, DSR-TH: data logger for temperature and humidity, DSR-TT : data logger for dual-temperature,DSR-THEXT : data logger for temperature and humidity(external probe),DSR-THP : data logger for temperature, humidity and atmospheric pressure, DSR-THCO₂ : data logger for temperature, humidity and carbon dioxide. DSR-THDP: data logger for temperature, humidity and differential pressure, and DSR-DP: data logger for differential pressure. Please check whether you have all of the corresponding accessories in readiness. If any items are missing, contact your supplier for assistance.

DSR family

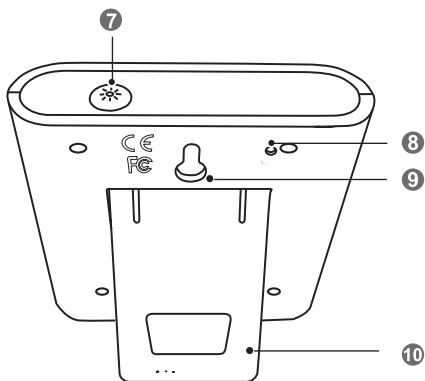


Overview

Take DSR-TH R series for an example

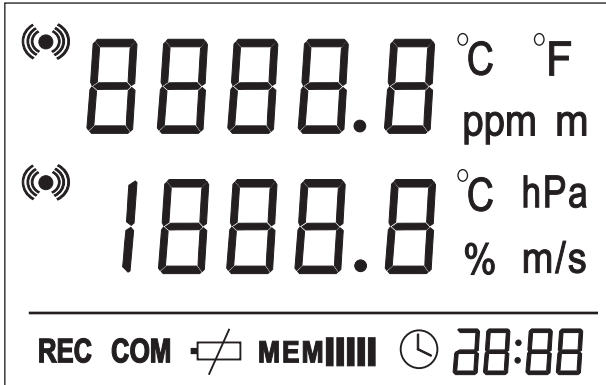


1. Display area
2. Vent
3. Humidity sensor
4. Temperature sensor
5. Communication port
6. Power port



7. Backlight button
8. Reset button
9. Mounting hole
10. Bracket

LCD display




Record symbol

The **REC** symbol will be flashing based on the logging interval while recording.

Communication symbol

The **COM** symbol will be flashing while communicating with PC or industrial equipment.

Battery symbol

If the system voltage is lower than the normal value, the data may lead to abnormal. Please change the battery if the  is flashing.

MEM Symbol

- 1.No recorded data
- 2.Data capacity of 1% ~ 20%
- 3.Data capacity of 21% ~ 40%
- 4.Data capacity of 41% ~ 60%
- 5.Data capacity of 61% ~ 80%
- 6.More than 81%
- 7.Reaches the pre-alarming value(90% by default)

MEM

MEM 

MEM 


MEM 

MEM 

MEM 

MEM   Not flashing


8.Capacity of 91%

MEM Flashing +  Flashing

9.Capacity of 100%

MEM Flashing +  Flashing +  Flashing

10.Memory is full and data has been read once or restart.

MEM Flashing +  Flashing

Clock symbol

When the logging ends (full deposit / presetting units / timing end), the clock symbol  will be flashing together with the **MEM**  symbol for alarming. If set up to timing storage, the clock symbol  will be flashing, showing the timing logging status. This symbol is active by default .



Digital clock

Display separately in YYYY, MM.DD, HH: MM forms.

2008 ==>> 03.28 ==>> 15:32 ==>>Chain displays.

The display of year will maintain for 5s before it changes to month/date . Then after 5s the display will change to hour/minute and keeps for 30s.

Alarm symbol

When the high and low limits have been exceeded,  will flashing quickly per 0.2s; Meanwhile, the data logger has pre-alarm function. If the actual value is nearly 95% of high and low limits ,the blinking cycle of  will be 0.5s.

Main display

First line :temperature display, range:-45.0~105.0°C/°F;

environmental TH display:-30.0~70.0°C/°F

Second line :humidity display, range:0.0%~100.0%

Minimum display resolution of temperature:0.1°C/0.2°F , Minimum display resolution of humidity:1.0%

Sensor fault or spalling

Temperature shown as -999.9°C or 1999.9°C(the second temperature channel),humidity shown as -99.9%.

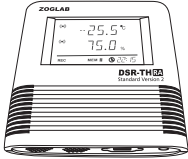
Memory lapse

Full LCD display and flashing

Components

DSR-TH series

Please check that the following components are all in readiness:



DSR data logger



RS232 cable (For R series)



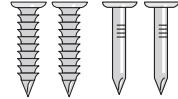
USB cable(For U series)



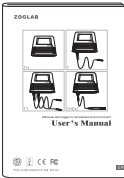
LAN cable(For L series)



Antenna(For wireless series)



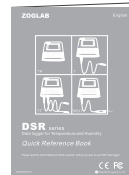
Accessories



User's Manual



Software



Quick Reference Book



Caution



Warranty Card



Qualification

Technical data

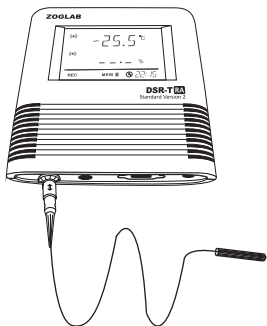
DSR-TH Data logger for temperature and humidity

Sensor type	Internal
T Measuring range	-30°C~70°C
T Accuracy	±0.3°C(23°C ±2°C), Full scale±0.5°C
T Resolution	0.1°C /0.2°F
RH Measuring range	0%~100%RH
RH Accuracy	±3%RH (10%~85%),other range±5%RH
	(Testing environment 23°C ±2°C)
	±2%RH (High-precision version)
RH Resolution	0.1%RH
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] /
	360,440 [D] values
Alarm	High level and low level,display+beep+backlight
Sampling interval	2s,5s,10s,30s,60s,255s
Logging interval	2 seconds~24 hours
Start with delay time	1 ~120 seconds
Start mode	Start immediately / delay start / timing start
End mode	Full / FIFO / presetting units / timing end
Timing start / end	Random start/end with format YYMMDD HHMMSS
Interface	RS232/485[R]/USB[U]/LAN[L]/
	Wireless[W、B、Z、F、G]
Battery	3.6V lithium battery ×1
Battery lifetime	Typical 1 year(with a sample rate of 10 seconds)
	5 years(In sleep mode)
RTC battery	CR2032
External voltage	5~24V DC
Storage temperature	-50°C~90°C
Dimensions (WxHxD)	123.0×117.3×33.4mm
Weight	260g
Display area	66×42mm
Clock accuracy	<12mins/year

Components

DSR-T series

Please check that the following components are all in readiness:



DSR data logger



RS232 cable (For R series)



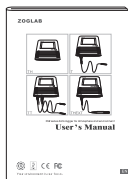
USB cable(For U series)



LAN cable(For L series)



Antenna(For wireless series)



User's Manual



Software



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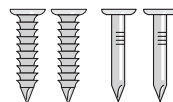
Caution



Warranty Card



Qualification



Accessories

Technical data

DSR-T Data logger for temperature

Sensor type	External 3m low-temperature and corrosion resistant wire		
Measuring range	-45°C~105°C		
Accuracy	± 0.5°C(-45°C~70°C), ± 0.6°C(70°C~105°C)		
Resolution	0.1°C /0.2°F		
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] /		
	360,440 [D] values		
Alarm	High level and low level, display+beep+backlight		
Sampling interval	2s, 5s, 10s, 30s, 60s, 255s		
Logging interval	2 seconds~24 hours		
Start with delay time	1 ~120 seconds		
Start mode	Start immediately / delay start / timing start		
End mode	Full / FIFO / presetting units / timing end		
Timing start / end	Random start/end with format YYMMDD HHMMSS		
Interface	RS232/485[R]/USB[U]LAN[L]/		
	Wireless[W、B、Z、F、G]		
Battery	3.6V lithium battery ×1		
Battery lifetime	Typical 1 year(with a sample rate of 10 seconds)		
	5 years(In sleep mode)		
RTC battery	CR2032		
External voltage	5~24V DC		
Storage temperature	-50°C~90°C		
Dimensions (WxHxD)	123.0×117×33.4mm		
Dimensions	5×6×14.5mm		
Weight	305g		
Display area	66×42mm		
Clock accuracy	<12mins/year		

Temperature measuring range of DSR-T extended models

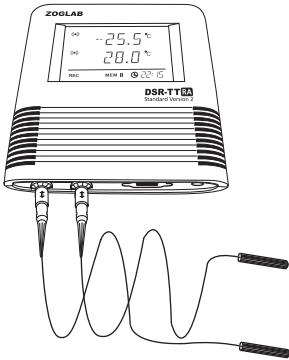
(the type and size of probe vary depending on the different measuring ranges)

Extra-low temperature type	-196 °C~ 25 °C	Medical type	0 °C~ 70 °C
Ultra-low temperature type	-100 °C~ 50 °C	High temperature type	0 °C~ 175 °C
Wide-range temperature type	-45 °C~ 105 °C		

Components

DSR-TT series

Please check that the following components are all in readiness:



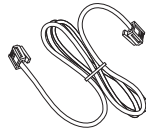
DSR data logger



RS232 cable (For R series)



USB cable(For U series)



LAN cable(For L series)



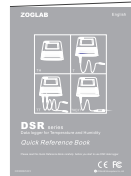
Antenna(For wireless series)



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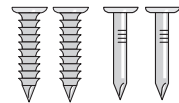
Caution



Warranty Card



Qualification



Accessories

Technical data

DSR-TT Data logger for temperature

Sensor type	External 3m low-temperature and corrosion resistant wire
T1 Measuring range	-45°C~105°C
T1 Accuracy	± 0.5°C(-45°C~70°C), ± 0.6°C(70°C~105°C)
T1 Resolution	0.1°C /0.2°F
T2 Measuring range	-45°C~105°C
T2 Accuracy	± 0.5°C(-45°C~70°C), ± 0.6°C(70°C~105°C)
T2Resolution	0.1°C /0.2°F
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] / 360,440 [D] values
Alarm	High level and low level, display+beep+backlight
Sampling interval	2s,5s, 10s,30s,60s,255s
Logging interval	2 seconds~24 hours
Start with delay time	1 ~ 120 seconds
Start mode	Start immediately / delay start / timing start
End mode	Full / FIFO / presetting units / timing end
Timing start / end	Random start/end with format YYMMDD HHMMSS
Interface	RS232/485[R]/USB[U]/LAN[L]/ Wireless[W、B、Z、F、G]
Battery	3.6V lithium battery ×1
Battery lifetime	Typical 1 year(with a sample rate of 10 seconds) 5 years(In sleep mode)
RTC battery	CR2032
External voltage	5~24V DC
Storage temperature	-50°C~90°C
Dimensions (WxHxD)	123.0×117.3×33.4mm
Dimensions	5×6×14.5mm
Weight	345g
Display area	66×42mm
Clock accuracy	<12mins/year

Temperature measuring range of DSR-TT extended models

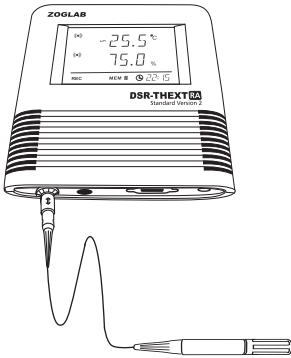
(the type and size of probe vary depending on the different measuring ranges)

Extra-low temperature type	-196 °C~ 25 °C	Medical type	0 °C~ 70 °C
Ultra-low temperature type	-100 °C~ 50 °C	High temperature type	0 °C~ 175 °C
Wide-range temperature type	-45 °C~ 105 °C		

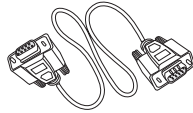
Components

DSR-THEXT series

Please check that the following components are all in readiness:



DSR data logger



RS232 cable (For R series)



USB cable(For U series)



LAN cable(For L series)



Antenna(For wireless series)



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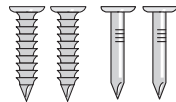
Caution



Warranty Card



Qualification



Accessories

Technical data

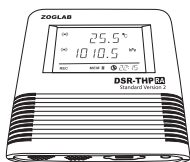
DSR-THEXT Data logger for temperature and humidity

Sensor type	External sensor (TH all in one)
T Measuring range	-40°C~85°C
T Accuracy	±0.3°C(23°C ±2°C), Full scale±0.5°C
T Resolution	0.1°C /0.2°F
RH Measuring range	0%~100%RH
RH Accuracy	±3%RH(10%~85%RH),other range±5%RH
	(Testing environment 23°C ±2°C)
	±2%RH (High-precision version)
RH Resolution	0.1%RH
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] /
	360,440 [D] values
Alarm	High level and low level,display+beep+backlight
Sampling interval	2s,5s,10s,30s,60s,255s
Logging interval	2 seconds~24 hours
Start with delay time	1 ~120 seconds
Start mode	Start immediately / delay start / timing start
End mode	Full / FIFO / Presetting units / Timing end
Timing start / end	Random start/end with format YYMMDD HHMMSS
Interface	RS232/485[R]/USB[U]/LAN[L]/
	Wireless[W、B、Z、F、G]
Battery	3.6V lithium battery ×1
Battery lifetime	Typical 1 year(with a sample rate of 10 seconds)
	5 years(In sleep mode)
RTC battery	CR2032
External voltage	5~24V DC
Storage temperature	-50°C~90°C
Dimensions	123.0×117.3×33.4mm
Weight	355g
Dimensions	Φ12mm×73mm
Display area	66×42mm
Clock accuracy	<12mins/year

Components

DSR-THP series

Please check that the following components are all in readiness:



DSR data logger



RS232 cable (For R series)



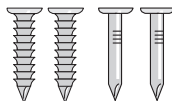
USB cable(For U series)



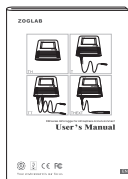
LAN cable(For L series)



Antenna(For wireless series)



Accessories



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Caution



Warranty Card



Qualification

Technical data

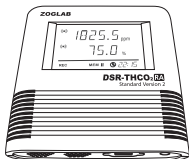
DSR-THP Data logger for temperature, humidity and atmospheric pressure

Sensor type	Internal
T Measuring range	-30°C~70°C
T Accuracy	±0.3°C(23°C ±2°C), Full scale ±0.5°C
T Resolution	0.1°C /0.2°F
RH Measuring range	0%~100%RH
RH Accuracy	±3%RH(10%~85%RH),other range ±5%RH
	(Testing environment 23°C ±2°C)
	±2%RH (High-precision version)
RH Resolution	0.1%RH
P Measuring range	500.0~1100.0hPa
P Accuracy	±0.5hPa A, ±1.0hPa B
P Resolution	0.1hPa
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] /
	360,440 [D] values
Alarm	High level and low level,display+beep+backlight
Sampling interval	2s,5s,10s,30s,60s,255s
Logging interval	2 seconds~24 hours
Start with delay time	1 ~120 seconds
Start mode	Start immediately / delay start / timing start
End mode	Full / FIFO / Presetting units / Timing end
Timing start / end	Random start/end with format YYMMDD HHMMSS
Interface	RS232/485[R]/USB[U]/LAN[L]/
	Wireless[W、B、Z、F、G]
Battery	3.6V lithium battery ×1
Battery lifetime	Typical 1 year(with a sample rate of 10 seconds)
	5 years(In sleep mode)
RTC battery	CR2032
External voltage	5~24V DC
Storage temperature	-50°C~90°C
Dimensions	123.0×117.3×33.4mm
Weight	280g
Display area	66×42mm
Clock accuracy	<12mins/year

Components

DSR-THCO₂ series

Please check that the following components are all in readiness:



DSR data logger



RS232 cable (For R series)



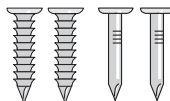
USB cable(For U series)



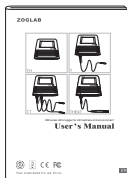
LAN cable(For L series)



Antenna(For wireless series)



Accessories



User's Manual



Software



Quick Reference Book



Caution



Warranty Card



Qualification

Technical data

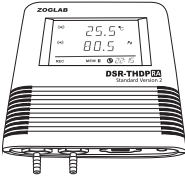
DSR-THCO₂ Data logger for temperature, humidity and carbon dioxide

Sensor type	Internal
T Measuring range	-30°C~70°C
T Accuracy	±0.3°C(23°C ±2°C), Full scale ±0.5°C
T Resolution	0.1°C /0.2°F
RH Measuring range	0%~100%RH
RH Accuracy	±3%RH(10%~85%RH),other range ±5%RH (Testing environment 23°C ±2°C)
RH Resolution	0.1%RH
CO ₂ Measuring range	0~9999.9ppm(Customizable)
CO ₂ Accuracy	±70ppm, ±40ppm
CO ₂ Resolution	0.1ppm
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] / 360,440 [D] values
Alarm	High level and low level,display+beep+backlight
Sampling interval	2s,5s,10s,30s,60s,255s
Logging interval	2 seconds~24 hours
Start with delay time	1 ~ 120 seconds
Start mode	Start immediately / delay start / timing start
End mode	Full / FIFO / Presetting units / Timing end
Timing start / end	Random start/end with format YYMMDD HHMMSS
Interface	RS232/485[R]/USB[U]/LAN[L]/ Wireless[W、B、Z、F、G]
Battery	3.6V lithium battery × 1
Battery lifetime	Typical 1 year(with a sample rate of 10 seconds) 5 years(In sleep mode)
RTC battery	CR2032
External voltage	5~24V DC
Storage temperature	-50°C~90°C
Dimensions	123.0×117.3×33.4mm
Weight	300g
Display area	66×42mm
Clock accuracy	<12mins/year

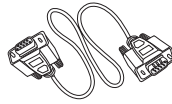
Components

DSR-THDP series

Please check that the following components are all in readiness:



DSR data logger



RS232 cable (For R series)



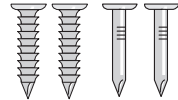
USB cable(For U series)



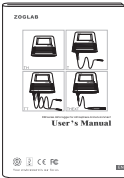
LAN cable(For L series)



Antenna(For wireless series)



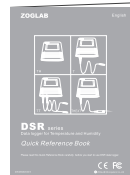
Accessories



User's Manual



Software



Quick Reference Book



Caution



Warranty Card



Qualification

Technical data

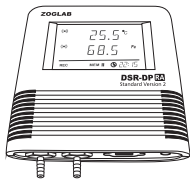
DSR-THDP Data logger for temperature, humidity and differential pressure

Sensor type	Internal
T Measuring range	-30°C~70°C
T Accuracy	±0.3°C (23°C ± 2°C), Full scale ± 0.5°C
T Resolution	0.1°C / 0.2°F
RH Measuring range	0%~100%RH
RH Accuracy	±3%RH (10%~85%RH), other range ± 5%RH (Testing environment 23°C ± 2°C)
RH Resolution	0.1%RH
DP Measuring range	0~100.0Pa, 0~200.0Pa
DP Accuracy	1.5%FS+3Pa (Testing environment 25°C, 980.0hPa~1015.0hPa)
DP Resolution	0.1Pa
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] / 360,440 [D] values
Alarm	High level and low level, display+beep+backlight
Sampling interval	2s, 5s, 10s, 30s, 60s, 255s
Logging interval	2 seconds~24 hours
Start with delay time	1 ~ 120 seconds
Start mode	Start immediately / delay start / timing start
End mode	Full / FIFO / Presetting units / Timing end
Timing start / end	Random start/end with format YYMMDD HHMMSS
Interface	RS232/485[R]/USB[U]/LAN[L]/ Wireless[W、B、Z、F、G]
Battery	3.6V lithium battery × 1
Battery lifetime	Typical 1 year (with a sample rate of 10 seconds) 5 years (In sleep mode)
RTC battery	CR2032
External voltage	5~24V DC
Storage temperature	-50°C~90°C
Dimensions	123.0×117.3×33.4mm
Weight	293g
Display area	66×42mm
Clock accuracy	<12mins/year

Components

DSR-DP series

Please check that the following components are all in readiness:



DSR data logger



RS232 cable (For R series)



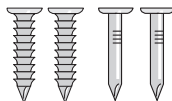
USB cable(For U series)



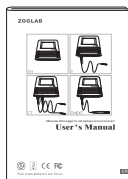
LAN cable(For L series)



Antenna(For wireless series)



Accessories



User's Manual



Software



Quick Reference Book



Caution



Warranty Card



Qualification

Technical data

DSR-DP Data logger for differential pressure

Sensor type	Internal
T Measuring range	-30°C~70°C
T Accuracy	±0.3°C(23°C ±2°C), Full scale ±0.5°C
T Resolution	0.1°C /0.2°F
DP Measuring range	0~100.0Pa,0~200.0pa
DP Accuracy	±1.5%FS±3Pa (Testing environment 25°C, 980.0hPa~1015.0hPa)
DP Resolution	0.1Pa
Memory size	10,918 [A] / 21,840 [B] / 180,220 [C] / 360,440 [D] values
Alarm	High level and low level, display+beep+backlight
Sampling interval	2s,5s,10s,30s,60s,255s
Logging interval	2 seconds~24 hours
Start with delay time	1 ~120 seconds
Start mode	Start immediately / delay start / timing start
End mode	Full / FIFO / Presetting units / Timing end
Timing start / end	Random start/end with format YYMMDD HHMMSS
Interface	RS232/485[R]/USB[U]/LAN[L]/ wireless[W、B、Z、F、G]
Battery	3.6V lithium battery ×1
Battery lifetime	Typical 1 year(with a sample rate of 10 seconds) 5 years(In sleep mode)
RTC battery	CR2032
External voltage	5~24V DC
Storage temperature	-50°C~90°C
Dimensions	123.0×117.3×33.4 mm
Weight	293g
Display area	66×42mm
Clock accuracy	<12mins/year

CHAPTER 3

Hardware

A Hardware installation

A cross screwdriver is needed to install /uninstall the device.

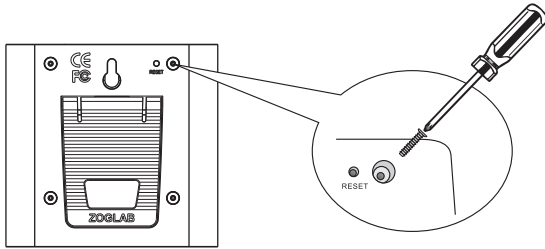


Ø3 × 16

Screw

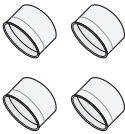


Cross screwdriver

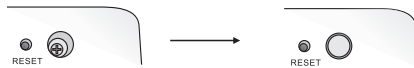


* The DSR appearance may change due to version upgrade , please make the object as the standard.

Four assorted screw stop: Put the screw stop into the hole in order to avoid the corrosion and rustiness of screws.

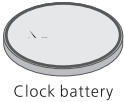
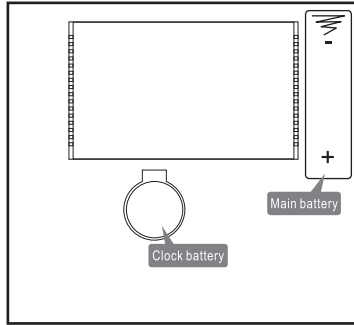


Screw stop



Cover the screw

B Battery replacement



Clock battery

How to replace the clock battery:

Open the case you will see a CR2032 battery below LCD display, then replace a new one.



We recommend that you replace the clock battery once a year.



Main battery

How to replace the main battery:

Open the case you will see a battery holder on the right, then replace a new battery. After installed correctly, the data logger will beep once, and data will be displayed immediately. If not, you should check the battery or refer to FAQ.

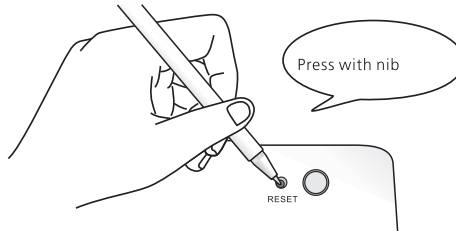


- Normally, a 3.6V Li-ion battery can last for 12 months with 10s sampling interval and no beep active.
- Long-term connection with PC will increase the additional battery cost. Please stop the connection after settings have been finished.
- The period of buzzer alarm and backlight will also affect the battery consumption, please set the appropriate period of alarm and backlight.

C Reset introduction

Hardware wake-up In the first use of DSR data logger, it may in the sleep mode (without any display).You shall use the reset button to wake-up the equipment(it can also be waken up through DSR analysis software).

Reset function As a result of external interference, the display of DSR data logger may stop updating and the second point on the screen may be not blinking; or abnormal data display/downloads may happen. You can press the reset button to reset the data logger.

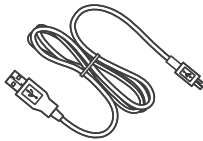


- ! Take the corresponding solution to the fault caused by external forces, please do not use the reset button arbitrarily.
- Attention: The current recorded data will be lost if reset the DSR data logger in logging status; if reset the data logger while it is not logging, the data will not lost. Therefore use this button after consideration .We recommend users to obturate the reset hole.

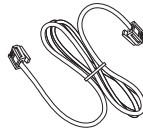
Connect to PC



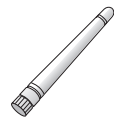
1 RS232



2 USB



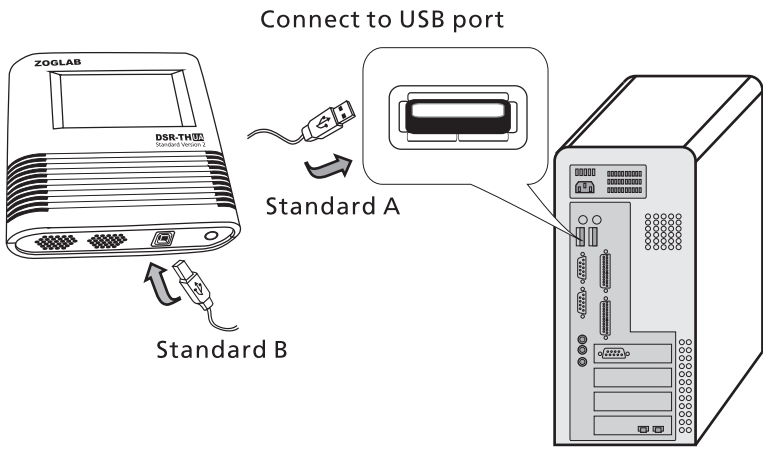
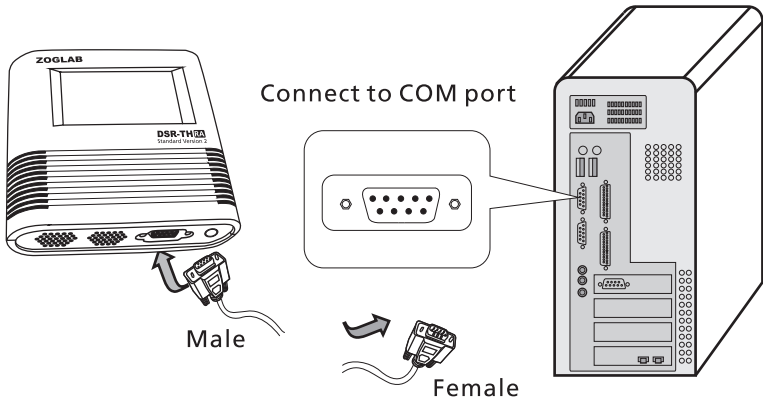
3 LAN



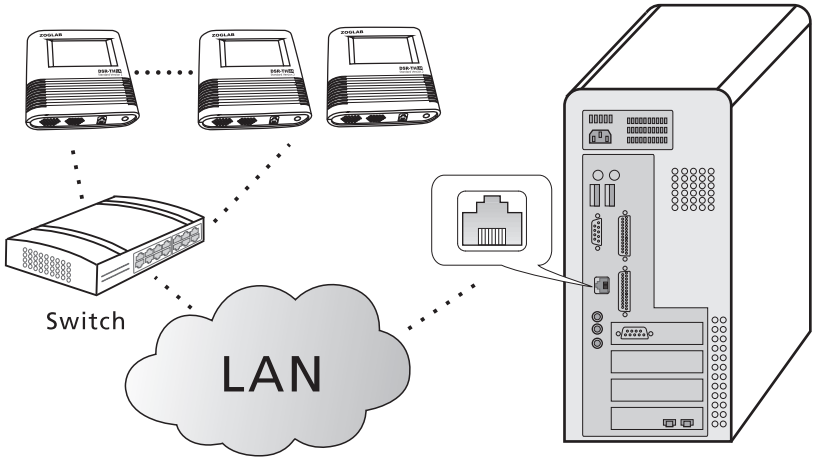
4 WIRELESS

- ☑ First you have to connect DSR to the computer/switch and then set the parameters through the PC analysis software.

Establish communication with PC

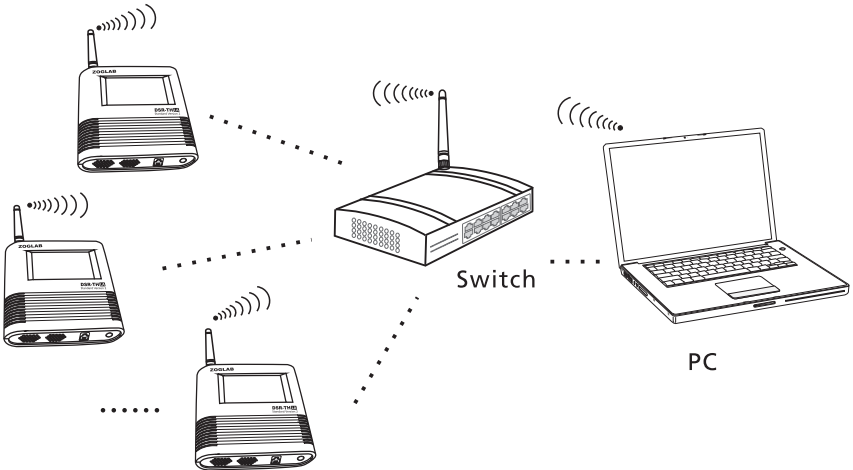


Establish communication with PC



3

LAN Connection Mode



4

Wireless Connection Mode

CHAPTER 4

Software (Compliance with GMP, GLP,FDA, ISO22000,ISO17025 standards)

A Operating requirement

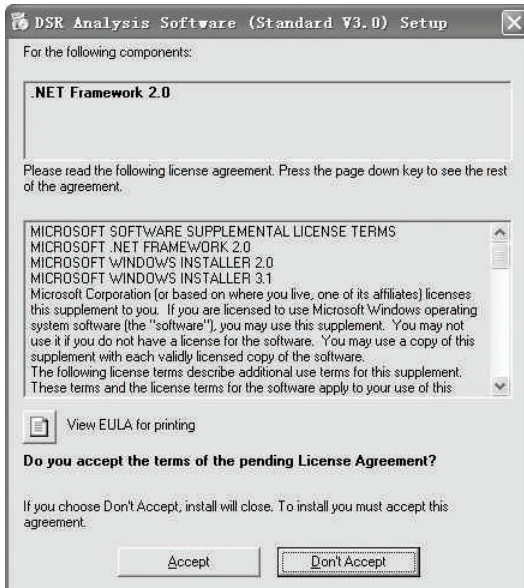
IBM or compatible computer
Intel or compatible with X86 processor
1G HDD or above
24X CD-ROM or above
Over 20GB hard disk space
Microsoft.NET framework

This software compatible with windows SVR2000/2003/2008,
windows XP/Vista/WIN7/WIN8
data can be exported in Office XP/2003/2007/2013 format.

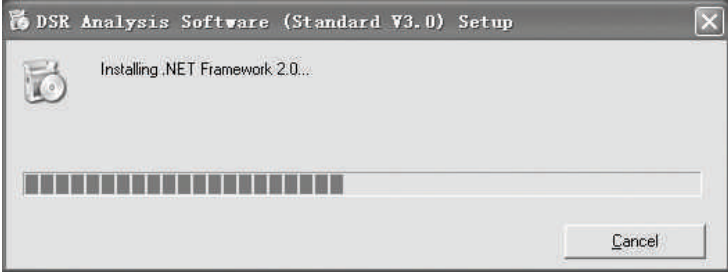
B Software installation

(Take windows XP system and standard V3.0 for example)

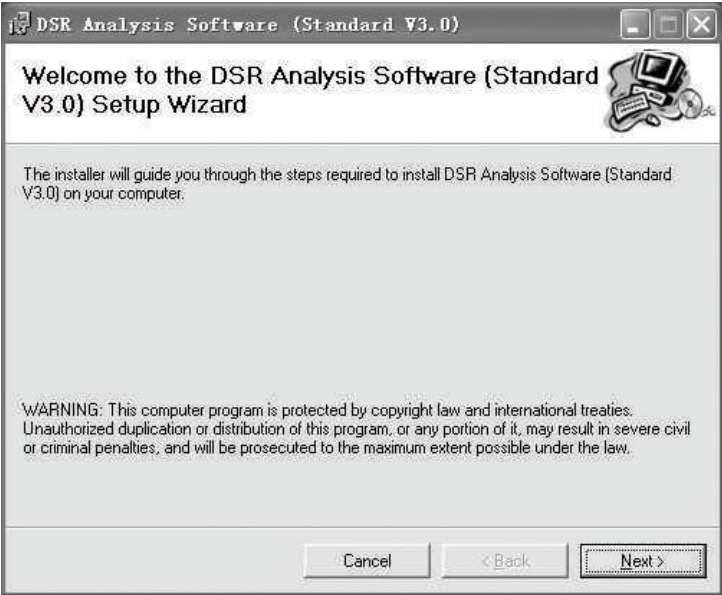
Put the DSR analysis software disk into the CD/DVD-ROM to spring the installation interface.



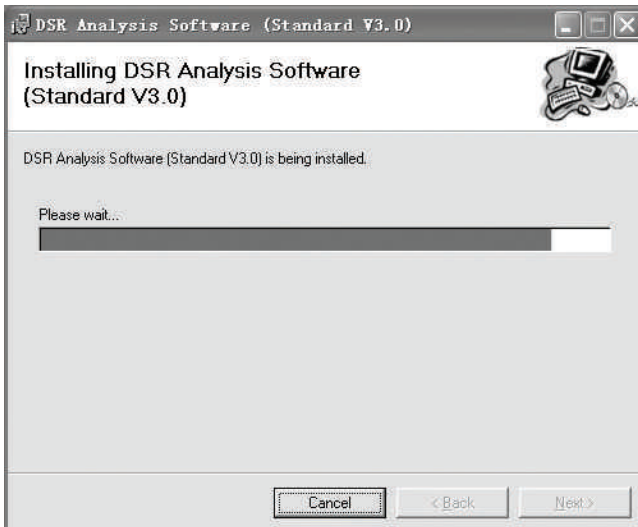
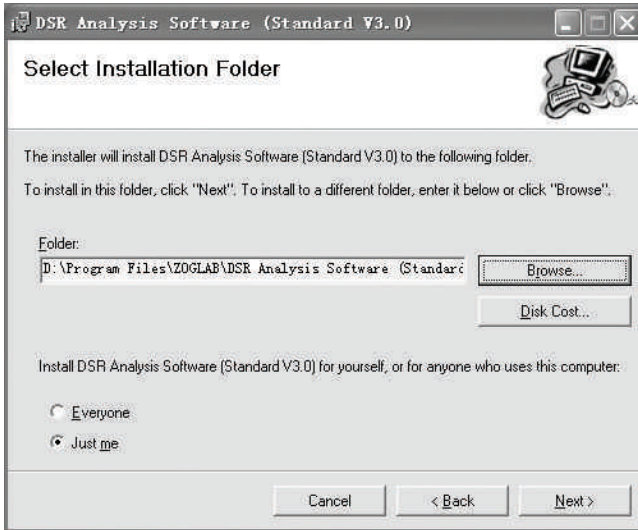
If your computer has never installed Microsoft.NET operating environment and its related language pack, the installation will proceed automatically. The entire installation process may take 1~2 minutes(depending on the system speed).



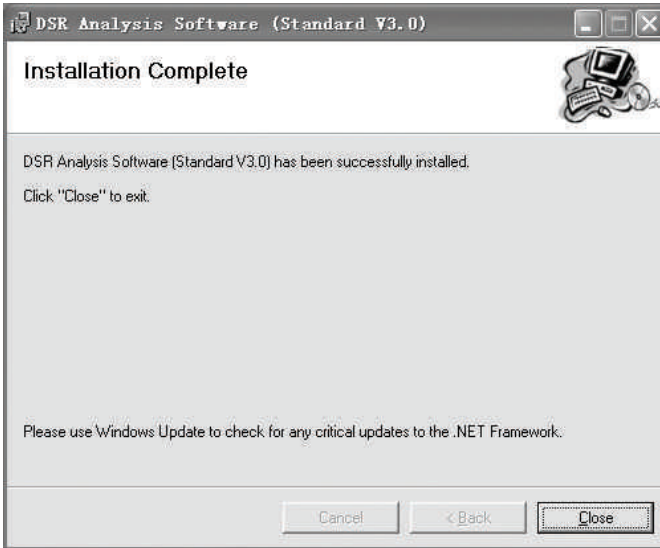
The formal installation begins after Microsoft.NET operating environment installation has finished.



Select permissions and we recommend you to select installation folder under non-system disk.



After installation , it will prompt that the installation has been finished and the corresponding shortcuts have been added both on the desktop and the programbar.



You can find this icon on the desktop after installation.



double click to startup the software

USB driver installation (For U-series only)

While connecting the DSR temperature and humidity data logger (U-series model) with the computer, you need to install the USB driver in order to establish communications between the data logger and computer then to carry out normal operation of DSR analysis software. Installation as follows:

After software installation, connect the DSR temperature and humidity data logger (U series model) to PC by using a USB communication cable, then the following dialog box will pop-up on the PC screen :

Choose "Yes, this time only" and click "Next".



Wizard installation can be divided into two types: 1. Install the software automatically 2. Install from a list or specified location

1. Install the software automatically



The system will search the installation package and install it automatically, please wait a few minutes for the installation to finish.



2. Install from a list or specified location



Choose "Install from a list or specified location", then the following dialog box will pop-up:



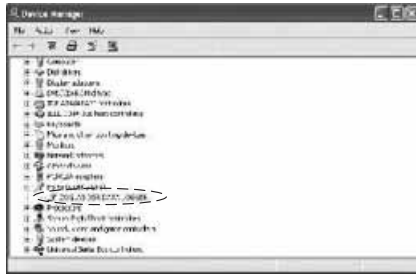
Click "browse" to find out and choose the installation package "USB_driver", the installation will begin after press "OK".



Please wait for the installation to finish.



The mapped corresponding COM port can be found in the device manager of the computer after the driver installation has finished. Just like the following:
"ZOGLAB DSR DATA LOGGER "



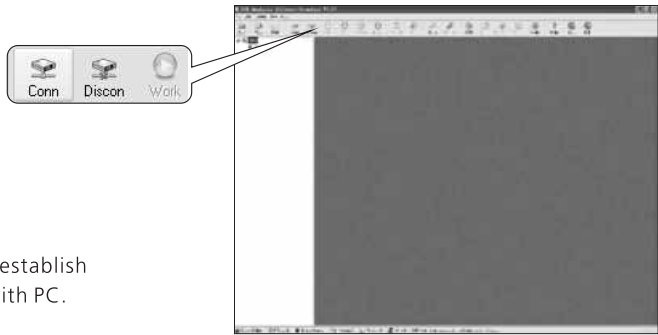
On some computers, the driver may need to be reloaded twice to complete.

Quick settings



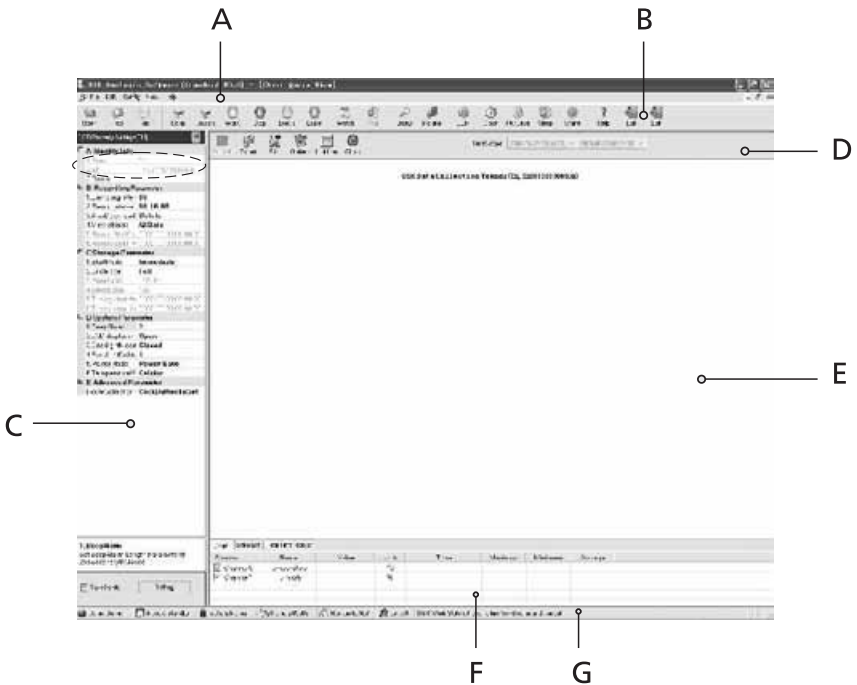
1. In the first use of DSR, the data logger may be in the sleep mode. You have to click "wake" to wake it up. Reset button on the back of the device can also be used to wake-up the data logger.

2. "Communication protocol settings "are used to set the communication protocol, communication rates between DSR software and different DSR devices. Do not change the baud rate so as to avoid communication failure except advanced users. If your PC does not have COM1 or the COM port is occupied , you can re-select port through this option.



3. Click "conn" to establish communications with PC.

The serial number of data logger is in the circle (each data logger has a unique serial number). The following chart is the interface shown after connection.



- A. Main Menu
- B. Shortcut menu
- C. Property bar
- D. Submenu
- E. Main display area
- F. Numerical table
- G. Status bar

When the connection is completed, the above form will appear . If not , the software will alert you to access the DSR data logger . You will not be able to run normal operations of the software without the data logger.

Property

① Sampling and logging interval

Ex-factory default interval is 60s per refreshing and 10mins per logging .The fastest refreshing interval is 2s (refreshing interval is the sensor sampling interval). Please select a suitable sampling interval between 2s/5s/10s/30s/60s/255s and logging interval from 2s to 24hrs.



We recommend that you use the "Power save" mode (60s per refreshing, 10mins per logging) as the standard setting .

B Recording Parameter	
1.Sampling Inter	60
2.RecordInterval	2
3.AfterDownload	5
4.View objects	10
5.RecordStartTin	30
6.RecordEndTin	60
C Storage Para	
	255

B Recording Parameter	
1.Sampling Inter	60
2.RecordInterval	00:10:00
3.AfterDownload	Delete
4.View objects	AllData
5.RecordStartTin	0000-00-00 00:00:00
6.RecordEndTin	0000-00-00 00:00:00

Set sampling interval

Sampling interval is the display update interval, please set it depending on your actual needs.

Set logging interval

Logging interval is the interval between two loggings. The software setting format is HH: MM: SS .The logging interval is from 2s to 24 hrs.

2 Start mode and end mode

Start mode :

C Storage Parameter	
1.StartMode	Immediate
2.EndMode	Immediate
3.StoreUnits	Delay
4.StoreDelay	Timing

Immediate start

DSR data logger will start recording as soon as you click the button "work".

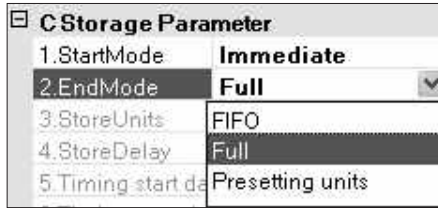
Delay start

DSR data logger will start recording after the delay time when you click the button "work".

Timing start

DSR data logger will be logging from pre-set start time to end time.

End mode :



- FIFO First in first out :if the memory is full ,the latest data will take the place of earlier data.
- Full Data logger will stop recording when the memory is full.
- Presetting units Data logger will stop recording in accordance with the threshold parameters set in "store units".

3 High and low limits

E advanced parameter---->route collection :used to configure the high and low temperature and humidity limits. Also the user can customize the colour, resolution, precision, scale parameters of the curve graph.



! Caution: Do not change the resolution, accuracy, calibration specifications and the high and low limits parameters except the advanced users.



4 Start logging



If there is no problem of settings, click "setting" in the lower-left corner of property bar to download the new parameters to the device and click "work" to start logging.



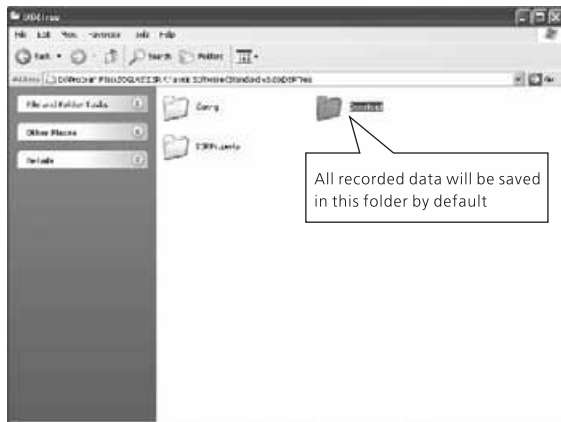
Data processing

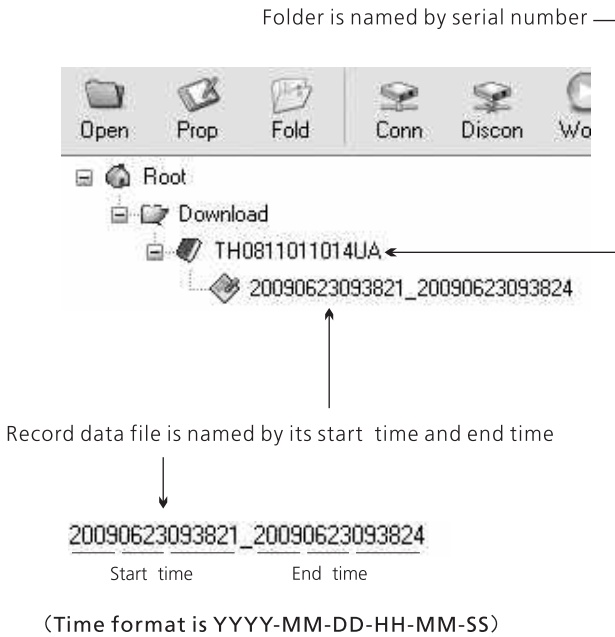
A Read / download the data after the data logger has automatically or man-made stopped. Do not plug the power or replace the battery while logging, otherwise the data will lost.

Stop logging by clicking "stop", then click "down" and you will see a save path dialogue:



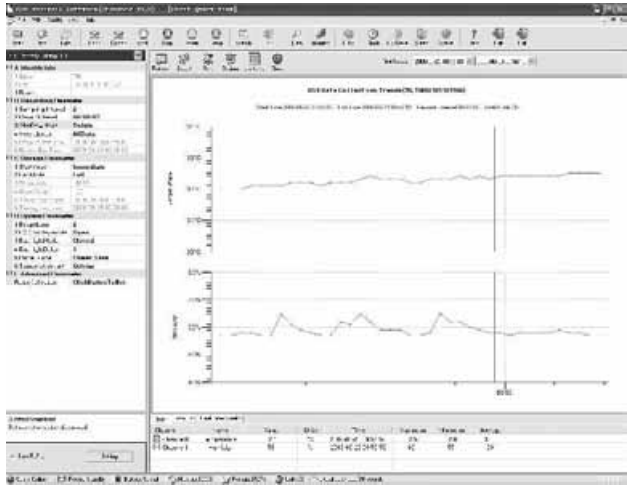
B The default storage path is "DSRTree\Download" :





Each download file will be stored in its DSR serial number named folder in the "Download", and the download files are named with its start time and end time in the file type *.dsrf. These files can be read in the "Folder" of analysis software.

After the download has been completed, a curve graph will pop up to show the trend of temperature and humidity in the scope (time or units) of records. By moving the mouse you will see a red vertical measurement line showing the real-time numerical points.



The inquiries can be customized according to the time frame while reading the graph. Click "Refresh" on the sub-menu to update display after changes.

TimeScope: 2009-06-23 09:55:03 2009-06-23 09:56:19

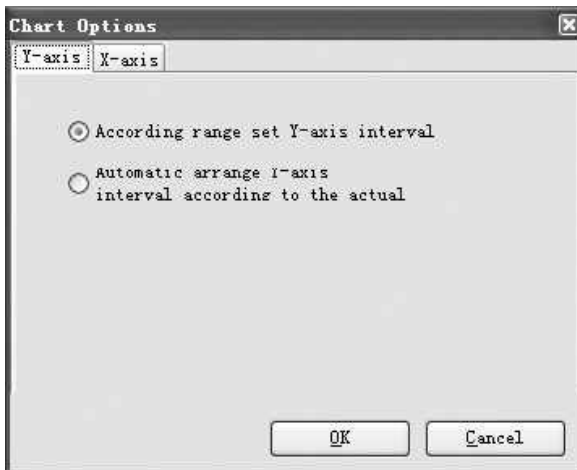
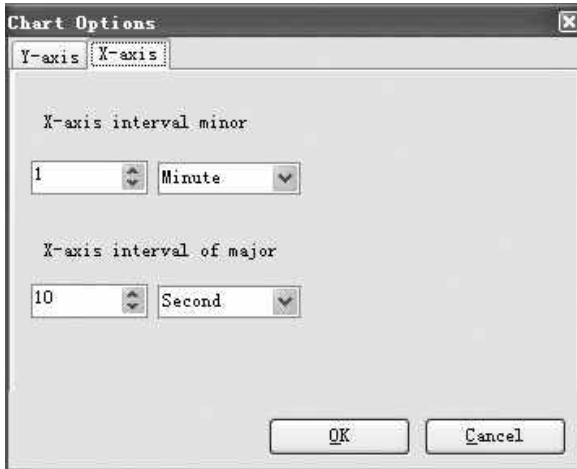
June, 2009

Sun	Mon	Tue	Wed	Thu	Fri	Sat
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

Today: 6/23/2009

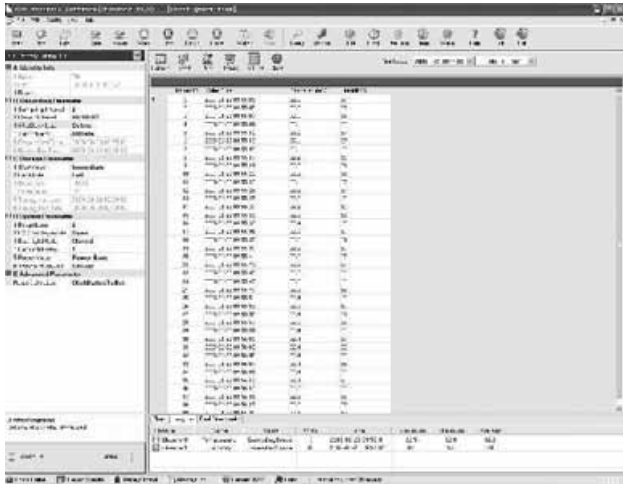


Click "Options" on the sub-menu to set X and Y coordinates. You have to click "Refresh" on the sub-menu to update display after settings.

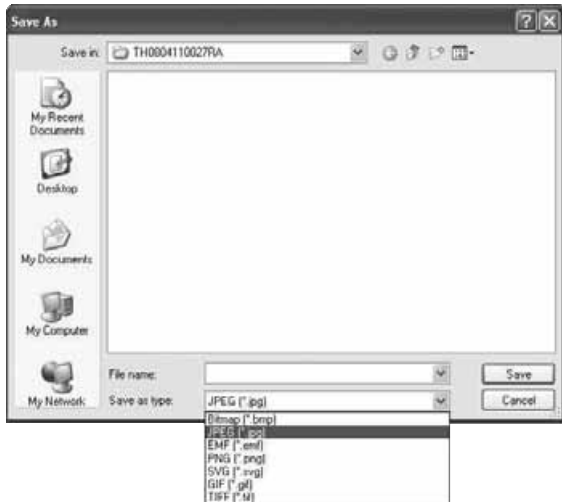


Do not change the default coordinates settings except the professional users.

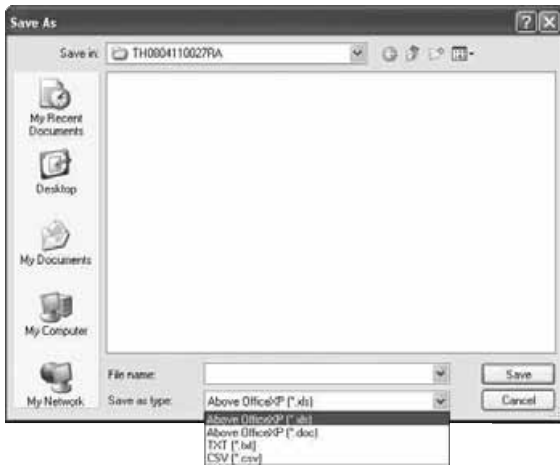
Click "Chart" and "Datalist" in main display to switch between curve graph and data list in the main display area. Specific data format listed as follows:



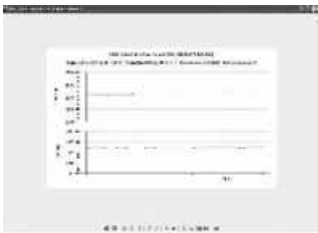
In the curve graph state, click "export" to export JPG or other image format files. This feature is convenient for users who need to analysis the process and to print chart. In this way the paper data in the ordinary paper driving recorder can be replaced.



In data list state, click "Export" to export XLS, CSV, TXT or DOC format files.



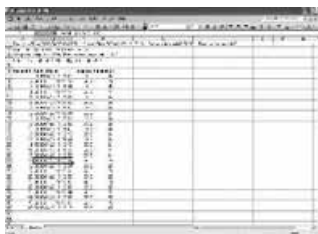
1



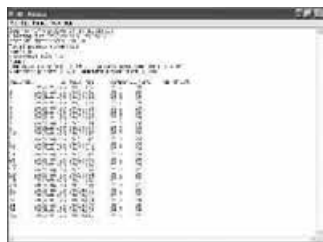
2



3



4



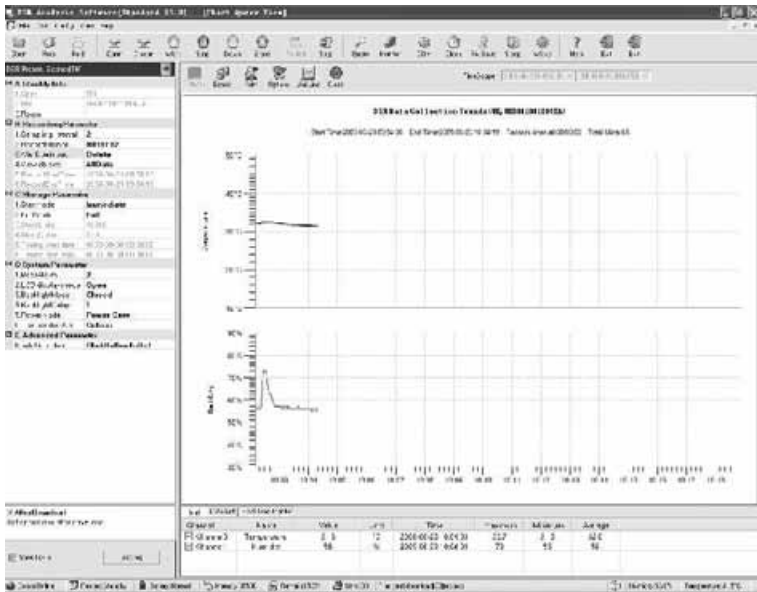
1.JPG 2.WORD 3.EXCEL 4.TXT

Real-time trace

Real-time data acquisition and data display updating (curve and data list) is the unique feature of the internationally popular digital loggers. DSR temperature and humidity data logger can not only support this feature, but also make your computer's hard disk like a super-memorizer used to preserve real-time traced data.

Real-time trace / stop

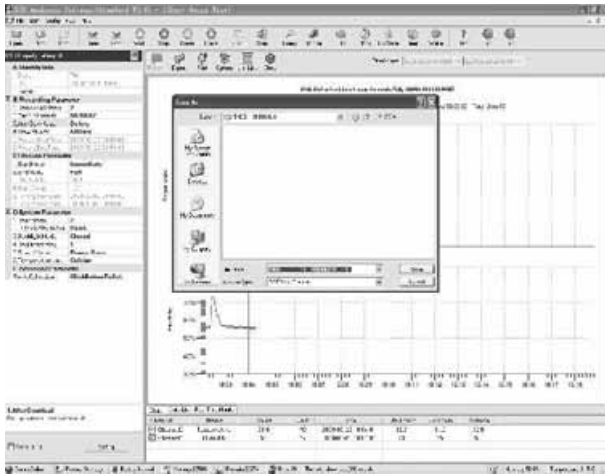
Click "monitor" to open a blank page before starting real-time trace. Then click "watch" to enable the real-time trace. In the process of acquisition, click "stop" (the one near "watch") to shut down.





! Real-time trace may consume much system memory, we recommended customers to use PC that contains at least 512MB or above.

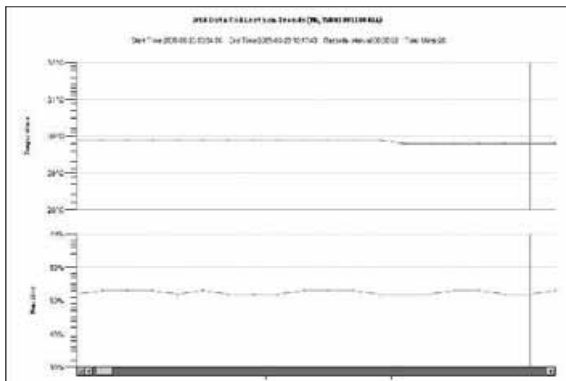
Data preservation

For each real-time trace, click "stop" and you will see a dialog box asking whether you need to save the collected data. If you click "yes" the data will be adopted as a standard *. dsrf file which format is the same with the download file and if "no" the system will immediately withdraw from the real-time trace function.



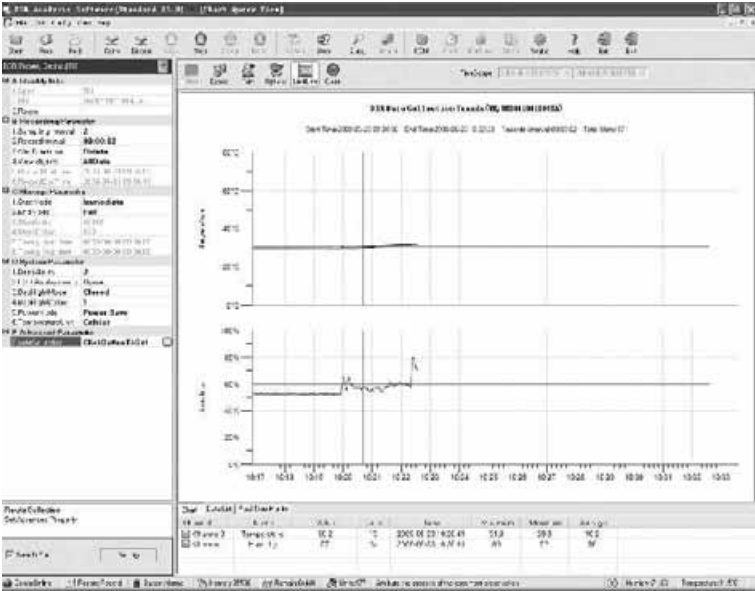
 Drag the mouse to magnify and observe the collected data, click  in the left bottom corner to restore.

Data observation



* New functions

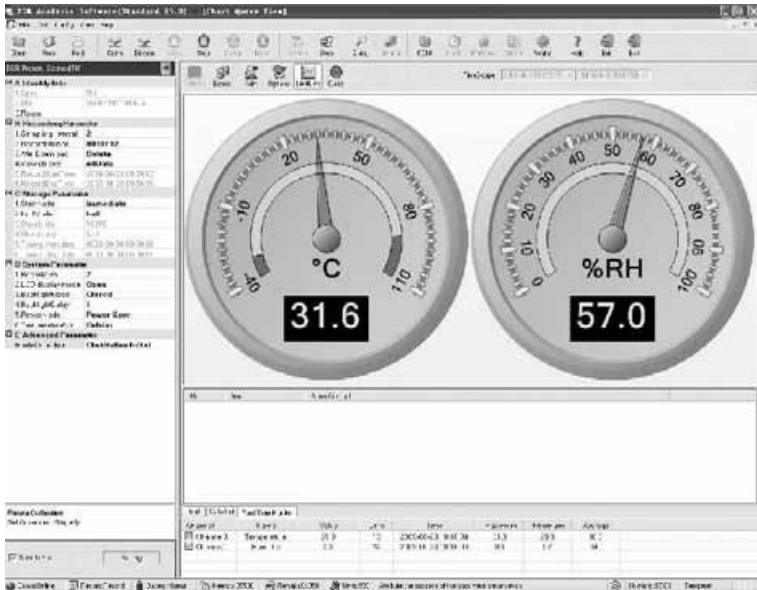
A Alarm line



DSR data analysis software (above 3.0 versions) provides high and low limits alarming under the chart mode. The curve display shows whether there is an overrun event in an intuitive way.

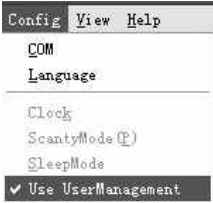
This feature is turned off by default, click "LimitLine" in the sub-menu to enable.

B Meter graphic interface



DSR data analysis software (above 3.0 versions) provides real-time data simulation display. As shown above, the interface combines analog meter with digital display and also provides different colours of high and low limits, so that the user is able to realize the environmental parameters changes and alarm limits at a glance.

C User management



1



2



3

DSR data analysis software (above 3.0 versions) provides management feature for the user. It is disabled by default, the user can enable it in accordance with their needs.



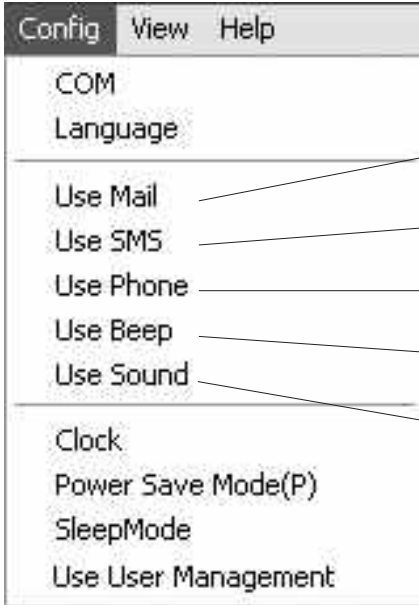
The default login name is Admin and the default password is 123456. It is recommended that you'd better change the initial password for better security after logging in.



Non-Admin users will be restricted on the use of high-level operations, such as settings and deleting.

D E-mail and SMS alarm

(Professional Version & Network Version Only)



- 1. E-mail alarm
(need network support)
- 2. SMS alarm
(need hardware support)
- 3. Phone alarm
(need hardware support)
- 4. PC beep alarm
- 5. PC sound card alarm

! All the alarm functions are effective under real-time trace status.

DSR data analysis software (above 3.0 versions) supports several methods of alarming, such as SMS, E-mail, designated phone call and PC sound card output alarm.

1 E-mail alarm

DSR data analysis software (above 3.0 versions) supports e-mail alarm function in real-time trace status. As long as the high and low limits are set and the equipment and computer has been connected in the real-time trace status, any overrun incident will be sent to the designated mailbox by software.



Settings: Fill in with the corresponding parameters such as SMTP Server, Sender and Mail Subject, click "Test" on the lower right corner to send a testing e-mail to the addressee and cc mail address.

Alarm options

Send after first alarm The times of alarm sending can be set after this option has been selected. If the number is set to 3, the software will send three times of alarm messages when an overrun situation happens. This option is able to cope with normal circumstances.

After first alarm and run on In this option, the software will check whether the temperature and humidity still overrun the limits from time to time according to the user's settings after the first alarm. If an overrun issue happens, the software will immediately send the alarm information. And the interval of checking and the times of sending can be set by the users.

State hold on In this option, the software will check whether the temperature and humidity overrun the limits from time to time according to the user's settings after the first alarm. If an overrun issue happens, the software will immediately send the alarm information. And this operation will repeat until the temperature and humidity returns to normal.

2 SMS alarm

DSR data analysis software (above 3.0 versions) supports SMS alarm function under real-time trace status. As long as the high and low limits have been set and connection between equipment and PC has been built in the real-time trace status, any overrun incident will be sent to the designated phone number through the software.



SMS parameter settings

Port settings Select the COM port which is connected to the SMS alarm, and set the baud rate to 9600.

SMSC number Fill your local SMSC number in "SMS service center address", please contact your local mobile network operator for the SMS center number.

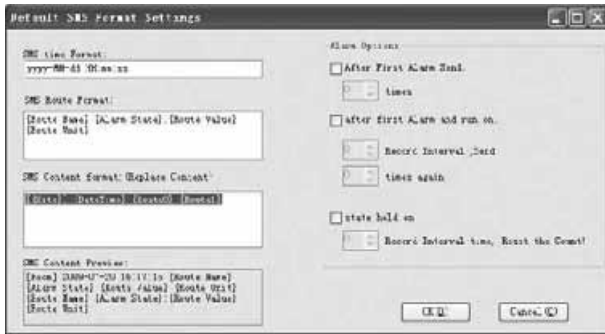
Connect to SMS alarm Click "Connect" to build connection to the SMS alarm. The prompt on the button will show "Successful connection" or "Connection failure".

SMS test Input the target phone number to whom you want to send the alarm information.

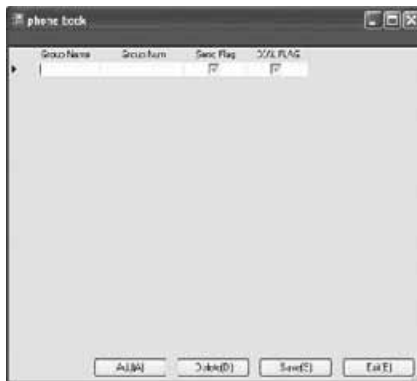
Test SMS sending Click "Send" to send the content in the Send SMS Contents to the target and "Succeed" in Receive SMS Contents will prompt for the successful sending.

Disconnect SMS alarm Click "Disconn" after successful testing. Pay attention to disconnect the SMS alarm, otherwise the normal SMS alarm function will be affected.

SMS format setting interface is as follows, please refer to the alarm options in the E-mail Alarm for relevant instructions.



Phone book setting interface is as follows. When the phone alarm function has been enabled, the way of alarming can be set in this interface. If [send flag] has been chosen ("√" is black, not grey), the software will send the alarm message to the corresponding number via SMS Alarm; If [DIAL flag] is chosen, the software will dial the corresponding number via SMS Alarm for about 30s.

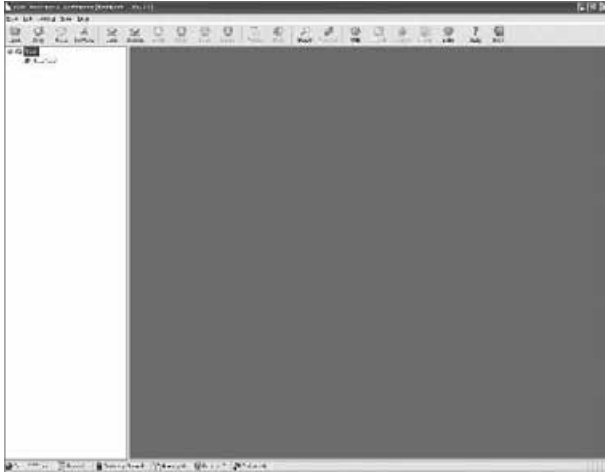


3 Other alarm functions

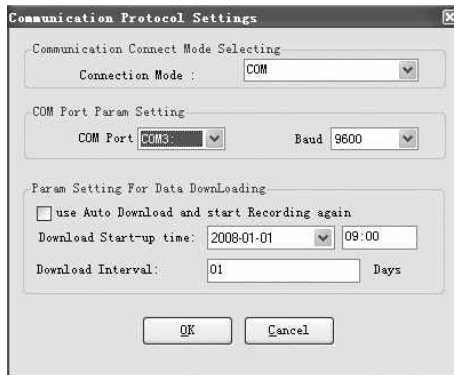
Phone call alarm function can be added to the SMS alarm feature. After the buzzer alarm option is opened, the computer will beep for alarming. After sound alarm function is opened, the computer will output pre-recorded WAV files if the alarm line is exceeded.

Network version

1. Install DSR analysis software (network version) in reference to the software installation of standard version. The software interface is as follows:



2. "Communication protocol settings" Choose the corresponding attended mode according to the different networking format: LAN for Ethernet networking; COM for RS485 networking; LAN for Ethernet and RS485 mixed networking. The port number and baud rate should be set in COM connection (baud rate is 9600, it should not be changed except advanced users).



3. Click "Conn" to build communication with PC, and a dialog box will pop up for the DSR temperature and humidity data logger adding. Just as follows:

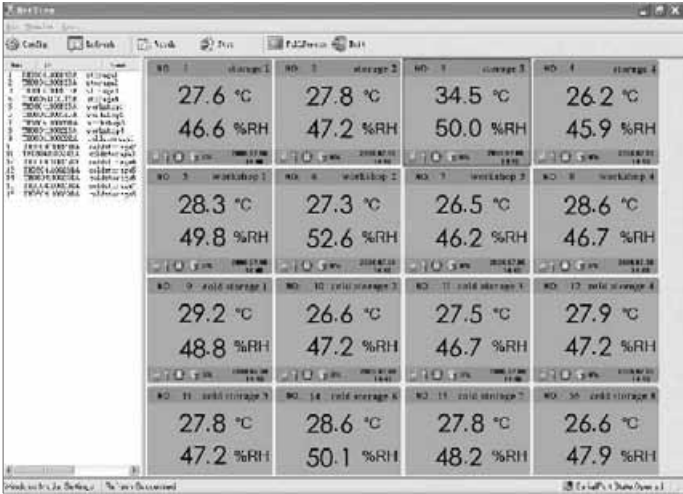


Click "Add" to increase the relevant information of the connected data logger, such as serial number, location, IP address, port number, etc. Users need to fill in with the corresponding parameters according to their actual networking format. If the highest networking format is LAN, you have to fill in with the serial number, place, IP address and the port number; if the highest level is RS485 networking, you just need to fill in the serial number, location parameters.



Click "Test" after adding to test whether the device has been added and whether the communication is normal. Click OK to finish the adding.

4. Set the DSR data logger under network version in reference to the standard version. Click "NetView" on the shortcut menu to enter the network view. As follows:



5. Click "Watch" to start real-time acquisition function.

Each form in the interface represents a data logger. The top line in each independent form stands for the number and its name, and the middle part displays the real-time collected data. When a parameter is in the alarm state, the corresponding data will be blinking with red background. The 4 icons on the bottom of independent form stand for communication status, battery power, working status (recording or standby, etc.) as well as storage status.

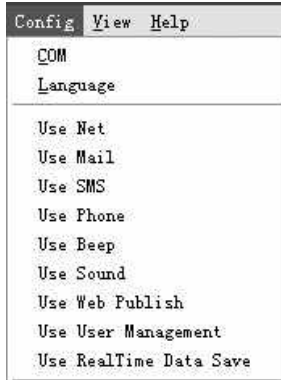


Monitor Status



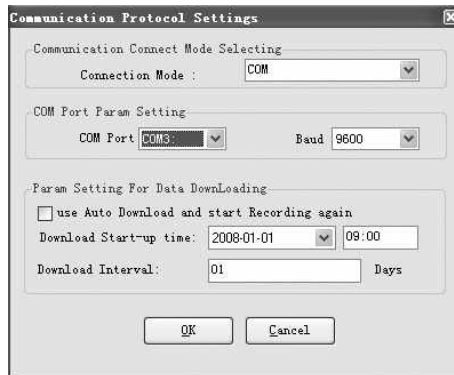
Alarm Status

6. In real-time acquisition status, DSR data analysis software (network version) supports several alarm functions, such as SMS, e-mail, phone call, PC buzzer and sound card output alarm. If you want to save the real-time data, click on "Use Realtime Data Save" (this function is inactive by default).

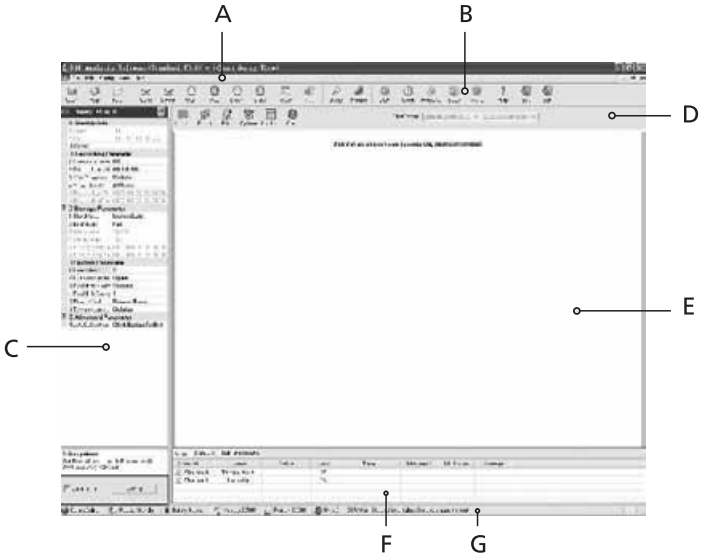


 Please refer to the "D E-mail and SMS alarm" in the "New functions" chapter for detailed introductions.

7. DSR analysis software (network version) can automatically download all of the recorded temperature and humidity data. The user is able to set the download start-up time and download interval in [Param settings for data downloading] in the [Communication protocol settings] dialogue.



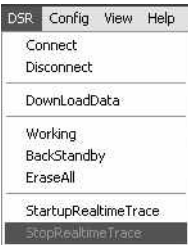
Menu description



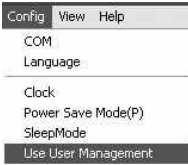
A Main menu



1. Click "File" to open the *.dsrf documents, logoff or exit the system.



2. "DSR" can be implemented to connect and disconnect the data logger ,download recorded data, begin logging, return to the standby mode (as the end command while logging), delete all records, start / stop real-time trace.



3. "Config" can carry out the communications settings, language settings, clock settings, power save mode, sleep mode and user management.



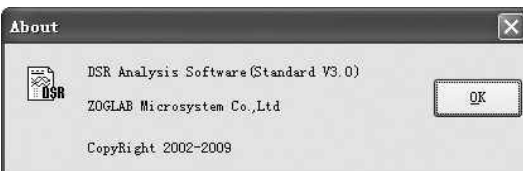
4. "View" is used for querying, monitoring ,switching to the property bar / folder column, start / stop status refreshing , manually refresh status opening.



When the status refreshing enabled ,either automatically or manually, DSR analysis software will obtain the current parameters of the sensor through the communication protocol within the sampling interval. This will take up some computer resources and may affect the speed. The function is turned on by default, you can also manually set it to stop.



5. "Help" can be used to query the software version information, open the electronic user's manual and access to the DSR exclusive website for online help and upgrade services.



B Shortcut menu



In order to facilitate the operation, the software use the popular XP shortcut menu operating style.

From left to right:

Open / Prop/ Fold / Conn / Discon/ Work / Stop / Down / Erase / Watch / Stop / Query / Monitor / COM / Clock / PwrSave / Sleep / Wake/ Help / Exit.

- DSR sleep mode operation can not be back-kicked. If you choose to enable this feature, the software will remind you once again for confirm. Once the implementation has been carried out, the data logger will stop all the operations and enter the super-low-power sleep mode. This operation requires system reset, software wake-up or re-power the logger in order to return to normal working condition. (Applicable to internal battery power supply, long idle storage and transport) .



C Property bar

DSR Property Settings[TH-M8]	
A Identity Info	
1.Spec	TH-M8
2.SN	TH0803370050A
3.Room	
B Recording Parameter	
1.ClockInterval	2
2.RecordInterval	00:00:02
3.AfterDownload	NotDelete
4.WatchMode	AllData
5.RecordStartTime	2008-06-15 09:42:23
6.RecordEndTime	2008-06-15 09:42:56
C Storage Parameter	
1.StartMode	Immediate
2.StopMode	Overflow
3.StorePoints	65535
4.StoreDelay	120
5.BookingStart	0000-00-00 00:00:00
6.BookingStop	0000-00-00 00:00:00
D System Parameter	
1.BeepWarning	2
2.LCDWorkMode	Open
3.LightBackMode	DelayClose
4.LightBackDelay	10
5.PowerMode	Economy
6.TemperUnit	Celsius
E Advance Parameter	
RouteCollection	ClickButtonToSet
1.BeepWarning	
Set Beep Warning Time Parameter(0-225 Second) 0:Closed	
<input checked="" type="checkbox"/> SaveToFile	Setting

* It is used to set the various operating parameters in DSR temperature and humidity logging.

D Submenu



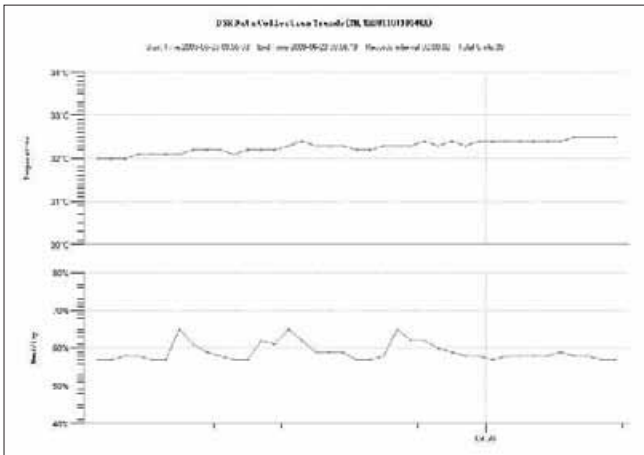
The software also provides a flexible sub-menu for the regulation of the curve graphs and data list.

! Caution: Once select the initial and ending time of "TimeScope", click "Refresh" to obtain updated curve graph or data list .

E Main display area

The main display shows the curves display or data list of temperature and humidity. Meanwhile the software will update the necessary parameters on the top of the curve: the data logger type, serial number, operator, start time, end time, logging interval, the total units. These parameters can also be exported together with curves as JPG and other graphic forms .

Curve graph





There is a unique feature "dynamic equilibrium value" when the main display shows the curve graph. It is to build suitable observing coordinate graph in accordance with the average value of collected data . This special feature of each curve makes it able to display its extreme high and low number clearly.

Data list

RecordID	CollectTime	Temperature°C	Humidity%
793	2009-04-24 17:07:47	24.9	59
794	2009-04-24 17:07:49	24.9	59
795	2009-04-24 17:07:51	24.9	59
796	2009-04-24 17:07:53	24.8	59
797	2009-04-24 17:07:55	24.8	58
798	2009-04-24 17:07:57	24.8	58
799	2009-04-24 17:07:59	24.0	59
800	2009-04-24 17:08:01	24.8	59
801	2009-04-24 17:08:03	24.8	58
802	2009-04-24 17:08:05	24.0	59
803	2009-04-24 17:08:07	24.8	59
804	2009-04-24 17:08:09	24.8	58
805	2009-04-24 17:08:11	24.8	59
806	2009-04-24 17:08:13	24.0	59
807	2009-04-24 17:08:15	24.8	59
808	2009-04-24 17:08:17	24.8	59
809	2009-04-24 17:08:19	24.0	59
810	2009-04-24 17:08:21	24.8	59
811	2009-04-24 17:08:24	24.8	59
812	2009-04-24 17:08:26	24.8	59
813	2009-04-24 17:08:27	24.8	59
814	2009-04-24 17:08:29	24.8	59
815	2009-04-24 17:08:31	24.8	59

Data list interface provides the serial number , logging time and parameter values, which well displays the true changes in circumstances.

F Numerical table

Channel	Name	Value	Units	Time	Maximum	Minimum	Average
<input checked="" type="checkbox"/> Channel0	Temperature	Unknown	°C	2009-04-24 17:01:03	25.5	24.8	25.1
<input checked="" type="checkbox"/> Channel1	Humidity	Unknown	%	2009-04-24 17:01:03	59	55	57

The numerical table provides the channel information, minimum/ maximum/ average/ selected value information (the selected value is generated by the system selected red measurement line)

G Status bar



The status bar provides message of Comm, Record, Battery, Memory, Remain and Units, current command status return.

! Caution: Once the data logger stops refreshing, the table data in the status bar will remain in the final value.

Settings description

1 System clock

The data logger comes with a real-time clock which can still work after power-off. Time can be set by clicking "clock". Each time connected to the computer, data analysis software will automatically calibrate the time.

2 Room name

Binding with the serial number, it will be shown in the curve display and data list. Please fill in the name of operation staff, departments, and the warehouse name.

3 Sampling interval

Sampling interval controls the sensor sampling rate and it can be set up from 2, 5, 10, 30, 60 to 255 seconds. Faster sampling rate means more power consumption. Please set up the sampling interval according to actual needs.

! While sending the DSR data logger to the relevant department for calibration, we recommend you to set the sampling interval to 2s in order to improve the device sensitivity and get the best measurement result.

4 Logging interval

Logging interval is the interval between two loggings. The software settings format is HH: MM: SS from 2s to 24hrs. Please set up according to actual situation.

5 After download

Two modes for your choice: 1. Delete the record after downloads. 2.Keep the record after downloads. Set it according to your needs. Once deleted , the data will not be able to resume, please use this function carefully.

6 View objects

Since the data logger supports monitoring mode, you can also use it as a digital meter of temperature and humidity. Please set the necessary parameter types to monitor depending on your need, we recommend you to enable all the parameter types .

7 Start mode

The data logger supports three types of startup mode: immediate start / delay start / timing start.

Immediate start Click "work" to start data recording immediately after the parameter has been set.

Delay start Click "work" to start data recording after pre-set delay time .

Timing start In this mode you can start the data logger form the pre-set starting date to the ending date.




Caution: While using the delay or timing start, you should still click "work " after settings .

8 End mode

The end mode can be set up to three types: FIFO / Full / presetting units . In addition, there is a timing end mode. Timing end mode is a special mode that once selected the data logger is no more constrained by the above three modes.

FIFO This mode is used to prevent data lost caused by over memory deposit .When the memory is full, the new data will overwrite the earliest data. Data stored will maintain to the latest period recorded data.

Full This is the most commonly used mode (also the default end mode of this logger). Once the recorded data reaches the rated capacity of memory , logging will be stopped. And you can see the prompt on the LCD display (refer to "Introduction " for information of **MEM**  status).

Presetting units It is an end mode based on user units settings . Store units must be set up after presetting units mode is selected.

9 Store units

Store units settings should adapt to the end mode settings for effectiveness. The store units setting range is from 1 to 65,535 units or decided by the recorder upper limits.

10 Delay start parameter

Delay start parameter works only when the working mode is set to delay start. This parameter range is from 1s to 120s.

11 Beep alarm


Beep alarm settings can adjust the alarm duration from 1s to 255s.

12 LCD display mode

LCD display mode settings can set up the LCD display: normally open or closed.

13 Backlight mode

Backlight mode settings can control the backlight by setting immediate or delay time shut down. In the open backlight mode the alarming backlight will lit and keep for a delay time unit.

 **Caution:** Backlight setting is valid only when the data logger models that you buy have backlight functions.

14 Backlight delay

Backlight delay settings is used to adjust the LCD backlight delay closing time and it works only when the backlight is set to delay closing mode.

15 Power mode

Power mode setting is used to configure the signal acquisition, display refreshing mode and the user can decide to set up the data logger in a high-speed or power-saving state through this option .If you want to use this data logger as a visual digital table, you can choose the always power mode on.

16 Temperature units

Temperature units is used to set up the temperature display unit on the LCD. By modifying the parameters, you can switch between Celsius and Fahrenheit temperature values on the data logger LCD display.

17 High-low limits

Click "route collection "you will see a pop-up form for a detailed high and low limits settings of temperature and humidity.

CHAPTER 5

Applications

With the continuous improvement and ISO standards, GMP, FDA, HACCP implementation of modern enterprise in the manufacturing, warehouse management, process control, temperature and humidity display, recording, management and control is becoming more and more important. DSR temperature and humidity data logger is a new generation of recording devices used in more and more widely industry fields with its unique advantages.



The medicine storage, preservation of blood serum and chemical reagents need a constant temperature and humidity environment. And the temperature and humidity

data in the process of storage has also become essential factual basis in its ultimate use as well as in malpractice appraisal. Traditional temperature and humidity devices can only be read manually and the accuracy is too low. For the use of ordinary paper driving logger, it will consume a large amount of paper and it is too troublesome to read the history record. Our DSR temperature and humidity data logger does not need paper or other supplies. Once the operating parameters have been set, it can work automatically. What's more, it is very convenient for software to export data as Excel documents, text documents for archiving. Its long record-time and powerful application makes it the ideal candidate for use.



Workshops and warehouses in food industry also need to temperature and humidity recording. Many companies need a digital recorder which can not only display the temperature and humidity

values, but also can store the data in order to keep its products strictly controlled in a reasonable temperature and humidity conditions from production to ex-factory. Through enhanced system software, DSR temperature and humidity data logger can also accurately calculate the dew point, which can only be seen in the high-end instruments.

Cleanroom is widely used in the electronic industry. And the requirements of temperature/humidity are pretty high in the SMD manufacturers and production of integrated circuit, because the changes in these parameters will seriously affect the quality of their products. Therefore, to ensure the environmental parameters of temperature and humidity and access to historical data is particularly important. Our DSR temperature and humidity data logger is just to the needs of the electronic industry.



Agricultural research is an area that much attention should be paid to the temperature and humidity, because the conditions of temperature and humidity directly determine the



growth of plants and animals. As a cost-effective temperature and humidity data logger, our DSR data logger will provide you a visual observation and analysis platform. It is a great contribute to people's precise control of temperature/humidity and crop's growth environmental record.



Biochemical laboratories are another user groups who are sensitive to temperature and humidity. There are tens of thousands of chemical and biological laboratories around the

world, and the controlling, recording and analysing of temperature and humidity is very important for a standard biochemical laboratory .

Precious literatures and historical relics in museums and archives should be preserved in a certain temperature and humidity conditions so as to avoid mildew, moth-eaten, etc. The DSR temperature and humidity data logger also applies to this area.



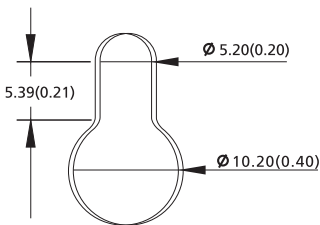
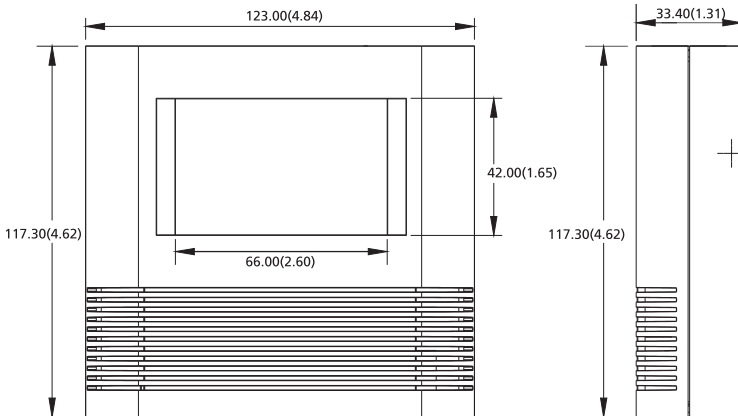
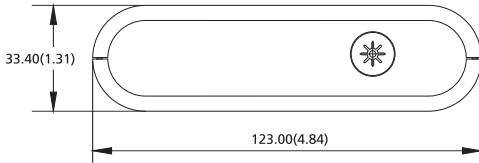
The temperature and humidity logging through transportation is an ancient and futuristic area. In the initial invention of paper driving logger, it is used for logging during cargo and even containers' transport. Nowadays, at the major trend of promoting environmental protection and sustainable use of resources, the depletion of using these paper driving recorders is increasingly clear. On the contrary, you do not need to use

traditional paper while using DSR temperature and humidity data logger and the memorizer can be used repeatedly for more than 40 years with data retention for more than 100 years .Meanwhile, the capacity of DSR data logger is several times or even several thousands times of the paper driving logger and the system maintenance and possibility of trouble is much less than traditional paper driving recorders. Therefore, applications of DSR temperature and humidity data logger in these industries are a general trend.

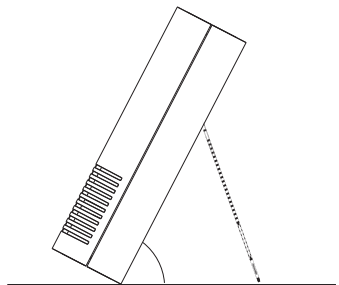
Of course, the use range of DSR temperature and humidity data logger is far more wider than fields placed above .As long as you need to monitor, store, analysis temperature and humidity data, the DSR data logger and its assorted software is your best option. In addition, DSR data logger has plenty of derived models to meet your needs on the wireless transmission, network monitoring and demands for secondary development. For more information, please contact us or refer to our professional DSR website for up-to-date product information.

Appendix I

Dimensions (mm/inch)



DSR Mounting hole dimensions

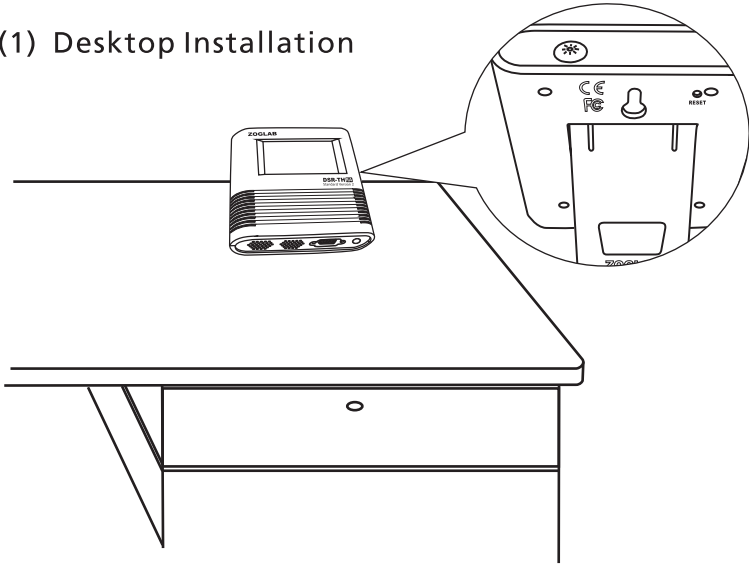


About $\angle 45^\circ$

Appendix II

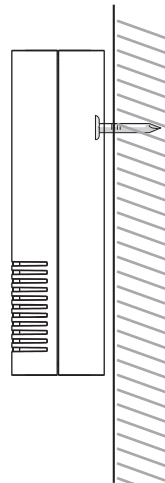
Mounting

(1) Desktop Installation



(2) Wall mounting

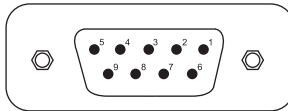
In accordance with environmental requirements, DSR data logger can be used on the desktop or fixed to walls, wooden planks and other special materials. (Assorted with two screws and two wall spikes)



Appendix III

Communication ports & pin assignments

RS232/RS485 interface for R series



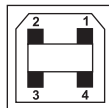
DB9FL interface

PIN	SIGNAL	PIN	SIGNAL
1	Alarm1	6	V485
2	RXD	7	485-
3	TXD	8	485+
4	GND485	9	Alarm2
5	GND232		

Alarm1 Output 1KHz square wave as soon as beep alarm active

Alarm2 Output 3.3V high level as soon as backlight alarm active

USB interface for U series



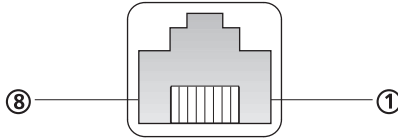
B type USB interface

PIN	SIGNAL	PIN	SIGNAL
1	VBUS	3	D+
2	D-	4	GND

Appendix III

Communication ports & pin assignments

RJ45 interface for L series

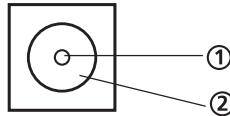


RJ45(LAN)interface

PIN	SIGNAL	PIN	SIGNAL
1	TX+	5	N/C(EPWR+)
2	TX-	6	RX-
3	RX+	7	N/C(EPWR-)
4	N/C(EPWR+)	8	N/C(EPWR-)

*In the E-Power™ function owned L series models, the 4,5,7,8 pins are dedicated for Power-over-Ethernet.

SMA RF interface for Wi-Fi/Bluetooth/RF/Zigbee series



SMA RF interface

PIN	SIGNAL	PIN	SIGNAL
1	RF signal	2	Signal ground

Refer to other documents for interface definitions of the other unspecified series








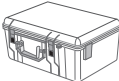
Appendix IV

FAQ

FAQ	Troubleshooting
Failed to connect to PC	For the R-type device, please check whether you have chosen the correct COM port (baud rate of 9600). If your model is the U, L, B, F, W, Z series, please check whether the driver has been installed correctly.
Dim LCD display	Lack of battery power may cause the dim display. Therefore replace the battery in time if a low battery symbol appears. In addition, direct sunlight or using the machine in excess of normal operating temperature range can cause uneven display.
Display data varies form other instruments	You have to compare the accuracy of values in the convection environment .Meanwhile, set sampling interval to 2s so as to achieve maximum sensitivity.
Inaccurate system time	May be the reserved battery is low, please consider replacement. Proposed to replace the clock battery once a year.
Display stop refreshing, clock second stop flashing	May be affected by outside interference (such as lightning induction), or communication cables off accidentally. You can press “RESET” on the back for resetting.
No beep, no LCD display after power on	Device may in sleep mode, you can use the software to wake it up. If the data still can not be displayed, the device may run out of battery or other reasons, please contact the supplier for maintenance.
Temperature display -999.9℃ or 1999.9℃ (second channel)	Temperature sensor is damaged or falling off, please contacts the supplier for maintenance or replacement.
Humidity display -99.9%	Humidity sensor is damaged or falling off, please contacts the supplier for maintenance/ replacement.

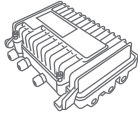







Appendix V

Accessories

Presentation	Name and Function
	<p>Radiation-proof case PN: RP101 Suitable for radiation protection of DSR outdoor environmental parameters measurement</p>
	<p>External display PN: EDP0802 For DSR (R series) extend real-time parameters display</p>
	<p>External alarm PN: 1081J For DSR (R series) external acousto-optic alarm</p>
	<p>SMS terminal PN: S3500 For DSR data analysis software SMS alarm function</p>
	<p>AC-DC adaptor PN: PSC-11R-120 Suitable for all DSR models, wide voltage input range of 100-230VAC</p>
	<p>Silicon sleeve PN: NP10 Suitable for DSR external probe series, it can protect the data logger from water splash, high humidity and mechanical shock damages</p>
	<p>ABS protective case PN: NP30 Suitable for DSR external probe series. Waterproof, moisture-proof, with a transparent observation window</p>
	<p>Transport case PN: NP50 Suitable for all DSR models' running and portable operation</p>





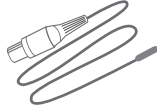

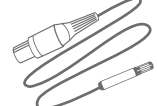

Appendix V

Accessories

Presentation	Name and Function
	<p>A-alloy protective case PN: NP70 Suitable for special applications, waterproof, moisture-proof and anti-electromagnetic interference</p>
	<p>USB communication cable(1.8m) PN: UC180 Standard USB1.8 communication cable for DSR (U series)</p>
	<p>RS232 communication cable(1.5m) PN: RC150 Standard RS232 communication cable for DSR (R series)</p>
	<p>RS232 communication cable(3m) PN: RC300 Standard RS232 3m communication cable for DSR (R series)</p>
	<p>RS232 communication cable(10m) PN: RC1000 Standard RS232 10m communication cable for DSR (R series)</p>
	<p>LAN communication cable(1.5m) PN: LC150 Ethernet communication cable for DSR L series models</p>
	<p>Antenna(900MHz) PN: ANT900 For DSR wireless series</p>
	<p>Antenna(2.4GHz) PN: ANT2400 For DSR wireless series</p>

Appendix V

Accessories

Presentation	Name and Function
	<p>Adapting piece for external alarm PN: ALARM-W Connecting accessory for external acousto-optic alarm</p>
	<p>RS485 Connector PN: RS485W Accessories for RS485 industrial bus networking</p>
	<p>U485 Adapter PN: U485 Accessories for RS485 industrial bus networking</p>
	<p>E485 Adapter PN: E485 Accessories for LAN networking</p>
	<p>Temperature sensor PN: T100 Dimensions :5.0 × 6.0 × 9.5mm, 3m low-temperature resistant wire, measuring range :-45 °C ~ 105 °C</p>
	<p>Temperature and humidity sensor PN: TH100 Dimensions:Ø12 × 73mm, 3m low-temperature resistant wire, measuring range :-40 °C ~ 85 °C</p>
	<p>Digital temperature and humidity probe PN: Z-Clip Suitable for professional version. Dimensions:Φ12 × 73mm, 3m low-temperature resistant wire, measuring range : -40 °C ~ 60 °C</p>
	<p>Li-ion battery PN: ER14505 3.6V/2400mAH energetic li-ion battery</p>

Appendix VI

Conversion formula

Temperature

International units: Celsius "°C", Fahrenheit "°F", Kelvin "K"

Conversion formula

$$0^{\circ}\text{C}=273.15\text{K}$$

$$\text{K}=5/9(^{\circ}\text{F}+459.67)=^{\circ}\text{C}+273.15$$

$$n^{\circ}\text{C}=(9/5 \times n+32)^{\circ}\text{F}$$

$$n^{\circ}\text{F}=[(n-32) \times 5/9]^{\circ}\text{C}$$

Humidity

Humidity can be divided into absolute humidity (g/m^3) and relative humidity(%RH).

Relative humidity= Absolute humidity/Saturated humidity $\times 100\%$

Atmospheric pressure

International units:hPa,mbar,mmHg,mmH₂O,Psi

Conversion formula

$$1\text{standard atmospheric pressure}=1013.25\text{hPa}$$

$$1\text{hPa}=1\text{mbar}=0.75\text{mmHg}=10.2\text{mmH}_2\text{O}$$

$$1\text{Psi}=68.95\text{mbar}=68.95\text{hPa}=6.895\text{kPa}$$

Gas strength

International units: ppm

Conversion formula

$$1\text{ppm}=1\text{mg}/\text{L}=1000\text{ug}/\text{L}=\text{cm}^3/\text{m}^3$$



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