



CONFIGURATION SUMMARY

**SEAR II APPLICATION 9VE50-A01A
PREPARED FOR
UNION PACIFIC RAILROAD**

NOVEMBER 2022

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VERSION A**

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The equipment covered in this manual has been tested and found to comply with the limits for Class A digital devices, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

DOCUMENT HISTORY

Version	Release Date	Sections Changed	Details of Change
A	NOV 2022	- - - - -	Initial Release

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NOTES, CAUTIONS, AND WARNINGS

Throughout this manual, notes, cautions, and warnings are frequently used to direct the reader's attention to specific information. The use of the three terms is defined as follows:



WARNING

INDICATES A POTENTIALLY HAZARDOUS SITUATION THAT, IF NOT AVOIDED, COULD RESULT IN DEATH OR SERIOUS INJURY. WARNINGS ALWAYS TAKE PRECEDENCE OVER NOTES, CAUTIONS, AND ALL OTHER INFORMATION.



CAUTION

REFERS TO PROPER PROCEDURES OR PRACTICES WHICH IF NOT STRICTLY OBSERVED, COULD RESULT IN A POTENTIALLY HAZARDOUS SITUATION AND/OR POSSIBLE DAMAGE TO EQUIPMENT. CAUTIONS TAKE PRECEDENCE OVER NOTES AND ALL OTHER INFORMATION, EXCEPT WARNINGS.

NOTE

NOTE

Generally used to highlight certain information relating to the topic under discussion.

If there are any questions, contact Siemens Mobility, Inc. Application Engineering.

GLOSSARY

TERM	DESCRIPTION
AAR	<u>Association of American Railroads</u> - An organization that establishes uniformity and standardization among different railroad systems.
EGMS	<u>Exit Gate Management System</u>
FRA	<u>Federal Railroad Administration</u> - An agency in the United States Department of Transportation. The agency was created by the Department of Transportation Act of 1966.
LED	<u>Light Emitting Diode</u>
XING	<u>Grade Crossing</u>

SECTION 1

INTRODUCTION

1 INTRODUCTION

1.1 General

This document supports the installation and maintenance of SEAR II units configured with the 9VE50-A01A user program stored in flash memory. This document:

- Explains LED indications
- Lists setup steps unique to 9VE50-A01A
- Lists all messages generated by 9VE50-A01A

For further information on SEAR II, including the configuration of executive software, refer to the EVENT ANALYZER RECORDER (SEAR II) A80273 – Installation & Operation Manual (Siemens document no. SIG-00-02-07).

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SECTION 2 USER MENU ITEMS – SITE SETUP

2 USER MENU ITEMS – SITE SETUP

2.1 General

Table 2-1 lists configuration settings that are unique to 9VE50-A01A. Each row presents an entry in the site setup sequence. The first column shows the text that appears on the SEAR II screen or in the terminal display. The two remaining columns give the options or define the range of values that may be entered.

Table 2-1 Configuration Settings Unique to Application 9VE50-A01A

Question	Minimum / Selection 1	Maximum / Selection 2
NUMBER OF XR RELAYS USED?	0	5
FXR RELAY USED?	YES	NO
NUMBER OF ISLR RELAYS USED?	0	5
EGMS LONG-TERM OBSTACLE ALARM USED?	YES	NO
AGDR RELAY USED?	YES	NO
BGDR RELAY USED?	YES	NO
GPR RELAY USED?	YES	NO
EXIT GATES?	0	2
BATTERY BANKS?	1	3
TEMPERATURE ALARM?	NO	INT

Question	Minimum / Selection 1	Maximum / Selection 2
LONG ACTIVATION (LA) ALARM ENABLED?	YES	NO
GATE DOWN (GD) ALARM ENABLED?	YES	NO
GATE UP (GU) ALARM ENABLED?	YES	NO
BATTERY (BA) ALARM ENABLED?	YES	NO
TEMPERATURE (TP) ALARM ENABLED?	NO	YES

SECTION 3 DIGITAL INPUT STANDARD CONFIGURATION

3 DIGITAL INPUT STANDARD CONFIGURATION

3.1 General

Table 3-1 defines the inputs for the 18 digital inputs at the bottom left of the SEAR II front panel for 9VE50-A01A. Once inputs are assigned based on the site setup answers, they cannot be changed.

Table 3-1 SEAR II Digital Input Assignments

Chan	Name	Normal	Energized	De-energized	Menu Condition
01	1XR	ON	ON	OFF	NUMBER OF XR RELAYS USED > 0
02	2XR	ON	ON	OFF	NUMBER OF XR RELAYS USED > 1
03	3XR	ON	ON	OFF	NUMBER OF XR RELAYS USED > 2
04	4XR	ON	ON	OFF	NUMBER OF XR RELAYS USED > 3
05	5XR	ON	ON	OFF	NUMBER OF XR RELAYS USED > 4
06	FXR	ON	ON	OFF	FXR RELAYS USED = YES
07	1ISLR	ON	ON	OFF	NUMBER OF ISLR RELAYS USED > 0
08	2ISLR	ON	ON	OFF	NUMBER OF ISLR RELAYS USED > 1
09	3ISLR	ON	ON	OFF	NUMBER OF ISLR RELAYS USED > 2
10	4ISLR	ON	ON	OFF	NUMBER OF ISLR RELAYS USED > 3
11	5ISLR	ON	ON	OFF	NUMBER OF ISLR RELAYS USED > 4
12	LTO	ON	ON	OFF	EGMS LONG-TERM OBSTACLE ALARM USED = YES

DIGITAL INPUT STANDARD CONFIGURATION

Chan	Name	Normal	Energized	De-energized	Menu Condition
13	AGDR	OFF	ON	OFF	AGDR RELAY USED = YES
14	BGDR	OFF	ON	OFF	BGDR RELAY USED = YES
15	GPR	ON	ON	OFF	GPR RELAY USED = YES
16	CGPR	ON	ON	OFF	EXIT GATES = 1
16	CDGPR	ON	ON	OFF	EXIT GATES = 2
17	CGDR	ON	ON	OFF	EXIT GATES > 0
18	DGDR	ON	ON	OFF	EXIT GATES > 1

SECTION 4

LED CONFIGURATION FOR I1 THROUGH I16

4 LED CONFIGURATION FOR I1 THROUGH I16

4.1 General

The following material on conventions defines the operation of the red Indicator LEDs for 9VE50-A01A.

4.2 Standard LED Conventions

1. LEDs 1 thru 16 are ON (RED) steady when the corresponding digital input is energized.
2. LEDs 1 thru 16 are OFF when the corresponding digital input is de-energized.
3. The state of digital inputs 17 and 18 are not displayed on LEDs.

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SECTION 5

LED CONFIGURATION FOR T1 THROUGH T8

5 LED CONFIGURATION FOR T1 THROUGH T8

5.1 General

Table 5-1 and the following material on conventions define the operation of the tri-color Alarm LEDs as they operate with 9VE50-A01A.

Table 5-1 SEAR II Alarm LED Configurations

LED	ALARM LABEL	DESIGNATOR	CHECKED	ALARM LED CONVENTIONS *
T01	LA	LONG ACTIVATION ALARM	ALWAYS	1-3
T02	FL	FOREIGN LONG ACTIVATION ALARM	ALWAYS	1-3
T03	GD	GATE DOWN ALARM	TRAIN MOVE	1-3
T04	GU	GATE UP ALARM	TRAIN MOVE	1-3
T05	BA	BATTERY	ALWAYS	1-3
T06	TP	TEMPERATURE	ALWAYS	1-3
T07	NO	NORMAL OPERATION	ALWAYS	2,3
T08	OL	ONLINE	ALWAYS	7,8

* See section 5.2

5.2 Alarm LED Conventions

1. LEDs are OFF when the alarm is disabled.
2. LEDs are GREEN when the alarm is enabled.
3. LEDs are RED when an alarm condition exists.
4. Reserved.
5. Reserved.
6. Reserved.
7. LEDs are GREEN if online.
8. LEDs are RED if offline.

SECTION 6

BATTERY INPUT CONFIGURATION

6 BATTERY INPUT CONFIGURATION

6.1 General

Table 6-1 shows the 9VE50-A01A default names, software designators, and resolutions for the three battery inputs at the lower right-hand corner of the SEAR II front panel.

Table 6-1 Battery Input Configuration

Chan	Name	Designator	Resolution	Menu Condition
01	B12	B12	1 VDC	
02	B16A	B16A	1 VDC	BATTERY BANKS >1
03	B16B	B16B	1 VDC	BATTERY BANKS >2

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SECTION 7 MESSAGES

7 MESSAGES

7.1 General

The tables in the following subsections list all of the messages generated by the 9VE50-A01A application. Messages generated by the SEAR II executive are not presented here

Messages fall into categories defined by message numbers:

0	Internal SEAR II Messages
1-99	Application Alarm
100	Reserved
101-199	Application Alarm Clears
200-299	Application Information Messages
1000-1099	Office Software Alarms
1100-1199	Office Software Alarm Clears

7.2 Application Alarms

The 9VE50-A01A application can generate the following alarm messages when the alarm is enabled during site setup.

Table 7-1 Application Alarms

Alarm #	Alarm Label	Designator	Condition
1	LA	LONG ACTIVATION ALARM	Xing active, via 1XR, 2XR, 3XR, 4XR, or 5XR down/low/false, for more than 20 minutes.
21	FL	FOREIGN LONG ACTIVATION ALARM	Xing active, via FXR down/low/false, for more than 20 minutes.
101	N/A	Reserved	Reserved
2	N/A	Reserved	Reserved

Alarm #	Alarm Label	Designator	Condition
3	N/A	Reserved	Reserved
4	GD	GATE DOWN ALARM	Gate not DOWN in 45 seconds after Xing active.
5	GU	GATE UP ALARM	Gate not UP 180 seconds after Xing clears.
26	OA	EGMS LONG-TERM OBSTACLE ALARM	EGMS long-term obstacle alarm active, via LTO down/low/false.
6	N/A	Reserved	Reserved
7	BA	BATTERY	Any battery input that is above or below the thresholds for more than 10 minutes. Low Battery Threshold 81% of normal operating battery. High Battery Threshold 120% of normal operating battery.
8	N/A	Reserved	Reserved
9	N/A	Reserved	Reserved
10	N/A	Reserved	Reserved
102	N/A	Reserved	Reserved
11	N/A	Reserved	Reserved
12	TP	TEMPERATURE	Temperature 150 degrees Fahrenheit or greater.
13	N/A	Reserved	Reserved
14	N/A	Reserved	Reserved
15	N/A	Reserved	Reserved

Alarm #	Alarm Label	Designator	Condition
103	NO	ONLINE	Pressing the clear alarms key once causes the SEAR II to go offline and no alarms are reported during this time. Pressing the clear alarms key a second time causes the SEAR II to go online and reset all alarms. Note the SEAR II always automatically returns online in 60 minutes.
104	N/A	Reserved	Reserved

NOTE**NOTE**

All alarms and clear alarms are both recorded and displayed. The alarm numbers are listed for reference only and are not sent, recorded, or displayed.

7.3 Application Information Messages

The 9VE50-A01A application generates the following informational messages.

Table 7-2 Application Information Messages

Number	Name	Description	Recorded	Displayed
200	Analyzer Off Line	Indicates that the alarm analyzer has been turned offline.	X	X
201	Analyzer On Line	Indicates that the alarm analyzer has been turned online.	X	
202	Prime Down	Indicates that any used XRs are down/low/false.		X
203	Island Occupied	Indicates that the Island is down.		X
204	XING START	Indicates that the xing has activated.	X	
205	XING END	Indicates the end of a train move and records the total activation time. The time is recorded in seconds if less than 2 minutes, otherwise, the activation is recorded in minutes.	X	
206	WARNING TIME	Indicates the total warning time.	X	

MESSAGES

Number	Name	Description	Recorded	Displayed
207	Reserved	Reserved		
208	AGD TIMER	Indicates that the GD alarm was caused by the AGD timer expiring and displays the timer value at the moment of the alarm.	X	
209	BGD TIMER	Indicates that the GD alarm was caused by the BGD timer expiring and displays the timer value at the moment of the alarm.	X	
210	Reserved	Reserved		
211	Reserved	Reserved		
212	Reserved	Reserved		
213	Reserved	Reserved		
214	Reserved	Reserved		
215	Reserved	Reserved		
216	GP TIMER	Indicates that the GU alarm was caused by the GP timer expiring and displays the timer value at the moment of the alarm.	X	
217	Reserved	Reserved		
218	Reserved	Reserved		
219	Reserved	Reserved		
220	Reserved	Reserved		
221	Reserved	Reserved		
222	Reserved	Reserved		
223	Reserved	Reserved		
224	B12 FAIL	Indicates that the BA alarm was caused by the B12 bus.	X	
225	B16A FAIL	Indicates that the BA alarm was caused by the B16A bus.	X	
226	B16B FAIL	Indicates that the BA alarm was caused by the B16B bus.	X	
227	Reserved	Reserved		
228	Reserved	Reserved		

Number	Name	Description	Recorded	Displayed
228	Reserved	Reserved		
230	Reserved	Reserved		
231	Reserved	Reserved		
232	Reserved	Reserved		
233	Reserved	Reserved		
234	Reserved	Reserved		
235	Reserved	Reserved		
236	Reserved	Reserved		
237	Reserved	Reserved		
238	Reserved	Reserved		
239	Reserved	Reserved		
240	Reserved	Reserved		
241	Reserved	Reserved		
242	Reserved	Reserved		
243	Reserved	Reserved		
244	Reserved	Reserved		
245	Reserved	Reserved		
246	Reserved	Reserved		
247	Reserved	Reserved		
248	Reserved	Reserved		
249	Reserved	Reserved		
250	Reserved	Reserved		
251	Reserved	Reserved		

MESSAGES

Number	Name	Description	Recorded	Displayed
252	Reserved	Reserved		
253	Reserved	Reserved		

NOTE

NOTE

The alarm numbers are listed for reference only and are not sent, recorded, or displayed.

SECTION 8 INSTALLATION NOTES

8 INSTALLATION NOTES

8.1 Battery Calibrations

Upon initial site setup, the user will be prompted to calibrate the batteries. Any time that a battery is changed out, calibrations should be repeated. The battery calibration portion of the site setup is located under MENU>SITE SETUP>BATTERY CALIBRATIONS. The user can then follow the prompts to re-calibrate the batteries.

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