SENSORSOFT®

Sensorsoft Device Server
User's Manual

Software Version 5.0

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Table of Contents

About This Manual

This document contains information about installing, configuring, using and troubleshooting Sensorsoft Device Server (SDS) software.

"App" or "application" are other terms that refers to this software or software provided by the Windows operating system.

When other sections of this manual are referenced, i*talics* are used.

The terms "sensor", "Sensorsoft device" (and its acronym "SSD") refer to devices that use the Sensorsoft Device Protocol.

Glossary of Acronyms

SDS – **Sensorsoft Device Server** software for Windows

RWMS – **Remote Watchman Device Server** software for Windows

RWME – **Remote Watchman Enterprise** software for Windows

RWMC – **Remote Watchman Client** software for Windows

SCOM – **Serial Communications Tool** software for Linux

SCM – **Service Control Manager** app for Windows Operating System

Overview

Sensorsoft Device Server (SDS) is Windows based software that permits access to local serial or USB COM ports from TCP/IP network clients. SDS is composed of two tightly integrated pieces of software;

- SDS server executable that runs as a Windows Service
- SDS Instance Manager which is a desktop (GUI) app

The SDS Instance Manager allows a user to manage and control multiple instances of the SDS server executables from a graphical user interface on the desktop.

The SDS executable is the server application that permits a COM port to accept connections from TCP network clients. For each COM port that is shared there is a separate instance of an SDS service that appears in the Windows Service Control Manager (SCM) app.

SDS should be installed on the machine that is hosting the COM ports.

The TCP network clients that connect to an SDS server can be local (from same machine) or remote (on another networked machine) and can be any program that opens a raw outgoing socket connection, such as:

- Telnet, Putty or TeraTerm
- PHP or Python scripts
- Custom written software
- Sensorsoft Remote Watchman Client
- Sensorsoft Remote Watchman Enterprise
- Sensorsoft SCOM Serial Communication Tool

It is worth noting that Sensorsoft Remote Watchman Enterprise software does not have the ability to open sensors on local COM ports and SDS is used to access these locally connected sensors.

Although SDS is well suited to working with RS232 based Sensorsoft devices (SSD), it can work equally well with any serial device (RS232, RS423, USB). For this reason SDS makes a fine general purpose device server.

This program (SDS) was formerly named Remote Watchman Device Server (RWMS).

System Requirements for Running SDS

OS: Microsoft Windows 2000, XP, Vista, 7, 8, 10 and Windows Server 2000, 2003, 2008, 2012 and 2016.

CPU: Intel Pentium II 300 MHz processor or better.

Available Serial Port(s): RS232, RS423, RS485 or USB to serial adapters that map as a Windows COM port. Ports numbers from 1 to 255 are supported.

Minimum Screen Resolution: 1024 x 768, required to run SDS Instance Manager app.

RAM: 1.5 MB **(per instance of SDS service executable).**

Hard disk space: 0.5 MB minimum for product installables. Creating additional instances or installing the optional Prolific USB to serial driver will occupy more space. Recommend 100 MB free space for log files.

CD-ROM drive if installing from a CD.

TCP/IP Services must be installed.

TCP/IP LAN or Internet connection is required.

SDS Release Notes

The following changes took effect in version 5.0;

- This is the first release of SDS. The name of this software was changed from Sensorsoft Remote Watchman Device Server (RWMS) to Sensorsoft Device Server (SDS).

- An algorithm enumerates COM ports instead of just listing all possible ports (1-255).

- Improve output syntax in log file making debug mode clearer to use.

- New User's manual with numerous improvements.

- New Setup Installer based on Inno Setup. An option is given to install a Prolific USB to serial driver for customers using products based on this chip. Support is provided for installing in several different languages.

- Improvements to SDS Instance Manager (GUI) for ease of use.

- Start menu and desktop icons give customer an option to run SDS Instance Manager as Administrator. This is necessary as permission is needed to create and modify its services.

Installing SDS

Installing from a CD

1. Login to the target computer (where you want to install SDS) as the Windows administrator.
2. Close any open applications.
3. Place the CD into the target computer's CD-ROM drive.
4. The autorun sequence of the CD should open a web page in your default web browser. In the event that this does not occur, manually open the file named **Version Index.html**, which is in the root directory of the CD-ROM. From this web page you will find what versions of software are on the CD.
5. Follow the hyperlink under **Sensorsoft Device Server**. This will lead you to a file named **sds-v5-bxxx-setup.exe** (The **xxx** part in the filename represents the 3 digit build number).
6. Double click this file to launch the installation.
7. You must indicate that you accept the license agreement before installing begins. PLEASE READ THIS AGREEMENT CAREFULLY.
8. **Enter the required license key as printed on the CD jewel case (include the dashes).**

Installing from a Download File

1. Login to the target computer (where you want to install SDS) as the Windows administrator.
2. Go to https://sensorsoft.com/support.html and download the file **sds-v5-bxxx-setup.exe** to the hard disk of this target computer. The **xxx** part in the filename represents the 3 digit build number.
3. Close any open applications.
4. Double click the download file to launch the installation.
5. You must indicate that you accept the license agreement before installing begins. PLEASE READ THIS AGREEMENT CAREFULLY.
6. **Enter the required license key as provided to you electronically (include the dashes).**

IMPORTANT – The SDS setup installer offers the option to install a driver for USB to serial adapters based on the Prolific PL2303 chip. Sensorsoft sells such a USB to serial adapter with P/N SS1012. If you are using a USB to serial adapter with a different chip (FTDI, Silicon Labs, Cypress, etc.), you will need to install that manufacturer's driver to have it map as a COM port.

Running the SDS Instance Manager

The SDS Instance Manager app (*see Figure 1*) can be accessed through the Windows Start menu. If the default program folder was not changed during installation, the SDS Instance Manager can be started by selecting **Start > Programs > Sensorsoft Device Server (SDS) > Sensorsoft Device Server (SDS) - Instance Manager**.

When the SDS Instance Manager app runs for the first time it creates the 'Master' instance with the settings of TCP Port: 6101 and Serial Port: COM1, as shown in Figure 1.

In some cases, you may need to click the Master instance, highlighted in blue, to prompt you to start service.
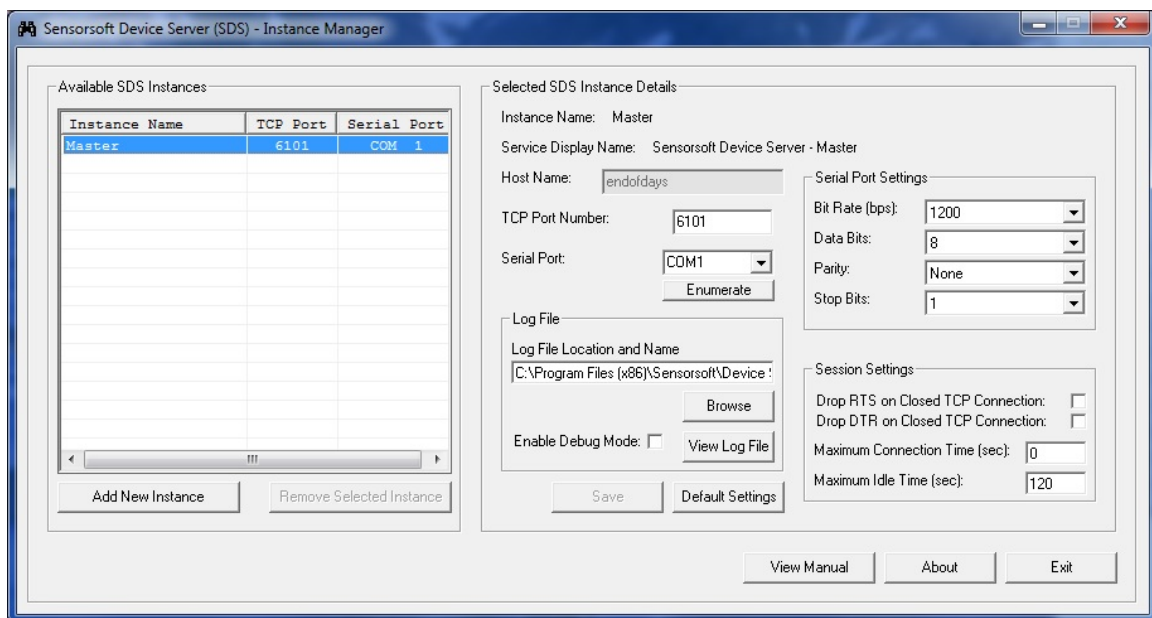

Figure 1

You can adjust the settings of the Master Instance to accommodate your requirements. If you are sharing a Sensorsoft device with SDS, we recommend using the default settings. To change the settings, follow the instructions under the next heading, *Configuring an SDS Instance*.

Configuring an SDS Instance

Select the instance you would like to configure by clicking on its name listed in the Available SDS Instances view located on the left side of the SDS Instance Manager app. If you make any changes, the 'Save' button will be enabled. Clicking the 'Save' button will save the setting changes and cause the SDS instance to be reinitialized and its service restarted. Reinitializing the SDS instance will break any existing TCP client connection.

Clicking the 'Default Settings' button will bring back the original installation settings. To default the settings of an instance, click the 'Default Settings' button and 'Save' button. This defaulting action applies to the following settings:

- Serial Port Settings
- Session Settings
- Disables the Debug Mode

The defaulting action does not apply to the settings for Serial Port, TCP port or Log filename and path.

Selected SDS Instance Details

Instance Name: This is the name of the selected SDS instance. The instance name for each SDS instance is unique. An instance name can have a maximum length of 20 characters.

Service Display Name: This is the display name of the SDS instance in the Windows Service Control Manager (SCM) app in the Windows Operating System.

Host Name: This is the network domain name of the computer on which SDS is installed. It is displayed for informational purposes and cannot be changed from here.This name can be entered into the RWMC, RWME or SCOM software instead of an IP address, if this name has an entry in your network DNS server.

TCP Port Number: This is the TCP/IP port number where the network client can connect to the serial device. The default for the 'Master' instance is 6101 and can be changed. This number must be between 1 and 65536 and must be absolutely unique on the machine where SDS is installed. Avoid well known ports below 1023.

Serial Port: The serial port this instance of SDS is serving on the TCP/IP network. The SDS Instance Manager lists all of the COM ports that it can enumerate (find). The default serial port for the 'Master' instance is COM1. Serial ports types can be RS232, RS423, RS485 and USB to serial adapters.

Enumerate: Clicking this button will update the Serial Port drop-down list. This is helpful if you recently added a USB to serial adapter and its driver added a new COM port.

Bit Rate: This sets the COM port's bit rate, which must be the same as that used by the serial peripheral connected to the COM port. The range is between 110 and 115,200 bits per second (bps). The default is 1200. Most Sensorsoft devices use the setting of 1200 bps.

> ⚠️ **IMPORTANT –** The Sensorsoft SS6420J Real-Time Contact & Voltage Sensor, has a (higher) bit rate of 57600 bps.

Data Bits: This sets the COM port's number of bits per byte, which must be the same as that used by the serial peripheral connected to the COM port. The range is between 5 and 8 bits. The default is 8. Sensorsoft devices use the setting of 8 bits.

Parity: This sets the COM port's parity, which must be the same as that used by the serial peripheral connected to the COM port. The possible values are NONE, EVEN, ODD, SPACE and MARK. The default is NONE. Sensorsoft devices use the setting of NONE.

Stop Bits: This sets the COM port's number of stop bits which must be the same as that used by the serial peripheral connected to the COM port. The possible values are 1, 1.5 and 2 bits. The default is 1. Sensorsoft devices use the setting of 1.

Drop DTR on Closed TCP Connection: When checked this will cause the DTR signal to be dropped when a network client releases a TCP connection. If unchecked, the DTR signal will remain high as long as the SDS instance is running. The default is unchecked.

Drop RTS on Closed TCP Connection: When checked this will cause the RTS signal to be dropped when a network client releases a TCP connection. If unchecked, the RTS signal will remain high as long as the SDS instance is running. The default is unchecked.

Maximum Connection Time: This setting dictates the maximum period of time in seconds that a network client can remain connected to an SDS instance. After this time has expired, the SDS instance will close the TCP connection. Setting this value to zero will specify an infinite connection time and effectively disable the Connection Timer. The default value is 0 (timer disabled). A value of 0 should be maintained when used in conjunction with Remote Watchman Client (RWMC) software and its TCP continuous mode (port type).

Maximum Idle Time: This is the maximum period of time in seconds that a network client can remain connected without any data being transmitted or received. An SDS instance will close the TCP connection if the idle time has been exceeded. Setting this value to zero will specify an infinite idle time and effectively disable the Idle Timer. **A value of 0 is not recommended**. This is due to the possibility that a TCP connection can be abruptly broken without the network client closing gracefully. This leaves the SDS software in a bad state where it anticipates that it is still connected to the network client. The only remedy for this situation is to restart SDS service as outlined in this manual's section, *Stopping or Restarting the SDS software*. This scenario can manifest itself when an Ethernet cable is unplugged or when a WAN (Wide Area Network) has an unexpected outage during an active connection. The default value is 120 seconds. The value of this parameter should not be set to less than 90 seconds when used with Remote Watchman Client (RWMC) software and its TCP continuous mode (port type).

Log File Location and Name: This field is used to specify the location and name of the log file used by the SDS instance. By default, the log file is located in the same directory where the SDS instance is created and with the default name of "sds.log". You can use the "Browse" button to choose a directory and filename for the SDS instance.

Enable Debug Mode: When this box is checked (and saved) the SDS service instance will add more detailed information to the log file. This includes a hexadecimal dump of receive and transmit traffic. Use this mode when trying to diagnose or troubleshoot communication problems. Under normal use it is not recommended to keep this box checked, as the log file grows very rapidly.

View Log File: Clicking this button will open the Windows Notepad app and display the log file contents. Scroll to the bottom of the file to see the most recent records.

Adding an SDS Instance

Each new instance that you create will need its own COM port. If you do not have additional COM ports available you can add more by installing a PCI multi-port serial card in your computer, or by using USB to serial adapters.

To add an SDS instance, you need to be logged into the target computer as administrator or you can select and right click SDSMgr.exe and choose "Run as administrator."

Follow these instructions to add an SDS instance;

1. Click on the 'Add New Instance' button. The following window will appear on the screen.
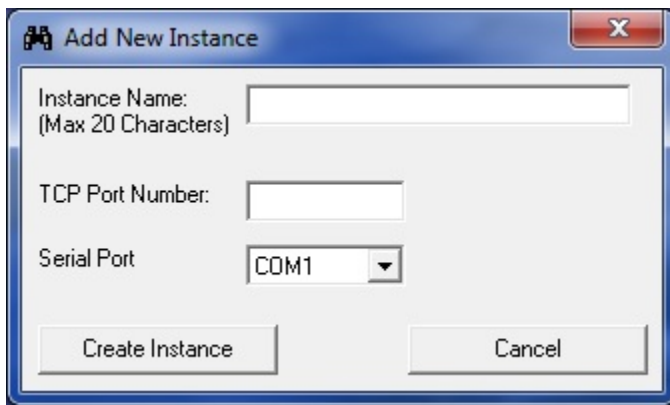

Figure 2

2. Specify a unique instance name. In this example we are going to use "Temperature Sensor". Please note that certain characters are reserved (i.e. \ / * % | : " ? <> .) by the software and are not available for use as a part of your Instance Name. If you attempt to use a reserved character an error message is generated and the software will prompt for a different instance name. A maximum length of 20 characters is allowed for the SDS instance name.

3. Specify a unique (to the machine) TCP Port number and select a unique Serial Port from the drop down box. In this example we are going to use TCP Port 6103 and Serial Port COM3.
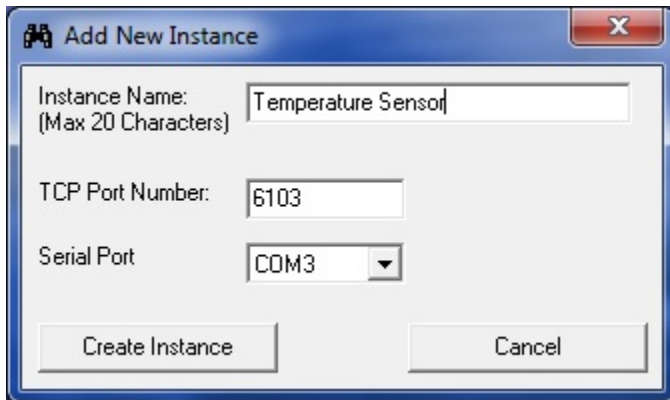

Figure 3

4. Click on the 'Create Instance' button to create a new instance or click on the 'Cancel' button to abort the creation of a new instance.

5. After clicking on the 'Create Instance' button, the new SDS instance will be created with the default settings. The new instance name with its TCP port and serial port will be displayed in the Available SDS Instances panel located on the left half of the SDS Instance Manager app as shown in the Figure 4. A folder with the instance name will be created as a subdirectory in the SDS base installation folder. In the Windows Service Control Manager, the service name for the new instance will be "SDS_*<Instance Name>*" and the display name will be "Sensorsoft Device Server - *<Instance Name>*." At the bottom of the SDS Instance Manager window a message like the following will appear - "**New Instance *<Instance Name>* has been added. Click the Save button for changes to take effect."** Clicking the 'Save' button will create the new instance, save its settings, and start the service.
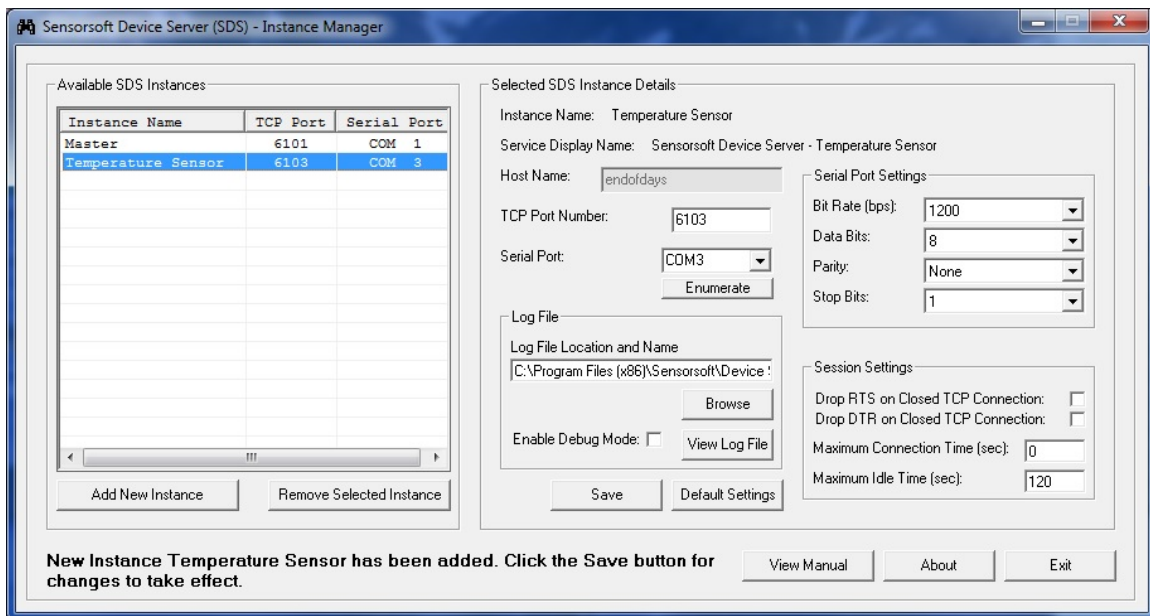

Figure 4

If you do not click the 'Save' button and instead click the 'Exit' button, or select another SDS instance name, the following dialog message, shown in Figure 5, will be displayed. Clicking the 'Yes' button, in this example, creates a new instance with the name "Temperature Sensor".

Figure 5

Removing an SDS Instance

For the removal of an SDS instance, you need to be logged into the target computer as administrator _or_ select and right click SDSMgr.exe then choose "Run as administrator."

1. Select the instance you would like to remove by clicking on its instance name listed in the dialog box, "Available SDS Instances", located on the left half of the SDS Instance Manager app as shown in Figure 6. In this example, we are going to remove the SDS instance, "Temperature Sensor".
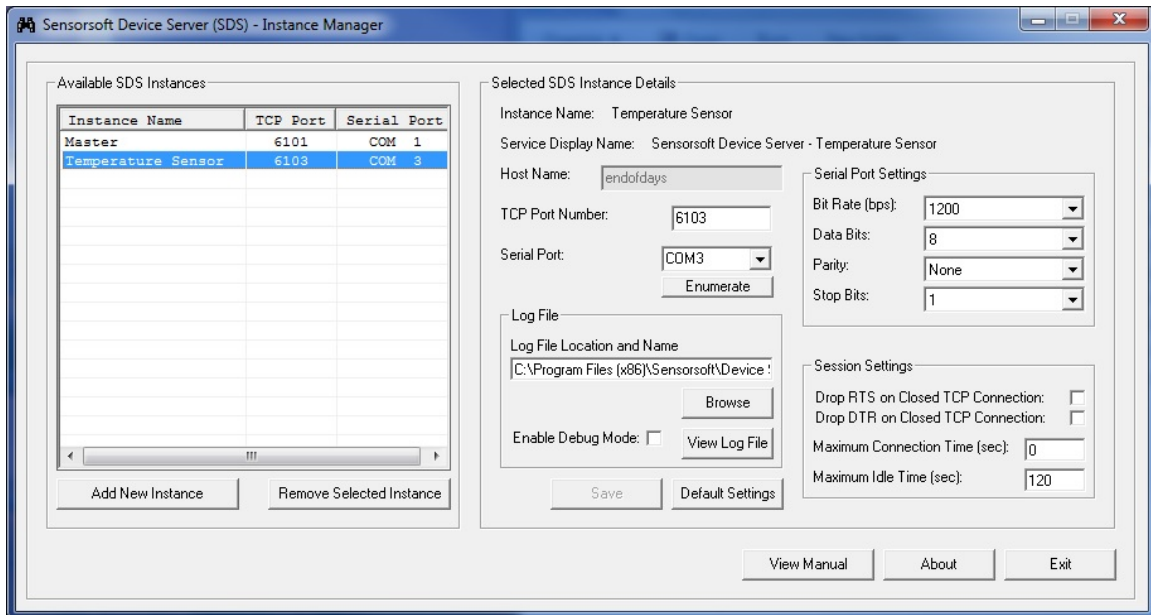

Figure 6

2. Click the 'Remove Selected Instance' button. The following message box shown in Figure 7 will appear on the screen. Click on the 'Yes' button to remove the selected instance.

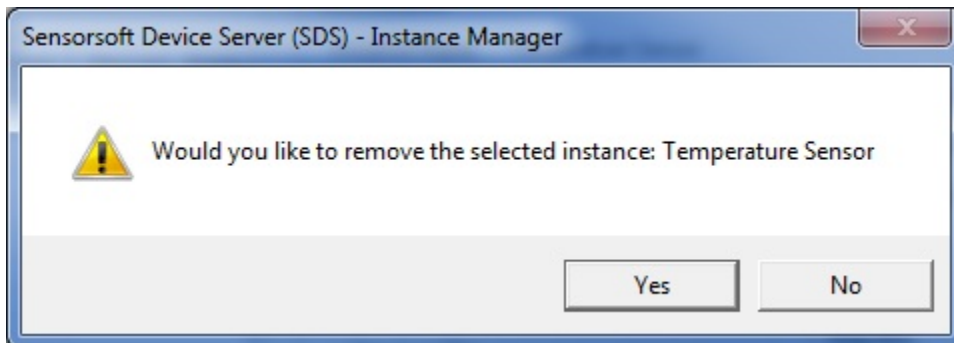Figure 7

After you see the message "**Done - removing software instance…**" you should notice that the instance's folder and its corresponding service in Windows Service Control Manager are both removed. *The 'Master' instance cannot be removed.*

Uninstalling SDS

To uninstall SDS, you will need to be logged into the target computer as administrator. Please note that the removal procedure will remove the Windows service of all SDS instances.

1. Log into the target computer (where SDS is installed) as the Windows administrator.
2. Close any open applications.
3. From the Windows Start Menu, choose Control Panel > Add/Remove Programs **or** Control Panel > Programs and Features > Uninstall a program.
4. Select Sensorsoft Device Server from the list and click the Remove button or right click and select 'Uninstall.'

The SDS uninstall does not remove the instance folders (and files) of the instances that you created. These can be removed manually.

In addition, the SDS uninstall does not remove the optionally installed Prolific USB driver. You will need to use Windows Control Panel > Uninstall a program to remove this USB driver.

Troubleshooting Error Messages

The following is a list of common error messages that may appear in the SDS instance log file with possible solutions.

COMx **does not exist**

The selected COM port is no longer present or not installed correctly on the computer.

COMx **is in use**

You have selected a serial port that is already opened by another application. You can change the serial port selected by the SDS instance or you can force the other unrelated application to release the serial port.

TCP Port number, x, **already used**

An SDS instance has attempted to open a server TCP port that is already being used by another SDS instance.

Some default values may be used due to error reading startup file

If the sds.ini file is corrupted this error message will be in the log. Any values in the sds.ini file that SDS cannot understand or are missing will result in default values being used. Simply start the SDS Instance Manager app, change to your desired settings, then click 'Save.' A new sds.ini file for the SDS instance will be created.

Remote Watchman Client (RWMC)

The following are error messages that may appear in Remote Watchman Client when attempting to connect to SDS.

Winsock error: 10061, Connection is forcefully rejected

The TCP port number in Remote Watchman Client is not the same as the one used by the SDS instance. Check the TCP port number used by the SDS instance and change accordingly in the Remote Watchman Client.

Maximum retries exceeded – too many time-out errors. A Sensorsoft Device is not found.

The Sensorsoft device either isn't correctly connected to the computer where SDS is installed or the SDS serial port settings (i.e. bit rate) are incorrect.

Remote Watchman Enterprise (RWME)

The following error messages may appear in the status column or log file of Remote Watchman Enterprise software when attempting to connect to a Sensorsoft device shared by SDS software.

Device Offline (TCP Connection Failure)

The TCP port number given to RWME is not the same as the one used by the SDS instance. Check the TCP port number shown in the SDS Instance Manager application for that particular SDS instance and change the TCP port in the RWME software accordingly.

Timeout Waiting for Device

The Sensorsoft device either isn't correctly connected to the computer where SDS is installed or the SDS serial port settings (i.e. bit rate) are incorrect.

SCOM Serial Communications Tool

The following are common error messages that may appear when trying to connect to SDS using SCOM Serial Communications Tool.

scom: connect: Connection refused

The TCP port number given to SCOM is not the same as the one used by the SDS instance. Check the TCP port number shown in the SDS Instance Manager application for that particular instance and then change the TCP port on the SCOM command line accordingly.

scom: Maximum retries expired, no response from Sensorsoft Device

The Sensorsoft device either isn't correctly connected to the computer where SDS is installed or the SDS serial port settings (i.e. bit rate) are incorrect.

Stopping or Restarting an SDS Instance

To stop an SDS instance service

1. Log into the target computer (where you installed SDS) as the Windows administrator.
2. From the Windows Start button choose **Control Panel > Administrative Tools > Services or Control Panel > Systems and Security > Administrative Tools > Services.**
3. Select the service named **Sensorsoft Device Server - *<Instance Name>***, where *<Instance Name>* is the given name of the SDS instance.
4. Right click and select **Stop** from menu.

To restart an SDS instance service

1. Log into the target computer (where you installed SDS) as the Windows administrator.
2. From the Windows Start button choose **Control Panel > Administrative Tools > Services or Control Panel > Systems and Security > Administrative Tools > Services.**
3. Select the service named **Sensorsoft Device Server - <Instance Name>**, where <Instance Name> is the given name of the SDS instance.
4. Right click and select **Restart** from menu.

Getting Help

Technical Support

If in the unlikely event you should have problems installing or using Sensorsoft Device Server and the previous sections have failed to provide a solution, we offer technical support to help you overcome your difficulties.

You will receive two (2) support incidents (telephone calls or emails) with your initial purchase of a Sensorsoft Device Server license. After these incidents are used, you must purchase a support package or pay a charge-per-incident fee. The included support incidents cannot be used for those wishing to obtain support to write their own software; this is available on a charge-per-incident basis only.

Before contacting Sensorsoft Technical Support:

Go through *Troubleshooting Error Messages* in the previous section of this manual. Even if a direct answer to your question is not found there, it will be helpful for the support technician if you are able to provide information obtained from the diagnostic and troubleshooting process. Please ensure the problem is directly related to the Sensorsoft Device Server software.

World Wide Web: https://www.sensorsoft.com
E-mail: support@sensorsoft.com

30 Day Money Back Guarantee

If for any reason you want to return a Sensorsoft product for a refund, you can do so within 30 days (calendar days) of your purchase. The refund does not include shipping or brokerage fees you may have incurred or paid.

Returns

If returning a product or item, please observe the following guidelines:

- Contact Sensorsoft for an RMA number (Return Material Authorization).
- Provide an explanation or reason for returning the product.
- Return shipments that bear no RMA number (on the outside of the package) or are not prepaid for shipping/clearing charges, will be refused.