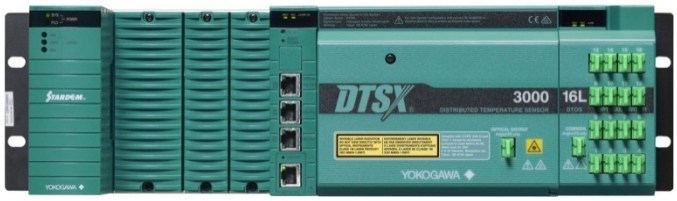
General Specifications

GS 39J02B40-01E

DTSXL
Distributed Temperature Sensor
Long Range System
(Software)

■ GENERAL

This General Specification (GS) describes the system configuration and software configuration of the DTSXL Distributed Temperature Sensor Long Range System. For information on its associated hardware and firmware, read GS 39J06B40-01E.



■ FEATURES

The DTSXL Distributed Temperature Sensor Long Range System (DTSXL System) measures temperatures at various points along the length of an optical fiber by launching a pulse of light into a connected optical fiber and analyzing the signal components of the returned backscatter. By using the optical fiber as the intrinsic temperature sensing element, the DTSX3000 of DTSXM System is capable of measuring temperature distribution over an area where the optical fiber is laid.
As the DTSXL lacks a man-machine interface, a dedicated DTSX3000 Control Visualization Software (DTAP3000) tool and DTSX3000 Data Conversion Software (DTAP3000D) tool are provided to allow a user to perform control, monitoring and analysis via a communication interface. These Software tools can connect DTSX series include DTSX200.
For more details on the DTSXL System, see “DTSXL Distributed Temperature Sensor Long Range System” (GS 39J06B40-01E).

■ CONFIGURATION

● Application Software

Application software for the DTSXL system includes the DTSX3000 Control Visualization Software (DTAP300) and the DTSX3000 Data Conversion Software (DTAP3000D).

Component (Model)	Quantity	Description
DTSX3000 Control Visualization Software (DTAP3000)	1	The DTSX3000 Control Visualization Software is used for configuring measurement and displaying measurement results. It is bundled with the DTSX3000 Control Visualization Software LAS 2.0 Data Conversion tool and the DTSX3000 Control Visualization Software Calibration tool. The former is used for converting measurement data to LAS/CSV format(*1), while the latter is used for calibrating the DTSX series.
DTSX3000 Data Conversion Software (DTAP3000D)	1	This software is required for converting measurement data to WITSML format

*1: Converting measurement data to CSV is available only for DTSX3000. It is not available for DTSX200.

● System Configuration

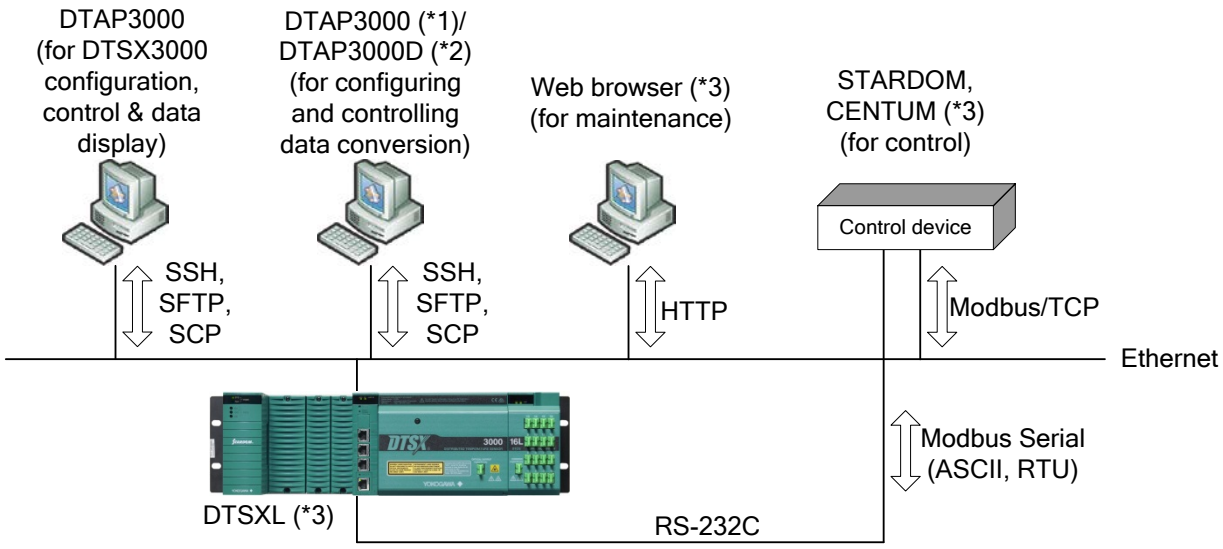
The figure below shows a DTSX system configuration example.

The DTSX3000 Control Visualization Software (DTAP300), as well as its bundled DTSX3000 Control Visualization Software Calibration tool, is used to instruct the DTSX series to perform measurement and output temperature distribution data. It polls the DTSX3000 constantly and when measurement data is available, it retrieves and displays the data. The DTSX3000 Control Visualization Software Calibration tool can moreover be used to calibrate the parameters with optical fiber sensor.

The DTSX3000 Control Visualization Software LAS 2.0 Data Conversion tool, which is also bundled with the DTAP3000, can be used to instruct the DTSX series to convert temperature data into LAS 2.0 or CSV format(*1) for transmission to a host data server.

The DTSX3000 Data Conversion software (DTAP3000D) can be used to instruct the DTSX3000 to convert temperature data into WITSML1.3.1.1 format for transmission to a host data server.

∗1： Converting measurement data to CSV is available only for DTSX3000. It is not available for DTSX200.



System Configuration Example

(*1) Data conversion to LAS or CSV format, (*2) Data conversion to WITSML format, (*3) Not covered in this specification document.

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■ SOFTWARE

Software tools for use with the DTSXL System include the DTSX3000 Control Visualization Software (DTAP3000) and the DTSX3000 Data Conversion Software (DTAP3000D).

● DTSX3000 Control Visualization Software (DTAP3000)

The DTSX3000 Control Visualization Software (DTAP3000) is used for configuring and controlling temperature measurement by the DTSX series, as well as displaying measurement result as graphs. It is bundled with the DTSX3000 Control Visualization Software LAS 2.0 Data Conversion tool and the DTSX3000 Control Visualization Software Calibration tool.

DTSX3000 Control Visualization Software

Item		Description
Boot modes	Control mode	The control mode is used for configuring and controlling measurement, as well as displaying measurement results while connected to the DTSX series.
	Monitoring mode	The monitoring mode is used for displaying measurement results while connected to the DTSX series.
	Trace mode	The trace mode is used for displaying trace data without connecting to the DTSX series.
Measurement configuration functions (*1)	(Global) measurement settings	Settings for channel combination, measurement sequence, measurement mode (single-ended or double-ended), measurement interval and measurement start time
	(Channel) measurement settings	Repetition rate, measurement time (*2) or averaging times, distance range, sampling resolution, fiber failure detection threshold and Increased loss detection threshold(*3)
	(Channel) fiber settings	Fiber length, wavenumber, group index, loss correction, temperature offset correction and winding coefficient (distance-depth conversion factor)
	Alarm settings	Up to 50 alarm detection sections(*4) can be defined with temperature high limit, low limit, rise limit, fall limit, difference limit, difference high limit(*3) and difference low limit(*3) values specified for each section.
	Sectional temperature data generation settings	Up to 200 data generation sections(*5) can be defined with the temperature output data type (average, maximum, minimum, difference or slope) selected for each section
DTSX series control functions	Connect/Disconnect (*6)	Authentication using username and password
	Start/Stop measurement (*7)	
	Self-test (*7)	Self-diagnosis by DTSX series
Status display functions	Connection status display and measurement status display	
Alarm display	Notification	An alarm is indicated by a lit alarm lamp button.
	Detailed information display	Alarm type and alarm location (only for the first occurrence)
Measurement result display functions	Graph settings	Data type (temperature, signal level), data unit, graph type (2D or 3D) and display range
	Graph display	Displays measurement data.

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Help functions	Version information display and user manual display	
Communications functions (*6)	Communications with DTSX series	Uses SSH, SFTP and SCP.
Data management functions	Measurement data retrieval (*6)	Saves data to specified folder.
	Measurement data time series log (*6)	Records time series data for a specified depth.
	CSV output (*8)	Exports specified measurement data in CSV format. (*9)

*1: DTSX series settings can be modified in control mode or calibration mode. DTSX series settings cannot be modified in monitoring mode and trace mode.
*2: Actual measurement time might differ from the measurement time setting, and might fluctuate.
The difference between actual measurement time and the measurement time setting increases when DTAP3000 connection, alarm detection, sectional data generation, data conversion, data transfer and other functions are used.
*3: This function is available only for DTSX3000.
*4: The number of sections is for DTSX3000. DTSX200 alarm detection section is up to 10.
*5: The number of sections is for DTSX3000. DTSX200 data generation detection section is up to 100.
*6: These functions are available only in control mode and monitoring mode. These functions are not available in trace mode.
*7: These functions are available only in control mode. These functions are not available in monitoring mode and trace mode.
*8: These functions are available only in trace mode. These functions are not available in control mode and monitoring mode.
*9: Exported CSV files cannot be re-imported by the DTSX3000 Control Visualization Software

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DTSX3000 Control Visualization Software LAS 2.0 Data Conversion

Item		Specification
LAS data configuration function	LAS data conversion configuration and LAS data transmission configuration	Configuration of LAS (Log ASCII Standard) data conversion (LAS version 2.0 compatible) and data transmission to server by DTSX series
CSV data configuration function (*1)	CSV data conversion configuration and CSV data transmission configuration	Configuration of CSV (comma-separated values) data conversion and data transmission to server by DTSX3000
DTSX series control functions	Connect/Disconnect	Authentication using user name and password
	Start/Stop conversion	
Status display functions	Connection status display, conversion status display and file transfer status display	
Alarm display	DTSX series failure notification	An alarm is indicated by a lit alarm button
Help function	Version information display and user manual display	
Communications function	Communications with DTSX series	Uses SSH, SFTP and SCP
LAS/CSV data retrieval function (*2)	LAS/CSV data retrieval	Transfer of LAS/CSV data files stored on the DTSX series to a PC

*1: This function is available only for DTSX3000.
*2: DTSX200 does not have CSV data conversion functionality, then DTSX200 can transfer of LAS data files only.

DTSX3000 Control Visualization Software Calibration

Item		Specification
Measurement configuration functions	(Global) measurement settings	Settings for channel combination, measurement sequence, measurement mode (single-ended or double-ended), measurement interval and measurement start time
	(Channel) measurement settings	Repetition rate, measurement time (*1) or averaging times, distance range, sampling resolution, fiber failure detection threshold and optical loss up detection (*2)
	(Channel) fiber settings	Fiber length, wavenumber, group index, loss correction, temperature offset correction, distance-depth conversion factor and noise filter
	Alarm settings	Up to 50 alarm detection sections (*3) can be defined with temperature high limit, low limit, rise limit, fall limit, difference limit, temperature average high limit (*2) and temperature average low limit (*2) values specified for each section.
	Sectional temperature data generation settings	Up to 200 data generation sections (*4) can be defined with the temperature output data type (average, maximum, minimum, difference or slope) selected for each section
DTSX series control functions	Connect/Disconnect	Authentication using user name and password
	Start/Stop measurement	
Status display functions	Connection status display and measurement status display	
Alarm display	Notification	An alarm is indicated by a lit alarm lamp button.
	Detailed information display	Alarm type and alarm location (only for the first occurrence)
Measurement result	Graph settings	Data type (temperature, signal level,

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display functions		CFL), data unit, graph type (2D or 3D) and display range
	Graph display	Displays measurement data.
Help functions	Version information display and user manual display	
Communications functions	Communications with DTSX series	Uses SSH, SFTP and SCP.
Data management functions	Measurement data retrieval	Saves data to specified folder.
Calibration function	Adjustment of various sensor fiber parameters	Fiber connection points adjustment and fiber parameters adjustment

*1: Actual measurement time might differ from the measurement time setting, and might fluctuate.
The difference between actual measurement time and the measurement time setting increases when DTAP3000 connection, alarm detection, sectional data generation, data conversion, data transfer and other functions are used.
*2: This function is available only for DTSX3000.
*3: The number of sections is for DTSX3000. DTSX200 alarm detection section is up to 10.
*4: The number of sections is for DTSX3000. DTSX200 data generation detection section is up to 100.

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● DTSX3000 Data Conversion Software (DTAP3000D)

The DTAP3000D is used for configuring data conversion by DTSX series.
If WITSML (Wellsite Information Transfer Standard Markup Language) conversion is configured using this software, the DTSX series will generate data files in WITSML format.

Item		Specification
WITSML data configuration function	WITSML data conversion configuration and WITSML data transmission configuration	Configuration of WITSML data conversion (WITSML version 1.3.1.1 compatible) and data transmission to server by DTSX3000
DTSX3000 control functions	Connect/Disconnect	Authentication using user name and password
	Start/Stop conversion	
Status display functions	Connection status display, conversion status display and file transfer status display	
Alarm display	DTSX series failure notification	An alarm is indicated by a lit alarm button
Help function	Version information display and user manual display	
Communications function	Communications with DTSX series	Uses SSH, SFTP and SCP
WITSML data retrieval function	WITSML data retrieval	Transfer of WITSML data files stored on the DTSX series to a PC
WITSML license registration and deregistration (*1)	Registration and deregistration of WITSML license	WITSML license registration and deregistration to DTSX3000

*1: This function is available only for DTSX3000.

● Operating Environment

The DTSX3000 Control Visualization Software (DTAP3000) and DTSX3000 Data Conversion Software (DTAP3000D) have the following common PC system requirements.

Item	Specification
Personal computer	IBM PC/AT compatible
CPU	Dual-core 32-bit processor 2 GHz or better
RAM	2 GB or more
Hard disk free space	2 GB or more
Ethernet adaptor	100BASE-TX or 10BASE-T
OS	Windows 7 (SP1) Windows 8.1
.NET framework	.NET framework 4.0 (Windows7), .NET framework 4.51 (Windows8.1)
PDF reader	Adobe Reader X

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■ SOFTWARE MEDIA

● DTSX3000 Control Visualization Software (DTAP3000)

The user manuals (IM) and programs for the DTSX3000 Control Visualization Software are supplied on a CD-ROM.

- DTSX3000 Control Visualization Software user manual (IM) (Electronic document)
- DTSX3000 Control Visualization Software LAS 2.0 Data Conversion user manual (IM) (Electronic document)
- DTSX3000 Control Visualization Software Calibration user manual (IM) (Electronic document)
- DTSX3000 Control Visualization Software
- DTSX3000 Control Visualization Software LAS 2.0 Data Conversion
- DTSX3000 Control Visualization Software Calibration

● DTSX3000 Data Conversion Software (DTAP3000D)

The user manual (IM) and programs for the DTSX3000 Data Conversion Software are supplied on a CD-ROM.

- DTSX3000 Data Conversion Software user manual (IM) (Electronic document)
- DTSX3000 Data Conversion Software

■ MODEL AND SUFFIX CODES

● DTSX3000 Control Visualization Software (DTAP3000)

		Description
Model	DTAP3000	DTSX3000 Control Visualization Software
Suffix Codes	-N	Standard license (Runtime license for one PC)
	0	Basic type
	E	English

● DTSX3000 Data Conversion Software (DTAP3000D)

		記事
Model	DTAP3000D	DTSX3000 Data Conversion Software
Suffix Codes	-N	Standard license (Runtime license for one DTSX3000)
	1	WITSML1.3.1.1
	E	English

This software cannot register and deregister of WITSML license to DTSX200

■ ORDERING INFORMATION

Specify the model and suffix codes when placing an order.

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