

# **SECS/HSMS Protocol Converter**

## **( tdISConv )**

**(Trust Design Simple SECS/HSMS Protocol Converter)**

### **Instruction Manual**

Version 15.041 : 2015.04.25  
Version 15.050 : 2015.05.08  
Version 15.080 : 2015.08.01  
Version 15.110 : 2015.11.13  
Version 15.111 : 2015.11.27  
Version 16.011 : 2016.01.15  
Version 16.012 : 2016.02.25  
Version 16.040 : 2016.04.05  
Version 18.032 : 2018.03.28  
Version 18.041 : 2018.04.23  
Version 19.070 : 2019.07.05  
Version 19.100 : 2019.10.25  
Version 20.040 : 2020.04.17  
Version 21.060 : 2021.06.15  
Version 24.040 : 2024.04.15

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## 1. Introduction

This program converts mutual protocol of communication compliant with SEMI standard-1 message transfer (SEMI E4/SECS-1) and high-speed SECS message service single session mode (SEMI E37-1/HSMS-SS)

This program has the following features.

- + This program works with Windows PC to convert connection method of SECS-1 (RS232C connection) and HSMS-SS (TCP/IP connection) in SECS communication.
- + For example, it functions as a repeater for connecting a SECS-1 connected device to a host computer that supports HSMS-SS connection.
- + The SECS-1 side supports both host side, equipment side, master and slave, and the HSMS side supports both host side, equipment side, passive and active.
- + Multiple programs can be run in a same PC, enabling connections with multiple devices.
- + After setting and checking operation, if automatic start setting of this program is performed to Windows, it is possible to carry out automatic operation by turning on power of Windows PC which runs this program thereafter.
- + For development of communication system by SECS/HSMS, our SECS/HSMS communication package (Trust Design Simple SECS Communication Library) is available.  
For more information, please visit our home page.
- + You can use SECS/HSMS simulator (Trust Design simple SECS/HSMS Simulator (Simplified Version)) as an inspection application to simulate communication processing (host side, device side) by SECS-1 and HSMS-SS, HSMS-GS is released.  
For more information, please visit our home page.
- + For monitoring communications by SECS (HSMS), our network communications monitor (Trust Design Simple) Network Communication Monitor) is available.  
For more information, please visit our home page.
- + For monitoring communications by SECS-1 protocol using RS232C Serial Port, our serial communication monitor (Trust Design Simple Serial Port Communication Monitor) is available.  
For more information, please visit our home page.

(Note) -----+  
| This package uses following ports of UDP/IP for license management. |  
| Also use following class D address as UDP/Multicast address. Please set not to block these |  
| by firewall etc. of your computer. |  
| - 36276/udp |  
| - 239.254.200.75 |  
| However, even if you can not connect to Internet connection environment, you can use it, and |  
| there are no functional restrictions on usage as compared with same environment. |  
+-----+

## 2. Operation explanation

### (0) Preparation

Before starting this program, be sure to set up and prepare the following files correctly.

+ SECS/HSMS Communication parameter setting file ..... (tdISConvE.ini)

(Note 1) Normally tdISConvE.ini should be placed in the same folder as this program (tdISConv.exe). You can use any file by specifying startup parameters.

(Note 2) Regarding to setting method of tdISConvE.ini, Please refer to corresponding part (2.1 (1) of "Programmer's Manual (TDSE. pdf)" attached to our "SECS/HSMS Communication Package (Trust Design Simple SECS Communication Library) (TDS)"). You can download SECS/HSMS communication package (Free) from our home page (<http://www.trust-design.co.jp/>).

The settings common to SECS-1 connection side and HSMS connection side are described in [DEFAULT] section, the SECS-1 side specific settings are described in [SECS] section, and the HSMS side specific settings are described in the [HSMS] section. (It is also possible to change the section name to be used by specifying start option.)

In the setting of SECS-1 connection side ([SECS] section), please set the attribute opposite to attribute of connection partner. That is, if connection partner is a Equipment, set Host, if it is a Host, set Equipment, if it is a Master, set Slave, if it is a Slave, it is set as Master.

In the settings of the HSMS connection side ([HSMS] section), set the attribute opposite to the attribute of the other party. In other words, if the connection partner is a Equipment, it will be a Host, if it is a Host, set Equipment, if it is Active, set Passive, if it is Active, and Active if it is Passive.

Please refer to the enclosed tdISConvE.ini and use it after correcting the file.

(Note 3) When setting tdISConvE.ini, pay particular attention to the following items.  
(For details, please refer to TDSE.pdf 2.1 (1) above.)

```
+ SECSMODE : SECS Communication parameter
    bit#0,1 ... Communication type (SECS-1 or HSMS-SS)
    4 ..... Equipment or Host
    5 ..... SECS-1 Master or Slave
    6 ..... HSMS Active or Passive

+ DEVMODE : Device control mode
    bit#0 ..... Device ID check
    1 ..... Processing for Secondary Messages not waiting for Receiving
    4 ..... Transaction management when sending primary message
    8-12 .. Automatic transmission of S9F9 and Reject
    15 ..... Processing when T6T0 occurs
```

Since tdISConv only relays send and receive messages, basically transaction management related to data send and receive is not performed by tdISConv but by Host and Equipment connected via tdISConv. Therefore, in this case must set (DEVMODE&0x10)!=0. In this case, even if (DEVMODE&0x0100)=0, tdISConv does not transmit S9F9 when T3T0 occurs. (In the first place, T3T0 does not occur in tdISConv with this setting.)

In SECS-1 communication and HSMS communication, the 0th and 1st bytes of the SECS header part are handled differently. In SECS-1, it is a DEVICE-ID, but in HSMS it is a SESSION-ID. Pay special attention to the settings of (SECSMODE&0x01) and (DEVMODE&0x0201), in particular, because the treatment of the 7th bit (MSB) of the 0th byte is different.

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- + DEVMODE : Device control mode
  
- + DEVID : Connected device ID
- + XDEV : Maximum number of connected device IDs
- + XMSGSIZE : Maximum SECS message byte length  
Specify a numerical value with some margin.
- + SDEVICE : COM port name ("COM1" etc.) used when connecting to SECS-1
- + HOST : Connection destination host name or IP address when Active connection is made at HSMS-SS connection.
- + PORT : TCP/IP port number used for HSMS-SS connection
- + LINKINT : Link test execution interval when connecting HSMS-SS  
When performing a link test, specify the number of seconds for execution interval.
  
- + TRCDIR : Communication trace file storage folder  
When specifying a relative path, it is based on the folder where the tdlSConvE.ini file exists.  
Refer to TDSE.pdf 2.1 (3) for the file name of communication trace file.
- + TRCTTYPE : Trace message output format to communication trace  
(Refer to TDS.pdf 2.1 (2)(c) note)
- + TRCTOUT : Communication trace output mode
- + TRCTLEVEL : Communication trace output level  
When outputting the communication control code when connecting SECS-1, specify value of 6 or more. When outputting HSMS-SS connection trace, also specify value of 9 or 10 or more.

The following is required when displaying message names and data item names using a message definition file for communication trace output.

- + MDMSSG : Specify message definition file (.sml) to be used for communication trace output.
- + MDMXITEM : Maximum number of total data items
- + MDMXMSSG : Maximum number of messages to define
- + MDMXMITEM : Maximum number of total data items + maximum number of items when expanding messages
- + MDMXPPOOL : Message definition Setting data storage area size  
For these items, specify a numerical value with some margin.

## (1) Start-up

Start tdISConvE.exe (or a shortcut to tdISConvE.exe) in the installed folder by double-clicking etc.

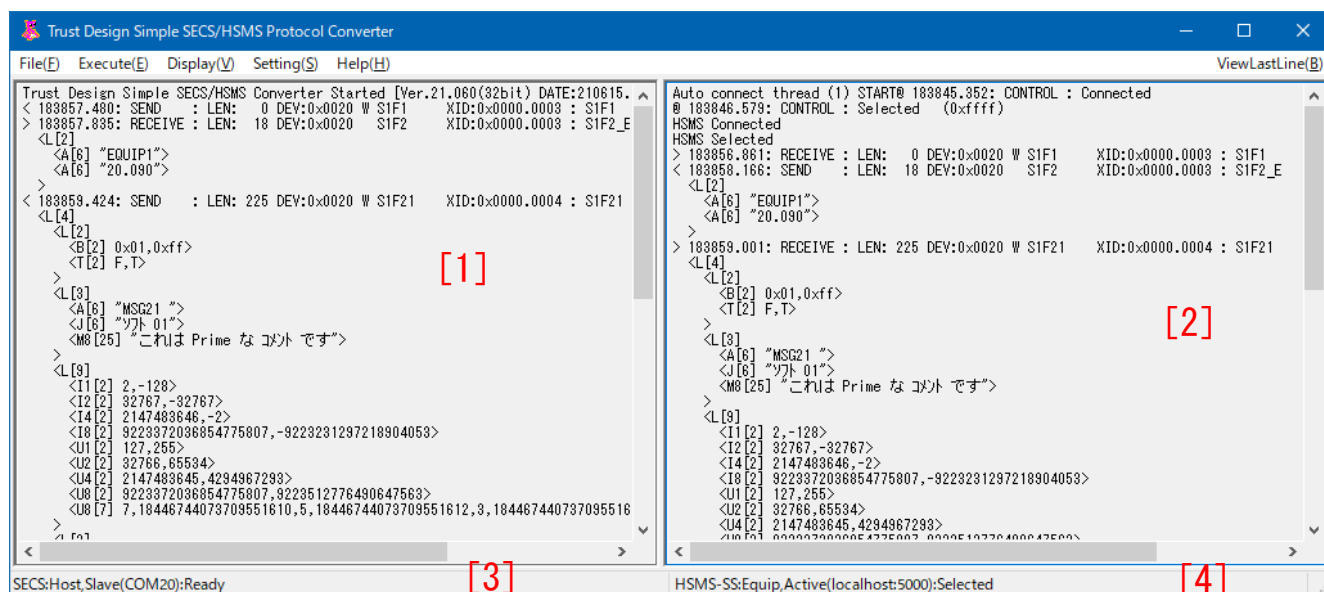
This program uses "MS Gothic" as the font used.

Please execute in the environment where the font can be used.

(Reference) The following can be specified as startup options.

+i ini_file	: Setting file name Default : tdISConvE.ini
+s SECS_Section	: Section name of SECS-1 setting Default : SECS
+h HSMS_Section	: Section name of HSMS-SS setting Default : HSMS
+S style_file	: Name of file to save operation style (position, size, specified parameter) Default : tdISConvEWin.ini (File name excluding the extension of the setting file to be used, with "Win" appended to the file name) (Note 1) Operation style save file is stored in the same folder as the configuration file.

## (2) Screen operation explanation



- [1] : SECS-1 connection side communication trace display  
Displays trace of sent and received SECS(SECS-1) communication messages.
- [2] : HSMS connection side communication trace display  
Displays trace of sent and received SECS(HSMS) communication messages.
- [3] : SECS-1 connection side status  
Displays current connection status of SECS-1 side I/F.
- [4] : HSMS connection side status  
Displays current connection status of HSMS side I/F.

(a) Menu

(a-1) [File]

- + End of application .. Exit tdISConvE.

(a-2) [Execute]

- + Start ..... Start SECS-1/HSMS-SS protocol conversion process.
- + Stop ..... Stop SECS-1/HSMS-SS protocol conversion process.

(Note 1) If a connection with opposite side is not established, it may take some time for the [Exit] process.

In such a case, if you exit the program immediately, please exit with [X] on the right end of the title bar.

(a-3) [Display]

- + Clear communication trace  
Clear the communication trace window ([1],[2]).
- + View last line of communication trace  
Make scroll bar of trace window ([1],[2]) last line displayed.  
(Used when final line does not easily appear in normal scroll bar operation, etc., with auto scrolling at high speed, etc.)
- + List format  
Display Send/receive SECS messages in specified List format in communication trace window ([1],[2]).
- + Hexa format  
Display send/receive SECS message in hexadecimal format in communication trace window ([1],[2]).

(a-4) [Setting]

- + Automatic start  
It is set to start processing automatically after program startup.  
This setting will be effective when the program starts next time.
- + Save window position and size  
When the program ends, the position, size, etc. at the end of this program are saved, and the state of the window is restored to the same state at the next start.
- + Do not check connection method  
Normally, at program start, it is checked whether setting (SECSMODE) of tdISConvE.ini is on SECS side or HSMS side according to specified connection method. However, when this item is checked, the connection method is not checked.

(a-5) [Help]

- + Version information of tdISConvE  
Display version information of this program.

(a-6) [ViewLastLine]

- + Positioned on the last line of communication trace display.  
(Same as (a-3) [View last line of communication trace])



(b) Communication trace display

Performs trace display of sent and received SECS/HSMS communication messages.

If [List] and [Hexa] are both unchecked in [Display], only the information on send/receive header will be displayed.

(Note 1) The form of the List format display of SECS/HSMS communication messages is determined by the following parameters of tdISConvE.ini file.

+ TRCTTYPE : Communication message output format to communication trace  
bit#2 : Item data display format  
=0: Display each item on one line only and omit the back if it does not fit on one line.  
1: Each item is displayed on multiple lines, 20 items for numerical items and 100 bytes for string items.  
bit#4, 5, 6 : List output format (usually use as 2)  
=0: TDS Format  
2: SML Format  
bit#7 : Data item name display (If you do not use message definition, set it to 0.)  
bit#8, 9 : Message definition file format  
=0: SML Format

(Note 2) The form of the Hexa format display of SECS/HSMS communication messages is determined by the following parameters of tdISConvE.ini file.

+ TRCTTYPE : Communication message output format to communication trace  
bit#3 : Hexadecimal display format  
=0: Display 16 Bytes on one line.  
1: Display 20 Bytes on one line.

(Note 3) Communication control code transmission and reception on the SECS-1 side is not displayed on the communication trace display window.  
Output to the communication trace file (if TRCTLEVEL>6 in tdISConvE.ini).

(Note 4) The LinkTest message on the HSMS side is not displayed in the communication trace display window.  
Output to the communication trace file (if TRCTLEVEL>= 9 in tdISConvE.ini).

(Note 5) The output to the communication trace file depends on the TRCDIR, TRCTTYPE, TRCTOUT, TRCTLEVEL, and TRCTSIZE of tdISConvE.ini.  
For details, please refer to TDS.pdf 2.1(1) above.