

Grade Crossing Control Systems

SGCP4000 / MS4000

Rail Automation

The electronic, microprocessor-based SGCP4000 / MS4000, manufactured by Siemens, is a modular microprocessor-controlled motion detector system that is designed to reliably detect the motion of an approaching train and start the crossing warning system.

Feature Summary

- Available in single track non-redundant and single track redundant models.
- Uses proven GCP 4000 modules (which are all hot swappable and interchangeable with GCP 4000 systems):
 - CPUI+ Module
 - Track Module (complete with island, two configurable vital inputs, vital XR output, and vital Island output)
- Reduced system size for installation in a smaller equipment house.
- Provides a simple user interface in order to easily program and setup the unit.
- The SGCP4000 / MS4000 programming can be confirmed by an Office Configuration Check Number (OCCN) and the track calibration information can be confirmed by a Track Check Number (TCN).
- Provides a diagnostic history log and train move history log with being capable of interfacing to a SEARII Recorder/ Analyzer for additional recording capability.
- Supports the use of an external island using a vital input.
- Supports the use of an Office Configuration Editor allowing minimum programming steps to be specified by design.
- Transfer module can be removed and a strap can be used to force either main or standby operation without the transfer module present.
- Can be configured as a basic predictor.
- The SGCP4000 / MS4000 comes ready for field installation; requiring minimum configuration per the railroad's approved wiring or installation instructions to place the unit into operation.

Theory of operation

Operation of the SGCP4000 / MS4000 is based on the maximum impedance of an unoccupied track circuit, which is determined by the location of the termination shunts and the rate of change in the impedance resulting from the physical location of a train as it moves within the track circuit.

- The SGCP4000 / MS4000 applies a constant current AC signal to the track and measures the level of the resulting voltage. The level varies with approach track impedance, which also varies with the distance of the train from the crossing.
- The SGCP4000 / MS4000 will detect the inbound motion of a train and activate the crossing warning equipment.
- When the train has cleared the crossing, the SGCP4000 / MS4000 no longer senses the inbound motion and allows the crossing warning signal system to recover.
- When a train stops before reaching the crossing, or reverses direction and backs away from the crossing, the SGCP4000 / MS4000 system will recover after a short (programmable) time-out as inbound motion is no longer detected.



Dimensional Data

Parameter

Chassis Dimensions:

Parameter	Values	
Width:	10.16 In.	(25.806 cm)
Depth:	10.86 In.	(27.584 cm)
Height:	14.25 In.	(36.195 cm)

Chassis Weight:

Single Track (A80490)	Empty 11.8 lbs (3.742 kg)	Full Module Complement 17.5 lbs (7.938 kg)
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Module Weights:

CPU2+ (A80403)	1.25 lbs (0.567 kg)
Track (A80418)	1.00 lbs (0.454 kg)
Transfer (A80406)	0.83 lbs (0.567 kg)

Miscellaneous Data

Parameter

MS Response Time	5 seconds
Relay Drive Outputs (VO):	400 to 1000-ohm load
Minimum Output Current @ medium transmit power:	200 mA
Minimum Output Current @ high transmit power:	400 mA
Surge Protection:	Requires surge protection
Typical Monitoring and Storage:	CPU2+
IO State Changes:	3000 minimum
Train Moves:	100 minimum

SGCP4000 / MS4000 Ordering Information

Item Description

SGCP4000 / MS4000
SGCP4000 / MS4000, A80490

Cards

CPU II+	8000-80403-0001
Track Module	8000-80418-0001
Transfer Module	8000-80406-0001

Documentation

Motion Sensor 4000 (MS 4000) Installation and Instruction Manual	SIG-00-11-02
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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.