

SSIT-1001(b)8 Constant Warning and Motion Sensors - Equipment

Purpose

These instructions describe the tests for verifying the configuration and functionality of Constant Warning or Motion Sensor equipment used at grade crossing warning systems.

Test Intervals

Tests are performed when installed, as required, and at least once a month as prescribed in *SSIT-7 Signal System Inspection and Test Intervals*.

Rail Safety

Employee shall ensure the site is safe for employees, the public, vehicular traffic and train operations as defined in *SSIT-8 Protecting Train Operations* prior to performing tests and inspections.

Equipment Manuals

A copy of the relevant constant warning time device and/or motion sensor equipment manufacturer's manual(s) should be on hand for reference when performing tests.

Procedure

The following tests are to be performed for each controller at each crossing warning system location:

Step	Procedure
1. Verify Calibration	Variable values shall not differ more than 20% from previous check, and shall still fall within manufacturer's specifications. Calibrating variables are outlined in manufacturer's manual. Depending on equipment type, variables may include and are not limited to: <ul style="list-style-type: none"> • Approach Receiver Signal • Train in Island • Island Occupancy • Distance Voltage • Reference Voltage
2. Review Data Recorder	→ Check data recorder time and date. → Check data recorder log data for repeating errors. → Check data recorder log for short approaches. If short warning times: Report to the ONR S&C Supervisor immediately. Arrange for Positive Protection as instructed. Investigate to determine the root cause of the short approach and make necessary adjustments or repairs.
3. Switch to Standby Unit (if applicable)	<ul style="list-style-type: none"> • Perform procedure to switch to standby operation as outlined in manufacturer's manual. If standby not available: Proceed to step 6.
4. Check Power Standby Switchover (if applicable)	→ Check control system switches to standby unit.

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Step	Procedure
5. Switch back to Normal (if applicable)	<ul style="list-style-type: none"> Perform procedure to switch back to normal operation as outlined in manufacturer's manual.
6. Update Log Book	<ul style="list-style-type: none"> Add any notes of issues observed, or adjustments made.
7. Complete Test Form	<ul style="list-style-type: none"> Record the test as completed on Grade Crossing Warning System Test Form.

Example Values

The following table displays variables and values that may be found for constant warning and motion sensing equipment. Actual values and variable names are equipment specific and should be checked against manufacturer's specifications:

Equipment	Variable	Description
Safetran MS2000 Safetran GCP3000 Safetran GCP4000	EZ	Track rectifier signal level: 100 = No train 0 = Train in island
	EX	Voltage level (varies with approach track impedance): 100 = Ideal 75 = Normal 50 = Poor
	Z1	DC voltage representing EZ value: 6-10 VDC = No train 0 VDC = Train in island
	Z2	Check voltage: +/- 0.5V of Z1
Safetran Model 62585	E _{DX}	DC voltage: Varies with ballast conditions.
	E _{DZ}	DC voltage: Varies with approach track impedance.
	ED	Distance Voltage: E _{DX} + E _{DZ}
	E _{CK}	DC reference voltage
	E _{RC}	Check receiver voltage
Harmon HXP-3 Harmon PMD-3	RX	Value of distance to shunt as percentage of total train: 100 = No train 0 = Train in island
	PH	Phase angle of impedance characteristics of approach circuit: Simultaneous decrease of RX & PH indicates deteriorating ballast