

Product Information

Bulletin



SAFETRAN
systems

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SUBJECT: 3000 Grade Crossing Predictor

NO: 3-01

CONCERN: Detailed Information on New Diagnostic/ Train Move Recorder Messages

DATE: 11-26-2001

I. BACKGROUND

New diagnostics message software has recently been released for the 3000 Grade Crossing Predictor (GCP). This major enhancement enables many new diagnostic and train move messages (see Table 1 for examples) to be generated in the 3000 GCP and recorded by either an 80115 Data Recorder or an 80250 Safetran Event Analyzer/Recorder (SEA/R). These new messages are date and time stamped by the recorder and include the EZ and EX values whenever the following activate or deactivate:

- Prediction or motion sensing
- Island
- Error
- UAX 1
- ENA/UAX2
- DAX predictions

In addition, all changes to the 3000 application programming are recorded. Maintenance personnel may also initiate the download of all GCP program parameters to the recorder.

The new message platform can be generated and recorded as long as:

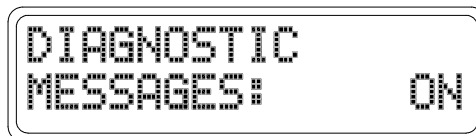
- The 3000 GCP has an 80214 Processor module with E-level software or later
- The Data Recorder is an 80115 with E-level software (or later) or an 80250 SEA/R with ER25 (or later) executive software

II. IMPLEMENTATION

To enable the new diagnostic messages, two program items have been added to the FUNCTION menu. These program steps are:

- **Diagnostic Messages**

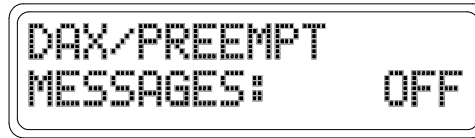
When programmed to **ON**, all new diagnostic messages are enabled except those for DAX A through DAX H and/or Preemption A through H.



When programmed to **OFF**, only those messages available prior to the upgrade are generated.

- **DAX/PREEMPT Messages**

The following menu item displays only when the Diagnostic Messages menu item (above) is programmed to **ON**.



When this menu item is programmed to **ON**, new DAX diagnostic/preemption messages are enabled. When programmed to **OFF**, no DAX/Preempt messages are generated.

III. EARLY 3000 UNIT DIAGNOSTIC MESSAGE IMPLEMENTATION

Any 3000 GCP unit can be upgraded to record these new diagnostic messages by implementing the following:

- The 3000 GCP has an 80214 Processor module with E-level (or later) software
- The Data recorder is an 80115 with E-level (or later) software or an 80250 SEA/R with ER25 (or later) executive software

NOTE

These two new diagnostic message steps may not be programmable (ON/OFF) in early 3000 GCP units; however, these new steps are defaulted to **ON** to allow all new messages to be generated.

IV. BASIC RECORDING REQUIREMENTS

The basic recording requirements are as follows:

- **Recording Using the 80250 SEA/R**

To record the new diagnostic messages using the 80250 SEA/R, the 3000 GCP must be configured as follows:

- ◆ The 80214 Processor module must have E-level (or later) software.
- ◆ The GCP's Diagnostic messages must be turned **ON** (Function menu).
- ◆ The recorder module must be programmed as **INSTALLED** (Node installed in GCP).
- ◆ An 80255 Interface module must be installed in the Data Recorder slot.

In addition, the 3000 GCP and the SEA/R must be interconnected via Echelon® LAN as shown in figure 1.

The 80251 SEA/R processor must have ER25 or later executive software installed.

Download Option Software For The 80250 SEA/R

A special analyzer program called **ViewLog**, part number 9V480-A07X (X is replaced by current version character), is currently available. When installed on a laptop computer, this program allows SEA/R downloads to be viewed. **ViewLog** provides a number of filter options that allow viewing of selectable data such as digital or analog data, GCP warning time data, error data, diagnostic data, individual node data, etc.

- **Recording Using the 80115 Data Recorder**

To record the new diagnostic messages using the 80115 Data Recorder module, the 3000 must have an 80214 Processor module with E-level or later software and the GCP's Diagnostic messages must be turned **ON**. In addition, the 80115 Data Recorder module must also have E-level software or later. The 80115 E-level software expands the maximum number of recorded events from 3000 to 10000 to accommodate the expanded number of new messages.

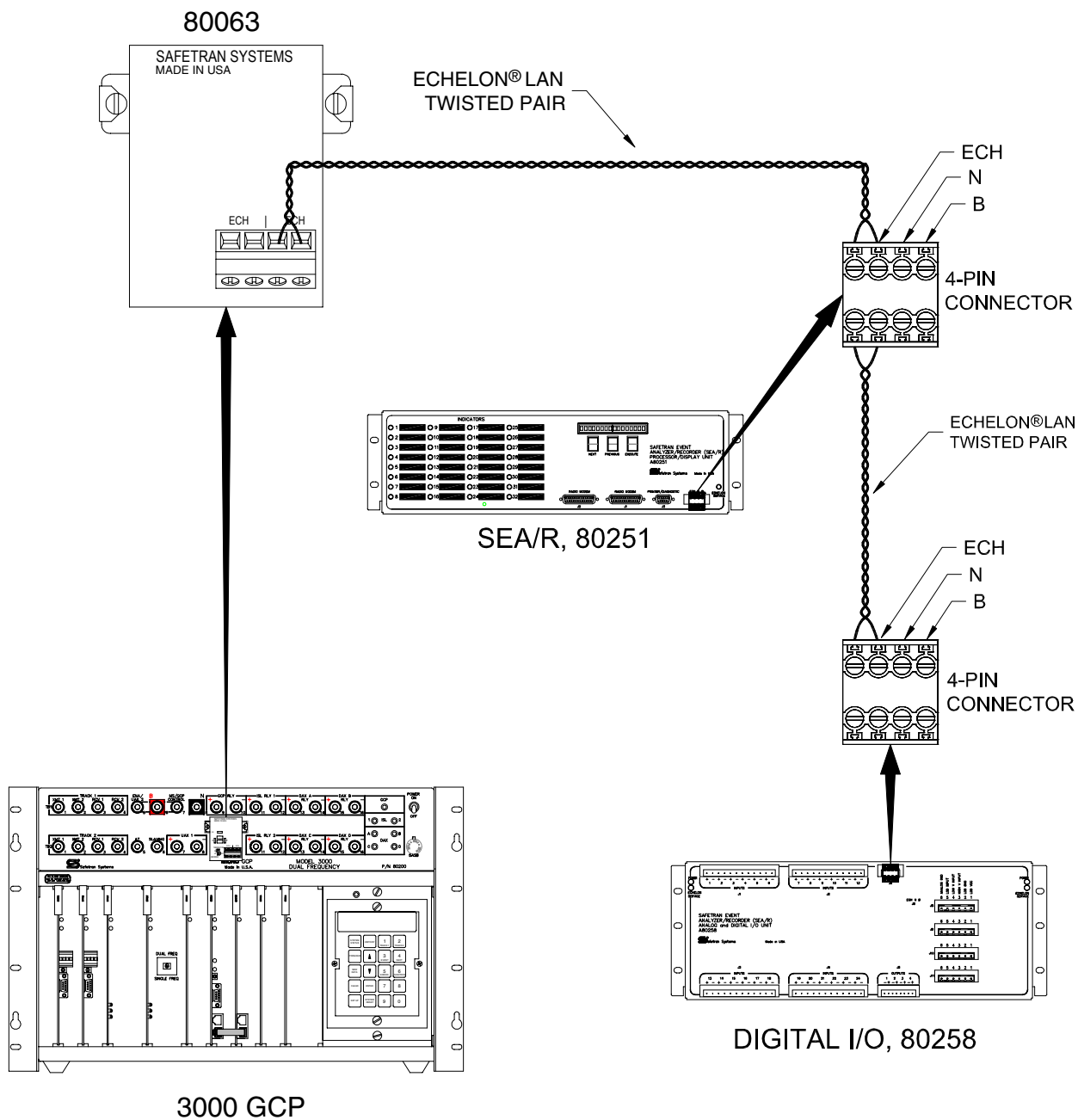


Figure 1
3000 GCP to 80251 SEA/R Interconnection Diagram

Download Options Menu For 80115 Data Recorder

When downloading the 80115 Recorder data to a laptop computer, a new download options menu appears on the computer screen. These download options are displayed as follows:

```
Safetran Systems Corporation
Data Recorder Software Version 9V309-A01X (x refers to the current version character)
Current Date/Time: DD-MMM-YYYY HH:MM AM/PM

Select Data to Download:

(A) All Events
(B) Train Move and Diagnostic Messages
(C) Train Move Messages Only
(D) Diagnostic Messages Only
(E) Error Messages
(F) General System Messages
(G) Input change Events
(H) Changed Parameters
(I) All GCP/MS Application Parameters

(Z) End
```

When option A is selected, all recorded events will be downloaded. Selection of options B through H permits only certain events to be downloaded. This simplifies the analyzing of recorded events or train moves. The selection of option I allows the user to request a download of all presently programmed application parameters.

V. EXPANDED DIAGNOSTIC MESSAGE FORMAT

All messages are date and time stamped. The new expanded diagnostic messages basically contain four types of information:

1. New train-move messages with EZ and EX values.
2. Diagnostic error messages with EZ and EX values.
3. Any change of application parameter values.
4. Download of application parameters (when requested by maintenance personnel).

- **Types 1 and 2 - Train-move and Diagnostic Messages**

The new train-move and the diagnostic error portions of the new messages are shown in table 1. Examples are provided for each new message including those having EX and EZ values.

The standard warning time and train speed message continues to be recorded for each train move:

TRN WT: 31 DET: 52 AVG: 51 ISL: 51 T1 TRAIN MOVE

- **Type 3 - Application Parameter Program Value Change Messages**

Any program change of application parameter values is recorded. The message contains both the original and the new parameter value as shown in the following examples:

PROGRAM T1 WARNING TIME: 25 TO 30
PROGRAM UAX1 PICKUP DELAY: 25 TO 15
FUNCTION DAX A PICKUP: 15 TO 20

In addition, each time the 3000 GCP is recalibrated, a message is generated indicating that system calibration has occurred:

T1 CALIBRATION EZ:99 EX: 96

A **POWER ON** message is also included when power is restored to the system.

- **Type 4 – Download of Application Parameters**

All present application parameters may now be downloaded to the 80115 Data Recorder or an 80250 SEA/R. Maintenance personnel initiate the download. When an 80115 Data Recorder is installed, the download is initiated from a laptop computer connected to the recorder module serial interface. When the 80250 SEA/R is installed, the download is initiated from the 80250 SEA/R display menu. This parameter download includes the 3000 GCP software version.

**Table 1
New Diagnostic/Train Move Messages**

Event Description		Message Examples	
GCP Prediction/ Motion Detect:	T1 Detect	T1 DETECT EZ:66 EX:91	Diagnostic Messages On
	T2 Detect	T2 DETECT EZ:66 EX:91	
Island 1 Relay Drive		ISLAND 1 DOWN EZ:2 EX:90 ISLAND 1 UP EZ:2 EX:90	
Island 2 Relay Drive		ISLAND 2 DOWN EZ:1 EX:95 ISLAND 2 UP EZ:1 EX:95	
GCP Relay Drive Recovery:	Prime T1 Timeout	T1 PRIME TIMEOUT EZ:3 EX:94	
	Prime T2 Timeout	T2 PRIME TIMEOUT EZ:4 EX:96	
UAX 1 Input (programmed with time)		UAX 1 DOWN EZ:99 EX:91 UAX 1 UP EZ:7 EX:93 UAX 1 TIMEOUT EZ:6 EX:94	
ENA/UAX 2 Input (programmed with time)		UAX 2 DOWN EZ:99 EX:92 UAX 2 UP EZ:5 EX:92 UAX 2 TIMEOUT EZ:4 EX:93	
ENA/UAX2 Input (Programmed to ENA)		ENA DOWN ENA UP	
MS/GCP Control Input		MS/GCP CONTROL DOWN MS/GCP CONTROL UP	
Errors*		ERROR 8113 T1 XMIT CURRENT ERROR 8113 EZ:0 EX:100 ERROR 8113 TIMEOUT EZ:100 EX:97	
DAX/ Detect	DAX A Detect	DAX A DETECT EZ:44 EX:88	DAX/Preempt Messages On
	DAX B Detect	DAX B DETECT EZ:33 EX:91	
	DAX C Detect	DAX C DETECT EZ:43 EX:90	
	DAX D Detect	DAX D DETECT EZ:41 EX:89	
	DAX E Detect	DAX E DETECT EZ:42 EX:87	
	DAX F Detect	DAX F DETECT EZ:40 EX:92	
	DAX G Detect	DAX G DETECT EZ:45 EX:93	
	DAX H Detect	DAX H DETECT EZ:39 EX:91	
DAX Relay Drive Recovery	DAX A Timeout	DAX A TIMEOUT	
	DAX B Timeout	DAX B TIMEOUT	
	DAX C Timeout	DAX C TIMEOUT	
	DAX D Timeout	DAX D TIMEOUT	
	DAX E Timeout	DAX E TIMEOUT	
	DAX F Timeout	DAX F TIMEOUT	
	DAX G Timeout	DAX G TIMEOUT	
	DAX H Timeout	DAX H TIMEOUT	

*EZ & EX values are included with most error messages.

VI. SOFTWARE UPGRADE INSTRUCTIONS

Software upgrade instructions for the 80214, 80115 and 80250 SEA/R™ are available from Safetran Customer Service at 1-800-793-7233. Please request the following documents as required:

Software Upgrade Instructions

Unit To Be Upgraded	Document Number
80214 Processor Module	SIG-00-00-21
80115 Data Recorder Module	SIG-00-01-17
Safetran Event Analyzer/Recorder, 80250 (SEA/R™)	SIG-00-01-18

ViewLog Software

Alarm Reporting Management System (ARMS) ViewLog Software CD	Order Number Z224-9V480-A070
Alarm Reporting Management System (ARMS) ViewLog Software User's Handbook	Document Number SIG-00-01-23