WorkstationST Recorder
User Guide

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Document Updates

Revision	Location	Description
G	*Trip Log*	Added ControlST V07.09.00C paragraph
	Appendix	Added TripFlash column in the table
F	*Maintenance Log*	New section to provide details for the Recorder Maintenance Log collection type
E	*Trip Log Collection*	Added diagnostic alarms to the collection described in second last paragraph in the section

Acronyms and Abbreviations

.dcaST	Data Collection and Analysis (file extension)
CDL	Compressed Data Log
EPA	Environmental Protection Agency
EGD	Ethernet Global Data
OPC	A standard for data exchange in the industrial environment
SDI	System Data Interface
TMR	Triple Modular Redundancy
UTC	Universal Time Coordinate

Contents

1 Introduction

The WorkstationST* Recorder is a feature of the WorkstationST component. It allows the collection of historical data from other ToolboxST* components. The collected data is saved to Data Collection and Analysis (*.dcaST*) files, which are accessible by the Trender. The *.dcaST* files are stored in the folder specified on the Recorder tab.

Data is collected from the following sources:

- Ethernet Global Data (EGD) configured for the WorkstationST application
- Directly from components that support the System Data Interface (SDI) protocol
- Capture buffers from components that support them

The OPC® Server must be running on the WorkstationST computer for the Recorder to collect data from EGD. Trip Logs and Power Conversion collections require the Alarm Server to be running.

The Recorder is configured through the WorkstationST Component Editor Recorder tab. The configuration used by the Recorder is the last configuration downloaded. The running configuration is updated when a download message is received from the WorkstationST Service. The Recorder receives two types of messages from the WorkstationST application: workstation download and component download.

A workstation download stops all current collections while it downloads the new configuration. A component download restarts collections for the component based on the new configuration.

The WorkstationST Recorder supports the following collection types:

- Capture Buffer
- Live Data
- Trip Log
- EPA Log

Note Refer to *Appendix: Recorder Supported Collections by Component Type*.

The *.dcaST* files are stored in a location defined in the Recorder tab of the WorkstationST component. The file directory structure is: `Recorder path\component\collection name\day\files`

Timestamps on data samples and file\directory names are in the Universal Time Coordinate (UTC) format. Each hour, the Recorder searches for files in storage, and deletes them if they have been there longer than the time specified for collection. Collections are also scanned for exceeding the disk usage limit. The oldest files are deleted until disk usage is within limits. Trip logs have no time or space limits; the previous 30 trips are always stored.

Note Refer to the *ToolboxST User Guide for Mark Controls Platform* (GEH-6700), the section *Recorder Tab* for software configuration details.

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2 Capture Buffer

The Capture Buffer collection uploads the high-speed data buffer in the component. Each Capture Buffer has an associated status word, which is an EGD variable, that must be added to the configuration. When this variable transitions to a complete state, the Capture Buffer is uploaded from the component and saved as a *.dcaST* file.

3 Live Data

The Live Data option collects data continuously or on a high-triggered event. The data source is either EGD through the OPC server, or the component through SDI.

Continuous collections sample the data at the specified scan rate and save it if the change in value has exceeded the deadband. A new file is created every hour to keep the file sizes manageable.

Triggered Edge collections sample data for up to 3600 seconds before, and for up to 3600 seconds after, the event. During this time, the data is sampled at the specified scan rate and saved if the change in value has exceeded the deadband.

Triggered Level collections sample data for up to 3600 seconds before the event, while the event is true, and for up to 3600 seconds after the event. During this time, the data is sampled at the specified scan rate and saved if the change in value has exceeded the deadband. A new file is created every hour to keep the file sizes manageable.

Note When alarms/events or diagnostic alarms are enabled for the collection, they are written to the file when the file closes; normally at the end of the hour.

4 Trip Log

The Trip Log collection creates both a Capture Buffer and a Live Data collection.

The Live Data collection samples the data once a second with no deadbands, and then saves it as a *.dcaST* file. The variables for the live data are the variables being collected in the Capture Buffer. The Recorder uploads the list of variables from the Capture Buffer list when it starts the Trip Log collection. These variables must be on EGD for valid data to be collected.

The Capture Buffer collection samples the status variables of the Capture Buffers. When all status words have transitioned to a complete state, the buffers are uploaded. The Recorder then reads the data from the live data files, and writes the data and capture buffer data to the Trip Log file. The data from the live data files is written using the following data re-sampling.

Time	Sample Rate
19 hours	10 minutes
4 hours	1 minute
40 minutes	10 seconds
20 minutes or until time of first sample in Capture Buffer	1 second

The alarms, events, diagnostic alarms, and SOEs that occurred between the first sample and the last sample in the Trip Log are requested from the Alarm Server. These alarms, events, diagnostic alarms, and SOEs are saved to the Trip Log file with a limit of 250 of each, with a maximum of 50 post-trigger samples for each.

For dual and Triple Modular Redundancy (TMR) systems, the Capture Buffers from the non-designated controller are uploaded and saved to separate files.

Starting with ControlST* V07.09.00C, there is a new Capture Buffer Upload Type of TripFlash. The TripFlash Capture Buffer Data is saved to Flash when it is triggered. The TripFlash option is only available when the Compressed Data Log (CDL) feature is enabled. With a TripFlash Capture Buffer the Live data is not read from EGD as is described above, but instead is read from CDL data that was stored in the controller. The Recorder feature, when it is started, or reconnected to a controller after a loss of communication, queries the controller to determine if there are any TripFlash Captures that it missed that it needs to upload.

5 EPA Log

The EPA Log uploads data from a high-speed data buffer like the Capture Buffer collection; however, the Create CSV and Print CSV properties are set to True. This requires the user to enter a printer for the resulting .csv file to be printed on.

6 Maintenance Log

The Maintenance Log collection causes the Recorder to create a set of .csv files beneath the Maintenance Log collection folder. The .csv files can be imported into Trender and the Maintenance Log collection's data can be read through the historical data selection using the Trender's Add Trace Wizard. The Maintenance Log is intended to be a very slow collection of data (minutes for the scan rate) that can be kept over a long period of time.

Maintenance Log .csv files contain the following columns:

- Name property (editable string property of the collection)
- Time stamp
- Variables that can be configured in the collection (the column heading for each variable contains the variable's description)

7 Glossary of Terms

Collection - More formally, an EGD Collection. A group of devices that constitutes a formal subset of the devices participating in a particular EGD installation. This arbitrary grouping allows users to subdivide the system to make some tasks easier.

EGD - A mechanism that provides access to global data between nodes supporting the EGD protocol.

Exchange - An EGD data message consisting of a header and a body of data. The header contains the producer ID and the exchange ID that uniquely identifies the message. The body of data is a block of bytes in a format agreed upon by the producer and all consumers.

Feature - An element of the WorkstationST runtime system, which can be optionally enabled through the ToolboxST application. Examples include OPC Server, Recorder, and Alarm Viewer.

Global Data - A concept in which multiple controllers on a network can share information by exchanging portions of their local memory with peer controllers.

OPC - A standard for data exchange in the industrial environment (OLE is Microsoft's Object Language Embedding). The OPC foundation provides specifications for various OPC standards such as OPC DA (Data Access) and OPC AE (Alarm and Event).

Produce - To send an EGD data message (exchange).

Producer - The EGD node configured to send data messages. The source of the data samples for an exchange.

Runtime - Software stored in the controller's Flash memory that converts application code (pcode) to executable code.

Triple Modular Redundancy (TMR) - An operation that uses three identical sets of control and I/O (channels R, S, and T) and votes the results.

8 Appendix: Recorder Supported Collections by Component Type

The following table displays the component-based collection types supported by the Recorder.

Component Information		Collection Type				
Component	**Component Configuration Tool**	**Live Data**	**Trip Log**	**Capture Buffer**	**Trip-Flash§**	**EPA Log**
Mark VIe	ToolboxST application	Yes	Yes	Yes‡	Yes	Yes
Mark VIeS	ToolboxST application	Yes	No	No	No	No
Mark VI	CSS toolbox†	Yes	Yes	Yes	No	Yes
Mark V	Mark V Toolset	Yes	No	No	No	No
EX2100	CSS toolbox†	Yes	Yes	Yes	No	Yes
LS2100e	ToolboxST application	Yes	Yes	Yes	No	Yes
LS2100	CSS toolbox†	Yes	Yes	Yes	No	Yes
Wind-DFIG 1.5	ToolboxST application	Yes	No	Yes	No	No
Wind-PMG 2.x	ToolboxST application	Yes	No	Yes	No	No
Wind- Sync 2.x	ToolboxST application	Yes	No	Yes	No	No
WorkstationST	ToolboxST application	Yes	No	No	No	No
EGD Generic (External Device)	ToolboxST application	Yes	No	No	No	No
Virtual Mark VIe	ToolboxST application	Yes	Yes	Yes	No	Yes
Virtual Mark VIeS	ToolboxST application	Yes	No	No	No	No
Virtual Mark VI	CSS toolbox†	Yes	Yes	Yes	No	Yes

† Control System Solution toolbox

‡ For a Mark VIe with a power conversion pack, the capture buffer from the pack is available for collection.

§ TripFlash is only available when Compressed Data Log is enabled.