



CONFIGURATION SUMMARY

SEAR II APPLICATION 9V736-A01D PREPARED FOR NORFOLK SOUTHERN

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DOCUMENT HISTORY

Version	Release Date	Sections Changed	Details of Change
D	April 2009		<ul style="list-style-type: none"> • Bumped manual version to D to maintain uniformity with new software application release. No change to manual content. • Minor format changes throughout manual in compliance with Safetran publication standards. • Added Translations disclaimer to front matter.
D.1	June 2014	All	Siemens rebranding

NOTES, CAUTIONS, AND WARNINGS

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

WARNING**WARNING**

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

CAUTION**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 Industry Inc., Rail Automation Application Engineering.

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1.0 INTRODUCTION

This document supports installation and maintenance of SEAR II units configured with the 9V736-A01D user program stored in flash memory. This document:

- Explains LED indications
- Lists setup steps unique to 9V736-A01D
- Lists all messages generated by 9V736-A01D
- Links specific tests and alarm messages to specific FRA regulations
- Lists connector / wire tag assignments
- Describes test modes supported by 9V736-A01D

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

NOTE

NOTE

Siemens Industry, Inc., Rail Automation is not responsible for any misunderstanding or misinterpretation of the federal regulations, or for any changes to the regulations occurring after the release of this document.

2.0 USER MENU ITEMS – SITE SETUP

The following table lists configuration settings that are unique to 9V736-A01D. 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 four middle columns give the options or define the range of values that may be entered. The rightmost column summarizes conditions that determine if that row's step will appear, for example: the 'TOTAL NUMBER OF GCP NODES' entry will appear only if the entry for 'CONSTANT WARNING DEVICE' equals 'GCP'.

9V736-A01D.1 CONFIGURATION SUMMARY

Question	Minimum / Selection 1	Maximum / Selection 2	Selection 3	Selection 4	Selection 5	Selection 6	Condition For Menu Display
RAILROAD NUMBER?	0	999					
CROSSING CONFIGURATION ?	STANDARD	LARGE	SPLIT GATE	ISLAND ONLY	CP COLLECTOR	REMOTE	
NUMBER OF XR INPUTS?	0	4					CROSSING CONFIGURATION <>ISLAND ONLY
NUMBER OF ISL INPUTS?	0	4					
CONSTANT WARNING DEVICE?	GCP	OTHER	NONE				CROSSING CONFIGURATION <>CP COLLECTOR
TOTAL NUMBER OF GCP NODES?	1	7					CONSTANT WARNING DEVICE = GCP
NUMBER OF REDUNDANT CPS?	1	3					CONSTANT WARNING DEVICE = GCP
CROSSING CONTROLLER 1?	SSCC IIIA/plus	SSCC IV	SSCC II	SSCC III	OTHER	NONE	
CROSSING CONTROLLER 2?	NONE	SSCC IIIA/plus	SSCC IV	SSCC II	SSCC III	OTHER	CROSSING CONTROLLER 1<>NONE
POK2?	NO	YES					CROSSING CONTROLLER 1=OTHER OR NONE
TLITE FUNCTION?	TLITE ONLY	TLITE/POK2					CROSSING CONTROLLER 1=SSCCIII A/plus OR SSCC IV OR SSCC III OR SSCC II
MAIN / STANDBY?	YES	NO					CONSTANT WARNING DEVICE<>NO
AUXILIARY TRACKS?	0	2					CROSSING CONFIGURATION <>SPLIT GATE
ENTRANCE GATES?	0	4					CROSSING CONFIGURATION <>LARGE
EXIT GATES?	0	2					CROSSING CONFIGURATION <>LARGE, ENTRANCE GATES<3
EXIT GATES?	0	1					CROSSING CONFIGURATION <>LARGE, ENTRANCE GATES=3

9V736-A01D.1 CONFIGURATION SUMMARY

Question	Minimum / Selection 1	Maximum / Selection 2	Selection 3	Selection 4	Selection 5	Selection 6	Condition For Menu Display
ENTRANCE GATES?	0	8					CROSSING CONFIGURATION =LARGE
EXIT GATES?	0	4					CROSSING CONFIGURATION =LARGE, ENTRANCE GATES<5
EXIT GATES?	0	3					CROSSING CONFIGURATION =LARGE, ENTRANCE GATES=5
EXIT GATES?	0	2					CROSSING CONFIGURATION =LARGE, ENTRANCE GATES=6
EXIT GATES?	0	1					CROSSING CONFIGURATION =LARGE, ENTRANCE GATES=7
ENTRANCE GATES CONTROLLED BY XR'S?	0	4					CROSSING CONFIGURATION =SPLIT GATE
ENTRANCE GATES CONTROLLED BY FRR?	0	4					CROSSING CONFIGURATION =SPLIT GATE
GATE POSITION FAIL TIME (SECONDS)?	10	60					RAILROAD NUMBER=125
GATES NOT STARTING TIME (SECONDS)?	10	20					RAILROAD NUMBER=005
NUMBER OF UAX INPUTS?	0	2					CROSSING CONFIGURATION <>CP COLLECTOR
BATTERY BANKS?	1	6					
OB RESOLUTION?	0.2	0.5	1.0				RAILROAD NUMBER=125
X-B RESOLUTION?	0.2	0.5	1.0	NOT PRESENT			RAILROAD NUMBER=125
B-G RESOLUTION?	0.2	0.5	1.0	NOT PRESENT			RAILROAD NUMBER=125
X-B2 RESOLUTION?	0.2	0.5	1.0	NOT PRESENT			RAILROAD NUMBER=125
B-G2 RESOLUTION?	0.2	0.5	1.0	NOT PRESENT			RAILROAD NUMBER=125

9V736-A01D.1 CONFIGURATION SUMMARY

Question	Minimum / Selection 1	Maximum / Selection 2	Selection 3	Selection 4	Selection 5	Selection 6	Condition For Menu Display
X-B3 RESOLUTION?	0.2	0.5	1.0	NOT PRESENT			RAILROAD NUMBER=125
PREEMPTION?	NO	NORMAL	ADVANCED				CROSSING CONFIGURATION <>CP COLLECTOR
VHF COMMUNICATOR ?	YES	NO					
DTMF ACTIVATION?	NO	YES					VHF COMMUNICATOR =YES
ACTIVATION CODE?	1	999					DTMF ACTIVATION=YES
ACTIVATION TIMEOUT (SECONDS)?	30	600					DTMF ACTIVATION=YES
iLOD MODULES?	0	4					CROSSING CONFIGURATION <>CP COLLECTOR
ANY LED BULBS USED?	NO	YES					iLOD MODULES>0
AUTO INSPECTIONS?	YES	NO					
BELL SENSORS?	0	8					CROSSING CONFIGURATION <>CP COLLECTOR
BELL SENSOR INPUT 4?	NO	YES					BELL SENSORS>0
BELL SENSOR INPUT 5?	NO	YES					BELL SENSORS>0
BELL SENSOR INPUT 6?	NO	YES					BELL SENSORS>0
BELL SENSOR INPUT 7?	NO	YES					BELL SENSORS>0
BELL SENSOR INPUT 8?	NO	YES					BELL SENSORS>0
BELL SENSOR INPUT 9?	NO	YES					BELL SENSORS>0
BELL SENSOR INPUT 10?	NO	YES					BELL SENSORS>0
BELL SENSOR INPUT 11?	NO	YES					BELL SENSORS>0
BELL ON?	GATES LOWERING	GATES MOVING	ALWAYS				BELL SENSORS>0

9V736-A01D.1 CONFIGURATION SUMMARY

Question	Minimum / Selection 1	Maximum / Selection 2	Selection 3	Selection 4	Selection 5	Selection 6	Condition For Menu Display
GATE TIP SENSORS?	YES	NO					CROSSING CONFIGURATION <>CP COLLECTOR
GFT'S?	YES	NO					CROSSING CONFIGURATION <>CP COLLECTOR
BATTERIES ON GFT1?	1	2					GFT'S=YES
VHF VOICE CHANNEL?	1	8					VHF COMMUNICATOR =YES
VHF DATA CHANNEL?	1	8					VHF COMMUNICATOR =YES
FULL APPROACH MOVE ALARMS?	ACTIVATE	DO NOT ACTIVATE					CROSSING CONFIGURATION <>CP COLLECTOR

3.0 DIGITAL INPUT STANDARD CONFIGURATION

The following defines the inputs for the 18 digital inputs at the bottom left of the SEAR II front panel for 9V736-A01D. Table 1 defines input assignments when the Crossing Configuration is not a “Large” or “CP Collector” site. Table 2 defines input assignments when the Crossing Configuration is selected as “Large”. Table 3 defines inputs assigned to the external digital I/O unit when a “Large” Crossing Configuration is selected. Once inputs are assigned based on the site setup answers, they cannot be changed.

Table 1. Standard Crossing Configuration, Not “Large” or “CP Collector” Site

Chan	Name	Wire Tag	Normal	Energized	De-energized	Menu Condition
01	XR1	XR1	UP	UP	DOWN	CROSSING CONFIGURATION=STANDARD OR SPLIT GATE
02	XR2	XR2	UP	UP	DOWN	CROSSING CONFIGURATION=STANDARD OR SPLIT GATE, NUMBER OF TRACKS>1
03	ISLAND 1	ISL1	UP	UP	DOWN	CROSSING CONFIGURATION<>REMOTE
04	ISLAND 2	ISL2	UP	UP	DOWN	CROSSING CONFIGURATION<>REMOTE, NUMBER OF ISL INPUTS>1
05	MAIN/ STANDBY	M/S	MAIN	MAIN	STANDBY	MAIN/STANDBY=YES
06	BELL OUT	BELL OUT	OFF	ON	OFF	CROSSING CONFIGURATION<>REMOTE
07	BELL	BELL	TSS	TSS	TSS	ENTRANCE GATES=0, BELL SENSORS>0
07	NEAR GATE	NEAR GATE	TSS	TSS	TSS	ENTRANCE GATES>0
08	FAR GATE	FAR GATE	TSS	TSS	TSS	ENTRANCE GATES>1
09	NEAR MGATE	NEAR MGATE	TSS	TSS	TSS	ENTRANCE GATES>2
09	NEAR EXIT	NEAR EXIT	TSS	TSS	TSS	EXIT GATES>0
10	FAR MGATE	FAR MGATE	TSS	TSS	TSS	ENTRANCE GATES>3
10	FAR EXIT	FAR EXIT	TSS	TSS	TSS	EXIT GATES>1
11	GATE CONTROL	GCOUT1	OFF	ON	OFF	ENTRANCE GATES>0

Table 1. Standard Crossing Configuration, Not "Large" or "CP Collector" Site - *continued*

Chan	Name	Wire Tag	Normal	Energized	De-energized	Menu Condition
12	UAX	UAX	UP	UP	DOWN	NUMBER OF UAX INPUTS>0
13	AUX TRACK(S)	AUX	UP	UP	DOWN	CROSSING CONFIGURATION <>SPLIT GATE
13	FOREIGN RAILROAD	FRR	UP	UP	DOWN	CROSSING CONFIGURATION = SPLIT GATE
14	GROUND FAULT TESTER 1	GFT1	GFT	GFT	GFT	GFT'S=YES
15	GROUND FAULT TESTER 2	GFT2	GFT	GFT	GFT	GFT'S=YES, BATTERY BANKS>2
15	EXIT GATE CONTROL	EGCOUT	OFF	ON	OFF	EXIT GATES>0, BATTERY BANKS<3
16	PREEMPT	PREEMPT	OFF	ON	OFF	PREEMPTION<>NO
17	120 VAC	120 VAC	ON	ON	OFF	
18	POK2	POK2	ON	ON	OFF	CROSSING CONTROLLER 1 =NO OR OTHER
18	TROUBLE LIGHT	TLITE	ON	ON	OFF	CROSSING CONTROLLER 1 <>NO OR OTHER

Table 2. Crossing Configuration, When Site Selected as “Large”

Chan	Name	Wire Tag	Normal	Energized	De-energized	Menu Condition
01	MAIN/ STANDBY	M/S	MAIN	MAIN	STANDBY	MAIN/STANDBY= YES
02	BELL OUT	BELL OUT	OFF	ON	OFF	
03	BELL OUT 2	BELL OUT 2	OFF	ON	OFF	
04	GATE 1	GATE 1	TSS	TSS	TSS	ENTRANCE GATES>0
05	GATE 2	GATE 2	TSS	TSS	TSS	ENTRANCE GATES>1
06	GATE 3	GATE 3	TSS	TSS	TSS	ENTRANCE GATES>2
07	GATE 4	GATE 4	TSS	TSS	TSS	ENTRANCE GATES>3
08	GATE 5	GATE 5	TSS	TSS	TSS	ENTRANCE GATES>4
08	EXIT GATE 1	EXIT GATE 1	TSS	TSS	TSS	ENTRANCE GATES<5, EXIT GATES>0
09	GATE 6	GATE 6	TSS	TSS	TSS	ENTRANCE GATES>5
09	EXIT GATE 1	EXIT GATE 1	TSS	TSS	TSS	ENTRANCE GATES=5, EXIT GATES>0
09	EXIT GATE 2	EXIT GATE 2	TSS	TSS	TSS	ENTRANCE GATES<5, EXIT GATES>1
10	GATE 7	GATE 7	TSS	TSS	TSS	ENTRANCE GATES>6
10	EXIT GATE 1	EXIT GATE 1	TSS	TSS	TSS	ENTRANCE GATES=6, EXIT GATES>0
10	EXIT GATE 2	EXIT GATE 2	TSS	TSS	TSS	ENTRANCE GATES=5, EXIT GATES>1
10	EXIT GATE 3	EXIT GATE 3	TSS	TSS	TSS	ENTRANCE GATES<5, EXIT GATES>2
11	GATE 8	GATE 8	TSS	TSS	TSS	ENTRANCE GATES>7
11	EXIT GATE 1	EXIT GATE 1	TSS	TSS	TSS	ENTRANCE GATES=7, EXIT GATES>0
11	EXIT GATE 2	EXIT GATE 2	TSS	TSS	TSS	ENTRANCE GATES=6, EXIT GATES>1
11	EXIT GATE 3	EXIT GATE 3	TSS	TSS	TSS	ENTRANCE GATES=5, EXIT GATES>2
11	EXIT GATE 4	EXIT GATE 4	TSS	TSS	TSS	ENTRANCE GATES<5, EXIT GATES>3

Table 2. Crossing Configuration, When Site Selected as “Large” - *continued*

Chan	Name	Wire Tag	Normal	Energized	De-energized	Menu Condition
12	GROUND FAULT TESTER 1	GFT1	GFT	GFT	GFT	GFT'S=YES
13	GROUND FAULT TESTER 2	GFT2	GFT	GFT	GFT	GFT'S=YES, BATTERY BANKS>2
14	GROUND FAULT TESTER 3	GFT3	GFT	GFT	GFT	GFT'S=YES, BATTERY BANKS>4
15	TROUBLE LIGHT	TLITE	ON	ON	OFF	CROSSING CONTROLLER 1 <>NO OR OTHER
15	POK2	POK2	ON	ON	OFF	CROSSING CONTROLLER 1 =NO OR OTHER
16	PREEMPT	PREEMPT	OFF	ON	OFF	PREEMPTION<>NO
17	120 VAC	120 VAC	ON	ON	OFF	

Table 3. Crossing Configuration, When Inputs Assigned to External Digital I/O and “Large” Site

Chan	Name	Wire Tag	Normal	Energized	De-energized	Menu Condition
01	XR1	XR1	UP	UP	DOWN	NUMBER OF TRACKS>0
02	XR2	XR2	UP	UP	DOWN	NUMBER OF TRACKS>1
03	XR3	XR3	UP	UP	DOWN	NUMBER OF TRACKS>2
04	XR4	XR4	UP	UP	DOWN	NUMBER OF TRACKS>3
05	ISLAND 1	ISL1	UP	UP	DOWN	NUMBER OF ISL INPUTS>0
06	ISLAND 2	ISL2	UP	UP	DOWN	NUMBER OF ISL INPUTS>1
07	ISLAND 3	ISL3	UP	UP	DOWN	NUMBER OF ISL INPUTS>2
08	ISLAND 4	ISL4	UP	UP	DOWN	NUMBER OF ISL INPUTS>3
09	GATE CONTROL	GCOUT1	OFF	ON	OFF	ENTRANCE GATES>0
10	EXIT GATE CONTROL	EGCOUT	OFF	ON	OFF	EXIT GATES>0
11	AUX TRACK 1	AUX	UP	UP	DOWN	AUXILLARY TRACKS>0
12	AUX TRACK 2	AUX2	UP	UP	DOWN	AUXILLARY TRACKS>1
13	UAX	UAX	UP	UP	DOWN	NUMBER OF UAX INPUTS>0
14	UAX2/ ENA	UAX2/ ENA	UP	UP	DOWN	NUMBER OF UAX INPUTS>1
15	TROUBLE LIGHT 2	TLITE2	ON	ON	OFF	CROSSING CONTROLLER 2 <>NO OR OTHER

4.0 INDICATOR LED CONFIGURATION

This table and the following material on LED conventions define operation of the red Indicator LEDs for 9V736-A01D.

LED	Alarm Numbers	Designator	Checked
I01	1	CROSSING CONTROLLER FAILURE	ALWAYS
I02	2, 26	SHORT WARNING TIME	TRAIN MOVE
I03	3, 15, 23, 24	ACTIVATION ALERTS	TRAIN MOVE
I04	4	CROSSINGACTIVE 20+ MINUTES	ALWAYS
I05	5	AC POWER OFF 20+ MINUTES	ALWAYS
I06	6	GATE NOT UP AFTER CROSSING CLEAR	TRAIN MOVE
I07	7	MTSS UNIT(S) FAILED	ALWAYS
I08	8, 20, 21	GATE TIMING ERROR	TRAIN MOVE
I09	9, 28	GATE POSITION FAIL	TRAIN MOVE
I10	10	SINGLE BULB OUT	TRAIN MOVE
I11	11, 12	TWO OR MORE BULBS OUT	TRAIN MOVE
I12	13, 14	IMPROPER FLASH RATE	TRAIN MOVE
I13	16, 25, 30	BELL MALFUNCTION	TRAIN MOVE
I14	17	GROUND FAULT	ALWAYS
I15	18, 19	LOW BATTERY	ALWAYS
I16	22	PREEMPTION FAIL	TRAIN MOVE

4.1 STANDARD LED CONVENTIONS

1. LEDs are ON (RED) steady when in Normal Mode.
2. LEDs FLASH FAST when an alarm condition exists.
3. LEDs FLASH SLOW if an alarm has occurred since the last time the CLEAR ALARM key was pressed, but has been cleared.
4. The CLEAR ALARM key will clear out alarms if the conditions that caused them no longer exist.
5. Any alarm associated with a train move can be cleared by the CLEAR ALARM key even if there has not been a train move without an alarm since the alarm occurred.

5.0 TEST LED CONFIGURATION

This table and the following material on conventions define the operation of the tri-color Test LEDs as they operate with 9V736-A01D.

LED	Designator
T1	234.249 GROUND TEST
T2	234.251 STANDBY POWER
T3	234.253 FLASHING LIGHT UNITS
T4	234.255 GATE ARM AND GATE MECHANISMS
T5	234.257 WARNING SYSTEM OPERATION
T6	234.259 WARNING TIME
T7	234.261 TRAFFIC PREEMPTION
T8	MONTHLY MANUAL INSPECTIONS

5.1 TEST LED CONVENTIONS

1. LEDs are **YELLOW STEADY** when Automatic Inspections are not ready to execute.
2. LEDs **SLOW FLASH YELLOW** when Inspections are Ready To Run, but have not yet executed or are currently executing. (Ex. Awaiting a train arrival).
3. LEDs are **RED STEADY** when an Inspection has failed.
4. LEDs **FAST FLASH GREEN** when an Inspection has passed.
5. The **CLEAR ALARM** key will not affect these LEDs.
6. After successful **PASSED** for all tests, the tests are sent in to the Office and LEDs are **GREEN STEADY**.

6.0 BATTERY INPUT CONFIGURATION

The following table shows the 9V736-A01D default names, software designators, and resolutions for the three battery inputs at the lower right-hand corner of the SEAR II front panel.

Chan	Name	Designator	Resolution	Menu Condition
01	B12	B12	1 VDC	RAILROAD NUMBER<>125 OR 400 OR 005
01	OB	OB	.2 VDC	RAILROAD NUMBER=125, OB RESOLUTION=0.2
01	OB	OB	.5 VDC	RAILROAD NUMBER=125, OB RESOLUTION=0.5
01	OB	OB	1 VDC	RAILROAD NUMBER=125, OB RESOLUTION=1.0
01	B10	B10	1 VDC	RAILROAD NUMBER=400
01	MB12	MB12	1 VDC	RAILROAD NUMBER=005
02	B16	B16	1 VDC	RAILROAD NUMBER<>125 OR 400 OR 005, BATTERY BANKS>1
02	X-B	X-B	.2 VDC	RAILROAD NUMBER=125, X-B RESOLUTION=0.2, BATTERY BANKS>1
02	X-B	X-B	.5 VDC	RAILROAD NUMBER=125, X-B RESOLUTION=0.5, BATTERY BANKS>1
02	X-B	X-B	1 VDC	RAILROAD NUMBER=125, X-B RESOLUTION=1.0, BATTERY BANKS>1
02	1XB12	1XB12	1 VDC	RAILROAD NUMBER=400, BATTERY BANKS>1
02	XB14	XB14	1 VDC	RAILROAD NUMBER=005, BATTERY BANKS>1
02	UNUSEDV2	UNUSEDV2	5 VDC	RAILROAD NUMBER<>125, BATTERY BANKS=1
03	B16A	B16A	1 VDC	RAILROAD NUMBER<>125 OR 400 OR 005, BATTERY BANKS>2
03	B-G	B-G	.2 VDC	RAILROAD NUMBER=125, B-G RESOLUTION=0.2, BATTERY BANKS>2
03	B-G	B-G	.5 VDC	RAILROAD NUMBER=125, B-G RESOLUTION=0.5, BATTERY BANKS>2
03	B-G	B-G	1 VDC	RAILROAD NUMBER=125, B-G RESOLUTION=1.0, BATTERY BANKS>2
03	2XB12	2XB12	1 VDC	RAILROAD NUMBER=400, BATTERY BANKS>2
03	BATT3	BATT3	1 VDC	RAILROAD NUMBER=005, BATTERY BANKS>2
01 Analog Module	BATT4	BATT4	1 VDC	RAILROAD NUMBER<>125, BATTERY BANKS>3

9V736-A01D.1 CONFIGURATION SUMMARY

Chan	Name	Designator	Resolution	Menu Condition
01 Analog Module	X-B2	X-B2	.2 VDC	RAILROAD NUMBER=125, X-B2 RESOLUTION=0.2, BATTERY BANKS>3
01 Analog Module	X-B2	X-B2	.5 VDC	RAILROAD NUMBER=125, X-B2 RESOLUTION=0.5, BATTERY BANKS>3
01 Analog Module	X-B2	X-B2	1 VDC	RAILROAD NUMBER=125, X-B2 RESOLUTION=1.0, BATTERY BANKS>3
02 Analog Module	BATT5	BATT5	1 VDC	RAILROAD NUMBER<>125, BATTERY BANKS>4
02 Analog Module	B-G2	B-G2	.2 VDC	RAILROAD NUMBER=125, B-G2 RESOLUTION=0.2, BATTERY BANKS>4
02 Analog Module	B-G2	B-G2	.5 VDC	RAILROAD NUMBER=125, B-G2 RESOLUTION=0.5, BATTERY BANKS>4
02 Analog Module	B-G2	B-G2	1 VDC	RAILROAD NUMBER=125, B-G2 RESOLUTION=1.0, BATTERY BANKS>4
03 Analog Module	BATT6	BATT6	1 VDC	RAILROAD NUMBER<>125, BATTERY BANKS>5
03 Analog Module	X-B3	X-B3	.2 VDC	RAILROAD NUMBER=125, X-B3 RESOLUTION=0.2, BATTERY BANKS>5
03 Analog Module	X-B3	X-B3	.5 VDC	RAILROAD NUMBER=125, X-B3 RESOLUTION=0.5, BATTERY BANKS>5
03 Analog Module	X-B3	X-B3	1.0 VDC	RAILROAD NUMBER=125, X-B3 RESOLUTION=1.0, BATTERY BANKS>5

7.0 RELAY OUTPUT CONFIGURATION

Table 1 shows the 9V736-A01D default names and software designators for the two relay outputs at the lower right-hand corner of the SEAR II front panel. Table 2 shows the relay configuration of the Digital I/O unit.

Table 1. Default Names and Software Designators for Front Panel Relay Outputs 1 & 2

Chan	Name	Designator	Normal	Energized	De-energized	Menu Condition
01	GFT TEST	GFTTEST	OFF	ON	OFF	AUTO INSPECTIONS=YES
02	AC POWER TEST	ACTEST	OFF	ON	OFF	AUTO INSPECTIONS=YES

Table 2. Relay Configuration of the Digital I/O Unit

Chan	Name	Designator	Normal	Energized	De-energized	Menu Condition
01 Digital I/O Module	KDR	KDR	OFF	ON	OFF	RAILROAD NUMBER<>550 OR 400, CROSSING CONFIGURATION=LARGE, DTMF ACTIVATION=YES
01 Digital I/O Module	LKR	LKR	OFF	ON	OFF	RAILROAD NUMBER<>550 OR 400, CROSSING CONFIGURATION=LARGE, DTMF ACTIVATION=YES
02 Digital I/O Module	ROR	ROR	OFF	ON	OFF	RAILROAD NUMBER=400, CROSSING CONFIGURATION=LARGE, DTMF ACTIVATION=YES
02 Digital I/O Module	RLR	RLR	OFF	ON	OFF	RAILROAD NUMBER=400, CROSSING CONFIGURATION=LARGE, DTMF ACTIVATION=YES

8.0 MESSAGES

The tables in the following subsections list all of the messages generated by the 9V736-A01D 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
1-100	Application Alarms
101-200	Application Alarm Clears
201-230	Automatic Inspection Alarms
231-240	Application Information Messages
241-250	Reserved
251-255	Automatic Inspection Information
1000-1099	Office Software Alarms
1099-1199	Office Software Alarm Clears

8.1 APPLICATION ALARMS

The 9V736-A01D application generates these alarms.

Alarm #	LED	Name	Description	Sent To Office	Tested
1	I01	Crossing Controller Failure	TLITE OFF and 120 VAC NORMAL for 30 seconds.	Yes	Always
2	I02	Short Warning TK1	Crossing Activates and ISL1 is down in less than 20 seconds. GCP ONLY Average speed on detected track must be greater than 15 mph.	Yes	Train Move
3	I03	Tail Ring	<ol style="list-style-type: none"> 1. XR drops 2. Island drops 3. Valid warning time 4. XR and Island pick 5. Within 40 seconds XR drops 6. No Island occurs 7. XR picks If GCP and track count > 1 then verify track detection for XR is the same.	Yes	Train Move
4	I04	Crossing Active Too Long	Crossing has been active (CrossingActive TRUE) for 20 minutes or longer.	20 min. intervals	Always

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
5	I05	AC Power Off For 20 Minutes	120 VAC has been off for 20 minutes or more.	Yes	Always
6	I06	Gate Not Up After Crossing Clear	All gates are not reporting UP or any tip reporting LEVEL after CrossingActive was clear for at least 2 minutes.	Yes	Train Move
7	I07	TSS Unit Failed	One of the TSS units is reporting STUCK LOW, STUCK HIGH or DATA ERROR.	Yes	Always
8	I08	Fail 3 Second Test	An entrance gate started down less than 3 seconds after CrossingActive.	Yes	Train Move
9	I09	Gate Position Fail	<ol style="list-style-type: none"> 1. Gate control activates 2. 20 second elapses 3. All entrance gates are not DOWN 4. All entrance tips are not LEVEL <p>**RAILROAD NUMBER<>125**</p>	Yes	Train Move
9	I09	Gate Position Fail	<ol style="list-style-type: none"> 1. Gate control activates 2. User specified Gate Position Fail time elapses 3. All entrance gates are not DOWN 4. All entrance tips are not LEVEL <p>**RAILROAD NUMBER=125**</p>	Yes	Train Move
10	I10	Bulb Out	A single bulb out condition exists in the time between the crossing being active for 11 seconds and the island being active for 2 seconds.	No	Train Move
10	I10	Possible Bulb Out, .7A Drop	A lamp amperage drop of .7A has been detected in the time between the crossing being active for 11 seconds and the island being active for 2 seconds.	No	Train Move
			ANY LED BULBS USED=YES		
11	I11	Two Bulbs Out	Two bulbs have been detected out in the time between the crossing being active for 11 seconds and the island being active for 2 seconds.	Yes	Train Move
12	I11	Multiple Bulbs Out	More than two bulbs have been detected out in the time between the crossing being active for 11 seconds and the island being active for 2 seconds.	Yes	Train Move

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
13	I12	Flash Rate Too Slow	Flash rate is less than 35 FPM in the time between the crossing being active for 11 seconds and the island being active for 2 seconds.	Yes	Train Move
14	I12	Flash Rate Too Fast	Flash rate is greater than 65 FPM in the time between the crossing being active for 11 seconds and the island being active for 2 seconds.	Yes	Train Move
15	I03	Pre-Ring	Non-GCP: <ol style="list-style-type: none"> 1. CrossingActive TRUE 2. No Island 3. CrossingActive FALSE 4. CrossingActive TRUE 5. IslandOccupied TRUE within 4 minutes GCP: <ol style="list-style-type: none"> 1. CrossingActive=TRUE/Track detect 2. No Island 3. CrossingActive=FALSE/Prime timeout 4. CrossingActive=TRUE on same track within 4 minutes of previous move. 5. EZ value is less than previous prime timeout EZ+5 6. Island Occupied 	Yes	Train move
16	I13	Bell Not Ringing	CrossingActive AND BELL OUT ON and TSS Bell Audio or TSS Bell Power FALSE for at least 3 seconds.	Yes	Train Move
17	I14	B12 Ground Fault Alarm	B12 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER<>125,400, OR 005**	Yes	Always
17	I14	OB Ground Fault Alarm	OB is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=125**	Yes	Always
17	I14	B10 Ground Fault Alarm	B10 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=400**	Yes	Always
17	I14	MB12 Ground Fault Alarm	MB12 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=005**	Yes	Always

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
18	I15	Low B12	B12 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER<>125,400, OR 005**	Yes	Always
18	I15	85% LOW OB	OB is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=125**	Yes	Always
18	I15	Low B10	B10 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=400**	Yes	Always
18	I15	Low MB12	MB12 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=005**	Yes	Always
19	I15	Low B16	B16 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER<>125,400, OR 005**	Yes	Always
19	I15	85% LOW X-B	X-B is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=125**	Yes	Always
19	I15	Low 1XB12	1XB12 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=400**	Yes	Always
19	I15	Low XB14	XB14 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=005**	Yes	Always
20	I08	Gates Not Starting	All Entrance Gates have not started down within 10 seconds of CrossingActive. **RAILROAD NUMBER<>005**	Yes	Train Move
20	I08	Gates Not Starting	All Entrance Gates have not started down within the user specified Gates Not Starting time after CrossingActive. **RAILROAD NUMBER=005**	Yes	Train Move

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
21	I08	Fail 5 Second Test	Any entrance gate not DOWN or any tip not LEVEL within 5 seconds prior to IslandOccupied after CrossingActive for at least 15 seconds	Yes	Train Move
22	I16	Preemption Alarm	CrossingActive and PREEMPT is ON	Yes	Train Move
23	I03	False Detection	<p>Non-GCP:</p> <ol style="list-style-type: none"> 1. CrossingActive=TRUE. 2. No Island 3. CrossingActive=FALSE. 4. 1 hour elapses with no valid train move. <p>GCP:</p> <ol style="list-style-type: none"> 1. Track detect with EX<=50 –or- 2. Prime timeout with EZ>(detect-20) –AND- 3. No Island within 30 minutes <p>Note: ‘detect’ value = EZ value at time of track detection. Value must be ≥ 90.</p>	Yes	Train Move
25	I13	Bell Ringing During Island	CrossingActive TRUE > 20 seconds AND IslandOccupied TRUE AND (TSS bell audio ON or BELL OUT ON) BELL ON DURING ISLAND MENU OPTION NOT SET.	Yes	Train Move
26	I02	Slow Train – Possible Switching Move	Train move with warning time less than 20 seconds and average speed is less than 15 mph. Not sent to office. **GCP CROSSINGS ONLY**	Yes	Train Move
27	---	User Test Mode	The SEAR II is in User Test Mode and is ignoring all alarm conditions for the specified time – Display shows SKIP ALARMS: XX MIN.	Yes	Always
28	I09	Hold Clear Fail	TSS gate up toggling > 10 times after CrossingActive=FALSE and gate up TRUE.	Yes	Always
29	I14	GFT Defective	One of the GFT units is reporting STUCK LOW, STUCK HIGH or DATA ERROR.	Yes	Always
30	I13	Bell Sensor Error	Bell ringing in error or Bell Sensor Failed.	Yes	Always
33	---	Ring-thru	Island is up for 10 seconds and relative XR is still down.	Yes	Train Move
34	I14	B16 Ground Fault Alarm	B16 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER<>125,400, OR 005**	Yes	Always

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
34	I14	X-B Ground Fault Alarm	X-B is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=125**	Yes	Always
34	I14	1XB12 Ground Fault Alarm	1XB12 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=400**	Yes	Always
34	I14	XB14 Ground Fault Alarm	XB14 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=005**	Yes	Always
35	I15	Low B16A	B16A is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER<>125,400, OR 005**	Yes	Always
35	I15	Low B-G	B-G is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=125**	Yes	Always
35	I15	Low 2XB12	2XB12 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=400**	Yes	Always
35	I15	Low BATT3	BATT3 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=005**	Yes	Always
36	I15	Low BATT4	BATT4 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER<>125**	Yes	Always
36	I15	Low X-B2	X-B2 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=125**	Yes	Always
37	I14	B16A Ground Fault Alarm	B16A is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER<>125,400, OR 005**	Yes	Always

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
37	I14	B-G Ground Fault Alarm	B-G is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=125**	Yes	Always
37	I14	2XB12 Ground Fault Alarm	2XB12 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=400**	Yes	Always
37	I14	BATT3 Ground Fault Alarm	BATT3 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=005**	Yes	Always
38	I14	BATT4 Ground Fault Alarm	BATT4 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER<>125**	Yes	Always
38	I14	X-B2 Ground Fault Alarm	X-B2 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=125**	Yes	Always
39	I15	Low BATT5	BATT4 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER<>125**	Yes	Always
39	I15	Low B-G2	B-G2 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=125**	Yes	Always
40	I15	Low BATT6	BATT6 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER<>125**	Yes	Always
40	I15	Low X-B3	X-B3 is less than 85% of calibrated voltage for at least 20 seconds. **RAILROAD NUMBER=125**	Yes	Always
41	I14	BATT5 Ground Fault Alarm	BATT5 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER<>125**	Yes	Always

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
41	I14	B-G2 Ground Fault Alarm	B-G2 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=125**	Yes	Always
42	I14	BATT6 Ground Fault Alarm	BATT6 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER<>125**	Yes	Always
42	I14	X-B3 Ground Fault Alarm	X-B3 is in FAULT state. This alarm is sent to the office once every 24 hours until it is cleared. **RAILROAD NUMBER=125**	Yes	Always
45	I11	Possible Bulbs Out, >= 2.1A Drop	A lamp amperage drop of >= 2.1A has been detected in the time between the crossing being active for 11 seconds and the island being active for 2 seconds. **ANY LED BULBS USED=YES**	Yes	Train Move
46	I11	Possible Bulbs Out, 1.4A Drop	A lamp amperage drop of 1.4A has been detected in the time between the crossing being active for 11 seconds and the island being active for 2 seconds. **ANY LED BULBS USED=YES**	Yes	Train Move
47	I05	AC Not On After Test	AC power has not come back on after an FRA test has run.	Yes	FRA Test
49	---	GCP comm. bad	Communication has been lost to any GCP node.	Yes	Always
50	I02	Short Warning TK2	Crossing Activates and ISL2 is down in less that 20 seconds. GCP ONLY Average speed on detected track must be greater than 15 mph.	Yes	Train Move
51	I02	Short Warning TK3	Crossing Activates and ISL3 is down in less that 20 seconds. GCP ONLY Average speed on detected track must be greater than 15 mph.	Yes	Train Move

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
52	I02	Short Warning TK4	Crossing Activates and ISL4 is down in less that 20 seconds. GCP ONLY Average speed on detected track must be greater than 15 mph.	Yes	Train Move
53	--	Exit Gate Not Down	IslandOccupied and an Exit Gate is still UP.	Yes	Train Move
231	---	Full Approach Move	A normal train move occurred with valid warning time.	Yes	Train Move
232	I02	Slow Train On Island	IslandOccupied within 5 seconds prior to CrossingActive or Warning time is <2 seconds. Alarms are ignored. **GCP CROSSINGS ONLY**	Yes	Train Move
233	---	GCP Transferred	A GCP has transferred.	Yes	Always

8.2 APPLICATION ALARM CLEARS

These messages report cleared alarms.

Alarm #	LED	Name	Description	Sent To Office	Tested
101	---	Crossing Controller Normal	<i>Crossing controller Fail</i> alarm clears.	Yes	Clears
104	---	Crossing Normal	<i>CrossingActive Too Long</i> alarm clears.	Yes	Clears
105	---	AC Power Back On	<i>AC Power Off For 20 Minutes</i> alarm clears for at least 1 minute.	Yes	Clear
106	---	Gate Normal	<i>Gates Not Up After Crossing Clear</i> alarm clears.	Yes	Clear
107	---	TSS Normal	<i>TSS Unit Failed</i> alarm clears.	Yes	Clears
108	---	Gates Normal	<i>Fail 3 Second Test</i> alarm clears.	Yes	Clears
109	---	Gates Normal	<i>Gate Position Fail</i> alarm clears.	Yes	Clears
111	---	Bulbs Normal	<i>Two Bulbs Out, Multiple Bulbs Out, Possible Bulb Out, 1.4A Drop, Possible Bulb Out, >=2.1A Drop</i> alarm clears.	Yes	Clears
---	---	Bulbs Normal	<i>Single Bulb Out, Possible Bulb Out, .7A Drop</i> alarm clears.	No	Clears
113	---	Flash Normal	<i>Flash Rate Too Slow</i> alarm clears.	Yes	Clears
114	---	Flash Normal	<i>Flash Rate Too Fast</i> alarm clears.	Yes	Clears
116	---	Bell Normal	<i>Bell Not ringing</i> alarm clears.	Yes	Clears
117	---	GFT Normal	<i>All Ground Fault</i> alarms clear.	Yes	Clears
118	---	B12 Normal	<i>Low B12</i> alarm clears for 5 seconds.	Yes	Clears
118	---	OB Normal	<i>Low OB</i> alarm clears for 5 seconds.	Yes	Clears
119	---	B16 Normal	<i>Low B16</i> alarm clears for 5 seconds.	Yes	Clears
119	---	X-B Normal	<i>Low X-B</i> alarm clears for 5 seconds.	Yes	Clears
120	---	Gates Not Starting Clear	<i>Gates Not Starting</i> alarm clears.	Yes	Clears
121	---	Fail 5 Second Test Clear	<i>Fail 5 Second Test</i> alarm clears.	Yes	Clears
122	---	Preempt Normal	<i>Fail Preempt Test</i> alarm clears.	Yes	Clears

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Sent To Office	Tested
125	---	Bell Normal	<i>Bell On During Island</i> alarm clears.	Yes	Clears
128	---	Hold Clear Normal	<i>Hold Clear Fail</i> alarm clears.	Yes	Clears
135	---	BATT3 Normal	<i>Low BATT3</i> alarm clears for 5 seconds.	Yes	Clears
135	---	B-G Normal	<i>Low B-G</i> alarm clears for 5 seconds.	Yes	Clears
136	---	BATT4 Normal	<i>Low BATT4</i> alarm clears for 5 seconds.	Yes	Clears
136	---	X-B2 Normal	<i>Low X-B2</i> alarm clears for 5 seconds.	Yes	Clears
139	---	BATT5 Normal	<i>Low BATT5</i> alarm clears for 5 seconds.	Yes	Clears
139	---	B-G2 Normal	<i>Low B-G2</i> alarm clears for 5 seconds.	Yes	Clears
140	---	BATT6 Normal	<i>Low BATT6</i> alarm clears for 5 seconds.	Yes	Clears
140	---	X-B3 Normal	<i>Low X-B3</i> alarm clears for 5 seconds.	Yes	Clears
150	---	GCP comm. good	<i>GCP comm bad</i> recovers	Yes	Clears
153	---	Exit Gate Not Down Clear	<i>Exit Gate Not Down</i> alarm clears.	Yes	Clears
200	---	Normal Train Move	Generated after FullApproachMove TRUE and no <i>Tail Ring, Pre-Ring, Ring-thru</i> or <i>Short Warning</i> occurred, but one of the above occurred previously. The alarm conditions are all cleared.	Yes	Train Move and No Alarm

8.3 AUTOMATIC INSPECTION ALARMS

The following are generated by 9V736-A01D during automatic inspections.

Alarm #	LED	Name	Description	Inspection Result #
201	T1	FRA FAIL: 234.249 B12 GFT	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER<>125,400, OR 005**</p>	<ul style="list-style-type: none"> • Fail 1
201	T1	FRA FAIL: 234.249 OB GFT	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=125**</p>	<ul style="list-style-type: none"> • Fail 1
201	T1	FRA FAIL: 234.249 B10 GFT	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=400**</p>	<ul style="list-style-type: none"> • Fail 1

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Inspection Result #
201	T1	FRA FAIL: 234.249 MB12 GFT	The GFT is tested before checking for active faults. Entire test is as follows: <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=005**</p>	<ul style="list-style-type: none"> • Fail 1
202	T1	FRA FAIL: 234.249 NO GFT INSTALLED	No GFT was configured for this location.	<ul style="list-style-type: none"> • Fail 1 • Fail 13 • Fail 20 • Fail 25 • Fail 29
203	T2	FRA FAIL: AC OFF 234.251	120 VAC is not NORMAL when Standby Power Test is initiated.	<ul style="list-style-type: none"> • Fail 3 • Fail 29 • Fail 30 • Fail 33 • Fail 34
204	T2	FRA FAIL: AC NOT OFF FOR TEST 234.251	SEAR II is unable to set 120 VAC OFF via AC Power Relay for Standby Power Test.	<ul style="list-style-type: none"> • Fail 3 • Fail 29 • Fail 30 • Fail 33 • Fail 34
205	T2	FRA FAIL: STANDBY POWER 234.251	Any of the following alarms occur: <ol style="list-style-type: none"> 1. AC In Fail, No Test 2. AC Not Off, No Test 3. Low B12 4. Low B16 5. Low BATT3 6. Low BATT4 	<ul style="list-style-type: none"> • Fail 3 • Fail 29 • Fail 30 • Fail 33 • Fail 34

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Inspection Result #
206	T3	FRA FAIL: LAMP TEST 234.253	Any of the following alarms occur: <ol style="list-style-type: none"> 1. <i>Single Bulb Out</i> 2. <i>Two Bulbs Out</i> 3. <i>Multiple Bulbs Out</i> 4. <i>Flash Rate Too Slow</i> 5. <i>Flash Rate Too Fast</i> 	<ul style="list-style-type: none"> • Fail 4 – Flash • Fail 5–EB1 Lamp • Fail 6–EN1 Lamp • Fail 7–EB2 Lamp • Fail 8–EN2 Lamp • Fail 21–EB3 Lamp • Fail 22–EN3 Lamp • Fail 23–EB4 Lamp • Fail 24–EN4 Lamp
207	T3	FRA FAIL: NO LAMP SENSOR 234.253	Crossing not configured with an iLOD for checking lamp current.	<ul style="list-style-type: none"> • Fail 4 – Flash • Fail 5–EB1 Lamp • Fail 6–EN1 Lamp • Fail 7–EB2 Lamp • Fail 8–EN2 Lamp • Fail 21–EB3 Lamp • Fail 22–EN3 Lamp • Fail 23–EB4 Lamp • Fail 24–EN4 Lamp
208	T4	FRA FAIL: GATE OPERATION 234.255	Any of the following alarms occur: <ol style="list-style-type: none"> 1. <i>Fail 3 Second Test</i> 2. <i>Gates Not Starting</i> 3. <i>Fail 5 Second Test</i> 4. <i>Gate Position Fail</i> 5. <i>Gate Not Up After Crossing Clear</i> 6. <i>Hold Clear Fail</i> 	<ul style="list-style-type: none"> • Fail 9
209	T5	FRA FAIL: BELL 234.257b	Any of the following alarms occur: <ol style="list-style-type: none"> 1. <i>Bell Not ringing</i> 2. <i>Bell On During Island</i> 	<ul style="list-style-type: none"> • Fail 26
210	T5	FRA FAIL: WARNING SYSTEM 234.257	<i>Crossing Controller Failure</i> alarm occurs	<ul style="list-style-type: none"> • Fail 10
211	T6	FRA FAIL: WARNING TIME 234.259	Either of the following alarms occur: <ol style="list-style-type: none"> 1. <i>Approach Too Short</i> 2. <i>Switch Short Approach</i> 	<ul style="list-style-type: none"> • Fail 11
212	T7	FRA FAIL: PREEMPTION 234.261	<i>Fail Preempt Test</i> alarm occurs.	<ul style="list-style-type: none"> • Fail 12

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Inspection Result #
213	T1	FRA FAIL: GFT DEFECTIVE 234.249	One of the GFT units is reporting STUCK LOW, STUCK HIGH or DATA ERROR.	<ul style="list-style-type: none"> • Fail 1 • Fail 13 • Fail 27 • Fail 28 • Fail 32
214	T1	FRA FAIL: B16 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER<>125,400, OR 005**</p>	<ul style="list-style-type: none"> • Fail 13
214	T1	FRA FAIL: X-B GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=125**</p>	<ul style="list-style-type: none"> • Fail 13
214	T1	FRA FAIL: 1XB12 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=400**</p>	<ul style="list-style-type: none"> • Fail 13

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Inspection Result #
214	T1	FRA FAIL: XB14 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=005**</p>	<ul style="list-style-type: none"> • Fail 13
215	T1	FRA FAIL: B16A GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER<>125,400, OR 005**</p>	<ul style="list-style-type: none"> • Fail 27
215	T1	FRA FAIL: B-G GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=125**</p>	<ul style="list-style-type: none"> • Fail 27

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Inspection Result #
215	T1	FRA FAIL: 2XB12 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=400**</p>	<ul style="list-style-type: none"> • Fail 27
215	T1	FRA FAIL: BATT3 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=005**</p>	<ul style="list-style-type: none"> • Fail 27
216	T1	FRA FAIL: BATT4 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER<>125**</p>	<ul style="list-style-type: none"> • Fail 30

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Inspection Result #
216	T1	FRA FAIL: X-B2 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=125**</p>	<ul style="list-style-type: none"> • Fail 30
217	T1	FRA FAIL: BATT5 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER<>125**</p>	<ul style="list-style-type: none"> • Fail 33
217	T1	FRA FAIL: B-G2 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=125**</p>	<ul style="list-style-type: none"> • Fail 33

9V736-A01D.1 CONFIGURATION SUMMARY

Alarm #	LED	Name	Description	Inspection Result #
218	T1	FRA FAIL: BATT6 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER<>125**</p>	<ul style="list-style-type: none"> • Fail 34
218	T1	FRA FAIL: X-B3 GFT 234.249	<p>The GFT is tested before checking for active faults. Entire test is as follows:</p> <ul style="list-style-type: none"> • Turn on GFTTEST output • 4-5 seconds, check for grounds • Turn off GFTTEST 7 seconds later • Check for faults 10 seconds later • Test complete <p>**RAILROAD NUMBER=125**</p>	<ul style="list-style-type: none"> • Fail 34

8.4 AUTOMATIC INSPECTION INFORMATION MESSAGES

The 9V736-A01D application generates the following informational messages during inspections.

Alarm #	Name	Description	Sent To Office	Tested
250	Auto Test Complete, Awaiting Manual	Automatic inspections have passed, awaiting monthly Manual inspections. Message will send every 24 hours until Manual tests have passed.	Yes	FRA
251	Automatic Inspection(s) Failed	One or more Inspections failed. Tests will not restart until failed/manual tests are completed or start of next month.	Yes	FRA
252	Automatic Inspections Complete	All Automatic and monthly Manual Inspections were completed successfully. ** all Test LEDs are green now **	Yes	FRA
253	Automatic Inspections Local Start	A local request has been issued, placing the Automatic Inspections in Ready To Run mode. **CROSSING CONFIGURATION<>REMOTE, ISLAND ONLY, OR CP COLLECTOR**	Yes	FRA
254	Automatic Inspections Started	One or more of the following occurs: 1. Inspection time elapsed. 2. Office start request. ** all Test LEDs set to Slow Flash Yellow **	Yes	FRA
256	Manual Inspections Complete	AUTOMATED INSPECTIONS=NO Sent after all inspections are entered manually. LEDs will all be green once complete. The LEDs will return to yellow at the beginning of the month for the next inspection.	Yes	FRA

8.5 OFFICE GENERATED MESSAGES

Office software working with 9V736-A01D sends these messages.

Alarm #	Name	Description	Sent To Office	Tested
1000	?? Off Line	<i>Generated by Office Software when field sites fail to report in as required.</i>	No	Always
1100	?? On Line	<i>Generated by Office Software after alarm #1000 has been generated for a site. Indicates the field site is reporting normally again.</i>	No	Clears

9.0 SPECIAL TRAIN MOVE CONDITIONS

The following definitions cover train move conditions monitored by the 9V736-A01D application.

CrossingActive

Any XR, ISL, or UAX input is de-energized.

IslandOccupied

Any ISL input is de-energized.

FullApproachMove

CrossingActive TRUE and IslandOccupied TRUE. GCP sites will not send this if train speed <15mph.

10.0 AUTOMATED/MANUAL INSPECTION RESULTS

The following table presents a listing of test numbers that will appear in SEAR II records for 9V736-A01D.

When a test applies only to a specific paragraph within a FRA subsection, it is called out with the alphabetic designator as in 'Test 253c' below.

Test #	Test Name	Test Description	Interval	Recorded Value
1	Test 249	B12 Ground Fault Detection **RAILROAD NUMBER<>125,400, OR 005**	Self-test when tests execute, checked 10 seconds later	None
1	Test 249	OB Ground Fault Detection **RAILROAD NUMBER=125**	Self-test when tests execute, checked 10 seconds later	None
1	Test 249	B10 Ground Fault Detection **RAILROAD NUMBER=400**	Self-test when tests execute, checked 10 seconds later	None
1	Test 249	MB12 Ground Fault Detection **RAILROAD NUMBER=005**	Self-test when tests execute, checked 10 seconds later	None
13	Test 249	B16 Ground Fault Detection **RAILROAD NUMBER<>125,400, OR 005**	Self-test when tests execute, checked 10 seconds later	None
13	Test 249	X-B Ground Fault Detection **RAILROAD NUMBER=125**	Self-test when tests execute, checked 10 seconds later	None
13	Test 249	1XB12 Ground Fault Detection **RAILROAD NUMBER=400**	Self-test when tests execute, checked 10 seconds later	None

9V736-A01D.1 CONFIGURATION SUMMARY

Test #	Test Name	Test Description	Interval	Recorded Value
13	Test 249	XB14 Ground Fault Detection **RAILROAD NUMBER=005**	Self-test when tests execute, checked 10 seconds later	None
27	Test 249	B16A Ground Fault Detection **RAILROAD NUMBER<>125,400, OR 005**	Self-test when tests execute, checked 10 seconds later	None
27	Test 249	B-G Ground Fault Detection **RAILROAD=125**	Self-test when tests execute, checked 10 seconds later	None
27	Test 249	2XB12 Ground Fault Detection **RAILROAD NUMBER=400**	Self-test when tests execute, checked 10 seconds later	None
27	Test 249	BATT3 Ground Fault Detection **RAILROAD NUMBER=005**	Self-test when tests execute, checked 10 seconds later	None
28	Test 249	BATT4 Ground Fault Detection **RAILROAD NUMBER<>125**	Self-test when tests execute, checked 10 seconds later	None
28	Test 249	X-B2 Ground Fault Detection **RAILROAD NUMBER=125**	Self-test when tests execute, checked 10 seconds later	None
31	Test 249	BATT5 Ground Fault Detection **RAILROAD NUMBER<>125**	Self-test when tests execute, checked 10 seconds later	None
31	Test 249	B-G2 Ground Fault Detection **RAILROAD NUMBER=125**	Self-test when tests execute, checked 10 seconds later	None
32	Test 249	BATT6 Ground Fault Detection **RAILROAD NUMBER<>125**	Self-test when tests execute, checked 10 seconds later	None
32	Test 249	X-B3 Ground Fault Detection **RAILROAD NUMBER=125**	Self-test when tests execute, checked 10 seconds later	None
2	Test 251	B12 **RAILROAD NUMBER<>125,400, OR 005**	A 5 minute test executed once during a train move with AC power removed from battery chargers.	Voltage read
2	Test 251	OB **RAILROAD NUMBER=125**		Voltage read
2	Test 251	B10 **RAILROAD NUMBER=400**		Voltage read

9V736-A01D.1 CONFIGURATION SUMMARY

Test #	Test Name	Test Description	Interval	Recorded Value
2	Test 251	MB12 **RAILROAD NUMBER=005**	A 5 minute test executed once during a train move with AC power removed from battery chargers.	Voltage read
3	Test 251	B16 **RAILROAD NUMBER<>125,400 OR 005**		Voltage read
3	Test 251	X-B **RAILROAD NUMBER=125**		Voltage read
3	Test 251	1XB12 **RAILROAD NUMBER=400**		Voltage read
3	Test 251	XB14 **RAILROAD NUMBER=005**		Voltage read
29	Test 251	B16A **RAILROAD NUMBER<>125,400 OR 005**		Voltage read
29	Test 251	B-G **RAILROAD NUMBER=125**		Voltage read
29	Test 251	2XB12 **RAILROAD NUMBER=400**		Voltage read
29	Test 251	BATT3 **RAILROAD NUMBER=005**		Voltage read
30	Test 251	BATT4 **RAILROAD NUMBER<>125**		Voltage read
30	Test 251	X-B2 **RAILROAD NUMBER=125**		Voltage read
33	Test 251	BATT5 **RAILROAD NUMBER<>125**		Voltage read
33	Test 251	B-G2 **RAILROAD NUMBER=125**		Voltage read
34	Test 251	BATT6 **RAILROAD NUMBER<>125**		Voltage read
34	Test 251	X-B3 **RAILROAD NUMBER=125**		Voltage read
4	Test 253	Flash rate	One train move	Flashes per minute
5	Test 253	Lamps – EB1	One train move	Current read
6	Test 253	Lamps – EN1	One train move	Current read
7	Test 253	Lamps – EB2	One train move	Current read
8	Test 253	Lamps – EN2	One train move	Current read

Test #	Test Name	Test Description	Interval	Recorded Value
21	Test 253	Lamps – EB3	One train move	Current read
22	Test 253	Lamps – EN3	One train move	Current read
23	Test 253	Lamps – EB4	One train move	Current read
24	Test 253	Lamps – EN4	One train move	Current read
9	Test 255	Gates	One train move	None
10	Test 257	Warning System	Continuous	None
11	Test 259	Warning Time	One train move	Warning time in seconds
12	Test 261	Traffic Preemption	One train move	None
15	Test 253c	Lamp Inspection	User entry	PASS/FAIL
25	Test 257	Bell Ringing	User entry	PASS/FAIL
26	Test 257	Bell	One train move	None

11.0 TEST MODES

Two different test modes may be selected. These settings can be accessed through the User Test button on the SEAR II front panel.

11.1 USER DIAG

This mode has selections for disabling alarms and starting automatic inspections locally. When a Field Test is activated it will cause all field-generated alarms numbered 1-200 to be ignored and not processed. These alarms will not be generated in the event buffer nor will they be sent to the Office. The maintainer will have the option of selecting 1, 4, 8 and 12-hour test modes. The local display will show “**SKIP ALARMS: XX MIN**”. To disable a Field Test select “Disable – Test Mode”.

Selecting “Start – Automatic Inspection” will set the Automatic Inspections to be flagged as Ready To Run. A message is recorded to the event buffer indicating that the tests have been started locally. It is also sent to the Office. Automatic Inspections will not run if the Crossing Configuration is set to Island Only, Remote, or CP Collector.

11.2 MANUAL INSPECTIONS

This mode allows for the entry of monthly manual inspections. The list of tests will also include any failed automated tests that now require manual entry. All automated and manual tests must pass in order for results to be sent to the office and for automatic inspections to run again. If all tests have not passed by month end, all remaining results will be sent to the office and saved to that month. Automatic tests will then be able to restart.

12.0 INSTALLATION NOTES

12.1 GCP NODE INSTALLATION

GCP nodes should be installed top to bottom, redundant to standalone. For instance, if there is 1 redundant GCP onsite, and 1 standalone, the main unit on the first GCP would be node GCP1 and the standby would be node GCP2. The main unit on the second GCP would be node GCP3. Odd numbered nodes should always be assigned to the Main units and even to the Standby. The user will be prompted to install the odd numbered nodes first to reduce the number of transfers necessary for install. The user may be prompted to install other nodes between the installation of GCP1 and GCP3.

12.2 BATTERY/LAMP CALIBRATIONS

Upon initial site setup, the user will be prompted to calibrate batteries and lamps. Any time that a battery or lamp is changed out, calibrations should be repeated. These portions of site setup can be performed individually onboard the SEAR II unit. They are located under MENU>SITE SETUP>LAMP CALIBRATIONS and MENU>SITE SETUP>BATTERY CALIBRATIONS. The user can then follow the prompts to re-calibrate.

NOTES

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