

Table 3: SGCP4000/MS4000 Menu System

ITEM	VALUE
PROG	Top Level Program Label
AFRQ	NONE , 86, 114, 156, 211, 285, 348, 430, 525, 645, 790, 970, 44, 45, 46, 151, 250, 267, 326, 392, 452, 522, 560, 630, 686, 753, 816, 881, 979, 999, 85.5, 86.5, 87, 113, 113.5, 114.5, 115, 155, 115.5, 156.5, 157, 210, 212, 284, 286, 347, 349, 429, 431, 523, 527, 643, 647, 788, 792, 968, 972 Hz
DIRN	UNI , BI, BIWD
TLVL	MED , HI
APKU	8 – 99 SEC (DEFAULT = 15)
UAX	Not Used , 0-99 SEC (UAX + UAX Pickup Delay)
ISL	Not Used , EXT, 2.14, 3.24, 4.9, 7.1, 10.0, 13.2, 17.5, 2.63, 4.0, 5.9, 8.3, 11.5, 15.2, 20.2 kHz
IPKU	0-6 SEC (Internal) 0 – 99 SEC (External)
ADVD	Sub-menu Program Label
PSTR	OFF , 1-80
PTIM	0-99 MIN
SHNT	OFF , 5 – 75
LWEZ	OFF , 50 – 80
LTIM	2 – 99 MIN
LWEX	34-39
COMP	1000 – 2000 (DEFAULT = 1300)
<u>OOS</u>	Out of Service (OOS) Menu
APPR	Calibration of Approaches only
XNG	Calibration if Approaches and Island
<u>CAL</u>	Calibration Menu
MCAL	Approach Calibration
ICAL	Island Calibration
<u>VERS</u>	Software and Hardware Information
<u>TRWT</u>	Warning Time of previous train

Table 4: SGCP4000/MS4000 Operational Tests

Step 1	Check tracks for: <ul style="list-style-type: none"> Open transmit wire. Verify that the crossing activates and that EZ = 0. Open receive wire. Verify that the crossing activates and that EZ = 0.
Step 2	UAX, if used: Crossing activates when each remote line circuit that controls a UAX is de-energized or opened from the far end of the circuit. Pickup Delay time is correct when input closes.
Step 3	Out of Service, OOS, if this feature is used: 4-Character Display reflects time remaining in OOS
Step 4	If Positive Start, and/or Sudden Shunt Detection are used: <ul style="list-style-type: none"> Shunt at the appropriate point Take the required measurements Reprogram EZ threshold levels as required.

Finishing Step 4 of Table 4 completes the SGCP4000/MS4000 operational checks / tests. Proceed to Table 5, Train Detection, Warning Time, and Crossing Activation to verify proper motion sensor operation.

Table 5: Train Detection, Warning Times, and Crossing Operation

Step 1	EZ continuity check on train moves: <ul style="list-style-type: none"> Crossing devices activate and EZ value decreases smoothly (without rapid change) for an approaching train. Crossing devices turn off when island recovers after train move and the EZ rises smoothly (without rapid change) as the train recedes.
Step 2	Check warning times for inbound train moves on each approach including UAX operation.
Step 3	Check for proper gate / flasher / bell operation on all train moves.

WARNING

IF A RAPID CHANGE OCCURS IN THE VALUE OF EZ AT ANY TIME THE TRAIN IS MOVING WITHIN THE TERMINATION SHUNTS, TRACK DISCONTINUITY CAUSED BY A HIGH RESISTANCE BOND OR A DEFECTIVE COUPLER IS INDICATED. LOCATE AND CORRECT THE PROBLEM IMMEDIATELY.

THE RAILROAD PROCEDURES GOVERNING HOW TO TAKE A TRACK CIRCUIT OUT OF SERVICE SHALL BE FOLLOWED. THE INSTRUCTIONS IN THIS SECTION MAY BE FOLLOWED ONLY IF ALLOWED BY THE RAILROAD.

NOTE

All references to Section numbers are those section numbers found within the Siemens Simple Grade Crossing Predictor 4000 / Motion Sensor 4000 (SGCP4000/MS4000) Installation and Instruction Manual, SIG-00-11-02.



**QUICK REFERENCE GUIDE
INSTALL SGCP4000/MS4000**

Document Number **SIG-QG-11-01**
Version **A.2**

The following procedure should be used when installing Simple Grade Crossing Predictor 4000 / Motion Sensor 4000 (SGCP4000/MS4000), P/N 80495. Additional data is found in the Simple Grade Crossing Predictor 4000 / Motion Sensor 4000 (SGCP4000/MS4000), Installation and Instruction Manual, SIG-00-11-02.

WARNING

VERIFY THAT THE SGCP4000/MS4000 SOFTWARE, AND PROGRAMMING DATA ARE AS SPECIFIED BY THE RAILROAD'S OR AGENCY'S APPROVED DESIGN. FAILURE TO DO SO MAY LEAD TO INCORRECT OR UNSAFE OPERATION OF THE TRACK CIRCUIT.

FAILURE TO FOLLOW THE RAILROAD'S OR AGENCY'S APPROVED DESIGN REGARDING SIMPLE GRADE CROSSING 4000/MOTION SENSOR SETTINGS AND CALIBRATION MAY LEAD TO POSSIBLE UNSAFE OPERATION OF THE TRACK CIRCUIT.

FOLLOWING INSTALLATION OR AFTER ANY MENU CHANGES HAVE BEEN MADE, RECALIBRATE THE MOTION SENSOR AND TEST FOR PROPER OPERATION PER THE REQUIREMENTS SPECIFIED IN TABLES 8-1 THRU TABLE 8-3 OF SIG-00-11-02, SGCP4000/MS4000 INSTRUCTION AND INSTALLATION MANUAL.

CAUTION

IF ANY SGCP4000/MS4000 UNIT IS CALIBRATED IN POOR BALLAST CONDITIONS, IT MUST BE RE-CALIBRATED WHEN BALLAST CONDITIONS IMPROVE.

NOTE

Tables 1 – 5 provide information regarding menu navigation, the SGCP4000/MS4000 Menu System, Island shunt distances, GCP operation and final track verification are shown on the reverse page of this guide.

INSTALL SGCP4000/MS4000 UNITS

1. Install and connect all SGCP4000/MS4000 equipment per the railroad's or agency's approved design.
2. Connect all required wiring per the railroad's or agency's approved design.

CONFIGURE SGCP4000/MS4000:

1. Observe the face of the CPU Card. SGCP4000/MS4000 scrolls in the 4-Character Display (See Figure 2).
2. Press and release the SEL button. PROG appears in the 4-Character Display.
3. Press and release the SEL button. AFRQ appears in the 4-Character Display. If the desired parameter value is displayed, proceed to step 6. Otherwise, press and hold the SEL until the currently programmed value flashes on the display.
4. To move down the menu, press and release the NAV button to scroll through the menu until the desired frequency value appears. To move back up the menu, press and release the SEL button until the desired frequency value appears.

NOTE

Typically, the SEL button is used to select desired parameter values. However, when setting parameters in the AFRQ (approach frequency) and ISL (island frequency) portions of the menu, pressing the SEL button moves the parameter value back up the value list, eliminating the need to scroll all the way through the menu if a mistake in made in parameter value selection.

5. Press and hold the SEL button until SET TFRQ = XXXX? (e.g., SET TFRQ=4000?) appears in the 4-Character Display. Press and hold the SEL until WAIT appears. Release the SEL button. After the parameter value is saved, TFRQ=XXXX (e.g., TFRQ=4000 HZ) appears.
6. Continue programming the values per the railroad's or agency's approved design until all main menu items have been programmed. If no values from the Advanced (ADVD) menu require programming, proceed to step 8.
7. Press and release the SEL value when the ADVD sub-menu appears, and begin programming with the Positive Start EZ Value (PSTR) and program per the railroad's or agency's approved design until all sub-menu items have been programmed.
8. Once all required parameters have been programmed, proceed to the CALIBRATE SGCP4000/MS4000 section.

CALIBRATE SGCP4000/MS4000:

The SGCP4000/MS 4000 may operate using an internal island (ISL frequency is set) or an external island (EXT is set). The calibration process differs depending upon whether the internal or external island is selected.

1. Observe face of Track Card. The display scrolls GCAL, ICAL, the EZ value (e.g., Z180), the EX value (e.g., X103) and the Island value (e.g., I250). On the CPU card, LEDs 2 & 3 are unlit.
2. Observe face of the CPU Card. To calibrate the approach:
 - Navigate to the CAL menu. Press and release the SEL button. MCAL appears in the display.
 - Press and hold the SEL Button. Release the SEL Button when *CAL appears, as *CAL alternating with MCAL signifies that the calibration process has begun.
 - PASS or FAIL appears for twenty (20) seconds when calibration is complete.

WARNING

IF "FAIL" APPEARS ON THE DISPLAY AND CPU CARD LEDS DO NOT LIGHT, THE CALIBRATION PROCESS DID NOT COMPLETE. SHOULD THIS HAPPEN, CYCLE THE UNIT POWER AND THEN REPEAT THE APPROPRIATE STEP. IF THE UNIT FAILS TO COMPLETE THE CALIBRATION PROCESS, FURTHER TROUBLESHOOTING IS REQUIRED. REFER TO THE TROUBLESHOOTING SECTION OF THE SIEMENS SIMPLE GRADE CROSSING PREDICTOR 4000/MOTION SENSOR 4000 (SGCP4000/MS4000) INSTALLATION AND INSTRUCTION MANUAL, SIG-00-11-02.

3. If the internal island is enabled, proceed to Step 4. If the external island is enabled, proceed to Step 6.
4. Observe face of the CPU Card. To calibrate the island:
 - When the track ballast is good, connect a track test shunt (hardwire, 0.06-ohm, 0.2-ohm, or as required) across the track at the receiver track connections. When the ballast is poor, connect the shunt across the track at the point specified in Table 2, Island Shunt Distance. Verify solid connections of the shunt to each rail.

- ICAL appears in the display. Press the SEL Button until *CAL appears alternating with ICAL. Release the SEL Button. The calibration process begins.
 - *CAL and ICAL alternately flash during the calibration process.
 - PASS or FAIL appears for twenty (20) seconds when calibration is complete. When PASS appears, continue to Step 6. If FAIL appears, the CPU card LEDs do not light; refer to the WARNING on Page 3 of this guide.
5. Remove the test shunt.
 6. LEDs #2 & #3 on the CPU card should light following calibration; in that case, proceed to Table 4, SGCP4000/MS4000 Operational Tests on page 7 of this guide. If the LEDs do not light, proceed to the Troubleshooting section of the Siemens Simple Grade Crossing Predictor 4000/Motion Sensor 4000 (SGCP4000/MS4000) Installation and Instruction Manual, SIG-00-11-02.

VIEW SGCP4000/MS4000 HARDWARE & SOFTWARE VERSION DATA:

To view SGCP4000/MS4000 Hardware and Software Data:

1. Observe the face of the CPU Card. SGCP4000/MS4000 scrolls in the 4-Character Display (See Figure 2).
2. Press and release the SEL button. PROG appears in the 4-Character Display.
3. Press the NAV button to scroll down the menu until VERS appears.
4. Press and release the SEL button. Press the NAV button to scroll to the desired sub-menu (CP, VLP, TRK, or CFG).
5. On the desired sub-menu (e.g., CP), press and release the SEL button. The first parameter appears.
6. Review the parameter values by pressing the NAV to scroll through each value.
7. Move back up the menu by pressing and holding the NAV button for approximately 2 sec.

TO VIEW WARNING TIME OF THE PREVIOUS TRAIN

To view the Warning Time (in seconds) of the previous train:

1. Observe the face of the CPU Card. SGCP4000/MS4000 scrolls in the 4-Character Display (See Figure 2).
2. Press and release the SEL button. PROG appears in the 4-Character Display.
3. Press the NAV button to scroll down the menu until TRWT appears.
4. Press and release the SEL button. The Warning Time appears in the 4-Character Display.

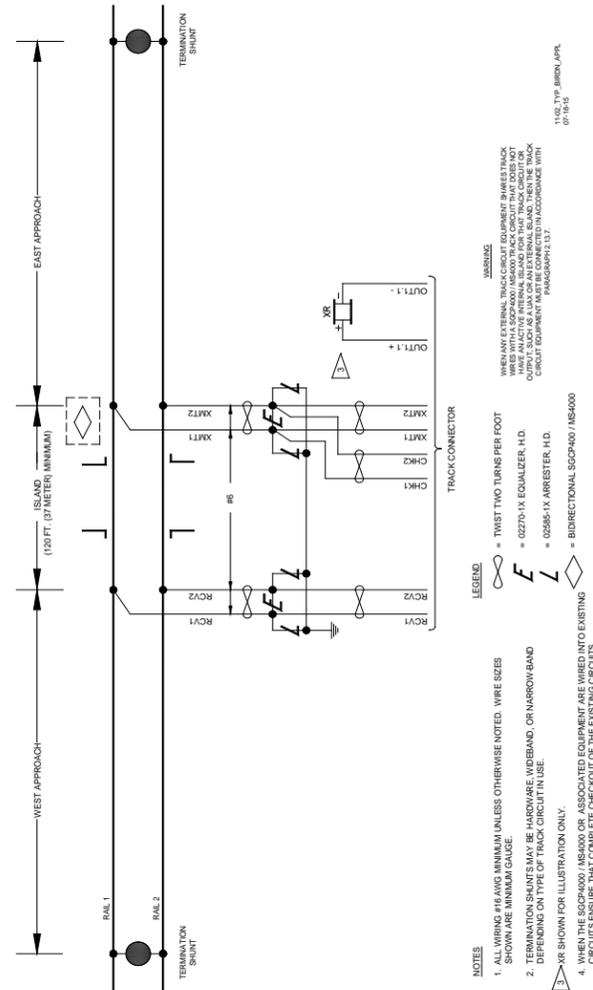


Figure 1: Typical SGCP4000/MS4000 Bidirectional Application

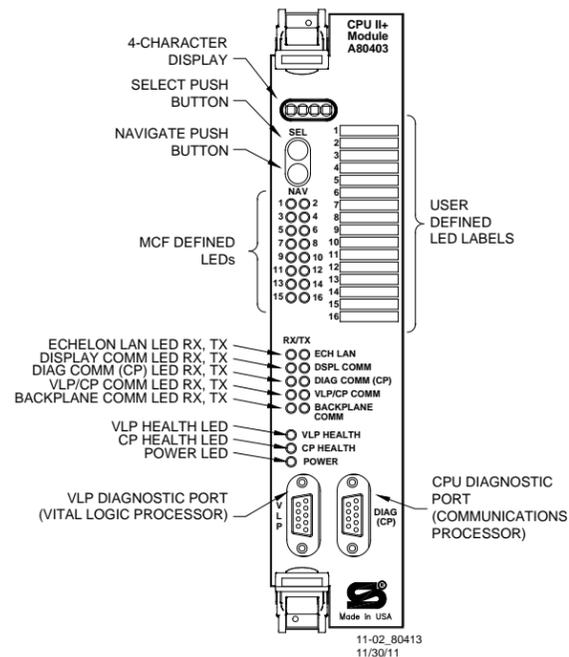


Figure 2: CPUii+ Module, A80403

Table 1: SGCP4000/MS4000 Menu Navigation

OPTION DESIRED	ACTION TAKEN
Move to the next item at the same menu level	Press NAV momentarily
Go down a main menu or move from the ADV menu to the Sub-Menu PSTR	Press SEL momentarily
Move to the next PARAMETER value	Press NAV momentarily
To modify a PARAMETER value	Hold SEL until currently set PARAMETER appears, press NAV multiple times until desired PARAMETER value appears, then hold SEL until the set parameter message (e.g., SET DIRN=UNI?) appears. Press and hold SEL button until WAIT appears. Release the SET button. Once the parameter is saved, DONE appears, and then the menu item just saved appears (e.g., DIRN=UNI) appears in the 4-Character Display
To scroll down through PARAMETER items	Each time NAV is pressed a new PARAMETER item appears
To SAVE CHANGES to modified PARAMETER values	Hold SEL until DONE appears
Go up one level (e.g., if in the AFRQ MENU editing frequency parameters, select to return to AFRQ at MAIN Menu level)	Hold NAV until BACK appears

Table 2: Island Shunt Distance

Island Freq (kHz)	Shunt Distance (Feet)			
	0.12 ohm Sensitivity	0.3 ohm Sensitivity	0.4 ohm Sensitivity	0.5 ohm Sensitivity
2.14	20	50	67	84
2.63	17	43	58	72
3.24	13	33	44	55
4.0	10.5	27	36	45
4.9	9.0	23	31	39
5.9	7.5	19	26	32
7.1	6.5	17	23	29
8.3	6.0	15	20	25
10.0	5.0	13	18	22
11.5	4.5	12	16	20
13.2	4.0	10	14	17
15.2	3.5	9	12	15
17.5	3.0	8	11	14
20.2	3.0	8	11	14

On Table 3, Main Menu titles are underlined. Default values are in **BOLD** text