Application Note
AN-0007

Retrieving Log Data from the OZpcs-RS40 Using Power Studio™

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ABSTRACT

The OZpcs-RS40 is a 40kW Power Conversion System (PCS) intended for battery-based energy storage applications. This application note describes the process for retrieving log data from the OZpcs-RS40 using the Power Studio™ GUI.

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1 Safety

The information contained in this application note is intended be used in conjunction with other product and safety documentation provided by Oztek. It is assumed readers are familiar with high-voltage/high-power systems and the general safety considerations related to the wiring and use of 3-phase AC electricity, battery systems, and PV energy sources. Oztek strongly suggests that a qualified engineer be engaged to do detailed system design and ensure conformance with local codes. UM-0061 should be consulted for OZpcs-RS40 product specifications upon which to base any detailed designs.

2 Introduction

The OZpcs-RS40 is a 40kW Power Conversion System (PCS) intended for battery-based energy storage applications. The OZpcs-RS40 provides three types of data logs, Event, Fault History, and Operating History, as described in the following sections. This application note describes how to use Oztek Power Studio™ to view and save these logs. UM-0052 may be consulted for general instructions on using Power Studio™.

2.1 Event Data Logs

The Event Data logging feature is intended to capture operating data leading up to, and shortly after an event. Events can be the assertion of a fault, or a user configured “trigger”. The event logs capture operating parameters at a high resolution when the trigger occurs. The time source for event logs is a real time clock (RTC) integrated into the OZpcs-RS40. Note that the RTC is not battery powered and should be set each time the PCS is powered on to ensure accurate timestamps. Consult the Real Time Clock (RTC) section of UM-0061 for instructions on setting the clock value. *AN-0005 Real-Time Clock Considerations for the OZPCS-RS40* provides additional application guidelines.

Event logs are updated automatically when a new fault occurs. DC power should be maintained for at least 10 seconds after a fault occurs to allow time for the log to be committed to flash memory. If the bias-enable pin is de-asserted before the log has been committed to flash memory the PCS will remain powered until the process has finished.

2.2 Fault History Logs

The fault history logs provide aggregated timestamp and event counters for each fault source in the PCS. Fault history logs are committed to flash memory automatically every two hours and when a shutdown is initiated by de-asserting the bias-enable pin.

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2.3 Operating History Logs

Operating history logs report the cumulative time spent operating under a variety of conditions, as well as lifetime min/max values for critical parameters. Operating history logs are committed to flash memory automatically every two hours and when a shutdown is initiated by de-asserting the bias-enable pin.

2.4 Programmatic Access to Logs

While Power Studio™ provides an easy-to-use GUI for accessing data logs, all logs described below are available to customer application code through the Modbus register set. A detailed description of this register interface is described in the Data Logging section of UM-0061.

3 Automatic Product Logs

3.1 Fault Log

The Fault Log consists of instrumentation data sampled leading up to, and after a fault occurs. The OZpcs-RS40 stores up to 12 fault logs internally. If a new fault log is generated when the device storage is full, the oldest log will be automatically removed so that the new log can be saved.

When using Power Studio™ to access the fault logs, select the “Data Log” tab, and click on the Fault Log selection box along the left side of the window. The “Available Logs” value under “Log Status” will automatically populate, indicating how many, if any, logs have been recorded. Clicking on the “Get Log List” button will read the timestamps for each log and populate the dropdown list. Once a log has been selected from the dropdown menu, the “Read Log” button will download the data from the RS40 and populate a table in Power Studio™, as illustrated in Figure 1.

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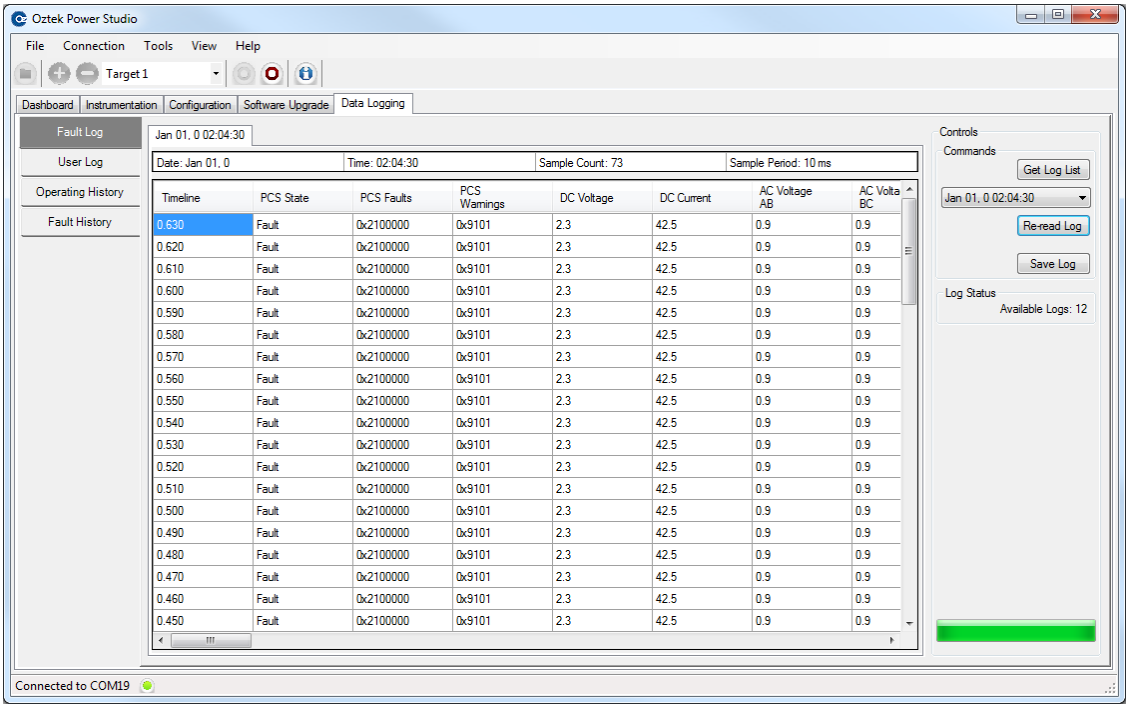

Figure 1 - Fault Log

A log header will be displayed across the top of the table detailing the date and time of the fault, as well as the number of samples (rows) captured. The table is filled in decreasing order according to the timestamp displayed in the first column. The fault log records samples both before and after the fault event, where the fault event corresponds to the 0.000 second timestamp. Samples recorded after the event have positive timestamps while samples recorded before the event have negative timestamps. Rows, columns, and groups of cells may be copied from this window directly into Microsoft Excel (or compatible spreadsheet program).

Due to the large number of samples recorded, it may take several minutes to download a complete log. Refer to Oztek *AN-0008, Improving Power Studio™ Performance Over RS-485 Interfaces* for instructions on how to reduce the time required to read a log.

The reading process may be halted prematurely using the “Pause” button. Once paused the “Save Log” button can be used to save a CSV file to the local computer. Reading may be resumed from the last line read using the “Resume” button.

3.2 Operating History

The Operating History log consists of three categories of data, stored over the life of the product. The individual categories can be accessed via the tabs above the table.

The controls on the right-hand side of the GUI are used to retrieve and save the data logs. The “Read Log” button will read data for the selected log and then populate a table on the screen. The “Save Log” button will save the displayed table as a CSV file.

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3.2.1 Durations

This log stores the amount of time the PCS has spent in each operating condition, in units of seconds.

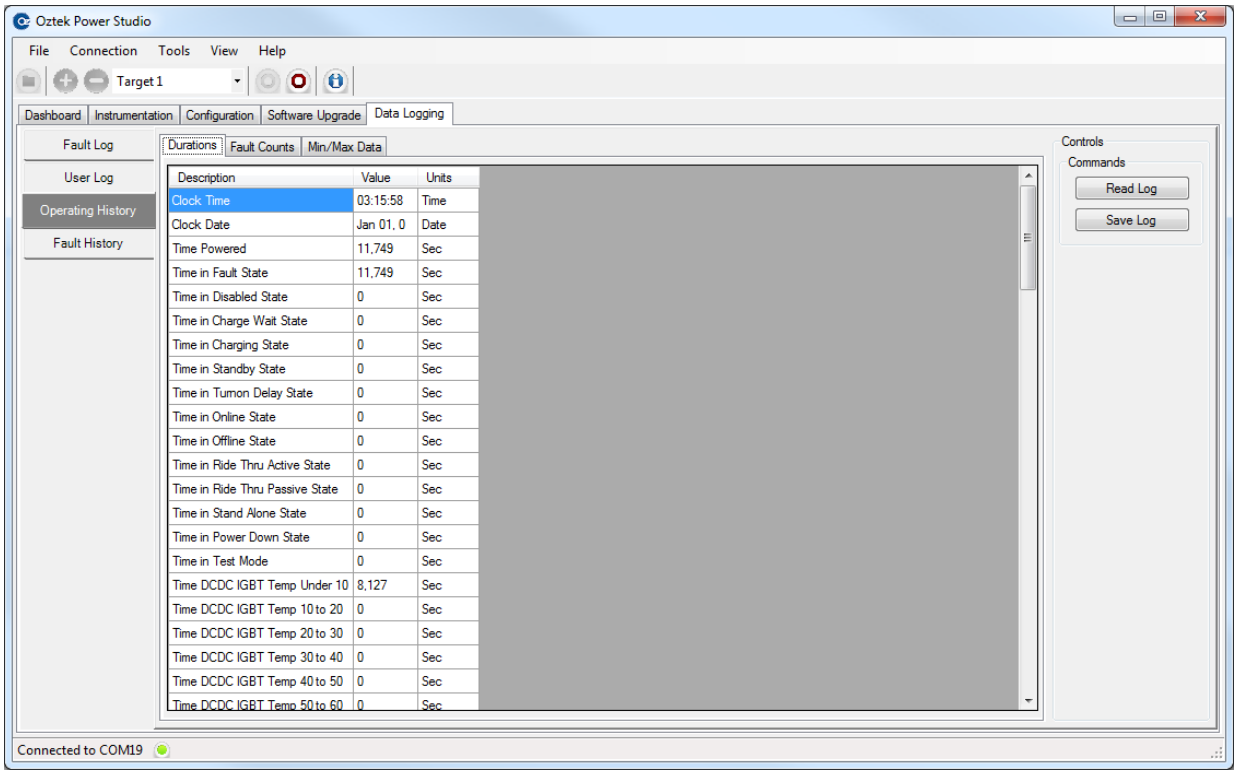

Figure 2 - Operation Log, Durations

3.2.2 Fault Counts

This log stores the number of times each fault has occurred over the life of the PCS.

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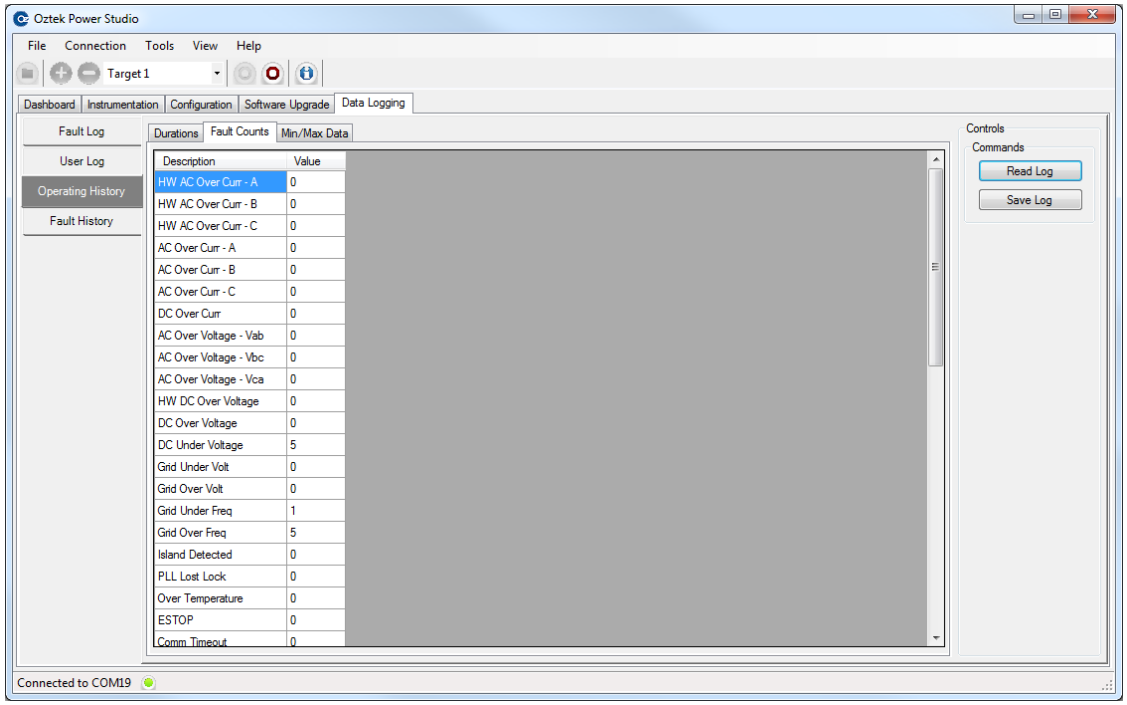

Figure 3 - Operation Log, Fault Counts

3.2.3 Min/Max Data

This log stores the minimum and maximum values of various operating parameters, over the life of the PCS.

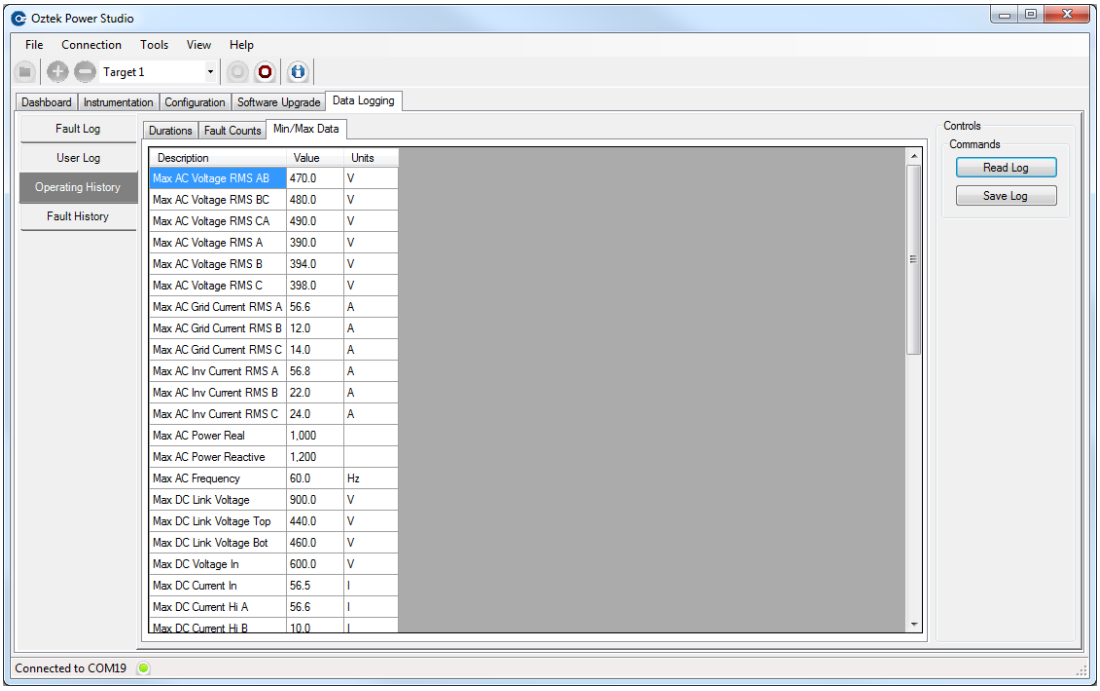

Figure 4 - Operation Log, Min/Max Data

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3.3 Fault History Log

This log shows the timestamps for the six most recent occurrences of each fault.

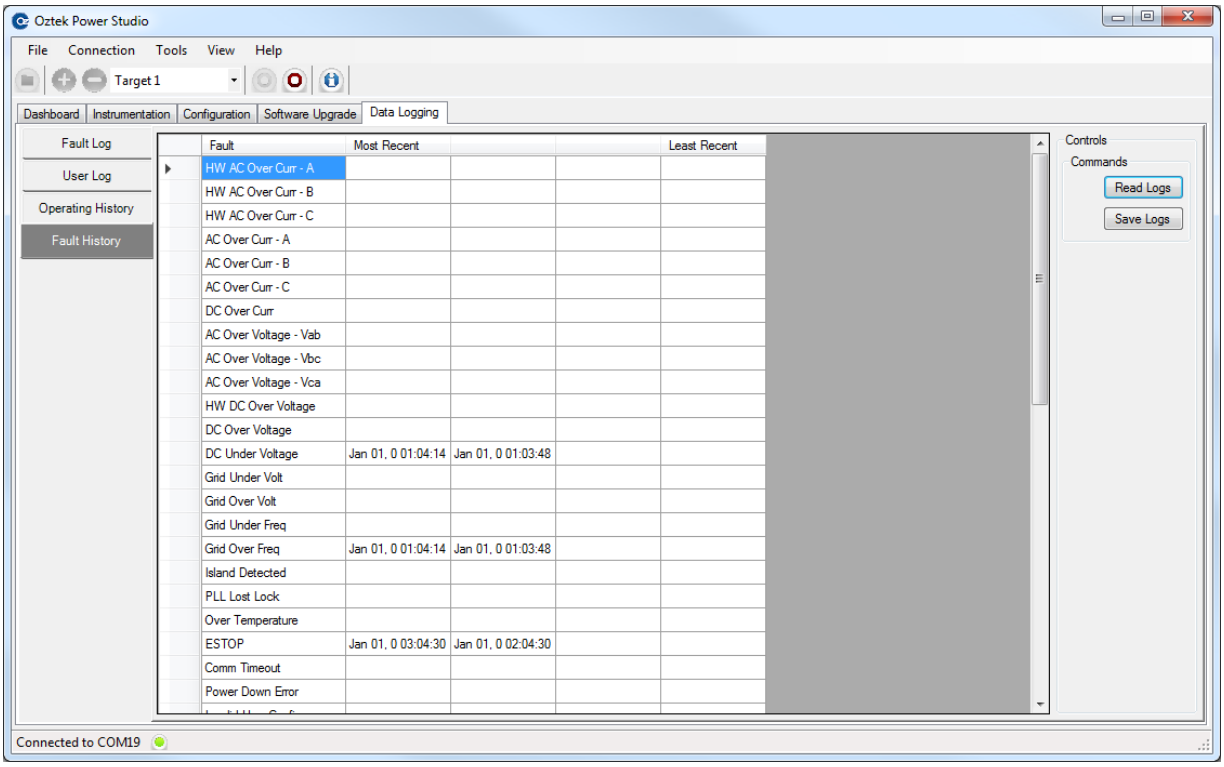

Figure 5 - Fault History Log

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