APPENDIX A
INSTITUTIONAL AND ENGINEERING CONTROLS CERTIFICATION FORM

Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. **V00228**

Site Name Ballpark at St. George Station

Site Address: Between North Ramp and Jersey St., Block 2, Lots 20, 22, and Part of 15 Zip Code: 10301
City/Town: Staten Island
County: Richmond
Site Acreage: 52.000
Reporting Period: ~~May 31~~, 2021 to April 24 June 30, 2023

	YES	NO
1. Is the information above correct?	√	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	√
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	√
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period? NYCDOB Alteration Permits for Turf Field and Stormwater System, DOB electrical (interconnect), NYCDEP sewer (hydrant) **If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.** Copies of above listed permits attached.	√	☐
5. Is the site currently undergoing development?	☐	√

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	√	☐
7. Are all ICs in place and functioning as designed?	√	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative _____ Date _____

SITE NO. V00228 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
2-20 , 2-15 (part of) & 2-22	New York City Economic Development Corp	Ground Water Use Restriction
		Landuse Restriction

1) Declaration of Covenants shall run with the land
2) Prohibition of land use for purpose other than sports stadium, parking lots, esplanade
3)Prohibition of groundwater use
4)ECs - sub-slab methane venting system and gas monitoring system
5) Shall be no excavation unless prior approval by DEC:
deeper than 18 inch clean soil
No excavation deeper than 18 inch to prevent damage to demarcation layer
In paved areas - no excavation below underlaying imported subgrade layer
In areas covered by buildings - no excavation below the footprint of such structures and underlying imported subgrade materials.

Box 4

Description of Engineering Controls

Parcel	Engineering Control
2-20 , 2-15 (part of), & 2-22	Vapor Mitigation
	Cover System
	Subsurface Barriers

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the Engineering Control certification;

b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
√	

2. For each Engineering control listed in Box 4, I certify by checking "YES" below that all of the following statements are true:

(a) The Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment; storm damage of shoreline bulkhead/seawall requires repair

(c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

(d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

(e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
	√

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

David Aneiro (on behalf of the City of NY) 07/17/2023

Signature of Owner, Remedial Party or Designated Representative — Date

David Aneiro, SVP, Asset Management

IC CERTIFICATIONS
SITE NO. V00228

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as _____(Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

_____ _____
Signature of Owner, Remedial Party, or Designated Representative Date
Rendering Certification

EC CERTIFICATIONS

Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I _____ at _____,
print name print business address

am certifying as a Professional Engineer for the _____
(Owner or Remedial Party)

Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification	Stamp (Required for PE)	Date

NYC™ Buildings

Work Permit Department Of Buildings

Permit Number: S00604494-I1-GC

Permit Classification: ALTERATION

Address: STATEN ISLAND 75 RICHMOND TERRACE

Work on Floor(s): FLOOR NUMBER(S) 1 THROUGH 1

Total number of dwelling units at location: 0

Number of dwelling units occupied during construction: 0

Description: PROPOSED NEW TURF DESIGN AT RICHMOND COUNTY BANK BALLPARK.

Issued: 02/15/2022

Expires: 10/01/2022

Issued To: KEVIN BARRETT

Business: HUNTER ROBERTS CONSTRUCTI

License No: GC-032144

For detailed information regarding this permit, please log on to DOB NOW at www.nyc.gov/buildings.
Call 311 with any questions or complaints.

Borough Commissioner:

Commissioner of Buildings:

Tampering with or knowingly making a false entry in or falsely altering this permit is a crime that is punishable by a fine, imprisonment or both.

NYC™ Buildings

Work Permit Department Of Buildings

Permit Number: S00604494-S1-GC

Permit Classification: ALTERATION

Address: STATEN ISLAND 75 RICHMOND TERRACE

Work on Floor(s): OPEN SPACE

Total number of dwelling units at location: 0

Number of dwelling units occupied during construction: 0

Issued: 02/15/2022

Expires: 10/01/2022

Issued To: KEVIN BARRETT

Business: HUNTER ROBERTS CONSTRUCTI

License No: GC-032144

Description: PROPOSED CIVIL WORK RELATED TO THE INSTALLATION OF A NEW TURF DESIGN AT RICHMOND COUNTY BANK BALLPARK. INSTALLATION OF STORM DETENTION SYSTEM UNDER PERIMETER OF BALLFIELD; CONNECT TO EXISTING OUTLET PIPE; CONNECT PERFORATED DRAIN PIPES.

For detailed information regarding this permit, please log on to DOB NOW at www.nyc.gov/buildings.
Call 311 with any questions or complaints.

Borough Commissioner:

Commissioner of Buildings:

Tampering with or knowingly making a false entry in or falsely altering this permit is a crime that is punishable by a fine, imprisonment or both.

NYC Buildings

Work Permit Department Of Buildings

Permit Number: **S00441063-I1-EL**

Issued: **12/15/2020**

Expires: **02/25/2021**

Address: **75 RICHMOND TERRACE 10301**

Issued To: **ANTHONY MATRONE**

Business: **JAMES F. VOLPE ELEC'L**

License No: **010364**

Description: **General Wiring**

STATEN ISLAND YANKEES CITY WIDE FERRY SERVICE VOLPE JOB 4322

For detailed information regarding this permit, please log on to DOB NOW at www.nyc.gov/buildings.
Call 311 with any questions or complaints.

Borough Commissioner:

Commissioner of Buildings:

Tampering with or knowingly making a false entry in or falsely altering this permit is a crime that is punishable by a fine, imprisonment or both.

NYC Environmental Protection

Date: **10/17/2022**

BLOCK: **2**
LOT (S): **20**

Rohit T. Aggarwala
Commissioner

Anastasios Gerorgelis, P.E.
Deputy Commissioner
Bureau of Water &
Sewer Operations

connections@dep.nyc.gov

59-17 Junction Boulevard
Flushing, NY 11373

To Whom It May Concern:

This is to certify that the records of this bureau show that on **08/17/22**

20' of 8" IWM Replaced and Installed 125' of 6" DIP from 8"x6" TEE connection to Fire Hydrant.

was installed for:

premises at **75 Richmond Terrace (CUT on: Private Road)**

Borough of **Staten Island** by plumber **D. Cannizzaro**

under permit no. **S-Relay-0016796** and that the installation passes inspection by this department on that date.

Very truly yours,

M. Hossain

Muhammad E Hossain, PhD, PE
Chief, Connections

NYC Environmental Protection

To report unsafe working conditions dial: **311**

WORK PERMIT

Property Address: 75 RICHMOND TERRACE, STATEN ISLAND, NY 10301

Borough: Staten Island

Permit Number: S-Relay-0016796

Address AKA:

Block/Lot: 00002 / 0020

Location of Conn. (Cut-On St.) RICHMOND TERRACE

Property Owner: REGINA MARENGO

Property Use: Commercial

Licensed Master Plumber: DAVID, CANNIZZARO

Permit Issuance Date: 7/15/2022

Permit Expiration Date: 9/13/2022

License Number: 001643

S0002315	S-Relay-0016796	Water

Phone Number: 7184829600

Permit Type	Tap Size	Service Size	Material	Length of Service (ft)	Size of City Main (in)	Conditions
Water Relay		8				

The exact location is feet of the and feet of the

Other property address, if applicable:

This is not a street opening permit

No new permits will be issued until all open charges have been satisfied including, but not limited to, charges against the subject premises and/or charges incurred on the account of the Licensed Master Plumber. All phases of the permitting process, inclusive of the tap card, must be completed for satisfaction of the permit requirements. Failure to provide necessary documentation is considered a violation of the rules. As per Chapter 20, 20-01 (c), "If a Licensed Master Plumber or meter repair company fails to comply with three (3) or more provisions, standards or requirements of these Rules, or the terms and conditions of any permit already issued under these Rules, during a three (3) month period, the Commissioner or his/her designee, in accordance with 24-309 of the Administrative Code, may make a determination not to issue additional permits from applications submitted from such licensed Master Plumber or meter repair company until such things as all the violations or non-compliances are corrected."

Tampering with or knowingly making a false entry in or falsely altering this permit is a crime that is punishable by a fine, imprisonment or both.

Commissioner of Dept. of Environmental Protection:

Enclosure 2

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No. **V00228**

Site Name Ballpark at St. George Station **(North Site 1)**

Site Address: Between North Ramp and Jersey St., Block 2, Lot ~~20~~ 22 Zip Code: 10301
City/Town: Staten Island
County: Richmond
Site Acreage: ~~52.000~~ 8.9

Reporting Period: ~~May 31, 2021 to May 31, 2023~~ April 24, 2021 - June 15, 2023

	YES	NO
1. Is the information above correct?	☐	☒

If NO, include handwritten above or on a separate sheet. Corrections added above - this Certification Form pertains to the portion of V00228 identified as North Site 1 (Block 2, Lot 22).

2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☒
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☒
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☒

If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.

5. Is the site currently undergoing development?	☐	☒

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Commercial and Industrial	☒	☐
7. Are all ICs in place and functioning as designed?	☒	☐

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative Date

SITE NO. V00228 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control
2-~~20~~ 22	New York City Economic Development Corp	Ground Water Use Restriction
		Landuse Restriction

1) Declaration of Covenants shall run with the land
2) Prohibition of land use for purpose other than sports stadium, parking lots, esplanade
3)Prohibition of groundwater use
4)ECs - sub-slab methane venting system and gas monitoring system
5) Shall be no excavation unless prior approval by DEC:
deeper than 18 inch clean soil
No excavation deeper than 18 inch to prevent damage to demarcation layer
In paved areas - no excavation below underlaying imported subgrade layer
In areas covered by buildings - no excavation below the footprint of such structures and underlying imported subgrade materials.

Box 4

Description of Engineering Controls

Parcel	Engineering Control	Completed? Y/N
2-~~20~~ 22	Vapor Mitigation	Y
	Cover System	N
	Subsurface Barriers	Y

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the Engineering Control certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

   YES ☐ NO ☐

2. For each Engineering control listed in Box 4, I certify by checking "YES" below that all of the following statements are true:

   (a) The Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

   YES ☐ NO ☐

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

_____ _____

Signature of Owner, Remedial Party or Designated Representative Date

IC CERTIFICATIONS
SITE NO. V00228

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I David Aneiro (print name) at NYCEDC - One Liberty Plaza 14th Floor NY, NY 10006 (print business address),

am certifying as Owner (on behalf of the City of NY) (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

07/17/2023
Date

EC CERTIFICATIONS

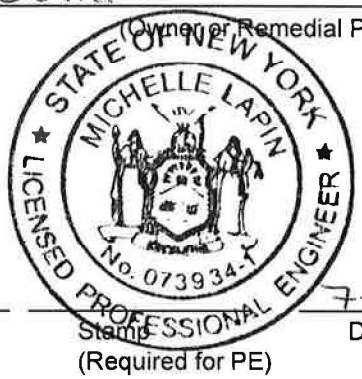
Box 7

Professional Engineer Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Michelle Lapin at AKRF, Inc.
print name print business address

am certifying as a Professional Engineer for the Owner
(Owner or Remedial Party)



Signature of Professional Engineer, for the Owner or Remedial Party, Rendering Certification

Stamp (Required for PE)

7-14-23
Date

Enclosure 2
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Site Management Periodic Review Report Notice
Institutional and Engineering Controls Certification Form

Site Details **Box 1**

Site No: V00228
Site Name: Ballpark at St. George Station (Empire Outlets South Site 2)

Site Address: Between North Ramp and Jersey Street Block 2 Lot 15 Zip Code: 10301
City/Town: Staten Island
County: Richmond
Site Acreage: 2.2

Reporting Period: October 13, 2022 to July 13, 2023

	YES	NO
1. Is the information above correct?	[X]	[ ]
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	[ ]	[X]
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	[ ]	[X]
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	[ ]	[X]
If you answered YES to questions 2 thru 4, include documentation or evidence that documentation has been previously submitted with this certification form.		
5. Is the site currently undergoing development?	[ ]	[X]

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Restricted-Residential, Commercial, and Industrial	[X]	[ ]
7. Are all ICs in place and functioning as designed?	[X]	

IF THE ANSWER TO EITHER QUESTION 6 OR 7 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Sandra Allbin (AGENT) 07-14-23

Signature of Owner, Remedial Party or Designated Representative Date

SITE NO. V00228
Site Name Ballpark at St. George Station (Empire Outlets – South Site 2)

Description of Institutional Controls **Box 3**

Parcel	Owner	Institutional Control
2-15	NYC EDC	Ground Water Use Restriction
		Land Use Restriction

1) Declaration of Covenants shall run with the land

2) Prohibition of land use for purpose other than commercial use
   - See Attachment II – Letter from New York State Department of Environmental Conservation t New York City Economic Development Corporation re: Deed Restriction Modification.

3) Prohibition of groundwater use
4) ECs - sub-slab methane venting system and gas monitoring system
5) Shall be no excavation unless prior approval by DEC:
   - In paved areas - no excavation below underlaying imported subgrade layer
   - In areas covered by buildings - no excavation below the footprint of such structures and underlying imported subgrade materials.

Description of Engineering Controls **Box 4**

Parcel	Engineering Control
2-15	Vapor Mitigation
	Cover System
	Subsurface Barriers
	Methane monitoring system

Box 5

Periodic Review Report (PRR) Certification Statements

1. I certify by checking "YES" below that:

   a) the Periodic Review report and all attachments were prepared under the direction of, and reviewed by, the party making the Engineering Control certification;

   b) to the best of my knowledge and belief, the work and conclusions described in this certification are in accordance with the requirements of the site remedial program, and generally accepted engineering practices; and the information presented is accurate and compete.

YES	NO
[X]	[ ]

2. For each Engineering control listed in Box 4, I certify by checking "YES" below that all of the following statements are true:

   (a) The Engineering Control(s) employed at this site is unchanged since the date that the Control was put in-place, or was last approved by the Department;

   (b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment; see the note regarding scheduled maintenance at the end of this form.

   (c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control;

   (d) nothing has occurred that would constitute a violation or failure to comply with the Site Management Plan for this Control; and

   (e) if a financial assurance mechanism is required by the oversight document for the site, the mechanism remains valid and sufficient for its intended purpose established in the document.

YES	NO
[X]	[ ]

IF THE ANSWER TO QUESTION 2 IS NO, sign and date below and DO NOT COMPLETE THE REST OF THIS FORM. Otherwise continue.

A Corrective Measures Work Plan must be submitted along with this form to address these issues.

Signature of Owner, Remedial Party or Designated Representative

07-14-23
Date

IC CERTIFICATIONS
SITE NO. 130086

Box 6

SITE OWNER OR DESIGNATED REPRESENTATIVE SIGNATURE

I certify that all information and statements in Boxes 1,2, and 3 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Isidoro Albino (print name) at Empire Outlets 353 Richmond Terrace, Suite: MGMT Staten Island, NY 10301 (print business address),

am certifying as REMEDIAL PARTY (Owner or Remedial Party)

for the Site named in the Site Details Section of this form.

Isidoro Albino (AGENT) — Signature of Owner, Remedial Party, or Designated Representative Rendering Certification

07-14-23 — Date

EC CERTIFICATIONS

Box 7

Qualified Environmental Professional Signature

I certify that all information in Boxes 4 and 5 are true. I understand that a false statement made herein is punishable as a Class "A" misdemeanor, pursuant to Section 210.45 of the Penal Law.

I Gary Rozmus (print name) at GEI Consultants, Inc., P.C, 1000 New York Ave., Huntington Station, NY (print business address),

am certifying as a Qualified Environmental Professional for the Empire Outlets

(~~Owner or~~ Remedial Party)

Signature of Qualified Environmental Professional, for the Owner or Remedial Party, Rendering Certification	Stamp (Required for PE)	Date
		7/14/2023

Scheduled Maintenance

As noted in the annual inspection report prepared by GEI Consultants, dated July 14, 2023, the Institutional and Engineering Controls at the site are functioning, and are protective of human health. However, maintenance is required on some elements of the methane monitoring system as described below:

- GEI will order the appropriate quick connect fitting to enable multi gas meter readings to be taken from SSDS monitoring point MP 2 during future inspections.
- The system installer (Donovan Electric) will consult with their supplier and/or the manufacturer (Honeywell) regarding the two detectors that failed to connect to the Bluetooth app and the five detectors that failed span calibration. These seven detectors will be repaired, replaced, or reconfigured, as necessary, to restore functionality.
- Following restoration of the above mentioned seven methane detectors, GEI will bump test the detectors to confirm functionality. Field calibration will be performed by GEI if bump test readings are found to be out of range.

Implementation of these maintenance activities is underway, and documentation of completion of the maintenance work will be reported in the September 2023 quarterly inspection report.

APPENDIX B

ANNUAL SITE INSPECTION RECORDS

ANNUAL SITE INSPECTION LOG
BALLPARK AT ST. GEORGE STATION

Inspected by: Robert Bowden / TRC Weather/Temperature: 42°, Overcast @ 9AM / 46°, Overcast @ 2PM

Date: 1/6/23 Recent Significant Weather Events? Yes (No)

If Yes, Describe: _____

			Status: Satisf	Status: Unsatisf	Corrective Action Required	Comment Number	Correction Date
SOIL COVER AREAS	BALLFIELD AREA	Bare spots		✓	Left Field Playground	1	
		Sparse growth areas		✓	Next to Big Wheel Sit	1	
		Weed encroachment	✓		—		
		Stressed vegetation	✓		—		
		Infield clay area	✓		New Turf Field	3	
		Settlement or subsistence	✓		—		
		Cracks			—		
		Burrowing/animal intrusion	✓		—		
		Erosion		✓	Shoreline	2	
		Any recent excavation/disturbance?	(Y)	N	Excavation work in Right field outfield completed / restored	4	
		If yes, was cover adequately repaired?	(Y)	N			
	WESTERN WOODED AREA	Bare spots	✓	OK'	—		
		Sparse growth areas	✓	OK	—		
		Weed encroachment		✓	Heavily vegetated	5	
		Stressed vegetation	✓		—		
		Mulch coverage	✓		—		
		Settlement or subsistence	✓		—		
		Cracks	✓		—		
		Burrowing/animal intrusion	✓		—		
		Erosion		✓	Shoreline	2	
		Visibility of white filter fabric	✓		—		
		Any recent excavation/disturbance?	Y	(N)	—		
		If yes, was cover adequately repaired?	Y	N	—		
	SS-7 REMOVAL AREA	Bare spots	✓		—		
		Sparse growth areas	✓		—		
		Weed encroachment	✓		—		
		Stressed vegetation	✓		—		
		Cracks	✓		—		
		Burrowing/animal intrusion	✓		—		
		Erosion		✓	Shoreline	2	
		Visibility of white filter fabric	✓				
		Any recent excavation/disturbance?	Y	(N)			
		If yes, was cover adequately repaired?	Y	N	—		
	LAWN AREA (ALONG ROAD	Bare spots	✓		—		
		Sparse growth areas	✓		—		
		Weed encroachment	✓		—		
		Stressed vegetation	✓		—		
		Cracks	✓		—		
		Burrowing/animal intrusion	✓		—		
		Erosion	✓		—		
		Any recent excavation/disturbance?	(Y)	N	Excavation work		
		If yes, was cover adequately repaired?	(Y)	N	complete/restored	4	
PAVED SURFACES (STADIUM ROADWAY/ESPLANADE)	CONCRETE, ASPHALT, PAVERS	Cracks		✓	Roadway / sidewalk	6	
		Depressions	✓		—		
		Bumps	✓		—		
		Potholes		✓	Roadway	6	
		Exposed underlying soil	✓		—		
		Any recent pavement repairs?	Y	(N)	—		
		If yes, was pavement adequately repaired?			—		

Comments are provided at the end of the log

Inspector's Initials: RB

ANNUAL SITE INSPECTION LOG
BALLPARK AT ST. GEORGE STATION

			Status: Satisf	Status: Unsatisf	Corrective Action Required	Comment Number	Correction Date
PAVED SURFACES (EMPIRE OUTLETS ROADWAY/ESPLANADE)	CONCRETE, ASPHALT, PAVERS	Cracks					
		Depressions		✓	Few surface cracks	7	
		Bumps	✓		—		
		Potholes	✓		—		
		Exposed underlying soil	✓		—		
		Any recent pavement repairs?	Y	(N)			
		If yes, was pavement adequately repaired?			—		
SHORELINE PROTECTION		**SD-4 Shore Remediation Area**					
		Riprap coverage		✓	Requires riprap.	8	
		Visibility of gravel backfill	✓		—		
		Visibility of black filter fabric		✓	Fabric visible @ wall	8	
		Photodocumentation conducted?	(Y)	N			
		SD-6 Shore Remediation Area					
		Riprap coverage	✓		—		
		Visibility of gravel backfill	✓		—		
		Visibility of black filter fabric	✓		—		
		Photodocumentation conducted?	(Y)	N	—		
		Remaining Riprap Areas					
		Stormwater Outfalls					
		Erosion		✓	Needed Riprap	9	
		Riprap coverage		✓	Partially blocked.	9	
GAS VENTING & MONITORING SYSTEMS	EXTERIOR VENT PIPING	**Northwestern (Left Field) Vent Piping**					
		General condition	✓		—		
		Corrosion	✓		—		
		Cap/Screen	✓		—		
		Fencing		✓	Fencing disturbed	10	
		Photodocumentation conducted?	(Y)	N	—		
		Vegetation Overgrowth		✓	Veg on fencing.	10	
		Northeastern (Right Field) Vent Piping					
		General condition	✓		—		
		Corrosion	✓		—		
		Cap/Screen	✓		—		
		Fencing	✓		—		
		Photodocumentation conducted?	(Y)	N	—		
		Vegetation Overgrowth	✓		—		
	INTERIOR FLOOR SLAB						
		Cracking		✓	Few Cracks require repair	11	
		Holes	✓		—		
		Joints	✓		—		
	RECORD-KEEPING	Quarterly calibration documentation	✓		New System as of 6/22	12	
		Quarterly inspection documentation	✓				
		Status reports	✓				
		History reports	✓		History Report downloaded	12	
		Key event reports					

Inspector Signature: RC Bowden Inspector Name: Robert Bowden / TRC.

Date: 1/6/23 PE License #:

COMMENTS

COMMENT NUMBER	COMMENT
1	Few barespots along outside of outfield fencing and former playground area. Mud / rutting adjacent to Big Wheel Site fence. (Photos 3, 5, 8, 9)
2	Shoreline erosion of soil cap where bulkhead collapsed. Requires bulkhead replacement and riprap stabilization. Black filter fabric visible at SD-4 area beneath exposed curb (Photos 23, 24, 25)

ANNUAL SITE INSPECTION LOG
BALLPARK AT ST. GEORGE STATION

COMMENTS

COMMENT NUMBER	COMMENT
3	Ballpark infield and outfield replaced with turf surface. (Photo 38)
4	Construction at Northeast corner of Ballpark Site has been completed and restored. Active construction not observed at West of Ballpark Railroad Site, but appears under construction. (Photos 9, 15)
5	Western Wooded area is heavily vegetated - Excess weed growth present in areas. (Photo 28)
6	Surface pavement and sidewalk cracking and potholes present between Ballpark and Harbor. (Photos 7)
7	Few surface pavement cracks along Richmond Terrace. Pavers between ~~Ballpark~~ Empire Outlets and Harbor are in good condition. (Photos 12, 13, 14)
8	Stone riprap required to supplement existing shore / concrete debris cover at SD-4 location. Black filter fabric visible at SD-4 undermined curb / bulkhead (Photos 22, 23, 24)
9	Stormwater outfalls along shoreline for central and western areas are partially blocked. Erosion present at shoreline bulkhead. (Photos 17, 21, 26).
10	Fencing partially damaged @ 3rd base vent pipes. Fencing is covered in vegetation. Fencing installed @ 1st base vent pipes following construction work. (Photos 10, 11)
11	Building (Stadium) lower level hallway concrete slab cracks require resealing / repair (Photos 35, 36)
12	New Sentry Commander installed in June 2022. System does not have printer but History Report downloaded. (Photos 33, 34)

Inspector's Initials: RB

Date: 1/6/23

GAS SURVEY LOG
BALLPARK AT ST. GEORGE STATION

DATE: 1/6/23
WEATHER: 9 AM: 42° Overcast
OUTSIDE TEMPERATURE: 2 PM: 46° Overcast light rain.
WIND: Wind: ESE @ 3 mph.
INSTRUMENTS: FID, PID, Landfill Gas Detector
SAMPLER NAME/COMPANY: Robert Bowden / TRC.

LOCATION	TIME	CONCENTRATION (ppm or %) FID	PID	CH4/O2/CO2	NOTES/COMMENTS
1st Base Side Vent Pipes					
East 1 (easternmost	1115	ND	ND	0/0.0/21.3	☆ New fenced-in enclosure @ vent pipes
East 2	1115	ND	ND	0/0.0/21.4	
East 3	1115	ND	ND	0/0.0/21.4	
East 4 (westernmost	1115	ND	ND	0/0.0/21.4	
3rd Base Side Vent Pipes					
West 1 (easternmost	1105	ND	ND	0/0.0/21.3	Fencing partially removed/open on west end / top of enclosures
West 2	1105	ND	ND	0/0.0/21.3	
West 3	1105	ND	ND	0/0.0/21.3	Vegitation on fencing.
West 4 (westernmost	1105	ND	ND	0/0.0/21.3	
Maintenance Room (3rd Base	1017	ND	ND	0/0.1/20.5	Overhead door is closed
Mechanical Room (Rm 1.01.07	1018	ND	ND	0/0.0/20.5	door closed
Commissary (Rm 1.03.05)	1025	ND	ND	0/0.0/20.7	door closed
Hallway	1026	ND	ND	0/0.0/20.6	
Switch Gear Room (Rm 1.01.10	1028	ND	ND	0/0.0/20.6	door closed
Wet Vending Room	1033	ND	ND	0/0.0/20.7	door closed
Storage (next to Fire Pump Rm	1041	ND	ND	0/0.0/21.1	pad-locked door - closed
Fire Pump Room (Room 1.12.01	1037	ND	ND	0/0.0/21.0	door closed
Hallway	1043	ND	ND	0/0.0/21.1	
Mechanical Room (Room 1.17.03	1047	ND	ND	0/0.0/21.0	door closed.
Open Unoccupied Space (Area F	1055	ND	ND	0/0.0/21.1	Accessed w/ Ray Overhead door closed prior to access

NOTES:
Normal oxygen level is 19.5-21% in ambient ai

FID/PID - TVA Thermo 2020 - PINE ID 42411

$CH_4/CO_2/O_2$ - Gem-2000 - PINE ID 15004

ND - Not detected above background.

☆ Heating system running during inspection

ANNUAL SITE INSPECTION LOG
BALLPARK AT ST. GEORGE STATION

Inspected by: Robert Bowden / TRC Weather/Temperature: 81°, Partly Sunny.

Date: 6/30/23 Recent Significant Weather Events? Yes (No)

If Yes, Describe:

			Status		Corrective Action Required	Comment Number	Correction Date
			Satisf	Unsatisf			
SOIL COVER AREAS	BALLFIELD AREA	Bare spots		✓	Left Field Playground	1	
		Sparse growth areas		✓	Next to Big Wheel Slide	1	
		Weed encroachment		✓	Excess Veg @ Vent Pipes		
		Stressed vegetation	✓		-		
		Infield clay area	✓		Turf Field	3	
		Settlement or subsistence	✓		-		
		Cracks	✓		-		
		Burrowing/animal intrusion	✓		-		
		Erosion		✓	Shoreline	2	
		Any recent excavation/disturbance?	(Y)	N	Ferry Terminal /		
		If yes, was cover adequately repaired?	(Y)	N	Excavation outside Right field restored	4	
	WESTERN WOODED AREA	Bare spots	✓		-		
		Sparse growth areas	✓		-		
		Weed encroachment		✓	Heavily vegetated	5	
		Stressed vegetation	✓		-		
		Mulch coverage	✓		-		
		Settlement or subsistence	✓		-		
		Cracks	✓		-		
		Burrowing/animal intrusion	✓		-		
		Erosion		✓	Shoreline	2	
		Visibility of white filter fabric	✓		-		
		Any recent excavation/disturbance?	Y	(N)	-		
		If yes, was cover adequately repaired?	Y	N	-		
	SS-7 REMOVAL AREA	Bare spots	✓		-		
		Sparse growth areas	✓		-		
		Weed encroachment	✓		-		
		Stressed vegetation	✓		-		
		Cracks	✓		-		
		Burrowing/animal intrusion	✓		-		
		Erosion		✓	Shoreline	2	
		Visibility of white filter fabric	✓		-		
		Any recent excavation/disturbance?	Y	(N)	-		
		If yes, was cover adequately repaired?	Y	N	-		
	LAWN AREA (ALONG ROAD	Bare spots	✓		-		
		Sparse growth areas	✓		-		
		Weed encroachment	✓		-		
		Stressed vegetation	✓		-		
		Cracks	✓		-		
		Burrowing/animal intrusion	✓		-		
		Erosion	✓		-		
		Any recent excavation/disturbance?	(Y)	N	Excavation (complete)		
		If yes, was cover adequately repaired?	(Y)	N	Restored	4	
PAVED SURFACES (STADIUM ROADWAY/ESPLANADE)	CONCRETE, ASPHALT, PAVERS	Cracks		✓	Roadway / sidewalk	6	
		Depressions	✓		-		
		Bumps	✓		-		
		Potholes		✓	Roadway		
		Exposed underlying soil	✓		-		
		Any recent pavement repairs?	Y	(N)	-		
		If yes, was pavement adequately repaired?			-		

Comments are provided at the end of the log

Inspector's Initials: RB

ANNUAL SITE INSPECTION LOG
BALLPARK AT ST. GEORGE STATION

			Status		Corrective Action Required	Comment Number	Correction Date
			Satisf	Unsatisf			
PAVED SURFACES (EMPIRE OUTLETS ROADWAY/ESPLANADE)	CONCRETE, ASPHALT, PAVERS	Cracks					
		Depressions		✓	Few Surface Cracks	7	
		Bumps	✓		—		
		Potholes	✓		—		
		Exposed underlying soil	✓		—		
		Any recent pavement repairs?	Y	(N)	—		
		If yes, was pavement adequately repaired?			—		
SHORELINE PROTECTION		**SD-4 Shore Remediation Area**					
		Riprap coverage		✓	Requires Riprap	8	
		Visibility of gravel backfill	✓		—		
		Visibility of black filter fabric		✓	Fabric visible in wall	8	
		Photodocumentation conducted?	(Y)	N	—		
		SD-6 Shore Remediation Area					
		Riprap coverage	✓		—		
		Visibility of gravel backfill	✓		—		
		Visibility of black filter fabric	✓		—		
		Photodocumentation conducted?	(Y)	N	—		
		Remaining Riprap Areas					
		Stormwater Outfalls					
		Erosion		✓	Requires RipRap	9	
		Riprap coverage		✓	Partially blocked	9	
GAS VENTING & MONITORING SYSTEMS	EXTERIOR VENT PIPING	**Northwestern (Left Field) Vent Piping**					
		General condition	✓		—		
		Corrosion	✓		—		
		Cap/Screen	✓		—		
		Fencing		✓	Fencing disturbed	10	
		Photodocumentation conducted?	(Y)	N	—		
		Vegetation Overgrowth			Excess Veg on fence	10	
		Northeastern (Right Field) Vent Piping					
		General condition	✓		—		
		Corrosion	✓		—		
		Cap/Screen	✓		—		
		Fencing	✓		—		
		Photodocumentation conducted?	(Y)	N	—		
		Vegetation Overgrowth		✓	Excess Veg in Area	10	
	INTERIOR FLOOR SLAB						
		Cracking		✓	Few Cracks requires Repair	11	
		Holes	✓		—		
		Joints	✓		—		
	RECORD-KEEPING	Quarterly calibration documentation	✓		Cal'd on 6/8/23	12	
		Quarterly inspection documentation	✓		History Report downloaded	12	
		Status reports	✓		—		
		History reports	✓		History Report downloaded	12	
		Key event reports					

Inspector Signature: RC Bowden Inspector Name: Robert Bowden / TRC

Date: 6/30/23 PE License #:

COMMENTS

COMMENT NUMBER	COMMENT
1	Few bare spots along outside of outfield fencing and former playground area. Mud / Rutting at fencing adjacent to Big Wheel Site (Photos 3, 5, 8, 9)
2	Shoreline erosion at soil cap where bulkhead collapsed. Requires bulkhead replacement and riprap stabilization. Black filter fabric visible @ SD-4 area beneath exposed curb (Photos 23, 24, 25).

ANNUAL SITE INSPECTION LOG
BALLPARK AT ST. GEORGE STATION

COMMENTS

COMMENT NUMBER	COMMENT
3	Ballpark infield and outfield new turf surface (Photos 37, 38).
4	Construction @ NE corner of Ballpark Site and Ferry Terminal has been completed. No active construction ongoing @ West of Ballpark Rail Road Site but under construction. Parking Garage not completed / still under construction. (Photos 2, 9, 11, 12, 13, 15, 16).
5	Western wooded area is heavily vegetated - Excess weed growth present in areas. (Photo 28).
6	Surface pavement and sidewalk cracking and potholes present between ballpark and shoreline (Photo 7).
7	few surface pavement cracks along Wall Street. Pavers between Empire Outlets and Shoreline are in good condition. Asphalt and pavers in area of New Ferry Terminal are in good condition (Photos 12, 14)
8	Stone riprap required to supplement existing shore / concrete debris cover @ SD-4 area. Black filter fabric visible at SD-4 area and curb / bulkhead is undermined (Photos 22, 23, 24, 25)
9	Stormwater outfalls along shoreline for central and western areas are partially blocked. Erosion present at shoreline bulkhead (Photos 17, 21, 26).
10	Fencing partially damaged @ 3rd base vent pipes and fencing is covered in vegetation. Excess vegetation noted inside fencing @ 1st Base vent pipes (Photos 9, 10, 11).
11	Stadium lower level hallway concrete slab cracks require resealing / repair (Photos 34, 35).
12	Sentry Commander gas monitoring system installed June 2022 and calibrated June 2023. History Report downloaded during inspection (Photos 32, 33).

Inspector's Initials: RB

Date: 6/30/23

GAS SURVEY LOG
BALLPARK AT ST. GEORGE STATION

DATE: 6/30/23
WEATHER: 81°, Partly Sunny
OUTSIDE TEMPERATURE: 81°
WIND: 9 mph, NE
INSTRUMENTS: FID, PID, Landfill Gas Detector
SAMPLER NAME/COMPANY: Robert Bowden / TRC

LOCATION	TIME	CONCENTRATION (ppm or %) FID	PID	CH4/O2/CO2	NOTES/COMMENTS
1st Base Side Vent Pipes:					
East 1 (easternmost)	1247	0.0	0.1	0/21.3/0.0	Fenced-in enclosure @ vent pipes.
East 2		0.0	0.1		- Excess vegetation around vent pipes
East 3		0.0	0.1		
East 4 (westernmost)		0.0	0.1		
3rd Base Side Vent Pipes:					
West 1 (easternmost)	1244	0.0	0.1	0/21.5/0.0	Fencing partially removed/open on West end / top of enclosure
West 2					
West 3					Excess vegetation at fencing
West 4 (westernmost)					
Maintenance Room (3rd Base)	1205	0.0	0.0	0/20.7/0.0	Overhead door / garage door open
Mechanical Room (Rm 1.01.07)	1208	0.1	0.0	0/20.7/0.0	door closed
Commissary (Rm 1.03.05)	1211	0.0	0.0	0/20.7/0.1	door closed - Workers in commissary
Hallway	1212	0.0	0.0	0/20.6/0.1	
Switch Gear Room (Rm 1.01.10)	1210	0.0	0.0	0/20.7/0.1	door closed
Wet Vending Room	1215	0.0	0.0	0/20.7/0.0	door closed
Storage (next to Fire Pump Rm)	1223	0.0	0.1	0/21.0/0.0	door closed
VALVE ROOM Fire Pump Room (Room 1.12.01)	1221	0.0	2.8	0/21.1/0.0	* Solvent odor, source unknown
Hallway	1225	0.0	0.0	0/21.0/0.0	
Mechanical Room (Room 1.17.03)	1230	0.0	0.1	0/21.0/0.0	door closed
Open Unoccupied Space (Area F)	1235	0.0	0.1	0/21.0/0.0	overhead door closed

NOTES:
Normal oxygen level is 19.5-21% in ambient air.

FID/PID - TVA Thermo 2020 - PINE ID 217144
Isobutylene - 100ppm - PINE
Methane - 10,000 ppm, PINE -
$CH_4/CO_2/O_2$ - GFM 5000 - PINE ID - 213417
$CO_2/CH_4/N_2$ Gas Mixture - SDS #G-715
Lot # 304-402394561-1
Exp: 4/6/26

APPENDIX C

TRC SITE INSPECTION PHOTOGRAPHS

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 1: Stadium west plaza area (looking from stadium stairs to the north at the harbor).

Photo 2: Adjacent former NY Wheel construction site to the west of the stadium. Gravel-covered observation wheel location is to the right of building.

Photo 3: Bare spot of landscaped area located outside of centerfield of Ballpark outfield fencing.

Photo 4: Landscaped area outside of centerfield of Ballpark outfield fencing.

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 5: Bare spots and rutting present adjacent to fencing between Ballpark area and Big Wheel Site (looking north).

Photo 6: Landscaped area located between right field stadium wall and harbor.

Photo 7: Surface pavement cracking at roadway located between right field stadium wall and harbor.

Photo 8: Bare spots at former playground located outside left field stadium wall.

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 9: Ground restored following former trenching performed as part of construction activities adjacent to 1st Base Side Vent Pipes.

Photo 10: Vegetation covering fencing and damaged fencing at 3rd Base Side Vent Pipes.

Photo 11: 1st Base Side Vent Pipes.

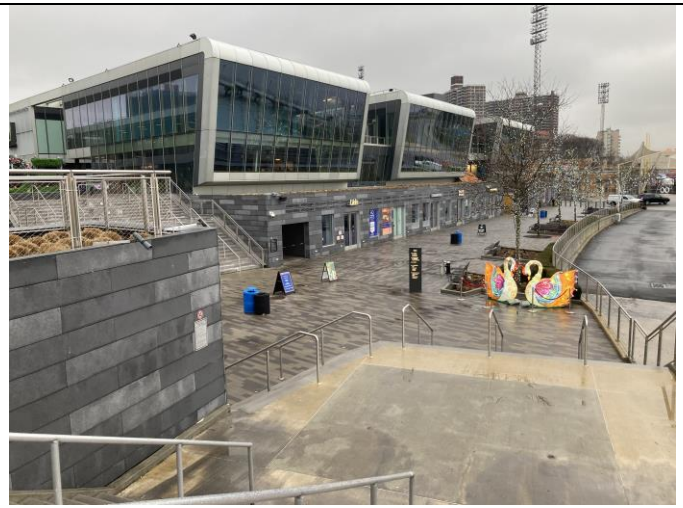


Photo 12: Paver sidewalk and paved roadway located between Empire Outlets and harbor (looking west).

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 13: Paver sidewalk located between Empire Outlets and harbor (looking east).

Photo 14: Paved concrete sidewalk, pavers, and roadway located west of ballpark Site (looking south).

Photo 15: Railroad track located to the west of the stadium.

Photo 16: Adjacent NY Wheel construction site to the west of the stadium.

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 17: Site stormwater outfall from the central retention basin. Outlet is partially blocked with gravel.

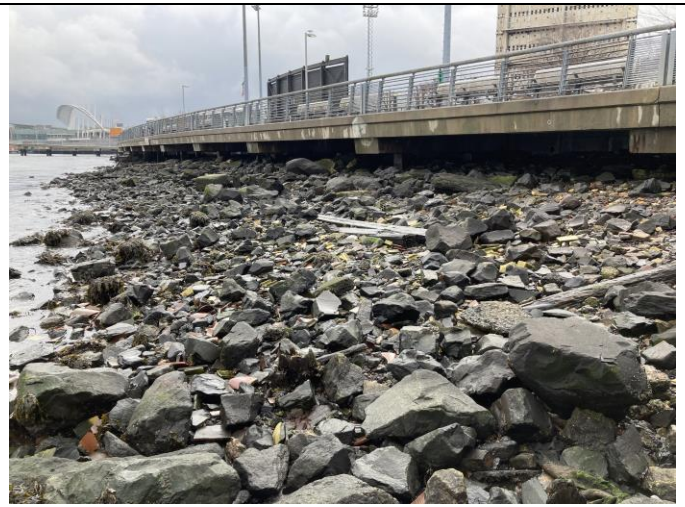


Photo 18: Site shoreline adjacent to the stadium west plaza and 911 Memorial (looking East).

Photo 19: Location of stone covered SD-6 sediment capped area is in the center part of the photo and extends below plaza deck.

Photo 20: Site shoreline adjacent to the stadium west plaza and 911 Memorial (looking West).

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 21: NYCDEP sewer outfall along shoreline and adjacent to NY Wheel construction Site.

Photo 22: Site shoreline adjacent to NY Wheel construction Site (looking West).

Photo 23: Partially collapsed fencing adjacent to shoreline bulkhead wall at western end of NY Wheel construction Site.

Photo 24: Location of stone covered SD-4 sediment capped area along the shoreline adjacent to NY Wheel construction Site. Black filter fabric is partially exposed under bulkhead erosion.

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 25: Partially collapsed shoreline bulkhead wall adjacent to the NY Wheel construction Site.

Photo 26: Site stormwater outfall from the western retention basin. Outlet is partially blocked with gravel.

Photo 27: Remains of a former timber sheet pile wall supported by large quarry stones along western wooded Site area. Retains shoreline stone/gravel covered area and protecting shoreline.

Photo 28: Soil covered wooded area at the west end of the Site. Ground is heavily vegetated.

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 29: Construction entrance at west end of NY Wheel construction Site.

Photo 30: Site shoreline west of the former timber sheet pile/stone wall (looking east).

Photo 31: Partially covered soil pile located east of Big Wheel Site (1).

Photo 32: Partially covered soil pile located east of Big Wheel Site (2).

Appendix C
Site Inspection Photograph Log
January 6, 2023

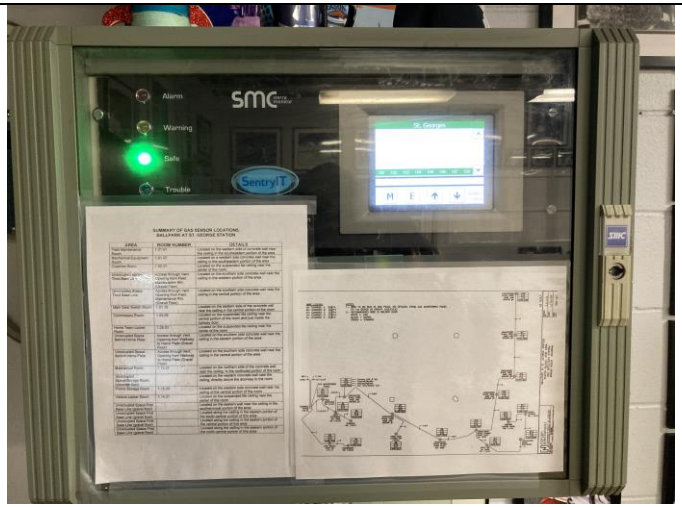


Photo 33: Inspection of indoor combustible gas monitoring system panel enclosure located within the ballfield maintenance office. The new panel was installed in June 2022.

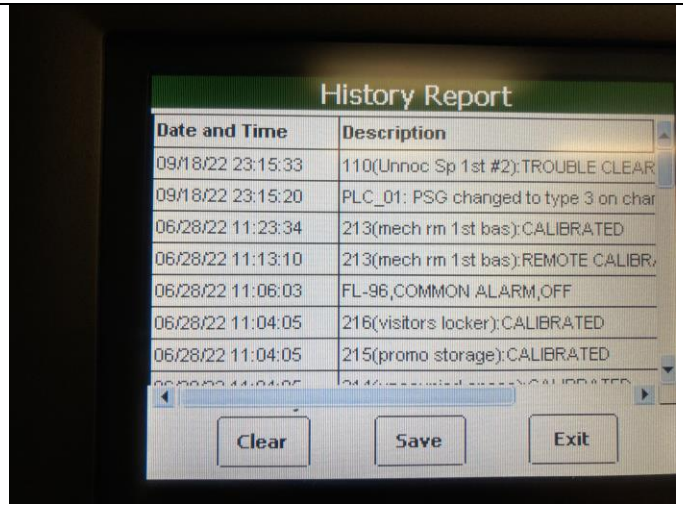


Photo 34: Inspection of indoor combustible gas monitoring system panel History Report.

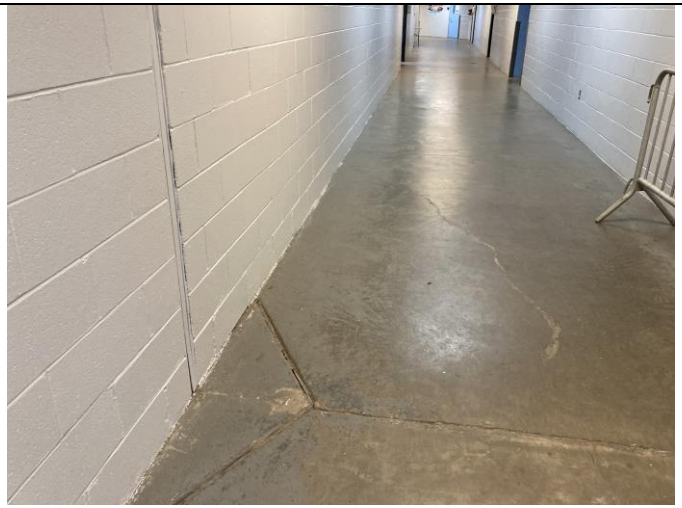


Photo 35: Concrete slab floor crack in main hallway; cracks previously filled with some filler worn away (1).

Photo 36: Concrete slab floor crack in main hallway; cracks previously filled with some filler worn away (2).

Appendix C
Site Inspection Photograph Log
January 6, 2023

Photo 37: Inspection of gas survey sensor in Fire Pump Room of Ballpark.

Photo 38: Outfield and infield replaced with turf surface. Field formerly was grassed soil-covered outfield and clay soil-covered infield ballfield areas (looking northwest).

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 1: Stadium west plaza area (looking from stadium stairs to the north at the harbor).

Photo 2: Adjacent NY Wheel construction site to the west of the stadium. Gravel-covered observation wheel location is to the right of building.

Photo 3: Bare spot of landscaped area located outside of centerfield of Ballpark outfield fencing.

Photo 4: Landscaped area outside of centerfield of Ballpark outfield fencing.

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 5: Bare spots and rutting present adjacent to fencing between Ballpark area and Big Wheel Site (looking south).

Photo 6: Landscaped area located between right field stadium wall and shoreline.

Photo 7: Surface pavement cracking at roadway located between right field stadium wall and shoreline.

Photo 8: Bare spots at former playground located outside left field stadium wall.

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 9: Ground restored following former trenching performed as part of construction activities adjacent to 1st Base Side Vent Pipes.

Photo 10: Vegetation covering fencing and damaged fencing at 3rd Base Side Vent Pipes.

Photo 11: Excess vegetation at 1st Base Side Vent Pipes.

Photo 12: Paver installation at NYC Ferry Terminal.

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 13: NYC Ferry Terminal.

Photo 14: Paved concrete sidewalk, pavers, and roadway located west of ballpark Site (looking north).

Photo 15: Big Wheel Site and Railroad track located to the west of the stadium.

Photo 16: Adjacent NY Wheel construction site to the west of the stadium.

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 17: Site stormwater outfall from the central retention basin. Outlet is partially blocked with gravel.

Photo 18: Site shoreline adjacent to the stadium west plaza and 911 Memorial (looking East).

Photo 19: Location of stone covered SD-6 sediment capped area is in the center part of the photo and extends below plaza deck.

Photo 20: Site shoreline adjacent to the stadium west plaza and 911 Memorial (looking West).

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 21: NYCDEP sewer outfall along shoreline and adjacent to NY Wheel construction Site.

Photo 22: Site shoreline adjacent to NY Wheel construction Site (looking West).

Photo 23: Partially collapsed shoreline bulkhead wall at western end of NY Wheel construction Site.

Photo 24: Location of eroded fill supporting the bulkhead wall along the shoreline adjacent to NY Wheel construction Site. Black filter fabric is partially exposed under bulkhead erosion.

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 25: Partially collapsed shoreline bulkhead wall at western end of NY Wheel construction Site.

Photo 26: Site stormwater outfall from the western retention basin. Outlet is partially blocked with gravel.

Photo 27: Remains of a former timber sheet pile wall supported by large quarry stones along western wooded Site area. Retains shoreline stone/gravel covered area and protecting shoreline.

Photo 28: Soil covered wooded area at the west end of the Site. Ground is heavily vegetated.

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 29: Construction entrance at west end of NY Wheel construction Site.

Photo 30: Partially covered soil pile located east of Big Wheel Site on adjacent MTA property (1).

Photo 31: Partially covered soil pile located east of Big Wheel Site along Bank Street (2).

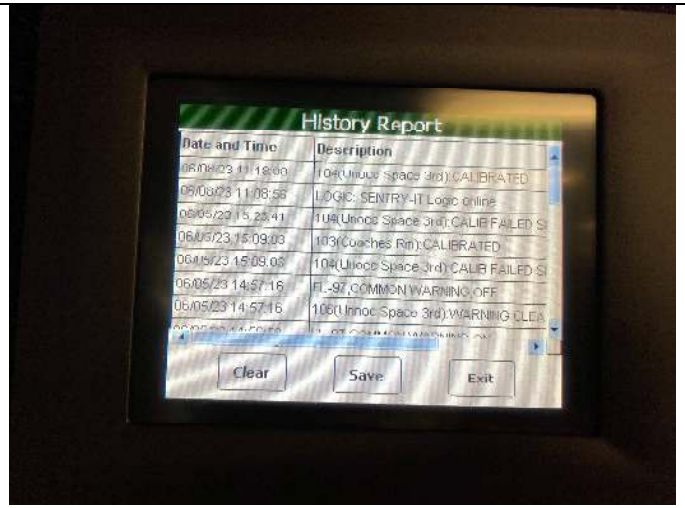


Photo 32: Inspection of indoor combustible gas monitoring system panel History Report.

Appendix C
Site Inspection Photograph Log
June 30, 2023

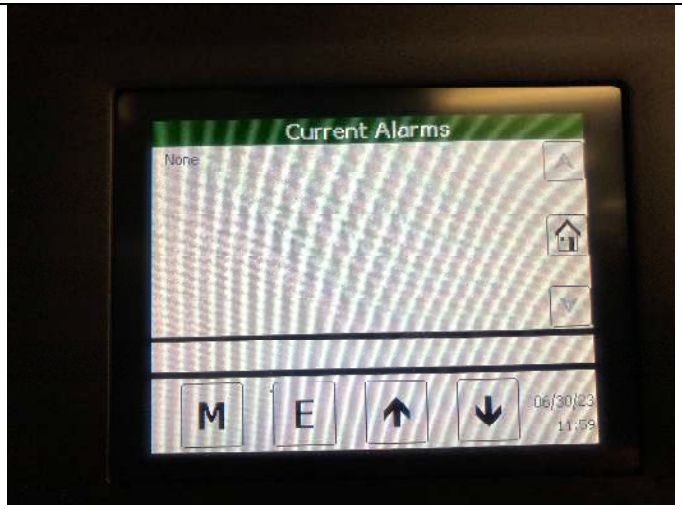


Photo 33: Inspection of indoor combustible gas monitoring system panel Alarms Report.

Photo 34: Concrete slab floor crack in main hallway; cracks previously filled with some filler worn away (1).

Photo 35: Concrete slab floor crack in main hallway; cracks previously filled with some filler worn away (2).

Photo 36: Inspection of gas survey sensor in area beneath first base bleachers at Ballpark.

Appendix C
Site Inspection Photograph Log
June 30, 2023

Photo 37: Outfield and infield replaced with turf surface. Field formerly was grassed soil-covered outfield and clay soil-covered infield ballfield areas (looking southeast).

Photo 38: Outfield and infield replaced with turf surface. Field formerly was grassed soil-covered outfield and clay soil-covered infield ballfield areas (looking northwest).

APPENDIX D
STADIUM GAS MONITORING SYSTEM
INSPECTION RECORDS

6/28/2022 Tag Module # Description
######### 213(mech rm 1st bas):CALIBRATED
######### 213(mech rm 1st bas):REMOTE CALIBRATION
######### FL-96,COMMON ALARM,OFF
######### 216(visitors locker):CALIBRATED
######### 215(promo storage):CALIBRATED
######### 214(unocupied space):CALIBRATED
######### FL-97,COMMON WARNING,OFF
######### 213(mech rm 1st bas):WARNING CLEARED
######### 213(mech rm 1st bas):ALARM CLEARED
######### FL-97,COMMON WARNING,ON
######### FL-96,COMMON ALARM,ON
######### 213(mech rm 1st bas):WARNING
######### 213(mech rm 1st bas):ALARM
######### FL-95,SYSTEM TROUBLE,OFF
######### 215(D07):TROUBLE CLEARED
######### 214(D06):TROUBLE CLEARED
######### 213(D05):TROUBLE CLEARED
######### 216(D08):TROUBLE CLEARED
######### LOGIC: SENTRY-IT Logic online
######### 216(D08):TROUBLE bits=256
######### 215(D07):TROUBLE bits=256
######### 214(D06):TROUBLE bits=256
######### 213(D05):TROUBLE bits=256
######### 216(D08):TROUBLE CLEARED
######### 215(D07):TROUBLE CLEARED
######### 214(D06):TROUBLE CLEARED
######### 213(D05):TROUBLE CLEARED
######### 216(D08):TROUBLE bits=256
######### 215(D07):TROUBLE bits=256
######### 214(D06):TROUBLE bits=256
######### 216(D08):TROUBLE CLEARED
######### 215(D07):TROUBLE CLEARED
######### 214(D06):TROUBLE CLEARED
######### 213(D05):TROUBLE CLEARED

6/5/2023 2 Tag Module # Description

######## 104(Unocc Space 3rd):CALIB FAILED SPAN(23.40)
######## 103(Coaches Rm):CALIBRATED
######## 104(Unocc Space 3rd):CALIB FAILED SPAN(23.34)
######## FL-97,COMMON WARNING,OFF
######## 106(Unnoc Space 3rd):WARNING CLEARED
######## FL-97,COMMON WARNING,ON
######## 106(Unnoc Space 3rd):WARNING
######## 216(visitors locker):CALIBRATED
######## 215(promo storage):CALIBRATED
######## 214(unocupied space):CALIBRATED
######## 213(mech rm 1st bas):CALIBRATED
######## 204(Commisary):CALIBRATED
######## 203(Main Swtch Gear):CALIBRATED
######## 112(Unnoc Sp 1st #4):CALIBRATED
######## 111(Unnoc Sp 1st #3):CALIBRATED
######## 110(Unnoc Sp 1st #2):CALIBRATED
######## 109(Unnoc Sp 1st #1):CALIBRATED
######## 108(Unnoc Sp Behind):CALIBRATED
######## 107(Home Locker Rm):CALIBRATED
######## 106(Unnoc Space 3rd):CALIBRATED
######## 105(Unocc Space Hm):CALIBRATED
######## 102(Mech Rm 3rd):CALIBRATED
######## 101(FLD Maint Rm):CALIBRATED
######## 104(Unocc Space 3rd):CALIB FAILED SPAN(22.42)
######## 103(Coaches Rm):CALIB FAILED SPAN(24.39)
######## Start Sensor Discovery(SYSTEM:1)
######## Start Sensor Discovery(SYSTEM:1)
######## LOGIC: SENTRY-IT Logic online

6/8/2023 Tag Module # Description
######## 104(Unocc Space 3rd):CALIBRATED
######## LOGIC: SENTRY-IT Logic online
######## 104(Unocc Space 3rd):CALIB FAILED SPAN(23.40)
######## 103(Coaches Rm):CALIBRATED
######## 104(Unocc Space 3rd):CALIB FAILED SPAN(23.34)
######## FL-97,COMMON WARNING,OFF
######## 106(Unnoc Space 3rd):WARNING CLEARED
######## FL-97,COMMON WARNING,ON
######## 106(Unnoc Space 3rd):WARNING
######## 216(visitors locker):CALIBRATED
######## 215(promo storage):CALIBRATED
######## 214(unocupied space):CALIBRATED
######## 213(mech rm 1st bas):CALIBRATED
######## 204(Commisary):CALIBRATED
######## 203(Main Swtch Gear):CALIBRATED
######## 112(Unnoc Sp 1st #4):CALIBRATED
######## 111(Unnoc Sp 1st #3):CALIBRATED
######## 110(Unnoc Sp 1st #2):CALIBRATED
######## 109(Unnoc Sp 1st #1):CALIBRATED
######## 108(Unnoc Sp Behind):CALIBRATED
######## 107(Home Locker Rm):CALIBRATED
######## 106(Unnoc Space 3rd):CALIBRATED
######## 105(Unocc Space Hm):CALIBRATED
######## 102(Mech Rm 3rd):CALIBRATED
######## 104(Unocc Space 3rd):CALIB FAILED SPAN(22.42)
######## 101(FLD Maint Rm):CALIBRATED
######## Start Sensor Discovery(SYSTEM:1)
######## Start Sensor Discovery(SYSTEM:1)

Date and Time	Tag	Module #	Description
9/18/2022 23:15	110(Unnoc Sp 1st #2):TROUBLE CLEARED		
9/18/2022 23:15	PLC_01: PSG changed to type 3 on channel 10 [1]		
6/28/2022 11:23	213(mech rm 1st bas):CALIBRATED		
6/28/2022 11:13	213(mech rm 1st bas):REMOTE CALIBRATION		
6/28/2022 11:06	FL-96,COMMON ALARM,OFF		
6/28/2022 11:04	216(visitors locker):CALIBRATED		
6/28/2022 11:04	215(promo storage):CALIBRATED		
6/28/2022 11:04	214(unocupied space):CALIBRATED		
6/28/2022 11:01	FL-97,COMMON WARNING,OFF		
6/28/2022 11:01	213(mech rm 1st bas):WARNING CLEARED		
6/28/2022 11:01	213(mech rm 1st bas):ALARM CLEARED		
6/28/2022 10:58	FL-97,COMMON WARNING,ON		
6/28/2022 10:58	FL-96,COMMON ALARM,ON		
6/28/2022 10:58	213(mech rm 1st bas):WARNING		
6/28/2022 10:58	213(mech rm 1st bas):ALARM		
6/28/2022 10:09	FL-95,SYSTEM TROUBLE,OFF		
6/28/2022 10:09	215(D07):TROUBLE CLEARED		
6/28/2022 10:09	214(D06):TROUBLE CLEARED		
6/28/2022 10:09	213(D05):TROUBLE CLEARED		
6/28/2022 10:09	216(D08):TROUBLE CLEARED		
6/28/2022 10:05	LOGIC: SENTRY-IT Logic online		
6/28/2022 10:05	216(D08):TROUBLE bits=256		
6/28/2022 10:05	215(D07):TROUBLE bits=256		
6/28/2022 10:05	214(D06):TROUBLE bits=256		
6/28/2022 10:05	213(D05):TROUBLE bits=256		
6/28/2022 10:05	216(D08):TROUBLE CLEARED		
6/28/2022 10:05	215(D07):TROUBLE CLEARED		
6/28/2022 10:05	214(D06):TROUBLE CLEARED		
6/28/2022 10:05	213(D05):TROUBLE CLEARED		
6/28/2022 10:02	216(D08):TROUBLE bits=256		
6/28/2022 10:02	215(D07):TROUBLE bits=256		
6/28/2022 10:02	214(D06):TROUBLE bits=256		
6/28/2022 10:02	216(D08):TROUBLE CLEARED		
6/28/2022 10:02	215(D07):TROUBLE CLEARED		
6/28/2022 10:02	214(D06):TROUBLE CLEARED		
6/28/2022 10:02	213(D05):TROUBLE CLEARED		

Date and Time	Tag	Module #	Description
6/8/2023 11:18	104(Unocc Space 3rd):CALIBRATED		
6/8/2023 11:08	LOGIC: SENTRY-IT Logic online		
6/5/2023 15:23	104(Unocc Space 3rd):CALIB FAILED SPAN(23.40)		
6/5/2023 15:09	103(Coaches Rm):CALIBRATED		
6/5/2023 15:09	104(Unocc Space 3rd):CALIB FAILED SPAN(23.34)		
6/5/2023 14:57	FL-97,COMMON WARNING,OFF		
6/5/2023 14:57	106(Unnoc Space 3rd):WARNING CLEARED		
6/5/2023 14:56	FL-97,COMMON WARNING,ON		
6/5/2023 14:56	106(Unnoc Space 3rd):WARNING		
6/5/2023 14:32	216(visitors locker):CALIBRATED		
6/5/2023 14:32	215(promo storage):CALIBRATED		
6/5/2023 14:32	214(unocupied space):CALIBRATED		
6/5/2023 14:32	213(mech rm 1st bas):CALIBRATED		
6/5/2023 14:32	204(Commisary):CALIBRATED		
6/5/2023 14:32	203(Main Swtch Gear):CALIBRATED		
6/5/2023 14:32	112(Unnoc Sp 1st #4):CALIBRATED		
6/5/2023 14:32	111(Unnoc Sp 1st #3):CALIBRATED		
6/5/2023 14:32	110(Unnoc Sp 1st #2):CALIBRATED		
6/5/2023 14:32	109(Unnoc Sp 1st #1):CALIBRATED		
6/5/2023 14:32	108(Unnoc Sp Behind):CALIBRATED		
6/5/2023 14:32	107(Home Locker Rm):CALIBRATED		
6/5/2023 14:32	106(Unnoc Space 3rd):CALIBRATED		
6/5/2023 14:32	105(Unocc Space Hm):CALIBRATED		
6/5/2023 14:32	102(Mech Rm 3rd):CALIBRATED		
6/5/2023 14:32	104(Unocc Space 3rd):CALIB FAILED SPAN(22.42)		
6/5/2023 14:32	103(Coaches Rm):CALIB FAILED SPAN(24.39)		
6/5/2023 13:03	Start Sensor Discovery(SYSTEM:1)		
6/5/2023 13:02	Start Sensor Discovery(SYSTEM:1)		

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Sentry IT Controller Custom Configuration

Order Number:	**402427821 - SOI00357**	Date:	3/3/2022
Customer Name:	**Economy Plumbing (St Georges Ballpark)**	Tag:	St. Georges
Controller #:	1 License: 32	Node ID:	1
Model #:	# 5000-32-IT-4-2200-A32-0		

STACK MAP

Stack #3	Stack #4 *
Type: Open	Type: Open

Stack #1	Stack #2
Type: PSG	Type: PSG

QC Review

	Name	Date
Design Review	Jonathan Breede	3-Mar-22
Sales Review	Jonathan Breede	3-Mar-22
Engineering Review		

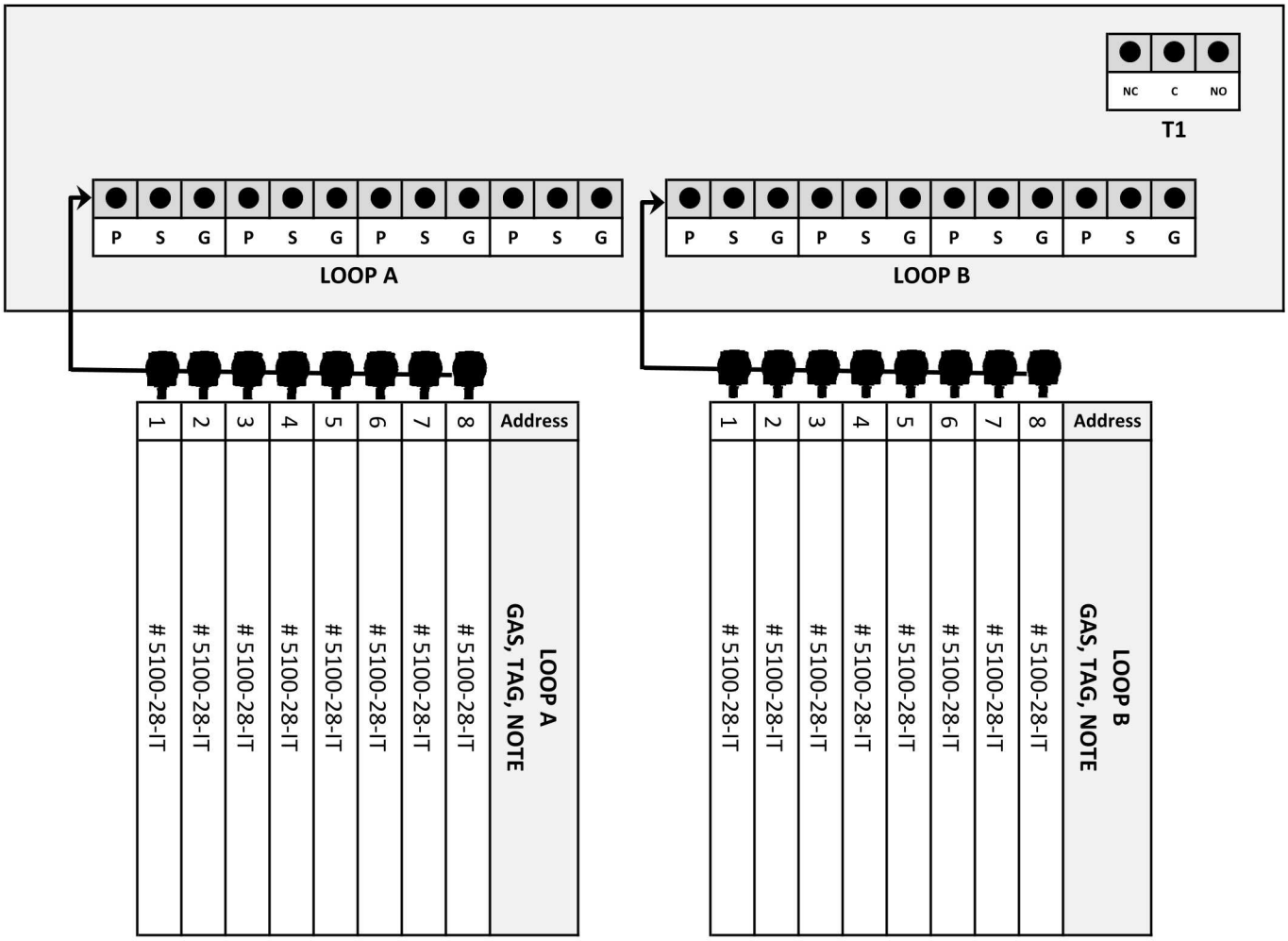
* Stack # 4, 5, 6 (Consult Factory)

Sentry IT Controller Custom Configuration

Stack # **1**

Order Number:	**402427821 - SOI00357**	Date:	3/3/2022
Customer Name:	**:conomy Plumbing (St Georges Ballpark**	Tag:	St. Georges
Controller #:	1	Node ID:	1

PSG (Top Board): Sentry Input



1	2	3	4	5	6	7	8	Address
# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	LOOP A GAS, TAG, NOTE

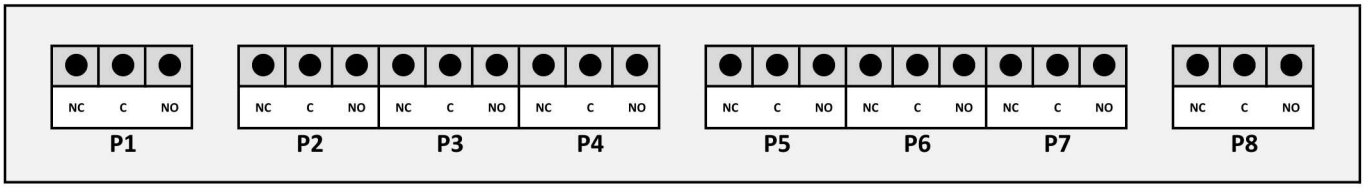
1	2	3	4	5	6	7	8	Address
# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	LOOP B GAS, TAG, NOTE

Sentry IT Controller Custom Configuration

Stack # 1

Order Number:	402427821 - SOI00357	Date:	3/3/2022
Customer Name:	Economy Plumbing (St Georges Ballpark	Tag:	St. Georges
Controller #:	1	Node ID:	1

PSG (Bottom Board): Relay Output



FUNCTION	SOURCE	QC	Date
Common Warning	Any Module Low	QC	Date
Common Warning	Any Module Low	QC	Date
Common Warning	Any Module Low	QC	Date
Common Alarm	Any Module High	QC	Date
Common Alarm	Any Module High	QC	Date
Common Alarm (Horn)	Any Module High	QC	Date
Common Trouble	Any Module Fault	QC	Date
Common Trouble	Any Module Fault	QC	Date

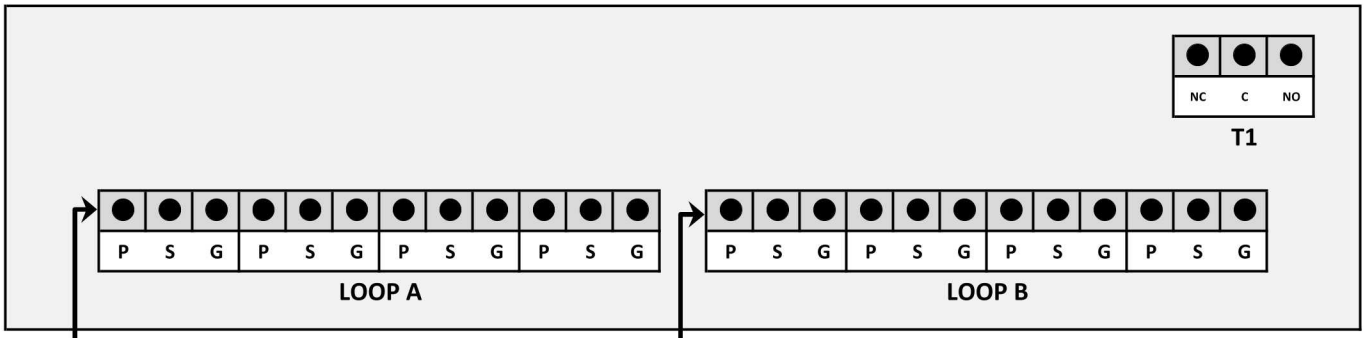
NOTES
P6 = ACK (Horn Silence)

Sentry IT Controller Custom Configuration

Stack # **2**

Order Number:	**402427821 - SOI00357**	Date:	3/3/2022
Customer Name:	**conomy Plumbing (St Georges Ballpark**	Tag:	St. Georges
Controller #:	1	Node ID:	1

PSG (Top Board): Sentry Input



1	2	3	4	5	6	7	8	Address
# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	LOOP A GAS, TAG, NOTE

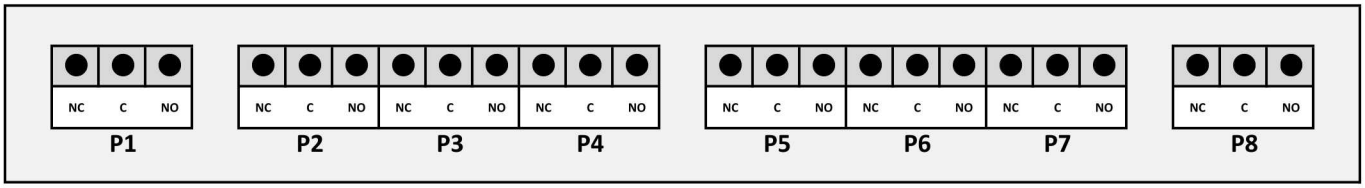
1	2	3	4	5	6	7	8	Address
# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	# 5100-28-IT	LOOP B GAS, TAG, NOTE

Sentry IT Controller Custom Configuration

Stack # **2**

Order Number:	402427821 - SOI00357	Date:	3/3/2022
Customer Name:	Economy Plumbing (St Georges Ballpark	Tag:	St. Georges
Controller #:	1	Node ID:	1

PSG (Bottom Board): Relay Output



FUNCTION	SOURCE	QC	Date
Common Warning	Any Module Low	QC	Date
Common Warning	Any Module Low	QC	Date
Common Warning	Any Module Low	QC	Date
Common Alarm	Any Module High	QC	Date
Common Alarm	Any Module High	QC	Date
Common Alarm (Horn)	Any Module High	QC	Date
Common Trouble	Any Module Fault	QC	Date
Common Trouble	Any Module Fault	QC	Date

NOTES

P6 = ACK (Horn Silence)

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Sentry IT Controller Custom Configuration

Order Number: **402427821 - SOI00357**
Customer Name: **' Plumbing (St Georges**
Controller #: 1

Date: 3/3/2022
Tag: St. Georges
Node ID: 1

Stack # **1**

SENTRY FORM

Sensor #	Module #	Module Type	Range	Units	Gas Tag	Module Tag	Alarm Level	Latch	Warning Level	Latch	Calibration Gas	Calib. Span	Calib. Interval
1	A01	# 5100-28-IT	0-100	%LEL	Methane	A01	40	Y	20	N	Methane	50	365
2	A02	# 5100-28-IT	0-100	%LEL	Methane	A02	40	Y	20	N	Methane	50	365
3	A03	# 5100-28-IT	0-100	%LEL	Methane	A03	40	Y	20	N	Methane	50	365
4	A04	# 5100-28-IT	0-100	%LEL	Methane	A04	40	Y	20	N	Methane	50	365
5	A05	# 5100-28-IT	0-100	%LEL	Methane	A05	40	Y	20	N	Methane	50	365
6	A06	# 5100-28-IT	0-100	%LEL	Methane	A06	40	Y	20	N	Methane	50	365
7	A07	# 5100-28-IT	0-100	%LEL	Methane	A07	40	Y	20	N	Methane	50	365
8	A08	# 5100-28-IT	0-100	%LEL	Methane	A08	40	Y	20	N	Methane	50	365
9	B01	# 5100-28-IT	0-100	%LEL	Methane	B01	40	Y	20	N	Methane	50	365
10	B02	# 5100-28-IT	0-100	%LEL	Methane	B02	40	Y	20	N	Methane	50	365
11	B03	# 5100-28-IT	0-100	%LEL	Methane	B03	40	Y	20	N	Methane	50	365
12	B04	# 5100-28-IT	0-100	%LEL	Methane	B04	40	Y	20	N	Methane	50	365
13	B05	# 5100-28-IT	0-100	%LEL	Methane	B05	40	Y	20	N	Methane	50	365
14	B06	# 5100-28-IT	0-100	%LEL	Methane	B06	40	Y	20	N	Methane	50	365
15	B07	# 5100-28-IT	0-100	%LEL	Methane	B07	40	Y	20	N	Methane	50	365
16	B08	# 5100-28-IT	0-100	%LEL	Methane	B08	40	Y	20	N	Methane	50	365
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31													
32													

MSA The Safety Company | SMC

Sentry IT Controller Custom Configuration

Order Number: **402427821 - SOI00357**
Customer Name: **' Plumbing (St Georges**
Controller #: 1

Date: 3/3/2022
Tag: St. Georges
Node ID: 1

Stack # **2**

SENTRY FORM

Sensor #	Module #	Module Type	Range	Units	Gas Tag	Module Tag	Alarm Level	Latch	Warning Level	Latch	Calibration Gas	Calib. Span	Calib. Interval
1	A01	# 5100-28-IT	0-100	%LEL	Methane	C01	40	Y	20	N	Methane	50	365
2	A02	# 5100-28-IT	0-100	%LEL	Methane	C02	40	Y	20	N	Methane	50	365
3	A03	# 5100-28-IT	0-100	%LEL	Methane	C03	40	Y	20	N	Methane	50	365
4	A04	# 5100-28-IT	0-100	%LEL	Methane	C04	40	Y	20	N	Methane	50	365
5	A05	# 5100-28-IT	0-100	%LEL	Methane	C05	40	Y	20	N	Methane	50	365
6	A06	# 5100-28-IT	0-100	%LEL	Methane	C06	40	Y	20	N	Methane	50	365
7	A07	# 5100-28-IT	0-100	%LEL	Methane	C07	40	Y	20	N	Methane	50	365
8	A08	# 5100-28-IT	0-100	%LEL	Methane	C08	40	Y	20	N	Methane	50	365
9	B01	# 5100-28-IT	0-100	%LEL	Methane	D01	40	Y	20	N	Methane	50	365
10	B02	# 5100-28-IT	0-100	%LEL	Methane	D02	40	Y	20	N	Methane	50	365
11	B03	# 5100-28-IT	0-100	%LEL	Methane	D03	40	Y	20	N	Methane	50	365
12	B04	# 5100-28-IT	0-100	%LEL	Methane	D04	40	Y	20	N	Methane	50	365
13	B05	# 5100-28-IT	0-100	%LEL	Methane	D05	40	Y	20	N	Methane	50	365
14	B06	# 5100-28-IT	0-100	%LEL	Methane	D06	40	Y	20	N	Methane	50	365
15	B07	# 5100-28-IT	0-100	%LEL	Methane	D07	40	Y	20	N	Methane	50	365
16	B08	# 5100-28-IT	0-100	%LEL	Methane	D08	40	Y	20	N	Methane	50	365
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32													

Sentry IT Controller Custom Configuration

Stack # **0**

Order Number:	**402427821 - SOI00357**	Date:	3/3/2022
Customer Name:	**onomy Plumbing (St Georges Ballpa**	Tag:	St. Georges
Controller #:	1	Node ID:	1

COMMANDER INSTRUCTIONS

Note	Instruction
1	Default Alarm Relays
2	
3	
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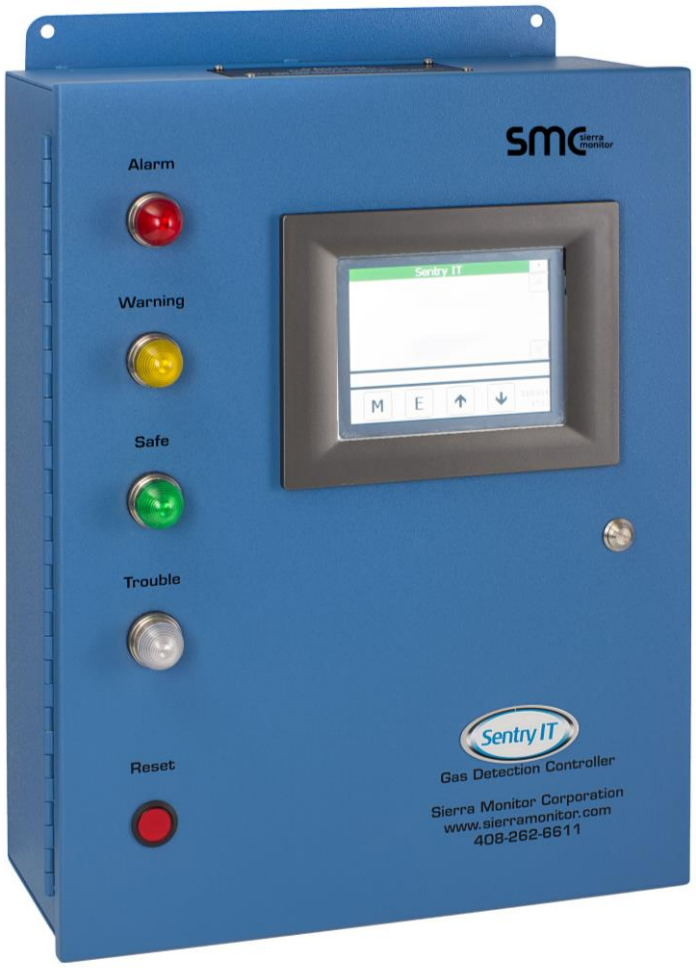

Sentry IT Fire & Gas Protection

Sentry 5000-IT Controller Instruction Manual

APPLICABILITY & EFFECTIVITY

The instructions are effective for the above as of November 2015

Manual Number: T12021

Document Revision: B1

Manual Number: T12021

The offices of Sierra Monitor are located at:

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Email: support@sierramonitor.com

Website: www.sierramonitor.com

TABLE OF CONTENTS

LIST OF FIGURES

1 INTRODUCTION

1.1 General

The Sentry 5000-IT Controller ("Controller") is the primary component of a gas detection system. The Controller design combines a framework of essential components with an assortment of configurable hardware modules selected during the system design phase to meet the specific application requirements.

1.2 Controller Framework (Platform)

The following components provide the platform for Controller configurations:

- Enclosure
- Power Supply
- Single Board Computer (SBC)
- Touch Panel Computer (TPC) Graphical Interface
- DIN rails for mounting three Configurable Hardware Modules

1.3 Configurable Hardware Modules (Stacks)

The following components are selected based on application requirements to complete individual Controller designs.

- **Modbus Stack**
  The Modbus Stack is comprised of a bottom board containing eight programmable relay outputs and a top board providing wiring points for two Modbus RTU RS-485 channels for sensor module connection.
- **Analog Input Stack**
  The Analog Input Stack is comprised of a bottom board containing eight programmable relay outputs and a top board providing wiring points for sixteen 4-20mA inputs for sensor module connection.
- **PSG Stack**
  The PSG Stack is the classic Sentry communication bus. It is comprised of a bottom board containing eight programmable relay outputs and a top board providing wiring points for eight PSG multiplex channels for sensor module connection. PSG is a proprietary SMC sensor module protocol.
- **Digital Input Stack**
  The Digital Input Stack is comprised of a bottom board containing eight programmable relay outputs and a top board providing wiring points for sixteen dry contact inputs.
- **Analog Output Stack**
  The Analog Output Stack is comprised of a bottom board containing eight programmable relay outputs and a top board providing wiring points for sixteen 4-20 mA output connections.

- **Digital Output Stack**
  The Digital Output Stack is comprised of a bottom board containing eight programmable relay outputs and a top board providing wiring points for an additional eight high capacity Form C Relays.

1.4 Programmable Features

Controllers are supplied with the following programmable features:

- Auto Discovery of connected sensor modules
- User configurable module tags, alarm levels and calibration settings
- Commander Logic used to enable control algorithms combining input values and states and managing relay output states
- Modbus RTU output for interface
- Sentry InSite Webserver

1.5 Gas Detection System

The Controller is always used in conjunction with gas detection sensor modules and is generally connected to alarm annunciation devices and environment control devices such as exhaust fans. The Controller may also be connected to facility control systems or control rooms. These external connections are not covered by this manual except as necessary to define the Controller connection or functionality.

In large facilities it is possible that gas detection systems include multiple Controllers that may not be identical to each other. For purposes of this manual each Controller should be considered unique.

1.6 Power Requirements

The Controller requires 24 VDC at 10.0 Amps for a fully loaded (maximum 32 modules connected) gas detection system. The following considerations should be noted:

- The Controller has an integral AC/DC power supply that allows primary 120/240 VAC power
- The Controller allows direct 24 VDC connection from a plant supply or battery backed UPS
- The VDC source will provide power for the connected sensor modules
- Power for ancillary connected devices such as alarm indicators must be supplied separately

2 PRODUCT DESCRIPTION

2.1 Controller Platform

This section describes the Platform for a painted steel wall mount enclosure. Optional Platform designs, such as rack mount versions contain the same components but the components may be located in different positions.

2.1.1 Enclosure and Front Panel

Figure 2-1 shows the wall mounted enclosure with Front Panel components installed.

Figure 2-1 – Controller/Platform External View

The front panel incorporates status indicators for Alarm (red), Warning (amber), Safe (green) and Trouble (blue), a Touch Panel Computer (TPC) graphical interface screen, a Reset Button and a Door Lock.

2.1.2 Internal Components

Figure 2-2 shows the internal components of the Controller Platform.

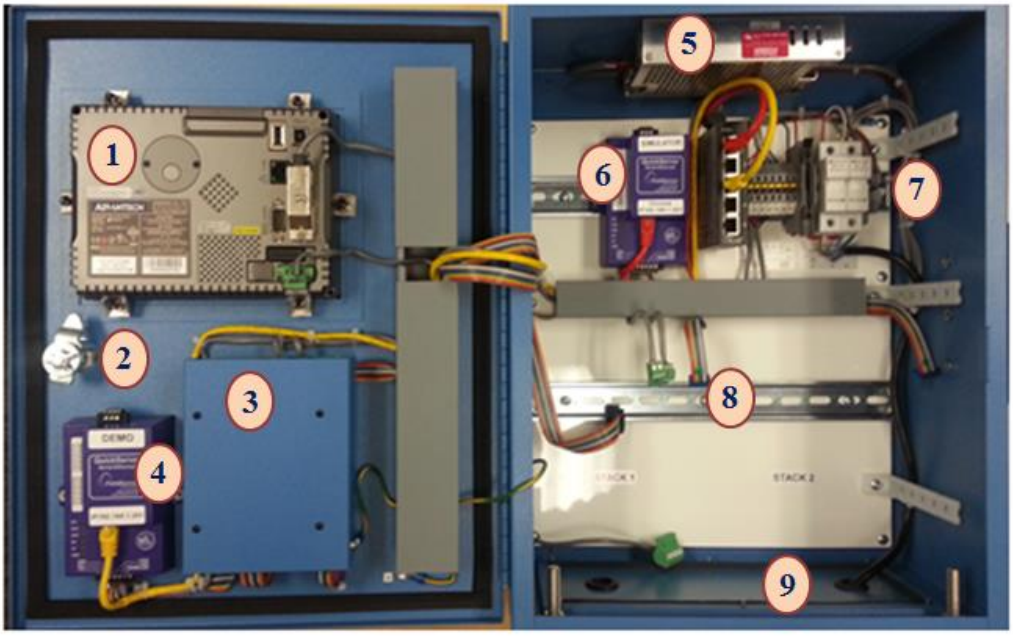


Figure 2-2 – Controller/Platform Internal View

The Controller Platform components include:

(1) Internal view of TPC display
(2) Internal view of door lock
(3) Cover panel containing single board computer (SBC) with communication port adapter board
(4) Quick Server Communications gateway for multi-protocol and InSite interface
(5) AC/DC Power Supply – not required for controllers using DC power source
(6) Accessory mounted on DIN rail – in this case the accessory is a second gateway and an Ethernet hub but may also be used for mounting Stack 3
(7) Power connections and fuses
(8) DIN rail for mounting Stacks 1 and 2
(9) Conduit access panel

2.2 Stacks

Stack Assembly selection during the system design phase differentiates Controller configurations. This section introduces the stack concepts and identifies typical Controller configurations. Each Stack is an assembly of two printed circuit boards where the bottom board is a Carrier Board containing eight relays and the top board varies by the application requirement.

2.2.1 Carrier Board

The Carrier Board (**Figure 2.3**) is assembled in a DIN carrier that snaps into the DIN rail in the Platform.

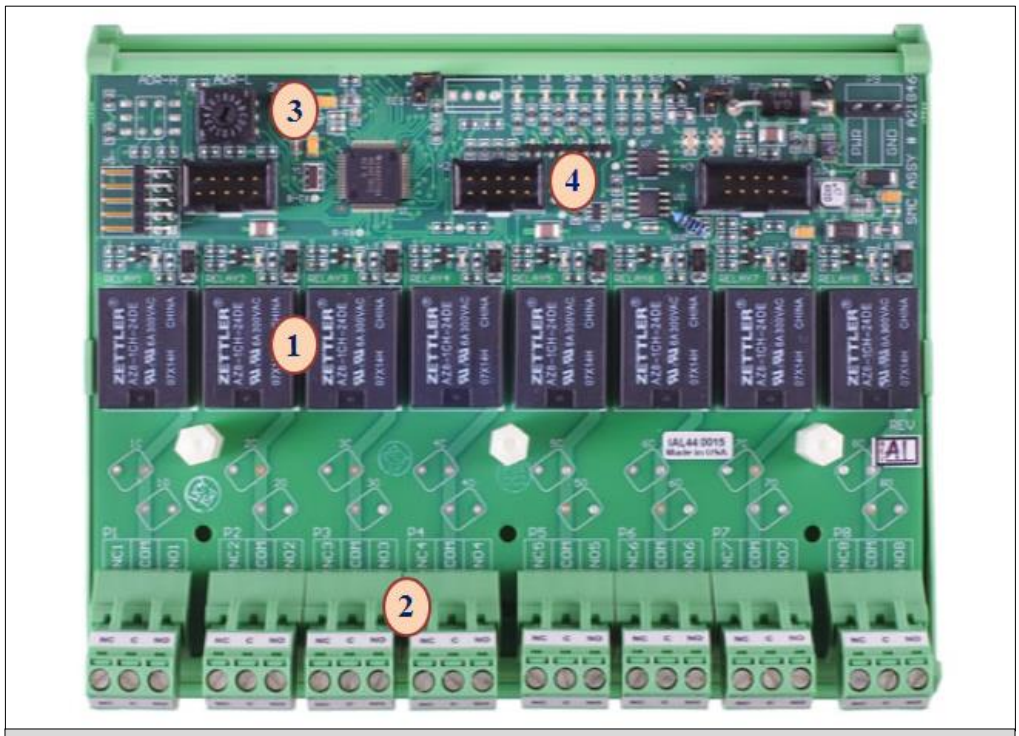


Figure 2-3 – Carrier Board

The function of the Carrier is to provide communications connections between all Stacks and the SBC. In addition the Carrier Board has:

(1) Eight SPDT relays that are fully programmable via the Controller Commander logic
(2) Eight removable connectors for the relay wiring
(3) A rotary switch for setting the Stack address – generally using the addresses 1, 2, and 3; conforming to the three stack capacity in the standard Platform
(4) Sockets for connection of any available Interface board

2.3 Interface Boards

An Interface Board plugs into the Carrier Board to complete a Stack. The type of Interface Board is determined during the Controller configuration process and includes:

- Modbus – **Section 2.3.1**
- Analog Input – **Section 2.3.2**
- PSG Input – **Section 2.3.3**
- Digital Input – **Section 2.3.4**
- Analog Output – **Section 2.3.5**
- Digital Output – **Section 2.3.6**
- Eight removable connectors for the relay wiring

2.3.1 Modbus

The Modbus Interface Board (**Figure 2-4**) provides two separate RS-485 loops identified as Loop A and Loop B. The board plugs into a Carrier Board to complete a Modbus Stack.

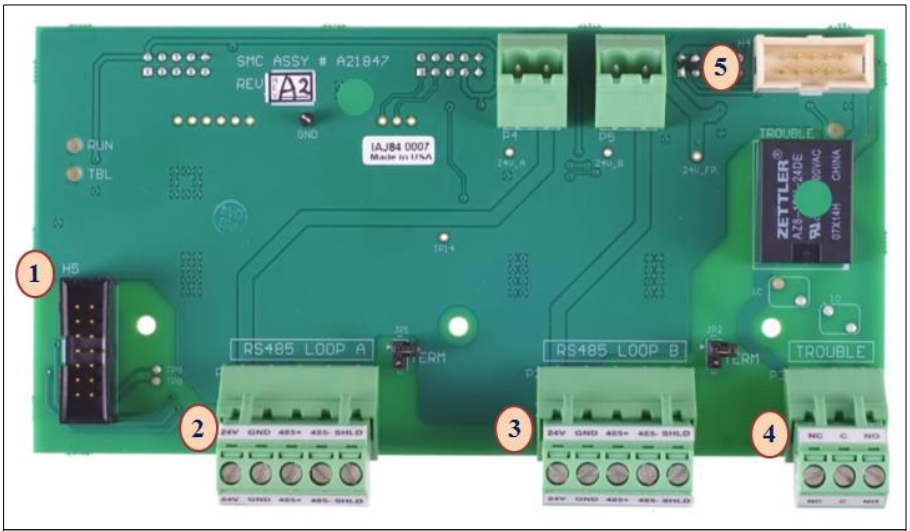


Figure 2-4 – Modbus Interface Board

The function of the Modbus board is to provide connectivity for two loops of sensor modules. The board includes:

(1) Factory installed ribbon cable for serial data pass through to the SBC
(2) Field connection for Loop A RS485 Modbus connections
(3) Field connection for Loop B RS485 Modbus connections
(4) Field connection for Trouble Relay
(5) Factory installed wire and ribbon cable connections for power and inter-stack communication

Each loop connector has five positions to provide 24 VDC power and shielded bi-directional Modbus protocol communications for up to 16 sensor modules. Sensor modules have node-id selector switches that must be set for addresses 1 through 16 on each loop.

The Modbus Stack is always installed in stack position 1 in the controller and has a stack address of 1. A maximum of one Modbus Stack is allowed per controller. The Modbus Board also provides a programmable SPDT Relay intended for use as a local Trouble Relay.

2.3.2 Analog Input

The Analog Input Interface Board (**Figure 2-4**) provides sixteen separate 4-20 mA inputs in two rows identified as JP1 though JP16. The board plugs into a Carrier Board to complete an Analog Input Stack.

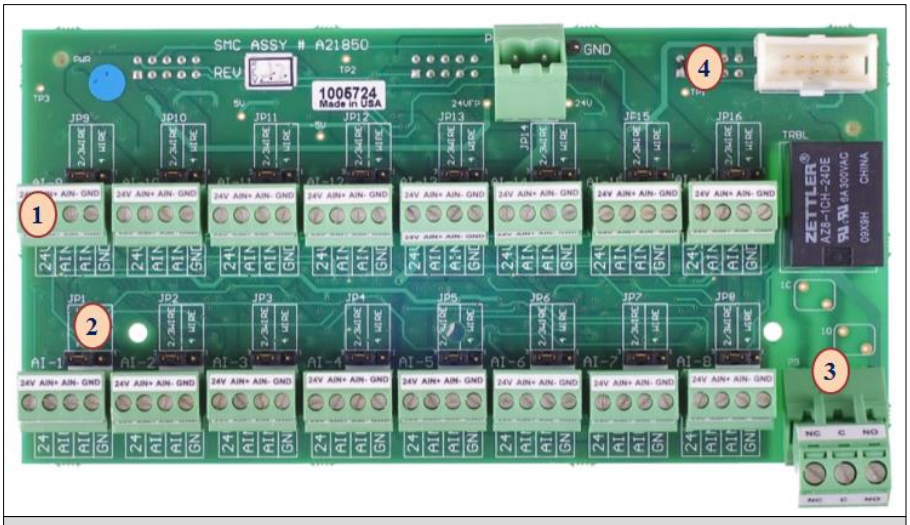


Figure 2-5 – Analog Input Interface Board

The function of the Analog Input board is to provide connectivity for up to sixteen 4-20 mA loops. The board receives the analog signal inputs and converts them to digital data communicating with the SBC. The board includes:

(1) Individual field connections for analog sensor power and signal
(2) Individual jumpers to select 2, 3 or 4 wire operation
(3) Field connection for Trouble Relay
(4) Factory installed wire and ribbon cable connections for power and inter-stack and SBC communication

Each analog loop connector has four positions to provide 24 VDC power and isolated 4-20 mA signal wiring. A terminal jumper located behind each connector is factory installed for two or three wire loop connection and can be moved to a four wire position.

Analog Stacks can be installed in any stack position in the controller and must configured for the corresponding stack position number on the Carrier Card rotary switch. A maximum of two Analog Input Stacks are allowed per controller. The Analog Board also provides also provides a programmable SPDT Relay intended for use as a local Trouble Relay.

2.3.3 PSG

The PSG Interface Board (**Figure 2-6**) provides two loops of inputs for Sentry proprietary PSG multi-drop communications protocol. Each of the loops identified as Loop A and Loop B supports up to eight gas detection modules. The board plugs into a Carrier Board to complete a PSG Input Stack.

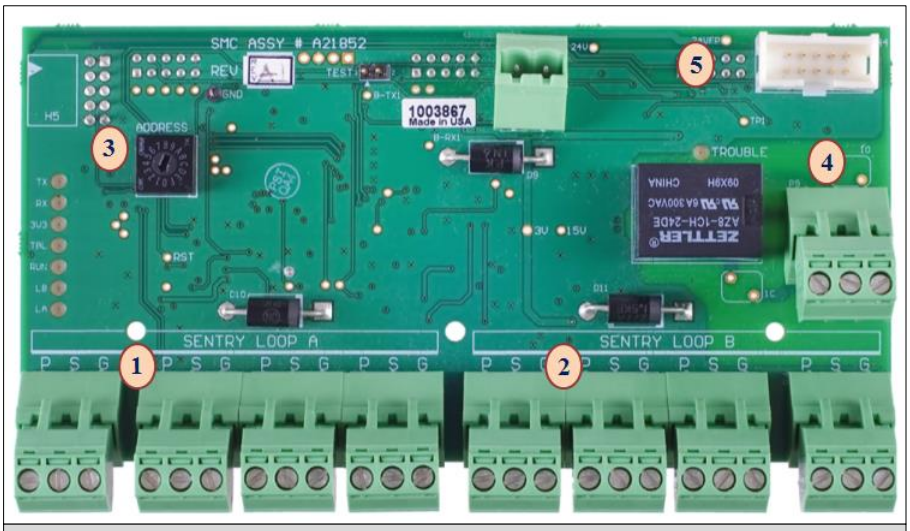


Figure 2-6 – PSG Sentry Bus Interface Board

The primary use of the PSG board is to support existing infrastructure where three conductor wiring is installed. The three conductors may have previously supported analog 4-20 mA modules or early version SMC gas detection modules.

Sensor modules connected using the three wire PSG connection are multi-drop and can be connected on common wiring using up to eight addresses on each of the two loops. The board polls sensor modules using PSG protocol and converts data into the common serial protocol for communicating with the SBC. The board includes:

(1) Sentry Loop A four field connectors to support PSG addresses A1 through A8
(2) Sentry Loop B four field connectors to support PSG addresses B1 through B8
(3) Rotary Switch (factory set) to identify PSG board node address 1 or 2
(4) Field connection for Trouble Relay
(5) Factory installed wire and ribbon cable connections for power and inter-stack and SBC communication

PSG Stacks can be installed in any stack position in the controller and must configured for the corresponding stack position number on both the Carrier Card rotary switch and the PSG Card rotary switch. A maximum of two PSG Stacks are allowed per 32 channel controller. The PSG Board also provides a programmable SPDT Relay intended for use as a local Trouble Relay.

2.3.4 Digital Input

The Digital Input Board (Figure 2-7) provides connections for up to eight dry contact switch inputs. The two position connectors are identified as DI-1 through DI8. The board plugs into a Carrier Board to complete a Digital Input Stack.

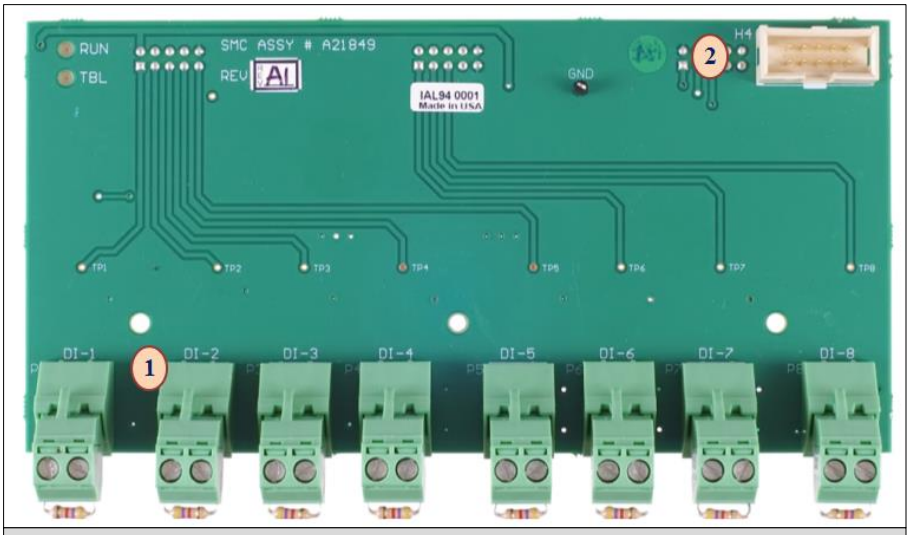


Figure 2-7 – Digital Input Interface Board

The Digital Input board enables the user to connect the outputs from foreign devices including switches or alarm only gas monitors. Digital inputs require an end of line 4.7K resistor for supervised monitoring.

The board polls the status of the inputs and converts data into the common serial protocol for communicating with the SBC. The Digital Input status can be used in Sentry Commander logic relay management algorithms. The board includes:

(1) Eight Digital Input field connectors to support addresses DI-1 through DI-8
(2) Factory installed ribbon cable connection for power, inter-stack and SBC communication

Digital Input Stacks can be installed in any stack position in the controller, generally the Stack 2 or Stack 3 position. A maximum of two Digital Input Stacks are allowed per standard channel controller.

NOTE: Digital Inputs must be conventional initiation type devices with dry contacts and must be located in the same room.

2.3.5 Analog Output

The Analog Output Board (**Figure 2-8**) provides connections for up to sixteen two wire 4-20 mA outputs. The two position connectors are identified as AO1 through AO16. The board plugs into a Carrier Board to complete an Analog Output Stack.

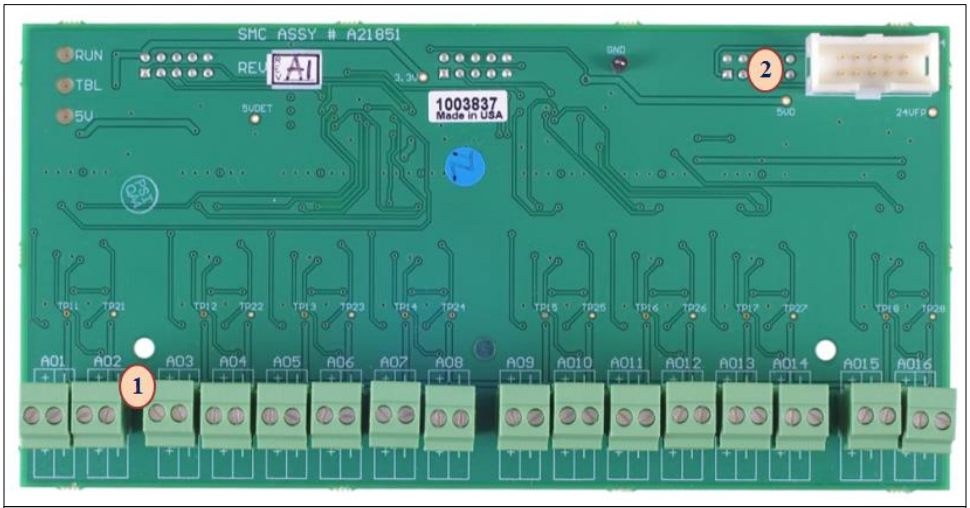


Figure 2-8 – Analog Output Interface Board

The Analog Output board enables the user to retransmit analog values derived from sensor inputs. The outputs are always 4-20mA scaled the match the full range of the sensor module input. Values to be output via the Analog Output board are derived by Commander Logic.

The board includes:

(1) Analog Output field connectors (16) to support addresses AO-1 through AO-16
(2) Factory installed ribbon cable connection for power, inter-stack and SBC communication

Analog Output Stacks can be installed in any stack position in the controller, generally the Stack 2 or Stack 3. A maximum of two Analog Output Stacks are allowed per standard channel controller.

2.3.6 Digital Output

The Digital Output Board (**Figure 2-9**) provides connections for eight replaceable 8 amp relays. The three position field connectors are located immediately below the socketed relay cubes. The cubes are labeled as Relay 1 through Relay 8.

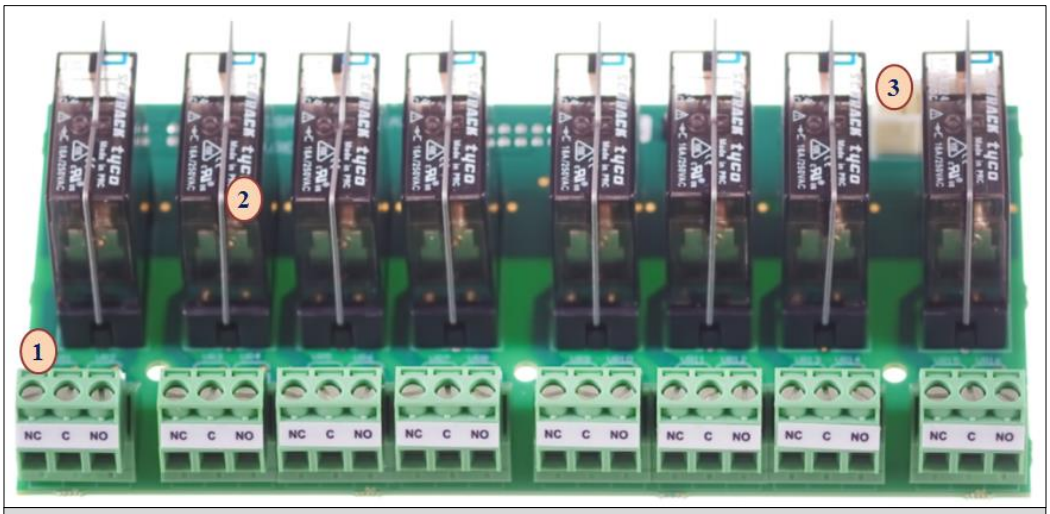


Figure 2-9 – Digital Output Board

Because there are already eight fixed 5 amp relays on every stack the Digital Output board is useful for either expanding the total number of relays in the controller or providing control relays for higher power field devices. All the standard relays and the Digital Output control relays are programmable via Sentry Commander logic processing. The board includes:

(1) Eight Digital Output field connectors to support addresses Relay1 through Relay 8
(2) Socketed, replaceable 8 amp relays corresponding to the field connectors
(3) Factory installed ribbon cable connection for power and inter-stack and SBC communication

Digital Output Stacks can be installed in any stack position in the controller, generally as Stack 2 or Stack 3. A maximum of two Digital Output Stacks are allowed per standard channel controller.

2.3.7 Assembled Stack

A completed stack is comprised of a Carrier Board and an Interface Board. **Figure 2-10** provides an example of a stack where the Digital Output card has been installed onto the Carrier.

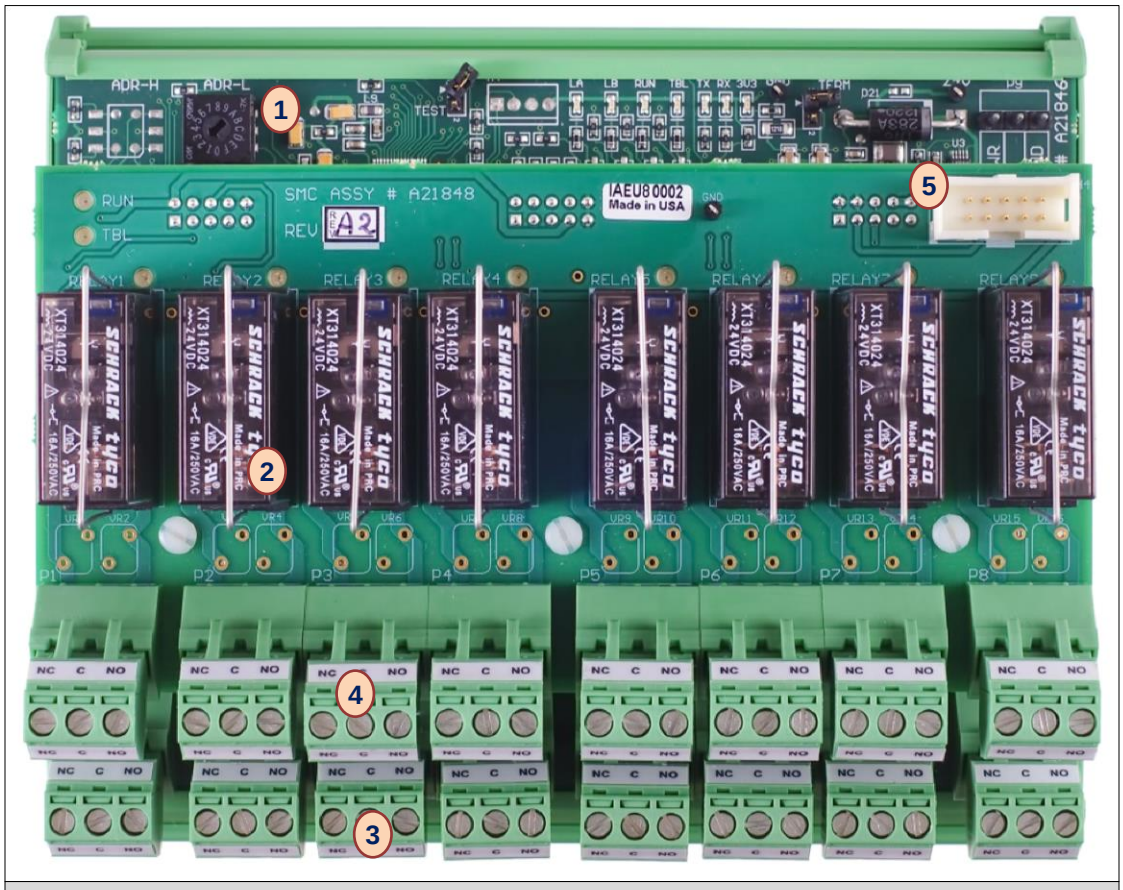


Figure 2-10 – Assembled Stack (Digital Output)

All Stack identifiers in Commander Logic begin with the Stack address followed by the field connection number. When a Digital Output stack is supplied, meaning that there are two sets of relays it is important to understand that the relay numbering begins on the Carrier Card and then continues on the Interface Card. The (example) stack includes:

(1) Carrier Card with address switch visible
(2) Digital Output Card with replaceable relays visible/accessible
(3) Eight field connectors to support relay addresses 1 through 8
(4) Eight field connectors to support relay addresses 9 through 16
(5) Factory installed wire and ribbon cable connections for power and inter-stack and SBC communication

A maximum of three Stacks are allowed per standard channel controller.

NOTE: Digital In the preceding description the maximum number of Interface Board Stacks is limited by the description of the Controller cabinet space. The Controller software is designed to allow higher numbers of stacks that may be designed into custom controllers.

2.4 Configured System

The Controller Platform and selected Stacks are assembled to complete the controller hardware. Although many combinations are possible **Figure 2-11** describes how a set of Stacks connect and communicate with the SBC and the TPC display. As indicated in the drawing the sensor module numbering varies by communication method.

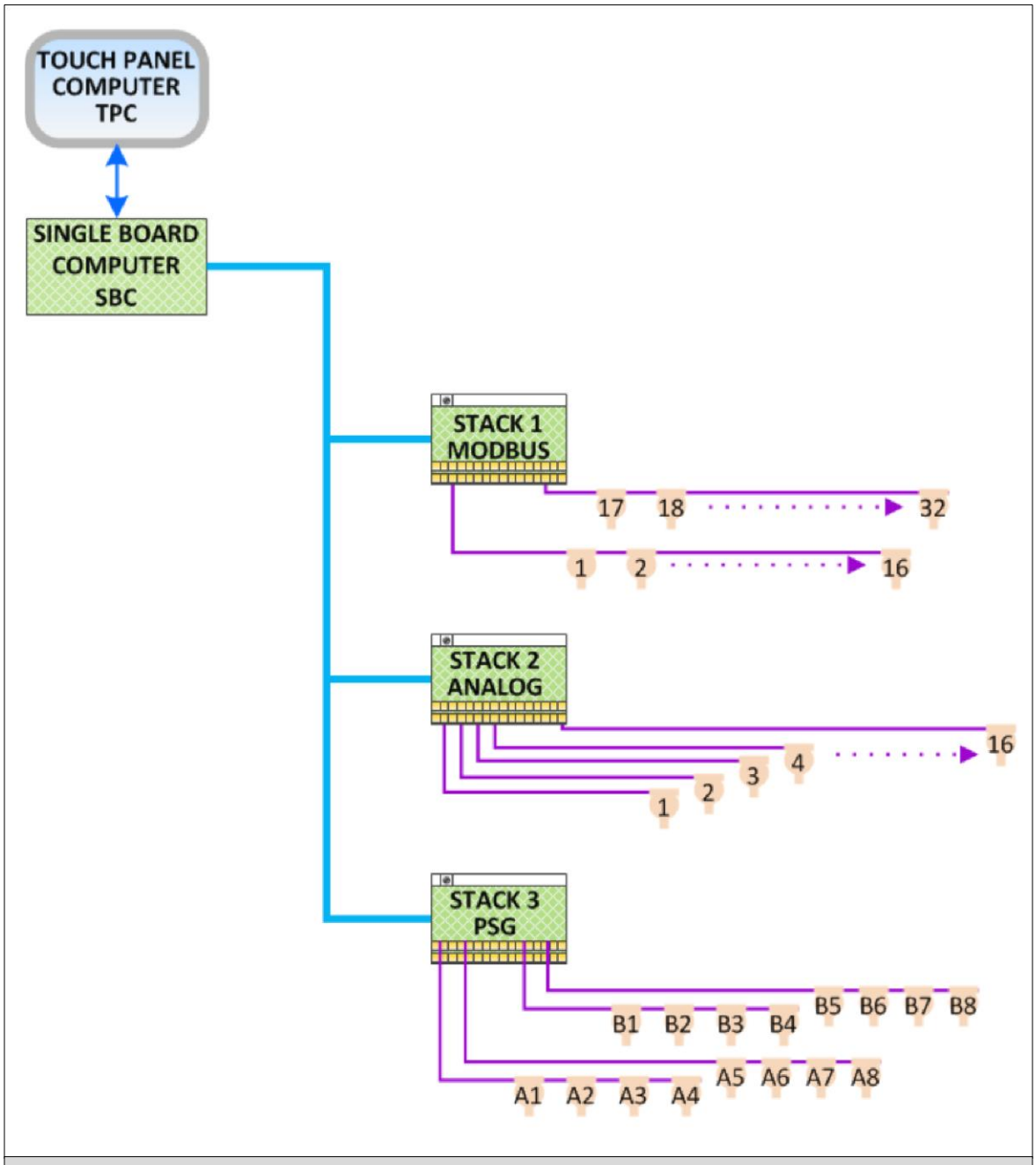


Figure 2-11 – Simplified System Overview

2.5 Controller Model Numbers

Controller model numbers are constructed as follows:

5000-	XX-	XX-	IT-	X-	#1	#2	#3	#4	XXX-	X-
	SENSOR MODULE CAPACITY									
	8 Channel	08								
	16 Channel	16								
	32 Channel	32								
			IT							
	ENCLOSURE TYPE									
	NEMA 1 Enclosure (3 stacks max)			1						
	NEMA 4 SS Enclosure (3 stacks max)			2						
	NEMA 4X GRP Enclosure (4 stacks max)			3						
	RACK Chassis (6 stacks max)			4						
	5383-00 Retrofit Kit (2 stacks max)			5						
	5383-01 Retrofit Kit (6 stacks max)			6						
	CUSTOM Enclosure (Consult Factory)			9						
	STACK CONFIGURATION									
	Analog Input (16 inputs)				1	1	N/A	N/A		
	PSG (16 inputs)				2	2	N/A	N/A		
	Modbus RTU (32 inputs)				3	N/A	N/A	N/A		
	Relay (8A) (8 relays)				N/A	4	4	4		
	Analog Output (16 outputs)				N/A	5	5	5		
	Digital Input (8 inputs)				N/A	6	6	6		
	Carrier Only (8 relays)				N/A	7	7	7		
	POWER SELECTION									
	AC 110/220 32ch, 16ch, 8ch								A32	
	DC 24V								D00	
	DC 24V w/ 8Hr BBU								D08	
	DC 24V w/ 24Hr BBU (Consult Factory)								D24	
	FIELDSERVER OUTPUTS									
	Modbus RTU Serial									0
	Sentry View (WebServer)									1
	Modbus TCP/IP / EtherNet/IP / BACnet/IP									3
	Integrated Bridge (Custom) (Consult Factory)									9

Typical Controller constructed models:

5000-32-1-3000-A32-0 – 32 Channel Modbus Controller w/ 8 Relay Outputs

5000-32-1-3600-A32-0 – 32 Channel Modbus Controller w/ 8 Digital Inputs and 8 Relay Outputs

5000-32-1-3460-A32-0 – 32 Channel Modbus Controller w/ 8 Digital Inputs and 24 Relay Outputs

5000-32-1-1000-A32-0 – 32 Channel Analog 4-20 mA Controller w/ 8 Relay Outputs

5000-32-1-1600-A32-0 – 32 Channel Analog 4-20 mA Controller w/ 8 Digital Inputs & 8 Relay Outputs

5000-32-1-1460-A32-0 – 32 Channel Analog 4-20 mA Controller w/ 8 Digital Inputs & 24 Relay Outputs

2.6 Software

In addition to embedded operating system software the user should be aware of the following software modules.

2.6.1 Graphical User Interface (GUI)

All normal operator functions are enabled through the GUI software that runs on the TPC display. All on-screen functions are driven by software in the TPC and all required data is automatically retrieved, as required, from the data base residing in the SBC. This separation of code allows the controller to continue safe operation in the event of a TPC display failure.

2.6.2 Single Board Computer (SBC)

The critical operating software that manages all stack, sensor module communication, and TPC data interface runs on the SBC. Functions such as auto discovery of modules, continuous polling of sensors and alarm initiation are automatically executed by the SBC code. TPC requests for data are processed for response at the time of the request. The SBC provides a Modbus slave interface useful for connection to Sierra Monitor FieldServer products or directly to third party communication devices.

2.6.3 Commander Logic

A very powerful software component of the controller is the Commander Logic. Simple process blocks, as listed in **Figure 2-12**, can be established to process multi-point data resulting in logical relay states and analog output values.

Variable	Description
Block Function	Process Block function such as a Flag, Relay or Lamp
Tag Name	Name of the Function Block
Function	Logic function OR, NOR, AND
On Setpoint	Value at which the block should change logical state
Change	Amount of change required to log an input's value
Off Setpoint	Value at which the block should return to normal logical state
Invert Output	Instruction to invert the state of the logic block
On Delay	Delay time between the logical and physical change of state
Off Delay	Delay time between the logical and physical return to normal state
Min Runtime	Minimum time that the block must remain in the "out of normal" state
Latch Hi	Requires manual reset input to clear the logical state
Rising	Determines if the value normally rises or falls into the "out of normal" state
Display Mode	A process block result can be displayed on the controller TPC
Source	Up to 48 source values can be identified as variables for the process block

Figure 2-12 – Commander Logic Variables

2.7 InSite Appliance

A separate module installed inside the door of the controller provides Ethernet connectivity. The InSite Appliance provides the following features:

- Inclusive:
  - Sentry InSite – Basic auto-build System View dashboard webserver
  - Gateway to Modbus TCP/IP
- Options:
  - Various plug-in options to enhance InSite functionality
  - Gateway to a library of additional FieldServer serial and Ethernet protocols

See **Section 7** for a description of the InSite Appliance.

3 SAFTEY NOTES

3.1 Introduction

Although the Controller is designed and constructed for installation and operation in industrial applications including "hostile" environments, caution should be taken to insure that the installation is made in compliance with this instruction manual and that certain procedures and conditions are avoided. This chapter discusses the necessary cautions. Read the entire chapter prior to installation of the equipment.

3.2 Controller

The controller should be installed in a location which is safely accessible during a gas alarm.

Avoid installing the controller where it will be unnecessarily exposed to wind, dust, shock or vibration or direct sun. Observe temperature range limitations.

Adhere to National Electric Code standard electrical installation procedures. The chassis ground on the controller must be connected to earth ground.

3.3 Wiring

While the digital and analog communication methods used between the controller and gas sensor modules will greatly reduce problems associated with electromagnetic and radio frequency interference the manufacturer recommends that extra caution be taken where the installation is near any sources of these interferences:

- Avoid running sensor module cable close to high power cables, radio transmission lines, or cables subject to pulses of high current
- Avoid running cables near large electric motors or generators
- Use shielded cables of the type specified in the sensor module instructions
    - In conduit installations the shield should be connected to the conduit
    - In cable applications the shield should be connected to the cable connector
- All splices must be via compression connector or soldered – improperly spliced cable can result in corrosion, resistance changes and system errors

3.4 Sensor Modules – General

Avoid installing sensor modules where they will be unnecessarily exposed to wind, dust, water (esp. direct hose down), shock, or vibration. Observe temperature range limitations.

Sensors may be adversely affected by prolonged exposure to certain materials. Loss of sensitivity, or corrosion, may be gradual if such materials are present in low concentrations. These materials include: Halides (compounds containing chlorine, fluorine, bromine, iodine), silicones, acid vapors, caustic liquids or mists.

Care has been taken by the manufacturer to ship your modules in protective packaging to avoid contamination prior to installation. It is recommended that the sensors remain protected during installation and that the covering be removed immediately prior to system start-up.

During normal use the sensor is protected from dirt and oil contamination by a sintered metal cover. If this cover becomes clogged, the response of the sensor will be reduced. Protect the sensor from contamination by careful placement, or by use of rain and dust shields.

Sensor modules must not be painted. Paint may contain compounds which will contaminate the sensor. Paint will cause clogging of the sintered metal cover and will cause difficulties during attachment of the calibration head or other maintenance activity. It is recommended that the module be tagged "DO NOT PAINT".

When sensors are replaced the thread must be Teflon taped to avoid metal to metal binding which will damage the housing threads.

3.5 Combustible Sensor Modules

Catalytic type combustible gas sensors may be poisoned by exposure to silicones. Sierra Monitor Corporation supplies resistant sensors, but care should be taken to avoid exposure to silicones. No Silicone caulking (RTV) should be used near the sensors. No other silicone based compounds should be used near the sensors unless they are fully protected during the entire cure cycle. If the sensors will be exposed to silicone during normal operation the manufacturer's sensor warranty is void.

4 INSTALLATION

4.1 Site Planning

Prior to installation of the controller a site plan should be prepared to indicate the location of all system components including the controller, sensor modules and annunciators. The site plan must also provide cable, conduit or wire tray locations and routing. The scope of this manual covers installation and wiring of the controller.

4.2 Controller Location

Determine the location for mounting the controller. Preferably this is a flat wall with sufficient vertical space to install the controller with the graphic panel (GUI) at eye height. The wiring entry is to be via the downward facing panel. Provide sufficient clear wall space on the wall for the door to open. The approximate linear wall space required is 30” and the vertical space is approximately 75”.

This section describes the Platform for a painted steel wall mount enclosure. Optional Platform designs, such as rack mount versions contain the same components but the components may be located in different positions.

4.3 Controller Mounting

Prior to mounting the controller, remove the conduit entry flange from the downward facing side of the enclosure and punch conduit entry holes of size and position as required for the conduit entry. If possible, reinstall the conduit flange prior to wall mounting the controller. Determine the appropriate wall position for the controller and mark the four mounting positions at 12” on center horizontal and 19.75” on center vertical. Use ½” bolts or lag screws with appropriate washers to attach the controller to the vertical surface. The controller should be positioned for ease of viewing and operating the TPC operator interface.

Figure 4-1 provides the external dimensions of the controller.

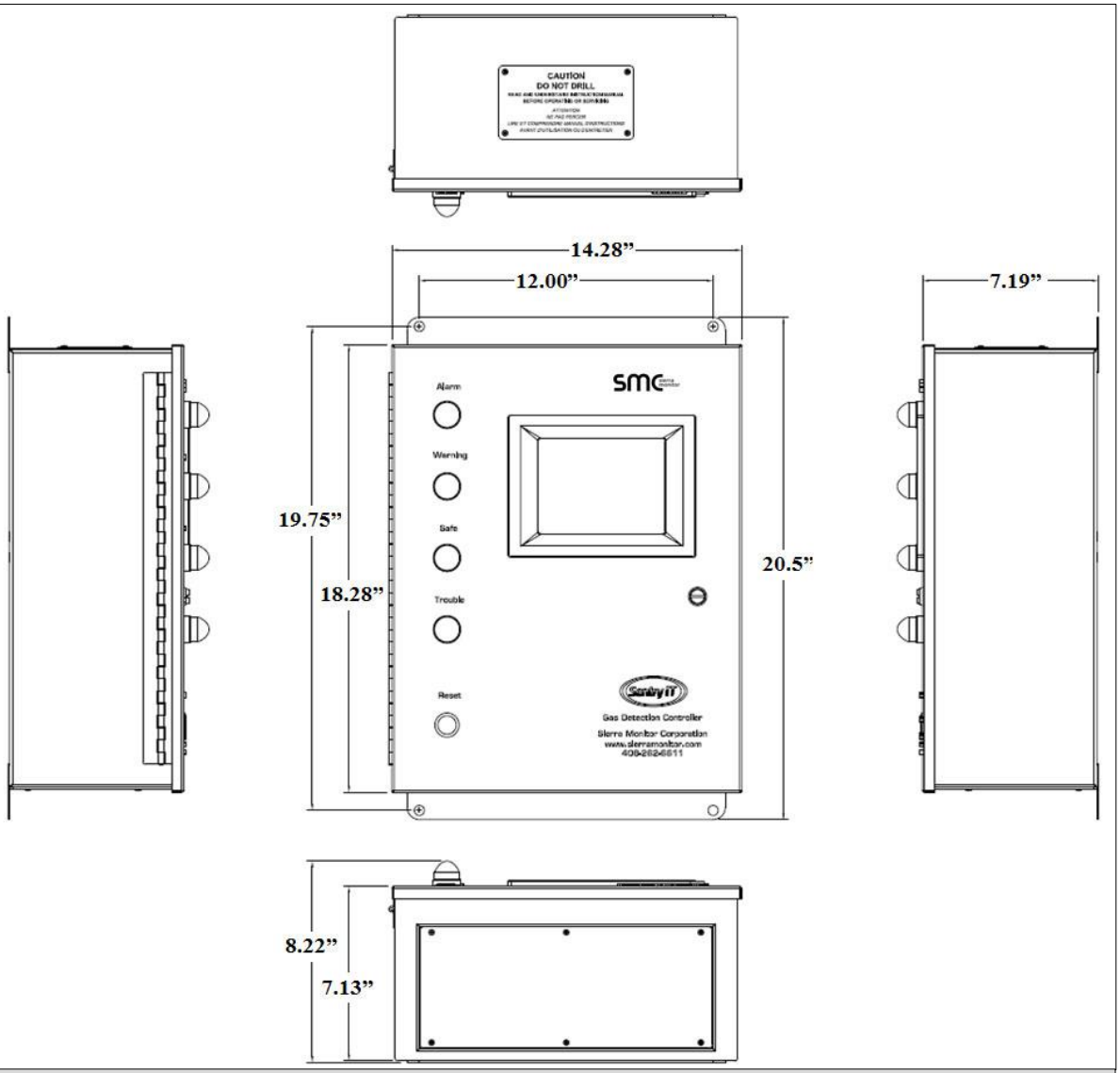


Figure 4-1 – Sentry IT Controller External & Mounting Dimensions

4.4 Wiring

4.4.1 Stack Connections

Figure 4-2 through Figure 4-8 provide generic wiring guides for each stack type. Project specific wiring drawings are generally supplied in the project submittals or data pack. Install and terminate all input and output wiring based on the project data package supplied with the controller. Reference the following figures for specific terminations.

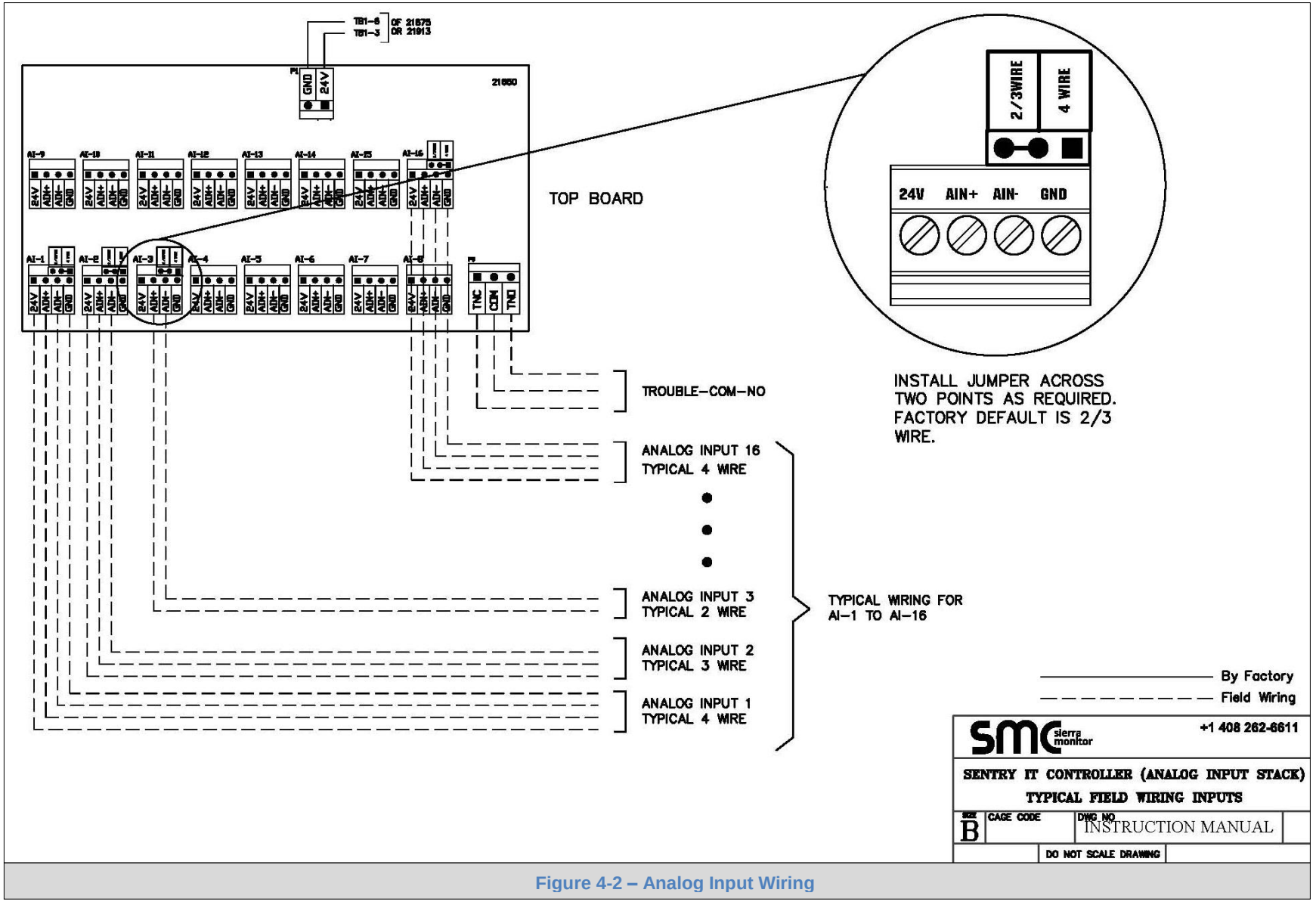


Figure 4-2 – Analog Input Wiring

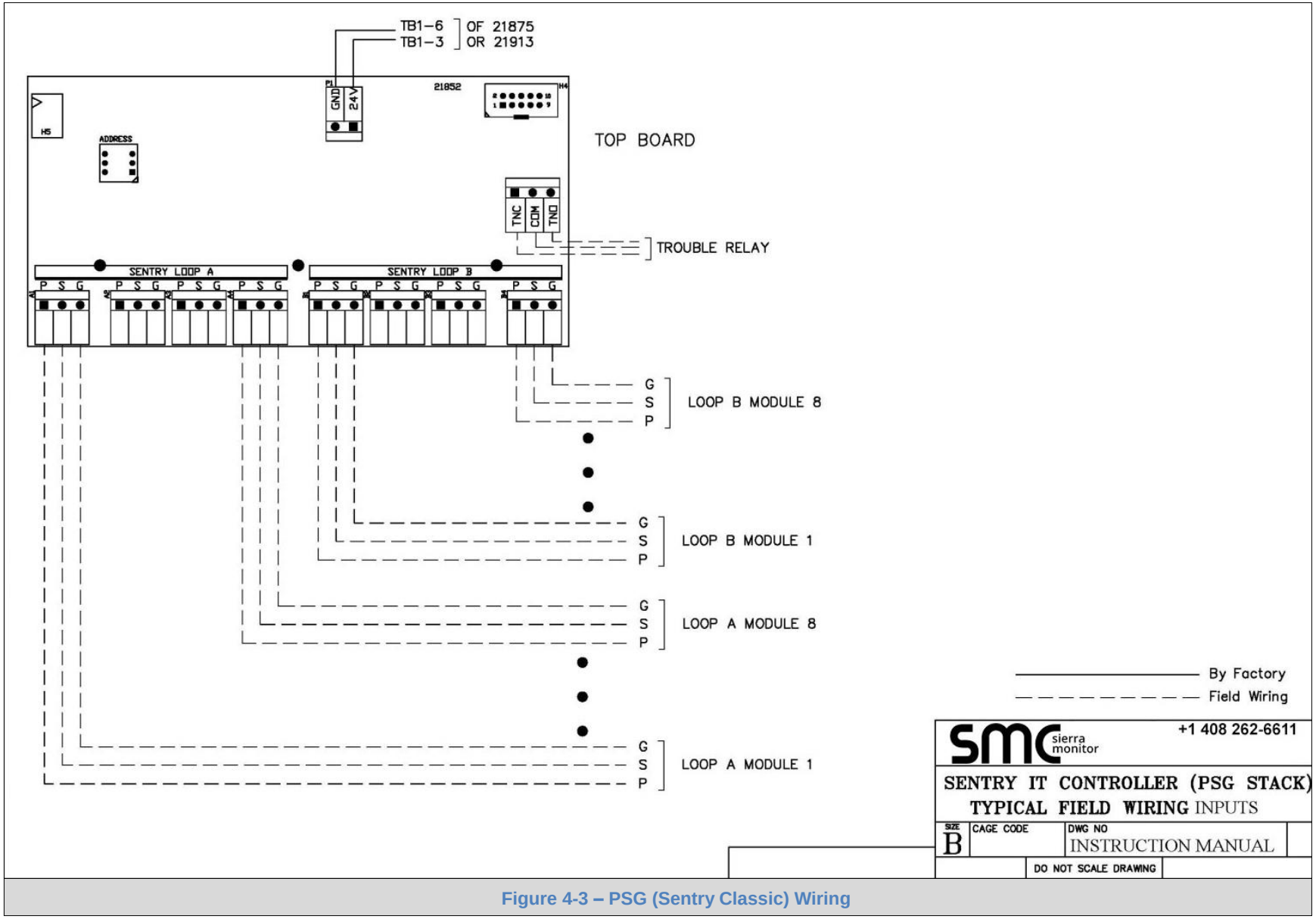


Figure 4-3 – PSG (Sentry Classic) Wiring

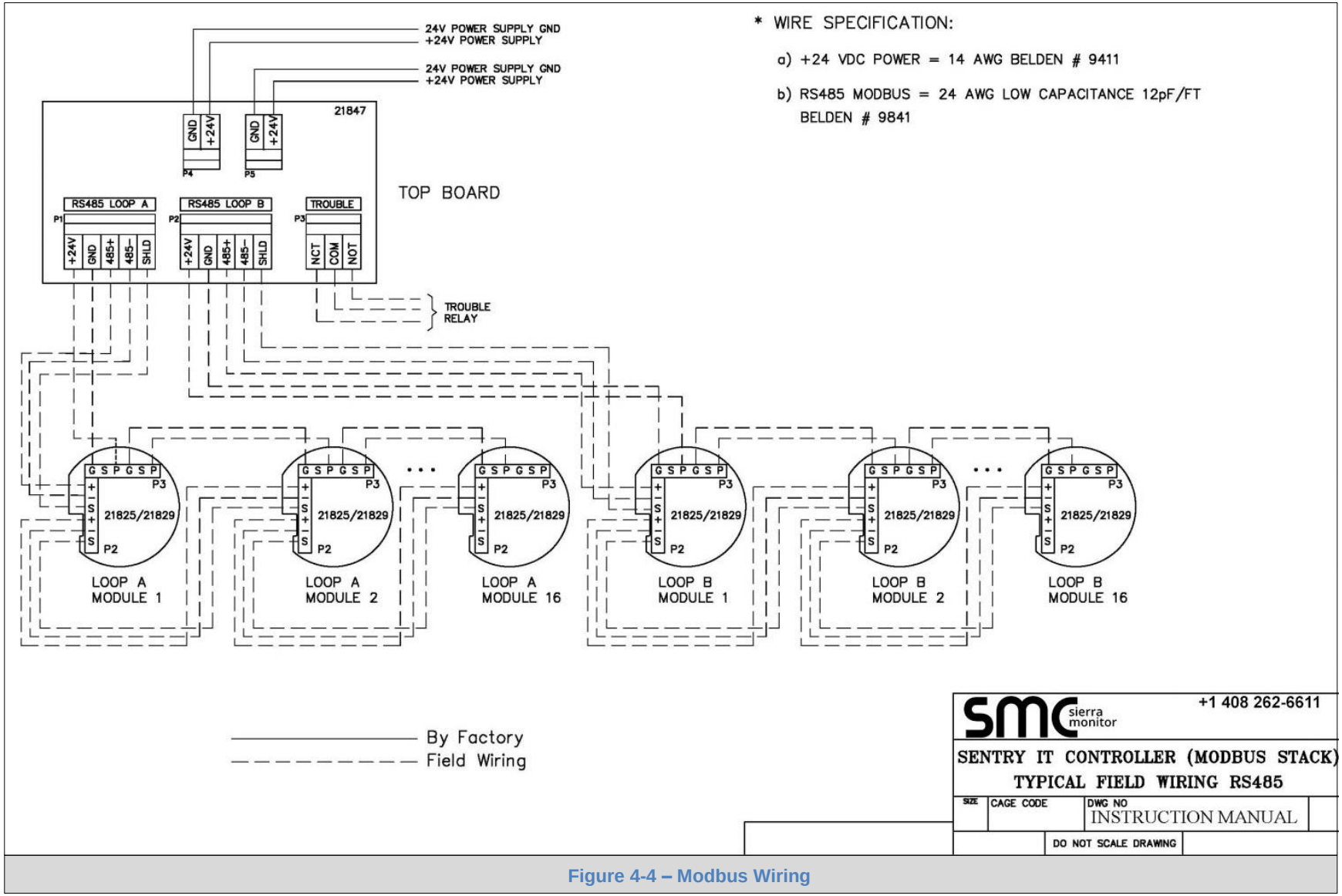


Figure 4-4 – Modbus Wiring

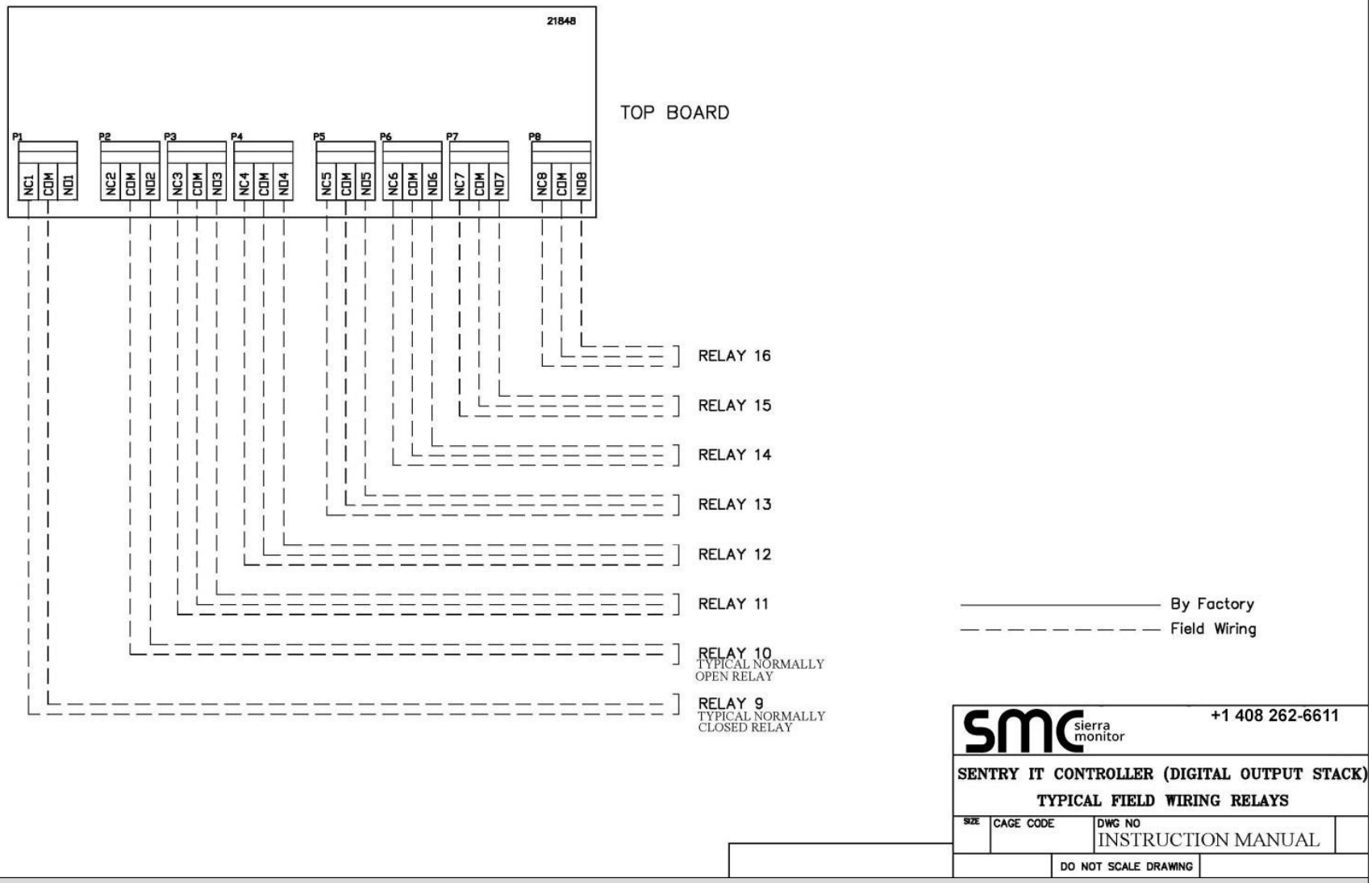


Figure 4-5 – Top Board Relay (Digital Output) Wiring

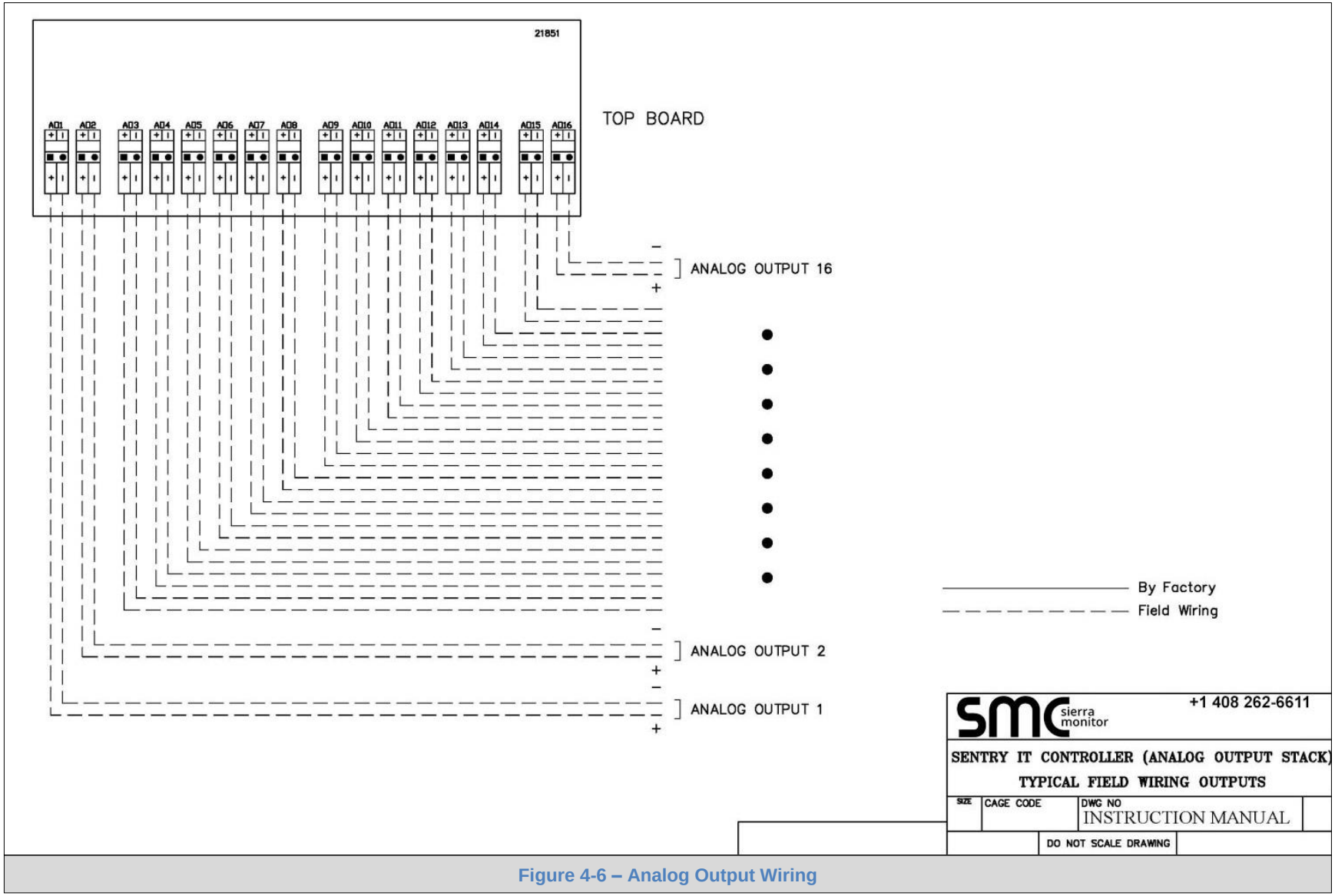


Figure 4-6 – Analog Output Wiring

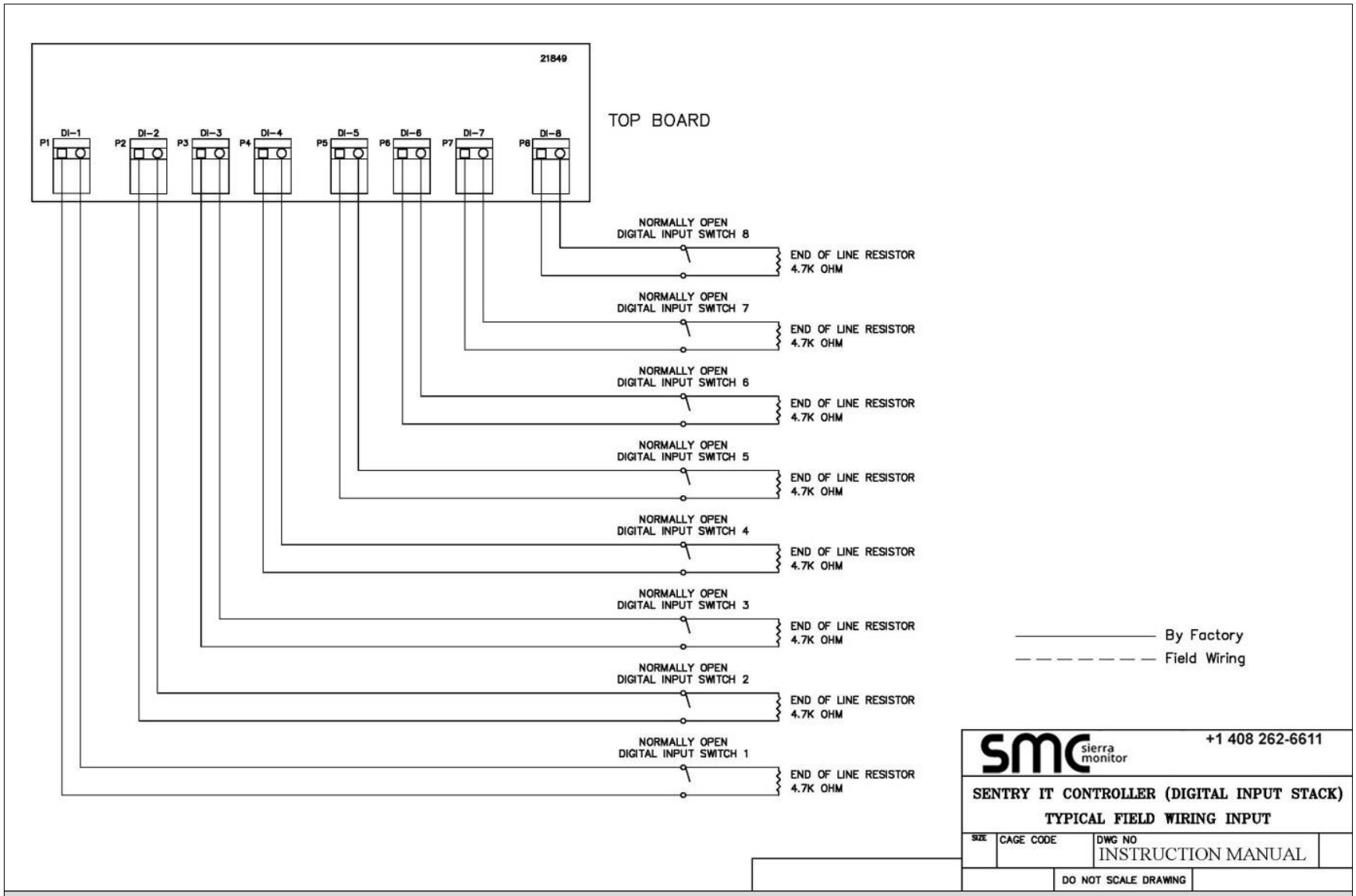


Figure 4-7 – Digital Input Wiring

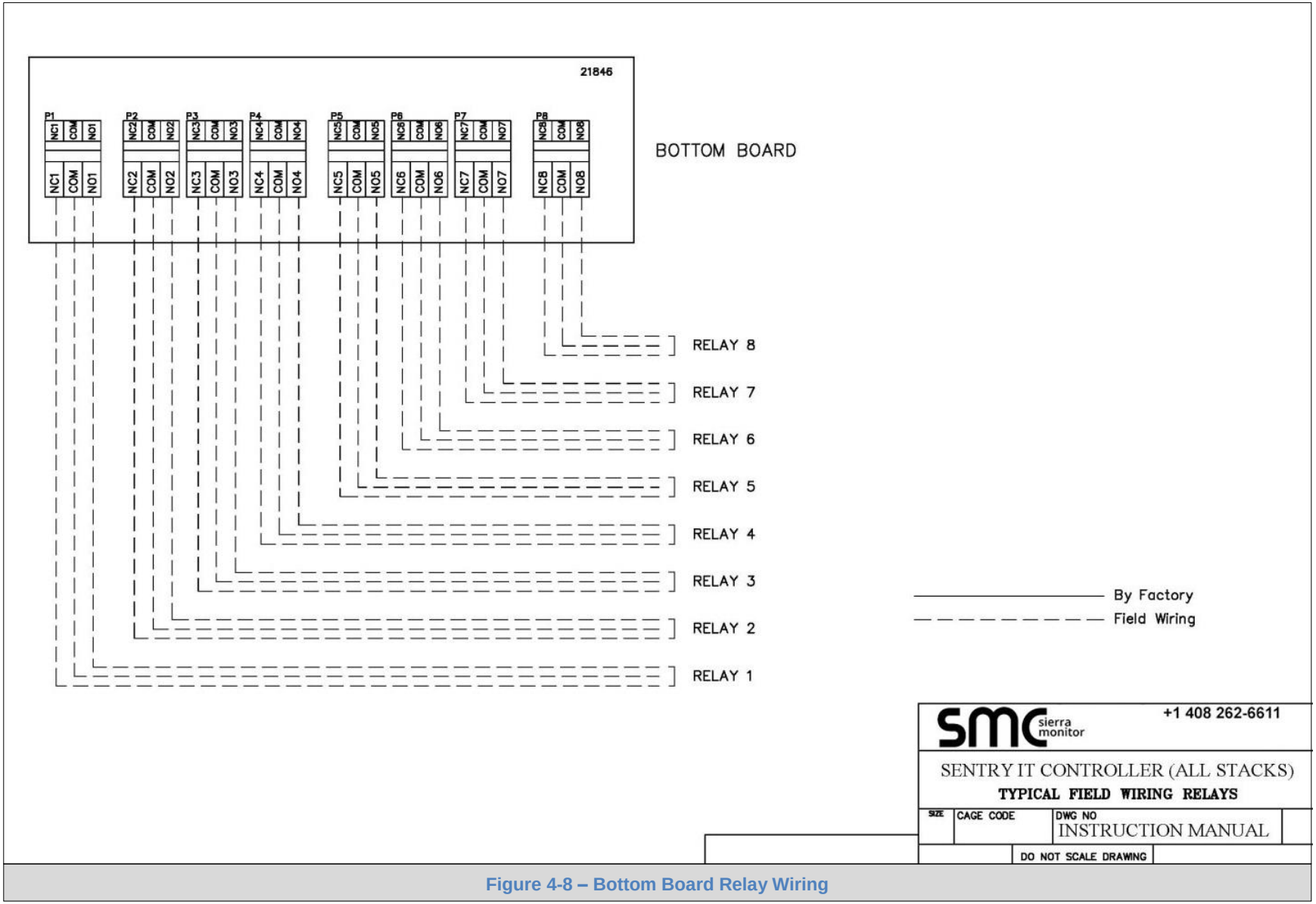


Figure 4-8 – Bottom Board Relay Wiring

4.4.2 Power Connections

Figure 4-9 and Figure 4-10 provide the locations of the terminals for connecting primary power to the controller.

- Controllers that have an AC to DC power supply installed on the upper wall of the enclosure require external AC power supply. For continuous power it is advisable to use a UPS source.
- Controllers that do not have an AC to DC power supply require an external DC source.

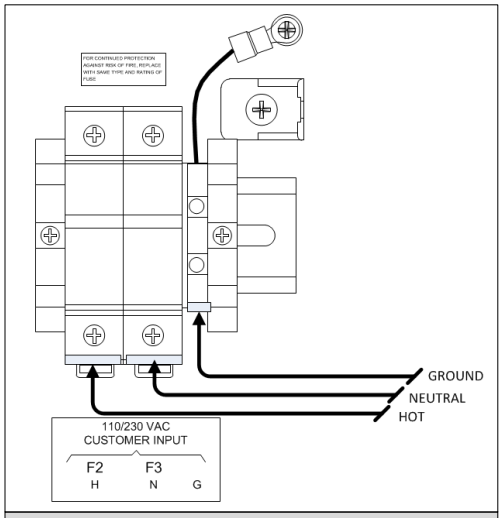


Figure 4-9 – AC Power Connections

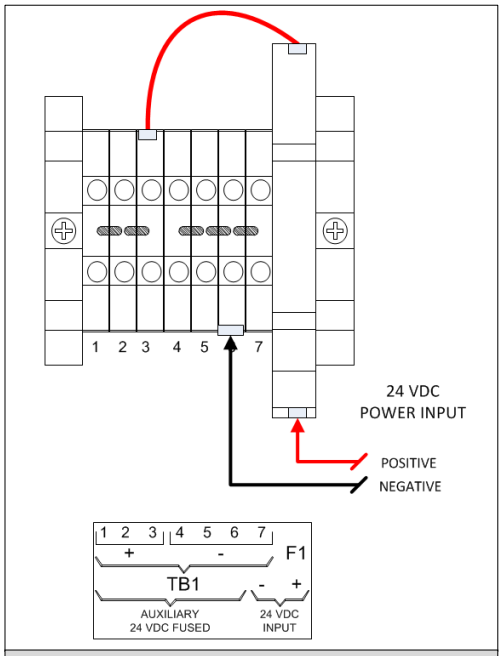


Figure 4-10 – DC Power Connections

5 COMMISSIONING

5.1 Overview

Controllers purchased from Sierra Monitor as part of a fully engineered system are factory configured and tested prior to shipment. In this case Sensor discovery and Module Configuration may not be necessary. It is recommended to inspect and power up the system and move directly to the functional test phase.

5.2 Power Up

Perform a careful inspection to insure that all field wires in the cabinet are correctly installed. Check to make sure there are no loose materials or tools in the enclosure. Apply external power and wait for the TPC display to complete its boot process. After a successful boot the Controller GUI default home page will be displayed.

5.2.1 Confirm Sensor Module Operation

By referring to the instruction manual for each gas sensor type, confirm that all modules connected to the controller are operational. This confirmation can generally be accomplished by a quick visual check to see that the module display is active. Every 30 seconds the module will display a banner including the module address. Keep a log of the module address settings to confirm there are no duplicate addresses.

5.3 Discover Sensors

To discover sensors, touch the following keys and menu items on the TPC display:

- M key five times
- System Management, then E
- Configuration, then E
- Manage Module Map, then E
- Initiate Module Discovery, then E
- Confirm with E
- Repeat this process until all modules show on TCP display

The discovered modules will be displayed in a table. If any module is not displayed, repeat the Initial Module Discovery process.

NOTE: If any module is missing, begin troubleshooting to determine why the modules are not being recognized by the controller.

5.3.1 Troubleshooting Missed Modules

Use the following table to identify the inspection point for troubleshooting any module numbers that are missing from the TPC display after module discovery. When the problem is resolved repeat the discovery routine until all modules are recognized on the TPC display.

Problem	Action
All modules missing	The inspection point is at the controller input stack.
All modules on one wiring channel missing	The inspection point is at the channel connection on the input stack.
One module missing	The inspection point is at the field sensor module. Confirm wiring connections and sensor module address switch – to avoid duplicate addresses.

5.4 Configure Modules

The process to configure the discovered modules is dependent upon the method of communication between the controller and the modules. If the controller was set up in the factory discovered modules will default to factory configured parameters.

5.4.1 Modbus

Modbus communication will discover all the important sensor module values and load them from the module into the controller memory.

5.4.2 Analog

Analog communication only discovers the input on the Analog Input stack connection. All required module parameters must be manually input via the TPC display.

5.4.3 PSG

PSG communication loads a small subset of parameters from the module to the controller. The remaining parameters must be manually configured via the Set-Module Screen and Sensor Setup Form.

Parameter	Modbus	Analog 4-20 mA	PSG	Note
Sensor Address	Auto Discover by loop number and module rotary switch	Auto Discover by stack number and channel number	Auto Discover by stack number, loop number and module rotary switch	Refer to Figure 2-11
Module Type	Auto-discover Combustible, Toxic or Oxygen	Manual input	Auto-discover Combustible, Toxic or Oxygen	
Gas Tag	Manual pull down list			
Alarm Level	Auto Discover	Manual Input		
Latch	Auto Discover	Manual Input		
Warning Level	Auto Discover	Manual Input		
Latch	Auto Discover	Manual Input		
Calibration Gas	Default based on Gas Tag – Pull down list for manual update			
Calibration Interval	Default based on Gas Tag – Pull down list for manual update			
Calibration Span	Default based on Gas Tag – Pull down list for manual update			
Module Tag	Default is the Sensor Address – Manual input for custom tag			
Module Number	Manual Input			
Units	Auto update based on Module Type			

Figure 5-1 – Data Detail by Communications Method

5.5 Configure Controller

When all sensor modules have been discovered and configured the controller is immediately in normal run mode. To display the home page of the GUI press the home icon or press the M key repeatedly until the home page is displayed. Various home page displays are available as describe in the following sections.

5.6 Functional Test

For Factory configured Controller the configuration sheets supplied with the system can be used for step by step testing of:

- Wiring
- Alarms logic
- Visual and Audible devices
- Other actuators
- InSite graphical display

5.6.1 GUI Display Options

The Display options described below can be set under the Set Display Defaults menu (System Management / Configuration / Set Display Defaults). Use the TPC display keys to apply new settings.

Display Type	Banner	Description
Bar Graph	None	The first eight sensor modules values are displayed as dynamic value bars. To view addition modules touch the down and up navigation keys to view additional modules.
Bar Graph	System Safe (Overlay)	
Zone Screen	None	Zones are groups of modules configured in Commander logic. The Zone Screen displays the zone name in green, amber or red state. Touch the zone name to navigate to the respective Bar Graph display.
Zone Screen	System Safe (Overlay)	
Alarm Screen	None	The alarm screen displays ONLY the sensor numbers that are in Warning or Alarm state. Touch the module to view its Bar Graph Display.
Alarm Screen	System Safe (Overlay)	

Figure 5-2 – GUI Display Options

5.6.2 Sentry InSite™

When the Sentry IT Controller is connected into an Ethernet Network Sentry InSite provides a Quick View of all sensor modules on the system and can be accessed via any Internet Browser.

5.7 Controller Testing and Commissioning

Controller testing and commission can be initiated after the follow processes are complete:

- All sensor modules have been discovered and confirmed in normal operation
- Display defaults and have been selected and implemented
- All sensor modules have been calibrated

The Controller is supplied with a set of configuration documents that identify:

- The planned sensor module numbers, loop connections and alarm levels
- Commander logic installed to manage the function of all relays
- Applicable tag names and specific system nomenclature

Definition of the specific actions to test and commission the system are beyond the scope of this manual and normally provided by the specifying engineer or AHJ. In general:

- Every sensor module input should be stimulated to insure that the correct display activates
- Every relay output should be activated via sensor module stimulation to confirm correct action
- All annunciation devices should be activated via relay activation to confirm visual, audible and mechanical action is correct
- All alarm handling devices should be exercised via alarm relay activation

After commission testing, the controller and gas detection system are ready for on line operation.

6 COMMANDER LOGIC

6.1 Overview

All controller outputs are controlled by Commander Logic. A process block based configuration file is loaded onto the controller to collect status data and use it to drive the outputs. The configuration file is generally factory installed based on user requirements provided during the order and project submittal process. Once delivered, the file can be modified as an Excel worksheet and downloaded to a working controller.

6.2 Process Blocks

Commander Logic is based on Process Blocks that provide state based results or analog values. The state (digital) based results are used to drive Relays. Analog values are used to drive Analog Outputs. Process Blocks are also used to combine states or values to create Flags that can then be used as inputs to final Process Blocks. For example, two groups of sensors may be grouped as a zone and then voted to results in a change of Relay state.

Available Process Blocks include:

- Flags
- Relays
- Analog Output

A special application of Commander Process Blocks creates Zones to allow sensor groups to be displayed on the TPC display.

Available Process Block name:

- Zones

6.3 Managing Commander Logic Files

Commander Logic is a .CSV file. The normal method for editing Commander Logic is to open the file in Excel, edit instructions and then save as Userlogic.csv.

To load a new Commander file onto the Controller:

- Create a folder named Commander on the root directory of a USB memory stick
- Copy Userlogic.csv into the Commander Folder
- Plug the memory stick into the USB port on the back of the TPC
- Navigate the TPC menu to System Management/Configuration/Commander Logic
- Touch “Install User Logic from USB” and Enter
- Cycle the Controller power to initiate the new logic

To upload the current Userlogic.csv file from the Controller:

- Create a folder named Commander on the root directory of a USB memory stick
- Plug the memory stick into the USB port on the back of the TPC
- Navigate the TPC menu to System Management/Configuration/Commander Logic
- Touch “Save User Logic to USB” and Enter
- The current Userlogic.csv file will be saved into a new folder named Snapshot

7 SENTRY INSITE

7.1 Overview

Sentry InSite is a fully automatic screen builder that allows the user to view the status of all sensors on the system. Sentry InSite is an appliance installed on the inside of the Controller front panel. To access InSite the appliance needs to be connected to a network via an Ethernet cable. Once connected, the user can browse to the IP address labelled on the appliance.

For the diagnostics page, click the “Diagnostics” link centered at the bottom of the page.

7.2 Security

The default security access settings are:

User Name: admin

Password: admin

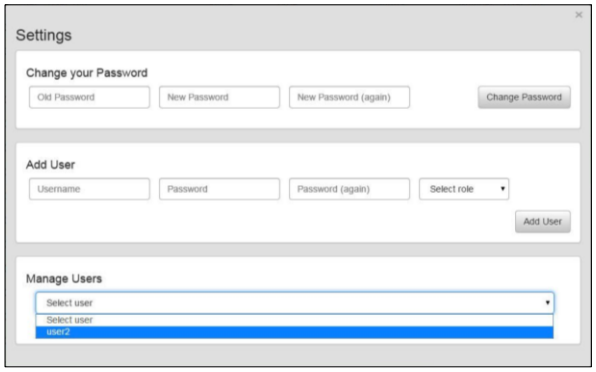
To change the admin password:

- On the System View page, click “Profile” on the top right hand side of the screen
- Click “Settings”
- Update password fields and click “Change Password” to save

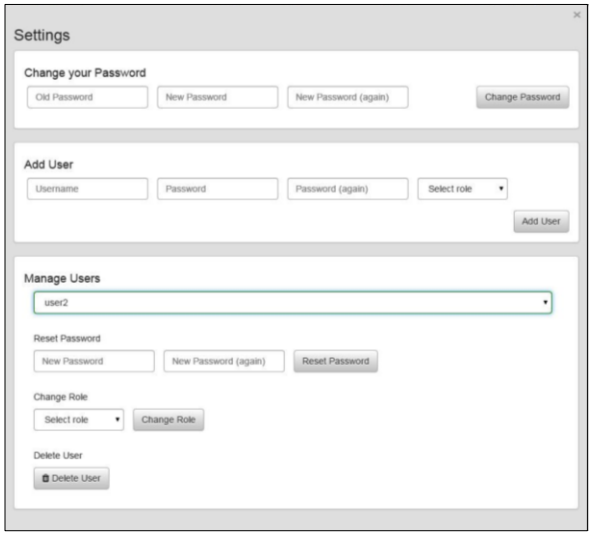
To add additional users and manage users:

- To add a user, fill out fields under the Add User Section, then click “Add User” to save

- To manage existing users, select the user to modify via the “Select User” drop-down menu



- Change user settings as needed; options include - changing login password, changing user role or deleting user profile



7.3 Network Settings

- To update Network Settings, click the menu button ≡ found to the upper left of the InSite Quick View Page (**Section 7.4**)
- Then click “Network Settings” on the menu that appears on the left
- Configure network settings as needed

NOTE: The Default IP Address is **192.168.1.24** and Subnet Mask is **255.255.255.0**

- Click “Save”

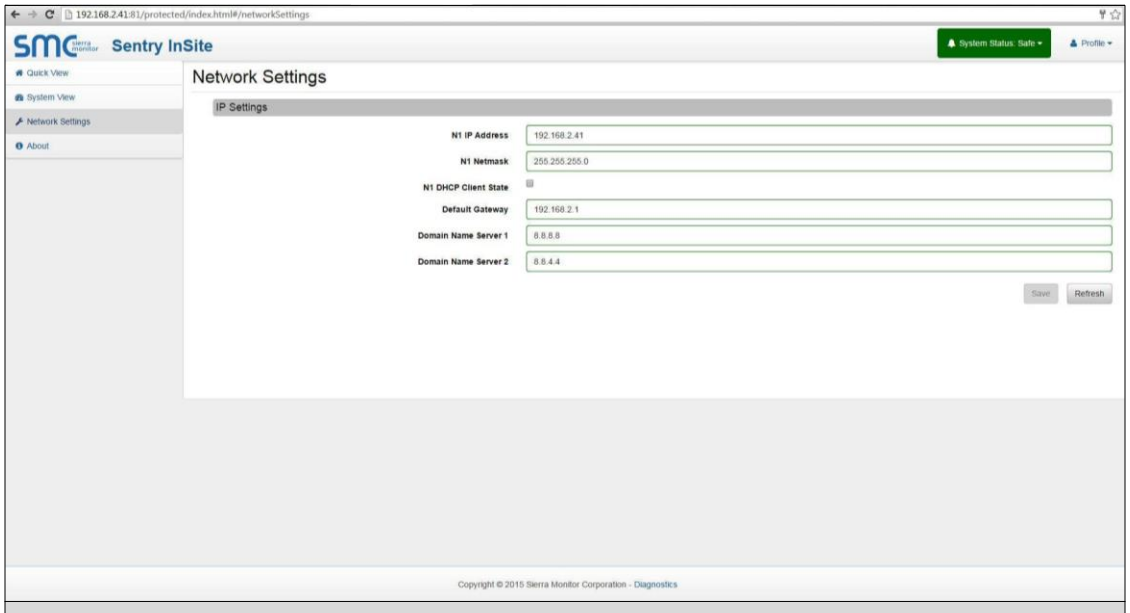


Figure 7-1 – Sentry InSite Network Settings Page

7.4 Screens

The Sentry InSite home screen provides a Quick View of all configured sensor modules providing their sensor number, tag, current reading and gas type. Each sensor entry is color highlighted green (safe), amber (warning), red (alarm) or blue (trouble). Current (active) Events are also listed in the left column for easy identification of “out of normal” conditions. Figure 7-2 illustrates a typical Quick View screen.

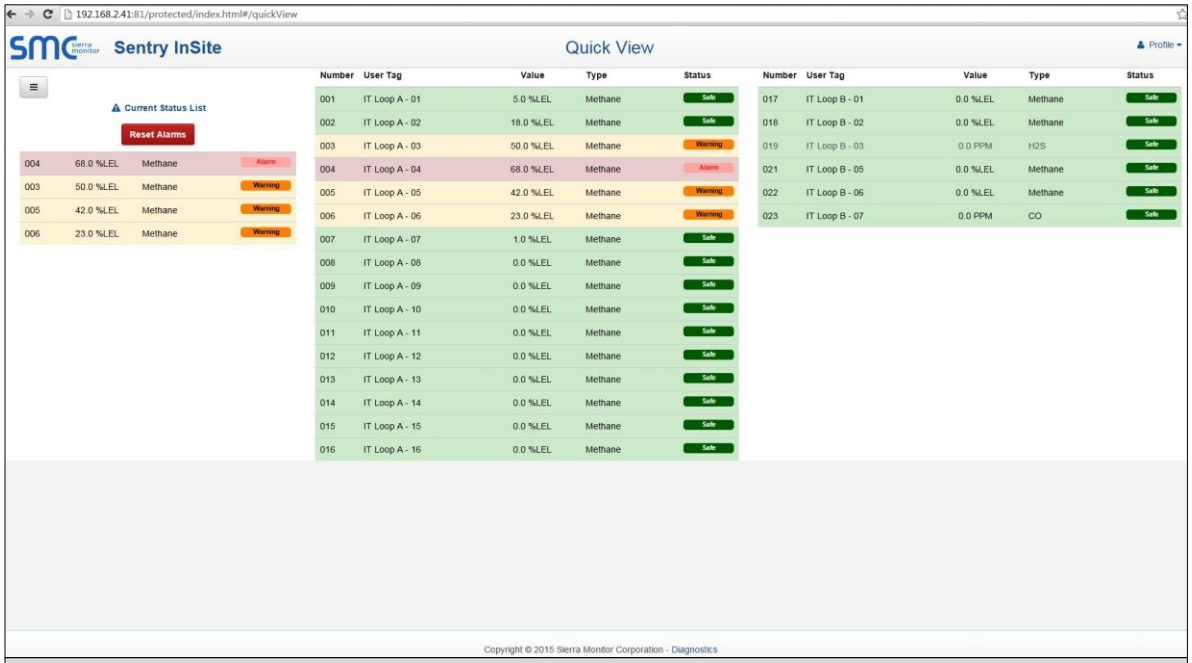


Figure 7-2 – Sentry InSite Quick View Screen

7.5 Edit Tag Names

The Sentry InSite screen initially displays default sensor tag names, identifying the Loop and Sequence Number. To customize the tag names take the following actions:

- At the Quick View screen, click any sensor line to view the Module Details page

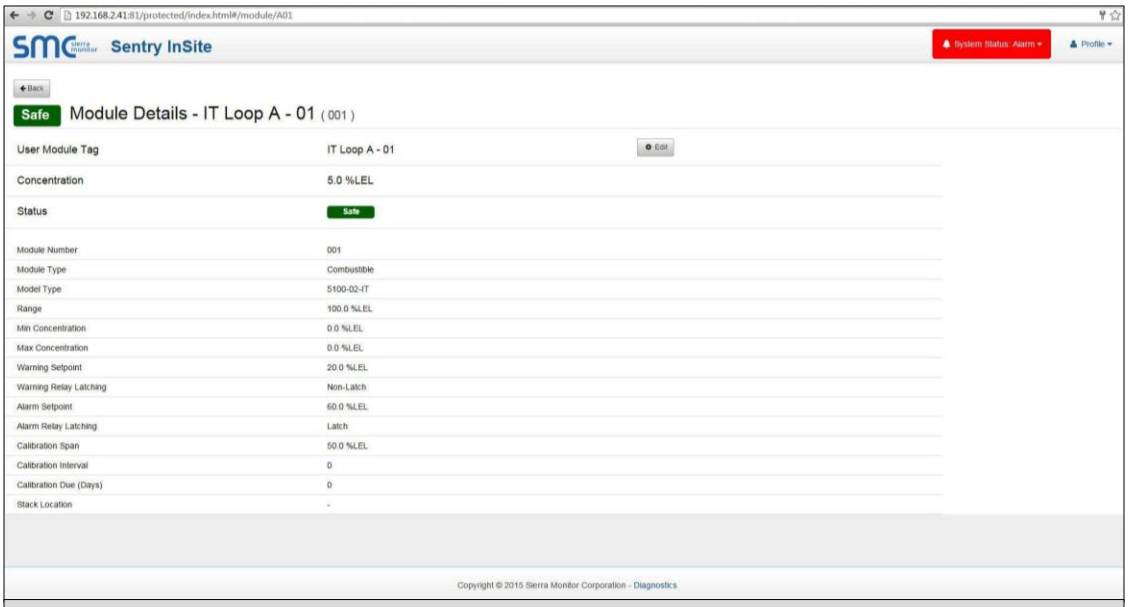


Figure 7-3 – Sentry InSite Module Details Page

- On the User Module Tag line click “Edit”
- Use the parameter edit box to type the new name and click “Save”

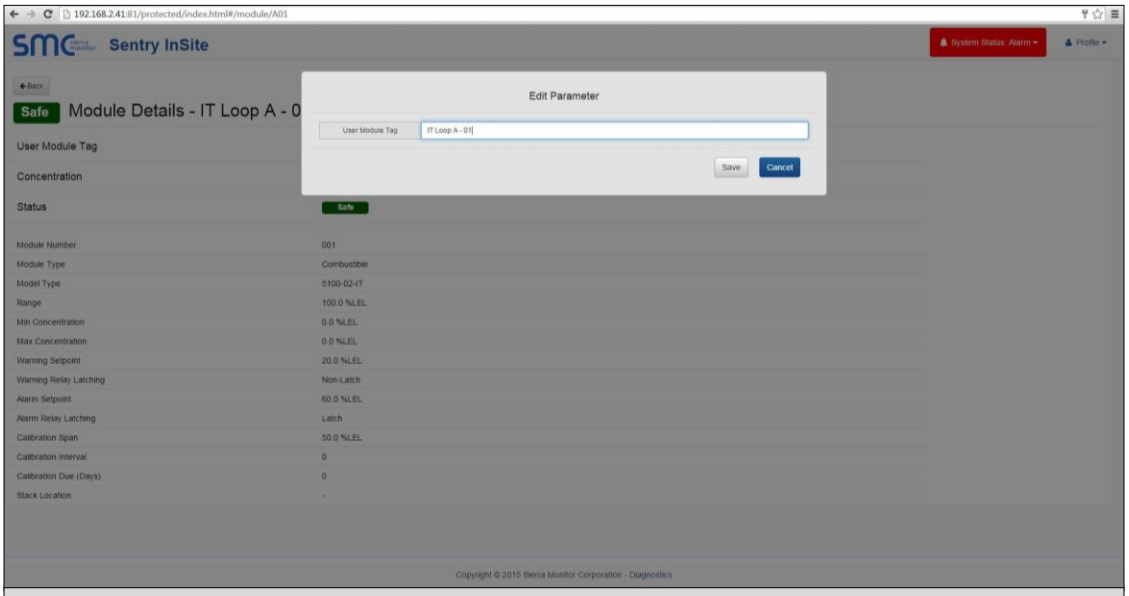


Figure 7-4 – Sentry InSite Module Details Edit Parameter

8 OPERATION – USER INTERFACE

8.1 Front Panel Detail

Figure 8-1 indicates the primary components of the Front Panel. See parenthesized numbering after headings for referenced part location.

8.1.1 Touch Panel (6)

The integrated Touch Panel Computer (TPC) is the primary operator interface. It provides critical data displays and access to various configuration, historical, and diagnostic functions.

8.1.2 Indicators (1, 2, 3, 4)

The front panel includes four high intensity LED indicators.

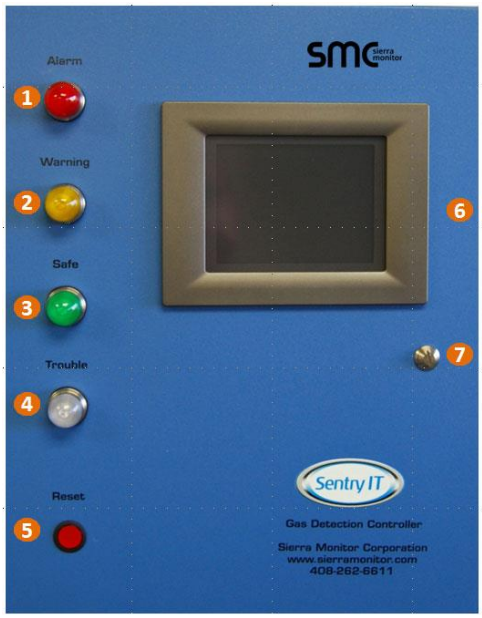


Figure 8-1 – Controller Front Panel

Red

- Flashing indicates a high alarm condition has occurred
- Solid indicates the alarm condition continues and has been acknowledged

Amber

- Solid indicates a warning condition

Green

- Solid indicates safe condition

Blue

- Flashing after power-up indicates system power up in process
- Flashing during operation indicates a trouble condition has occurred
- Solid indicates the trouble condition still exists but has been acknowledged

When the Controller is powered, at least one LED will be illuminated at all times. During safe normal operation only the Green LED will be illuminated.

8.1.3 Reset Switch (5)

The reset switch is used to Reset or Acknowledge an alarm or trouble condition.

Acknowledging the alarm condition will immediately stop the alert flashing on the touch panel. It will also reset relays configured for alarm acknowledge.

8.1.4 Door latch (7)

The standard door latch requires a half turn flat head screwdriver action to open or close the controller. The standard latch may be replaced with a key lock for applications where security necessitates the upgrade.

8.2 Operator Interface Screens

Operator interface screens utilize a common layout structure as illustrated in **Figure 8-2**.

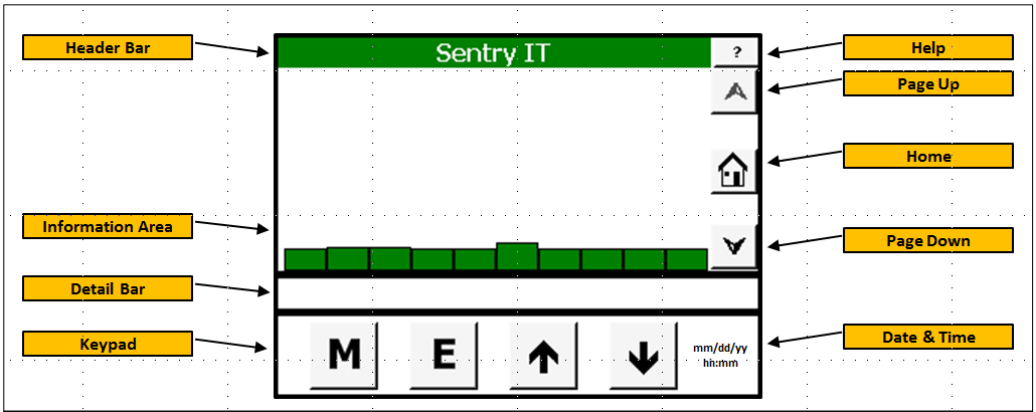


Figure 8-2 – Operator Interface Screen Layout

Screen Details	
Section	**Explanation**
Header Bar	Displays the system tag. User configurable. The background color represents the system Safe or highest Alarm status. ? The Help key on the right side of the Header Bar provides access to help topics
Information Area	Displays extensive detail information based upon selected screen. The Page Navigation keys appear when necessary in the right-hand portion of the information area. Page Up key displays the previous seven lines if present with the current first line being displayed as the last line Home navigation key displays the home screen Page Down navigation key displays the next seven lines if present, with the current last line being displayed as the first line
Detail Bar	Displays a message based on a touch of the screen. The message provides either the next action to be implemented or the data about the selected item.
Keypad	Allows navigation M Mode key advances within menus E Enter key implements selection Up key scrolls up within the menu Down key scrolls down within the menu The Controller current date and the time are displayed on the right-hand side of the keypad. The format is mm/dd/yy, HH:MM.

Screen Colors	
Banner Color	**Representation**
Red blinking	At least one of the sensor modules has an Alarm that has not been acknowledged
Red solid	Alarms have been acknowledged and at least one of the sensor modules continues to be in Alarm state
Amber	At least one of the sensor modules is in Warning state
Blue	At least one of the sensor modules is in trouble state
Green	All sensors normal, no trouble, no alarms
Sensor Bar Color	**Representation**
Red blinking	The sensor module has an Alarm that has not been acknowledged
Red solid	Alarms have been acknowledged and the sensor modules continues to be in Alarm state
Amber	The sensor module is in Warning state
Gray	The sensor module is in Trouble state
Green	The sensor module is normal, no trouble, no alarms

8.3 Navigation

This section discusses the areas of the display that can be touched to make a selection. Navigation areas highlight when selected.

The following navigation rules apply to all screens unless otherwise indicated.

- All menu page navigation begins by touching the Mode **M** key
- Sub-menu navigation may be scrolled by either touching the Mode key **M** repeatedly or by pressing the Up ↑ and Down ↓ keys
- The primary menu screens include:
  - Alarm Management
  - Calibration Management
  - Access Management
  - History Management
  - System Management
  - Module Summary
- To access the menu screens – click the desired menu in the Detail Bar (**Section 8.2**) then touch the Enter (E) key
- To access a device/sensor – select the desired device/sensor in the Information Area (**Section 8.2**) and touch the E key
  - Press the Down key to view additional information

WARNING: Do not use metal objects to touch the surface of the Touch Panel screen as these object may damage the screen surface. A fingertip, a plastic stylus or a pencil eraser work well to input data on the Touch Panel and will not damage the surface.

The touch panel indicates that the system is processing information by displaying a series of asterisks (*****) in the detail bar. When the system is processing information user input is ignored. (Figure 8-3)

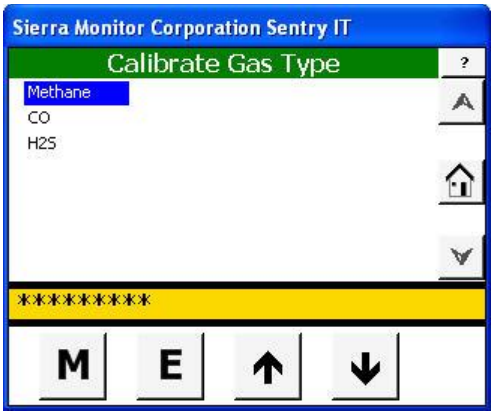


Figure 8-3 – Processing Mode Asterisks

8.4 Home Page Selection

The user may select a GUI Home Page from the following choices:

- **Display Zones with Banner –** When sensor modules have been assigned into Zone groups (Commander Logic) the Display presents the Zone Name. Any alarm within the Zone group causes a color change. When the Zone is touched the Module bar chart display will be presented for the respective module addresses. When there are no alarms present a large banner displays “Gas Detection System Condition Safe”.
- **Display Zones without Banner –** Same as above except there is no Banner.
- **Display Modules with Banner –** Provides bar graph view of up to 8 inputs per page, with multiple pages available. When there are no alarms present a large banner displays “Gas Detection System Condition Safe”.
- **Display Modules without Banner –** Same as above except there is no Banner. This is the system default view until a new Home screen view is selected.
- **Display only Alarms with Banner –** This Home Screen shows only sensor modules that are in alarm state. When there are no alarms present a large banner displays “Gas Detection System Condition Safe”.

To select a Home Page navigate to System Management / Configuration / Set Display Defaults.

8.5 Mode Pages

Menu pages provide the ability to navigate, access information, and change configuration. **Figure 8-4** provides the top level menu structure that appears on the TPC display.

Master Mode Structure	
M (Mode)	E (Enter)
Home Screen	
Alarm Management	
	Alarm Reset
	View Current Alarms
	View Current Warnings
	View Module Trouble
Calibration Management	
	Global Cal All
	Global Cal Type
	Global Cal Select Modules
	Global Cal Select Zones
	Confirm Remote Calibration
Access Management	
	Unprotected
History Management	
	View History Report
	Clear History Report
System Management	
	Configuration
	Maintenance
Module Summary	
	Module listing
About System	
	Touch Panel Version
	Controller Version
	Order Number
	Stack 1 thru 3 type
Home Screen	

Figure 8-4 – Top Level Menu Structure

8.6 Alarm Management

The Alarm Management page allows the user to execute the global alarm reset command. Users can also view Current Alarms, Current Warnings of Module Trouble Conditions.

- From the Home page, press the Mode (M) key to sequence through the modes
- Select Alarm Management module
- Touch Enter (E) key to confirm the selection
- Navigate the Alarm Management menu as needed

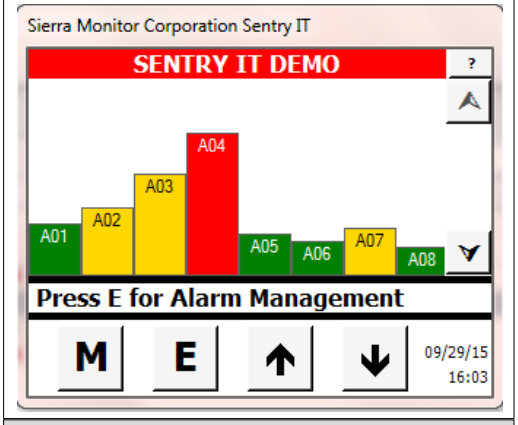


Figure 8-5 – Select Alarm Management

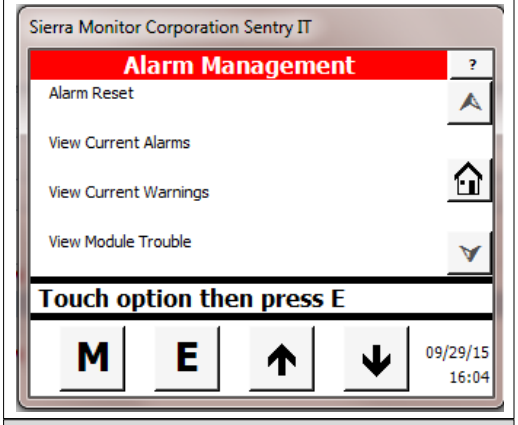


Figure 8-6 – Alarm Management Menu

8.6.1 Alarm Reset

The Alarm Reset activity allows onscreen global acknowledge or reset of all applicable alarms. To reset specific alarms, use the View Current Alarms activity.

NOTE: Typically global alarm reset is executed via the front panel Reset Switch.

The Alarm Reset function acknowledges current alarms and resets latched alarms. To perform a global reset of all applicable alarm conditions:

- Touch Alarm Reset
- Touch Enter (E) key to select the option
- The Detail bar will display “Alarm reset confirmed, Press E”
- Touch E key again

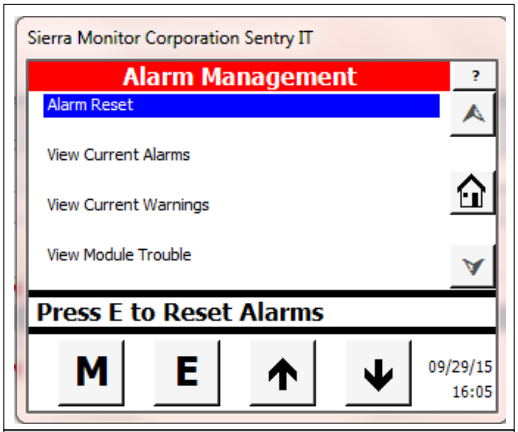


Figure 8-7 – Select Alarm Reset

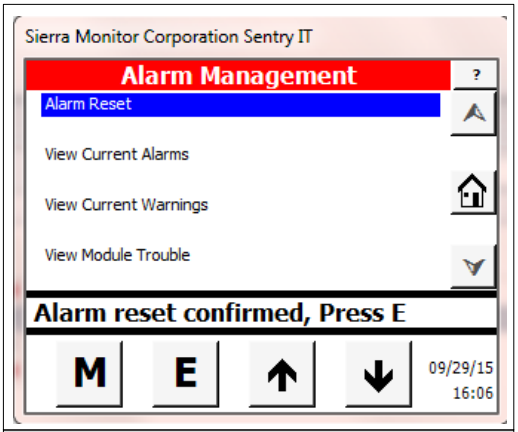


Figure 8-8 – Confirm Alarm Reset

8.6.2 View Current Alarms

This activity in Alarm Management allows access to view or reset specific alarms.

To view or reset current alarms:

- Touch View Current Alarms
- Touch Enter (E) key to select the option

To reset the specific alarm:

- Select the Alarm
- Touch E key to confirm the selection
  - Acknowledged alarms change from flashing to solid, while cleared alarms disappear
- The Detail Bar will display “Alarm reset confirmed, Press E”
- Touch E key
- To return to the Alarm Management page, touch the Mode (M) key

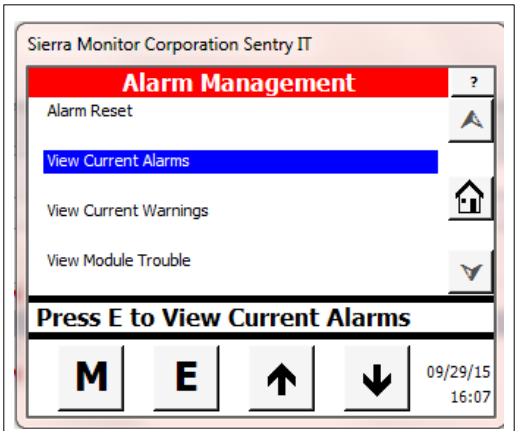


Figure 8-9 – Select View Current Alarms

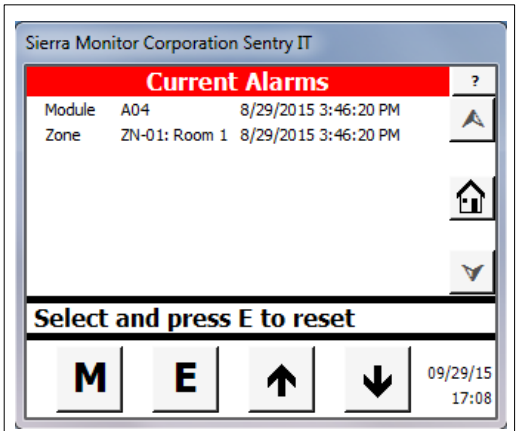


Figure 8-10 – Current Alarms

8.6.3 View Current Warnings

This activity in Alarm Management allows access to view or reset specific warnings.

To view and manage current warnings:

- Select View Current Warnings
- Touch Enter (E) key to select the option

To reset a specific warning:

- Select the warning and touch E key. (**Figure 8-13**)
    - Acknowledged warnings change from flashing to solid while cleared warnings disappear
- The Detail bar will display “Alarm reset confirmed, Press E”
- To return to the Alarm Management page, touch Mode (M) key

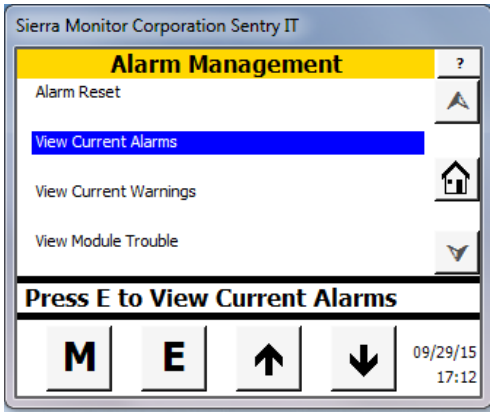


Figure 8-11 – View Current Warnings

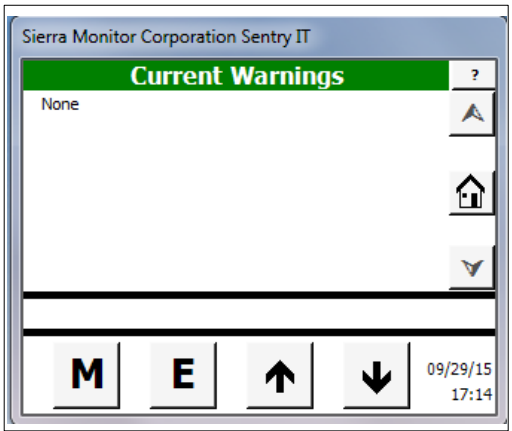


Figure 8-12 – No Current Warnings

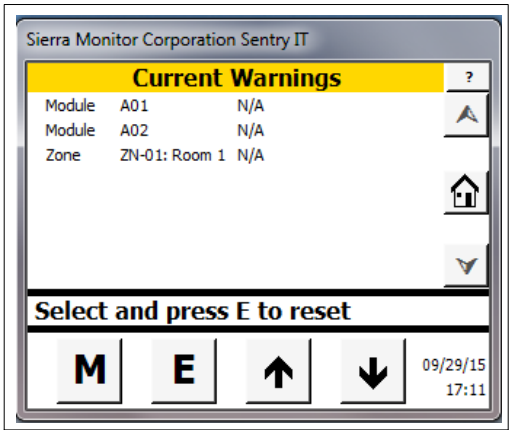


Figure 8-13 – Current Warnings Display

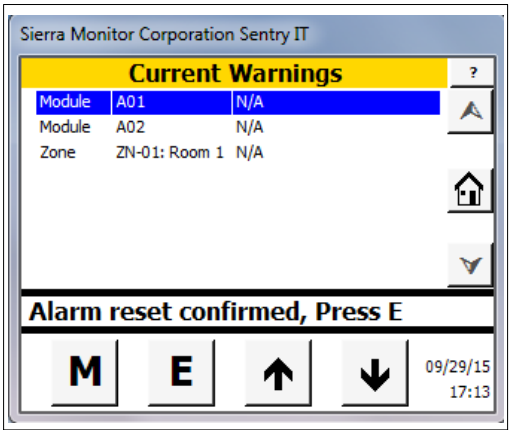


Figure 8-14 – Current Warnings Reset

8.6.4 View Module Trouble

This activity in Alarm Management allows access to view or reset specific trouble conditions.

To view and manage current troubles:

- Select View Module Trouble
- Touch Enter (E) key to select the option

Figures below show the normal condition.

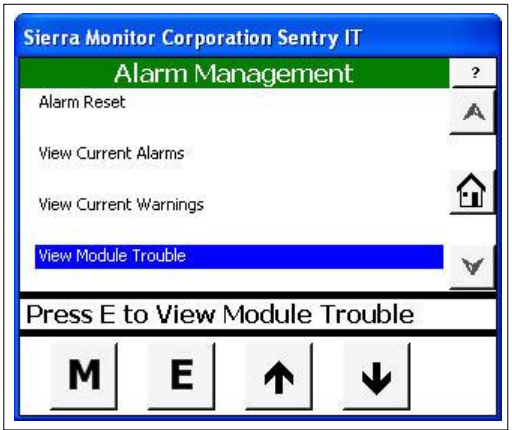


Figure 8-15 – View Module Trouble

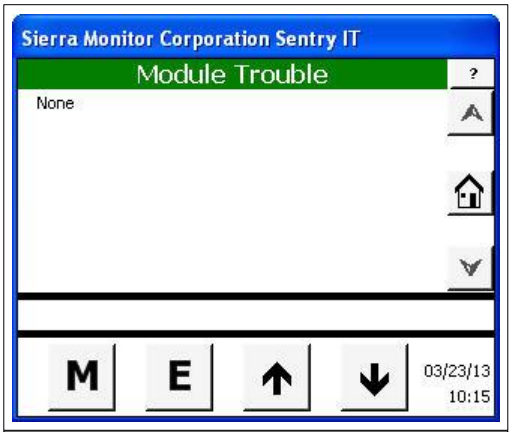


Figure 8-16 – Module Trouble Screen

Figures below show Module trouble condition.

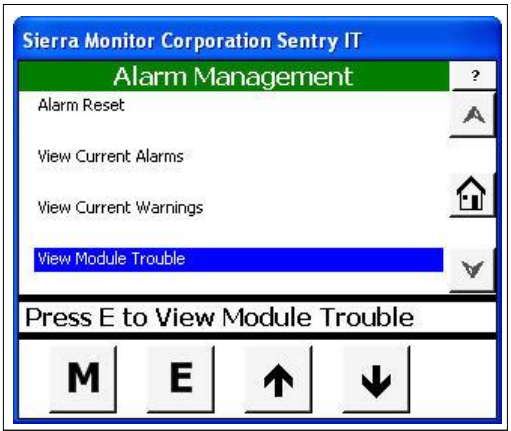


Figure 8-17 – View Module Trouble

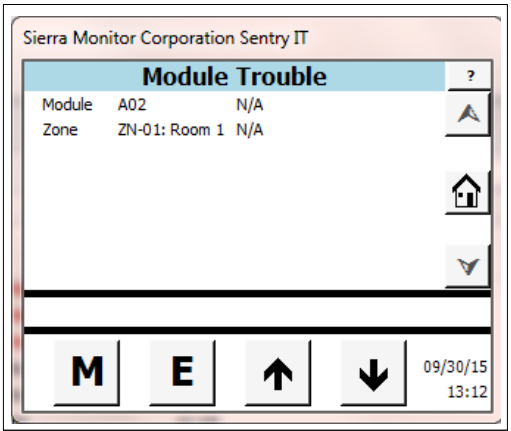


Figure 8-18 – Module with Trouble

Figure 8-19 describes alarm state logic behavior on TPC display, Front Panel LED's and Alarm Relays.

Condition		Result		
Configuration	**Status**	**Screen**	**LED**	**Relay**
Alarm condition with Latch configuration	Alarm	Flash	Flash	On
	Reset*	Solid	Solid	On
	Alarm Clears	-	-	Off
Condition clears before Reset	Alarm	Flash	Flash	On
	Alarm Clears	Flash	Flash	On
	Reset*	-	-	Off
Alarm condition with Non-Latch configuration	Alarm	Flash	Flash	On
	Reset*	Solid	Solid	On
	Alarm Clears	-	-	Off
Condition clears before Reset	Alarm	Flash	Flash	On
	Alarm Clears	-	-	Off
Alarm condition with Alarm Acknowledge configuration	Alarm	Flash	Flash	On
	Reset*	Solid	Solid	Off
	Alarm Clears	-	-	Off
Condition clears before Reset (Ackn.)	Alarm	Flash	Flash	On
	Alarm Clears	Flash	Flash	On
	Reset*	-	-	Off
Warning condition with Latch configuration	Warning	Solid	Solid	On
	Reset*	Solid	Solid	On
	Warning Clears	-	-	Off
Condition clears before Reset	Warning	Solid	Solid	On
	Warning Clears	Solid	Solid	On
	Reset*	-	-	Off
Warning condition with Non-Latch configuration	Warning	Solid	Solid	On
	Reset*	Solid	Solid	On
	Warning Clears	-	-	Off
Condition clears before Reset	Warning	Solid	Solid	On
	Warning Clears	-	-	Off
Warning condition with Acknowledge configuration	Warning	Solid	Solid	On
	Reset*	Solid	Solid	Off
	Warning Clears	-	-	Off
Condition clears before Reset	Warning	Solid	Solid	On
	Warning Clears	Solid	Solid	On
	Reset*	-	-	Off

Figure 8-19 – Alarm Conditions

* Reset is Input by TPC display menu, integral switch, remote switch, or Modbus command.

8.7 Calibration Management

The controller provides for gas detection system calibration to be implemented in various methods to suit the specific application. These methods include:

- **Remote Calibration** – Allows calibration of sensor modules only (typically used for Analog Input or PSG sensors). Since the modules have their own individual settings the Sentry IT Controller does not need to be updated with device/sensor calibration information. However, device/sensor calibration status and other information can be updated on the controller via Remote Calibration and then subsequently updated via the Sentry IT Controller. (**Section** 8.7.1)
- Sentry IT GlobalCal (typically used for Modbus or PSG sensor modules) has various modes that allows different ways to calibrate:
  - **GlobalCal All** – Calibrate all sensor modules (**Section** 8.7.2)
  - **GlobalCal Gas Type** – Calibrate all sensor modules of one gas type (**Section** 8.7.3)
  - **GlobalCal Select Modules** – Calibrate any selected sensor modules (**Section** 8.7.4)
  - **GlobalCal Select Zones** – Calibrate by Zone requires Commander logic zone configuration (**Section** 8.7.5)

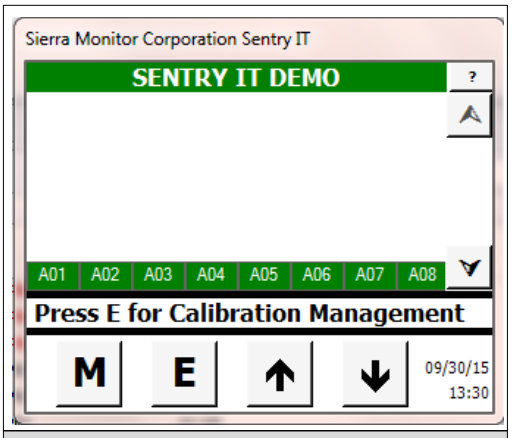


Figure 8-20 – Calibration Management

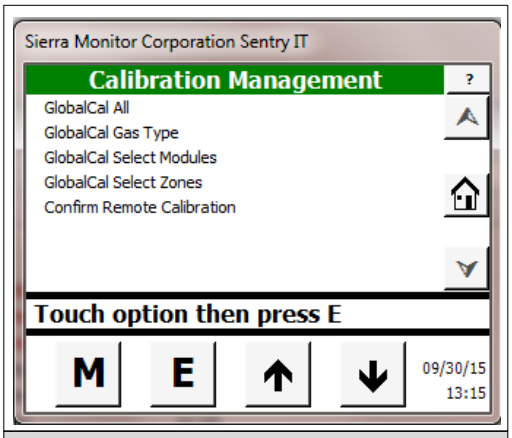


Figure 8-21 – Calibration Menu

These methods are described in more detail in the following sections.

8.7.1 Remote Calibration

The remote calibration function allows the user to calibrate sensors in the conventional manner where all calibration activity occurs at the sensor module. After calibration has been completed it is recommended that the Remote Calibration function be used to update the controller so that the next calibration due date will be correct. **To reach the Calibration Management screen press the M key twice.**

- Perform individual sensor module calibration according to the instruction manual for the gas detector. Update the calibration date using “Confirm Remote Calibration”.

NOTE: Keep in mind that the output signal of the sensor module should be suppressed during calibration to avoid creating alarm conditions in the controller.

To update the date of calibration recorded in the Controller:

- Select “Confirm Remote Calibration” then press the E (Enter) key. All sensors from Analog Input Stack or PSG Stack module numbers will appear on TPC display. (Figure 8-22)
- Select all modules to update calibration date and press the E key (Figure 8-23). Sensors will be calibrated as the day and time the E key is pressed.
- Setting details for calibrated modules are now listed; press the E key to exit. (Figure 8-24)

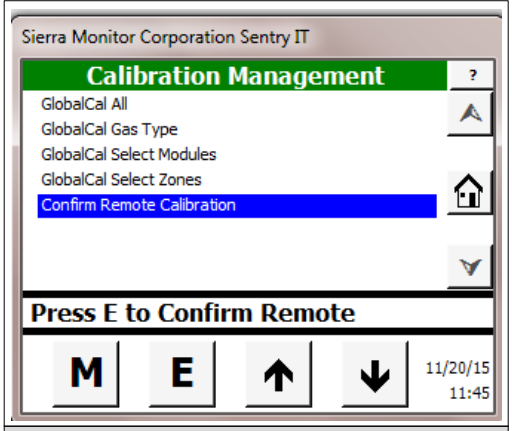


Figure 8-22 – Select Remote Calibration

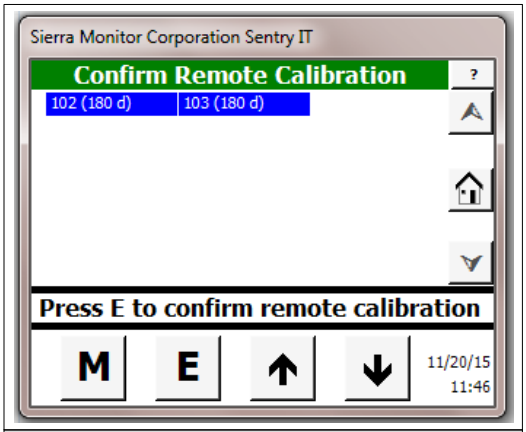


Figure 8-23 – Select Modules for Update

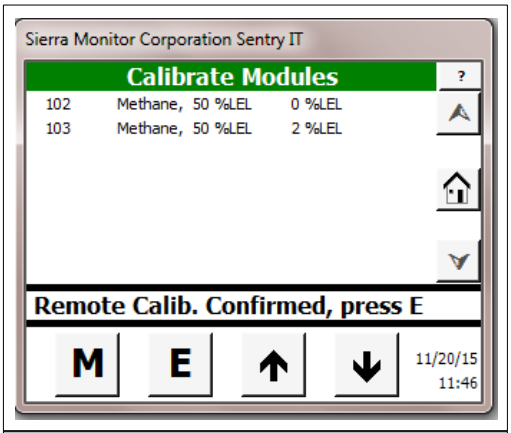


Figure 8-24 – Confirm Remote

8.7.2 GlobalCal All

In the Calibration Management menu select and Enter “GlobalCal All” and proceed as follows:

Display*	Description**	Action
Press E to GlobalCal all modules	All mapped modules are displayed followed by the number of days until calibration is required.	Press E. The controller will discover the gas types and calibration details for each module
Press E to Zero	A multipage display shows one line for each module with the configured span gas level.	Press E to begin zero gas, or M to abort calibration and use Module Setup to change span value.
Apply Zero Gas, E when done	The sensor modules are now storing the lowest sensor signal as the “zero” value.	Apply Zero (clean) air to all sensor modules. Press E when complete
Zero Complete, E to Span	Sensor modules have now stored their zero values	Press E to move to the span gas step.
Apply Span Gas, E when done	The sensor modules will now store the highest signal sensor signal as the “span” value.	Apply the correct span gas type and concentration to every module to be calibrated. Press E when complete
GlobalCal Complete, E to Operate	Modules that responded correctly to the zero and span gas display the pre-adjusted reading and are ready to return to service. Modules that did not respond correctly display “Failed” and return to their previous calibration states.	Press E **NOTE:** Return to the first GlobalCal screen to view all mapped modules to determine if their due days have updated. If there are failures use method 2c to repeat the calibration.
Any Display	Calibration process is complete	Touch “Home” to return to normal operation.

* Display column lists what instructions are displayed on the TPC display.
** Description column details what appears on the screen and any processes the Sentry IT is undergoing.

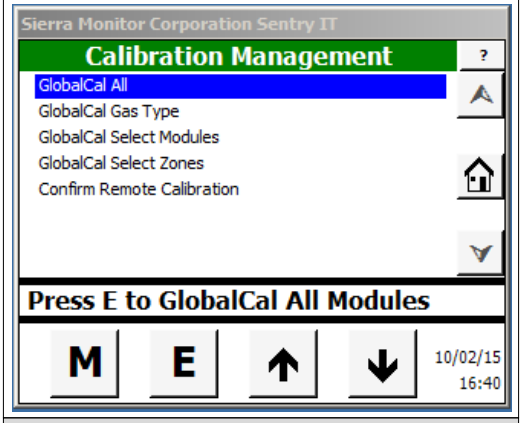


Figure 8-25 – Select Calibration All

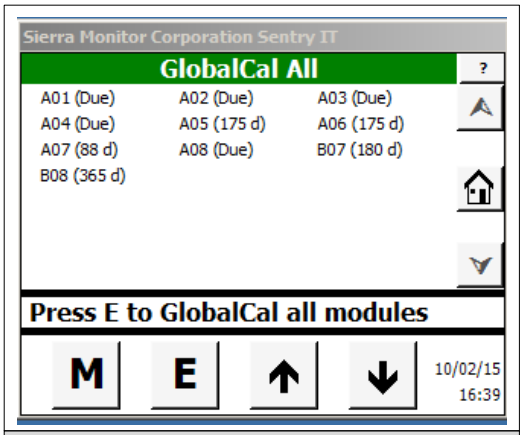


Figure 8-26 – Calibrate Select Module

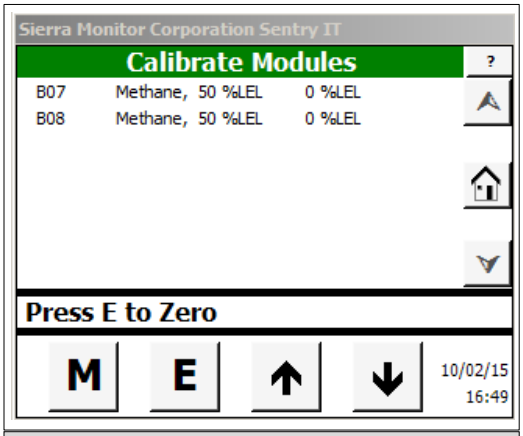


Figure 8-27 – Calibration in Progress

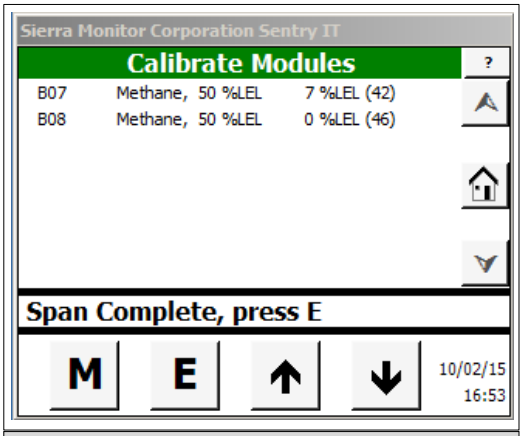


Figure 8-28 – Calibration Result

8.7.3 GlobalCal Gas Type

In the Calibration Management menu select and Enter “GlobalCal Gas Type” and proceed as follows:

Display	Description	Action
Touch Gas Type from menu	All gas type groups for all mapped modules are displayed.	Press E. The controller will discover all configured modules of the selected type.
Press E to Zero	A multipage display shows one line for each module with the configured span gas level.	Press E to begin zero gas, or M to abort calibration and use Module Setup to change span value.
Apply Zero Gas, E when done	The sensor modules are now storing the lowest sensor signal as the “zero” value.	Apply Zero (clean) air to all sensor modules. Press E when complete
Zero Complete, E to Span	Sensor modules have now stored their zero values	Press E to move to the span gas step.
Apply Span Gas, E when done	The sensor modules will now store the highest signal sensor signal as the “span” value.	Apply the correct span gas type and concentration to every module to be calibrated. Press E when complete
GlobalCal Complete, E to Operate	Modules that responded correctly to the zero and span gas display the pre-adjusted reading and are ready to return to service. Modules that did not respond correctly display “Failed” and return to their previous calibration states.	Press E **NOTE:** Return to the first GlobalCal screen to view all mapped modules to determine if their due days have updated. If there are failures use method 2c to repeat the calibration.
Any Display	Calibration process is complete	Touch “Home” to return to normal operation.

* Display column lists what instructions are displayed on the TPC display.
** Description column details what appears on the screen and any processes the Sentry IT is undergoing.

8.7.4 GlobalCal Select Modules

In the Calibration Management menu select and Enter “GlobalCal Select Modules” and proceed as follows:

Display	Description	Action
Touch Select Modules from menu	All mapped modules are displayed followed by the number of days until calibration is required.	Select specific modules by touching them on the displayed list. Press E. The controller will discover all selected modules.
Press E to Zero	A multipage display shows one line for each module with the configured span gas level.	Press E to begin zero gas, or M to abort calibration and use Module Setup to change span value.
Apply Zero Gas, E when done	The sensor modules are now storing the lowest sensor signal as the “zero” value.	Apply Zero (clean) air to all sensor modules. Press E when complete
Zero Complete, E to Span	Sensor modules have now stored their zero values	Press E to move to the span gas step.
Apply Span Gas, E when done	The sensor modules will now store the highest signal sensor signal as the “span” value.	Apply the correct span gas type and concentration to every module to be calibrated. Press E when complete
GlobalCal Complete, E to Operate	Modules that responded correctly to the zero and span gas display the pre-adjusted reading and are ready to return to service. Modules that did not respond correctly display “Failed” and return to their previous calibration states.	Press E **NOTE:** Return to the first GlobalCal screen to view all mapped modules to determine if their due days have updated. If there are failures use method 2c to repeat the calibration.
Any Display	Calibration process is complete	Touch “Home” to return to normal operation.

* Display column lists what instructions are displayed on the TPC display.
** Description column details what appears on the screen and any processes the Sentry IT is undergoing.

8.7.5 GlobalCal Select Zone

In the Calibration Management menu select and Enter “GlobalCal Select Zones” and proceed as follows:

Display	Description	Action
Touch Select Zone from menu	All mapped modules are displayed followed by the number of days until calibration is required.	Select Zones by touching them on the displayed list. Press E. The controller will discover all mapped sensors in the selected zones.
Press E to Zero	A multipage display shows one line for each module with the configured span gas level.	Press E to begin zero gas, or M to abort calibration and use Module Setup to change span value.
Apply Zero Gas, E when done	The sensor modules are now storing the lowest sensor signal as the “zero” value.	Apply Zero (clean) air to all sensor modules. Press E when complete
Zero Complete, E to Span	Sensor modules have now stored their zero values	Press E to move to the span gas step.
Apply Span Gas, E when done	The sensor modules will now store the highest signal sensor signal as the “span” value.	Apply the correct span gas type and concentration to every module to be calibrated. Press E when complete
GlobalCal Complete, E to Operate	Modules that responded correctly to the zero and span gas display the pre-adjusted reading and are ready to return to service. Modules that did not respond correctly display “Failed” and return to their previous calibration states.	Press E **NOTE:** Return to the first GlobalCal screen to view all mapped modules to determine if their due days have updated. If there are failures use method 2c to repeat the calibration.
Any Display	Calibration process is complete	Touch “Home” to return to normal operation.

* Display column lists what instructions are displayed on the TPC display.
** Description column details what appears on the screen and any processes the Sentry IT is undergoing.

8.8 Access Management

Access management for the Sentry IT Controller employs the following concepts:

- **Unprotected** – allows full access without password. The system is always unsecure allowing any user to change any configurable parameter.
- **Protected** – requires password for access to protected functions. A system is considered to be protected when a password has been configured.

To configure a password use the System Management / Configuration / Set Password menu. When the password has been set up:

- The Access Management screen is used to log in using the four digit password code or to log out.
- Use the System Management / Configuration / Set Password screen to erase the password and leave the system unprotected

8.9 History Management

The controller records two types of data into a History Report that can be read on screen or saved to a USB memory stick file. The types of data recorded are:

- Certain Controller/System messages including:
  - System Start – date and time
  - Trouble Condition – date and time
  - Trouble Cleared – date and time
- Specific events selected by the user and configured in the Commander file:
  - The Commander file parameter named “Display” can be used as follows:
    - YES – Reports every transition of the Flag or Relay state
    - IF-YES – Reports only when the Flag or Relay state is true
    - NO – The Flag or Relay state is not reported
  - A recommended Commander file protocol is to name (tag) all reported Flags or Relays with Capital Letters and to name (tag) un-reported Flags or Relays with small case names.

To view the History Report:

- Select “History Management” in the primary menu
- Press “E”
- Select “View History Report”
- Press “E”

The History Report display includes the date and time of the event, the source sensor, flag or relay and the type of event.

To manage the History Report use the following buttons:

- Clear – Removes all entries in the History Report.
- Save – Copies the History Report to an Excel file on the inserted USB memory stick. **It is recommended to clear the file after saving.**

NOTE: To insert the USB memory stick, open the controller door and find the USB slot in the back of the TPC display panel.

- Exit – Returns to the History Management Screen.

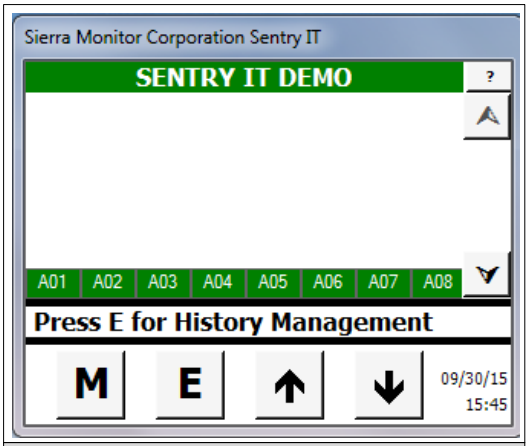


Figure 8-29 – History Management Module

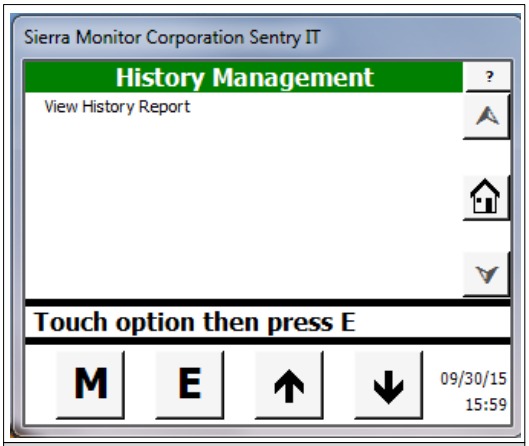


Figure 8-30 – View History Report

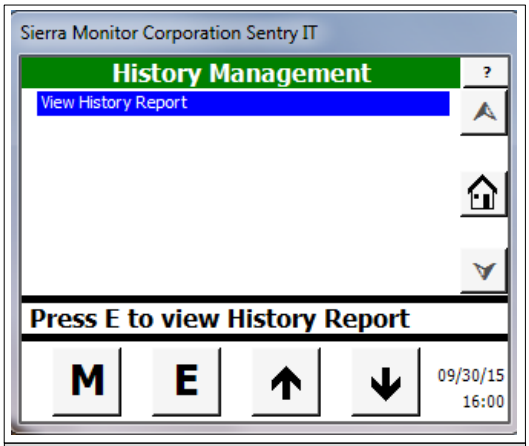


Figure 8-31 – Report Selection

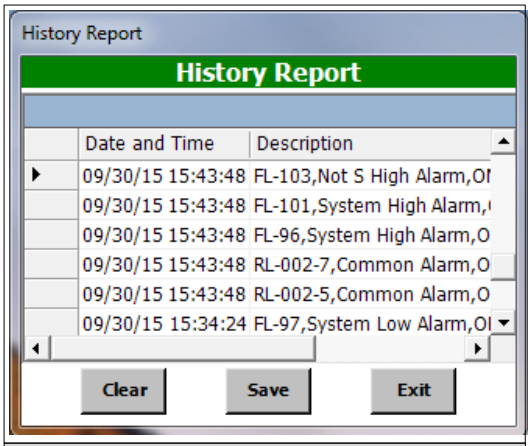


Figure 8-32 – History Report Display

8.10 System Management

The System Management menu allows users to access Configuration or Maintenance activities.

To access the System Management module:

- From the Home page press Mode (M) key to sequence through the modes
- Select System Management module
- Touch Enter (E) key to confirm the selection

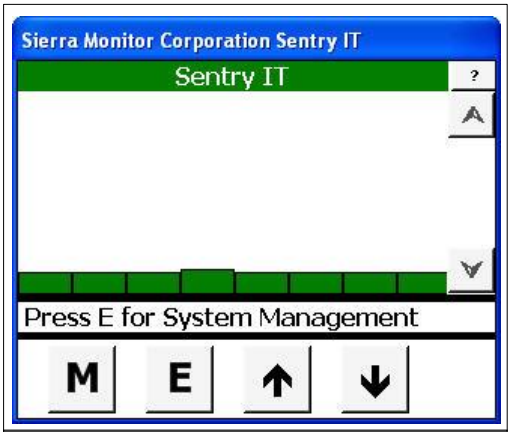


Figure 8-33 – System Management

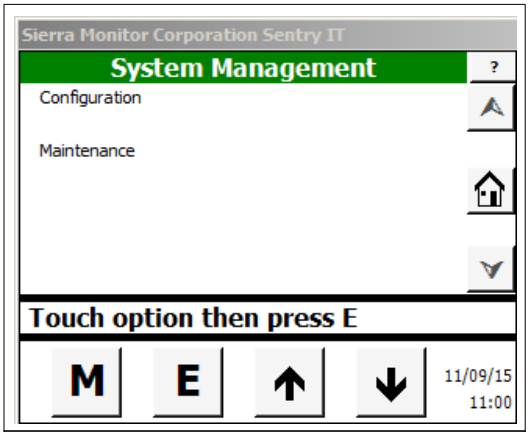


Figure 8-34 – System Management Menu

8.10.1 Configuration

Configuration menu contains following sub menus:

- Set Time & Date
- Set Controller Id
- Set Password
- Set Module
- Set Commander Logic
- Set Display Defaults
- Manage Module Map

To access the Configuration menu:

- Touch Configuration
- Touch Enter (E) key to select the option

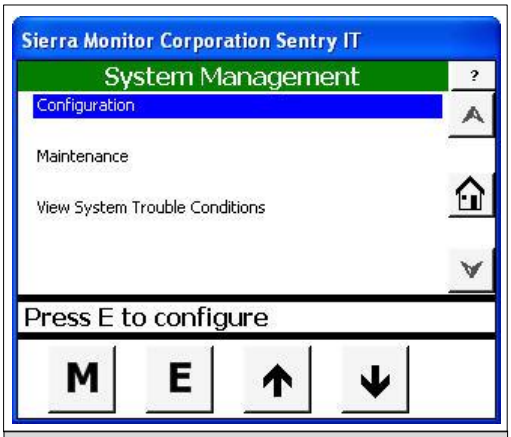


Figure 8-35 – Configuration Menu

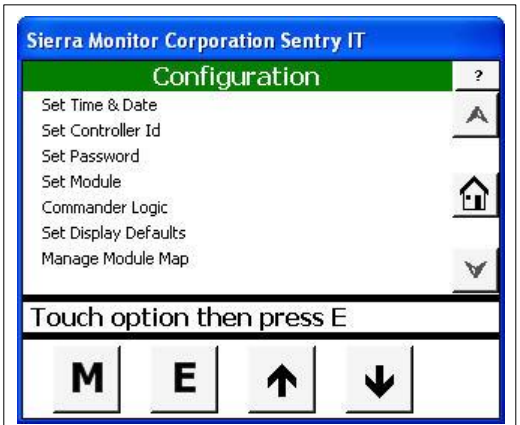


Figure 8-36 – Configuration Sub-Menu

8.10.1.1 Set Date & Time

The date and time displayed on the lower right side of the screen to timestamps all events and activities. The time can be set manually or synchronized to system clock.

To set (or change) the system date and time:

- Touch Set Date & Time
- Touch Enter (E) key to select
- Select the Date field to display the screen keyboard
- Enter the system date as MM/DD/YY followed by Return key to complete the Date setting
- Select the Time field to display the keyboard again
- Enter the current time of day as HH:MM (24-Hour time notation) followed by Keyboard Return key to complete the Time setting
- Touch the E key to save the updates
- After Date and Time update is complete, touch the E key to return to the Configuration Menu

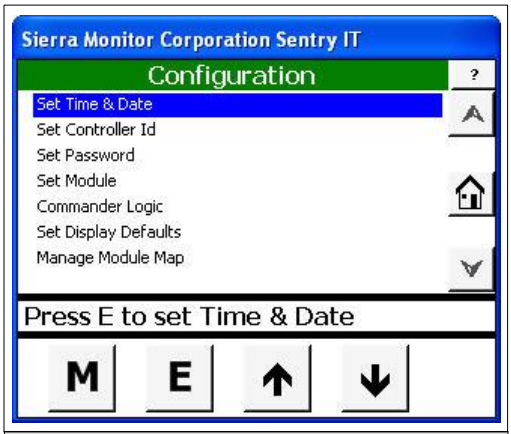


Figure 8-37 – Set Time and Date Module

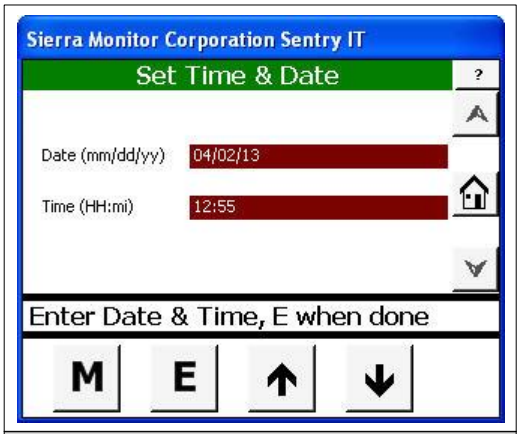


Figure 8-38 – Time to Date Menu

8.10.1.2 Set Controller ID

The Controller ID is a user-defined string that identifies the Controller.

To assign an identifier label for this Controller:

- Select “Set Controller Id”
- Touch the Enter (E) key to select the option
- Select “Controller Id” field to display the keyboard
- Enter an identifier string of up to 17 characters and touch Keyboard Return key
- Touch E key to save updates
- After Controller ID update is complete, touch E key to return to the Configuration Menu.

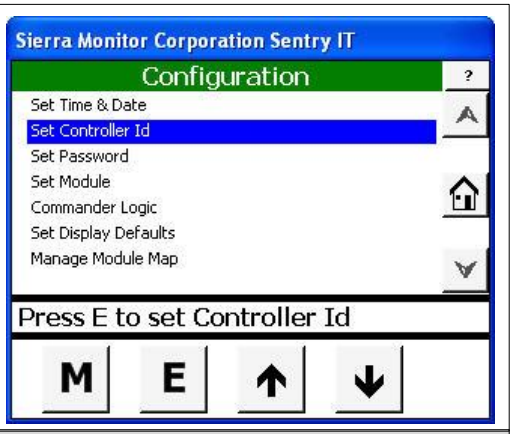


Figure 8-39 – Controller ID Menu

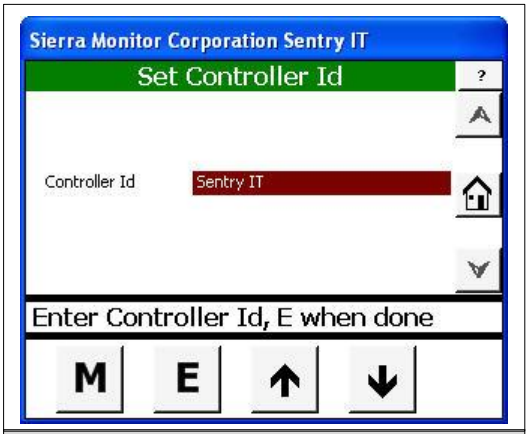


Figure 8-40 – Default Controller ID

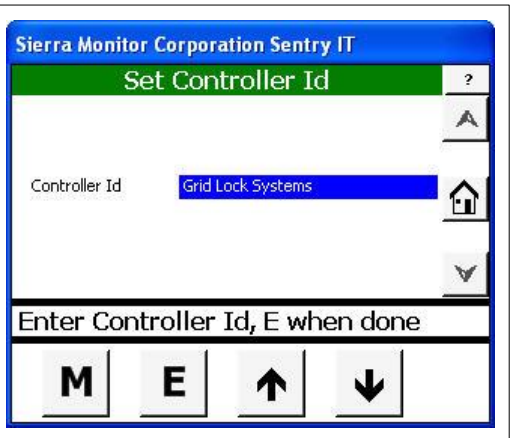


Figure 8-41 – New ID Name

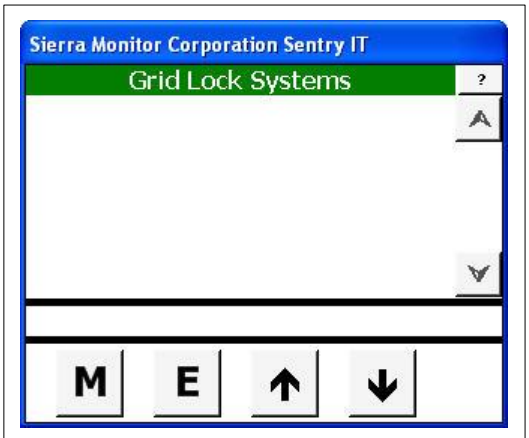


Figure 8-42 – New Controller Name

8.10.1.3 Set Password

To create or change the system password:

- Select “Set Password”
- Touch Enter (E) key to confirm the selection
- Select the Password field to display the keyboard
- Enter a Password string of up to 4 characters and press Keyboard Return key
- Touch E key to save updates
- After password update is complete, touch E key to return to the Configuration Menu

To remove the password, delete password characters starting from last character to the first character.

- Touch Enter (E) key to return to the Configuration Menu

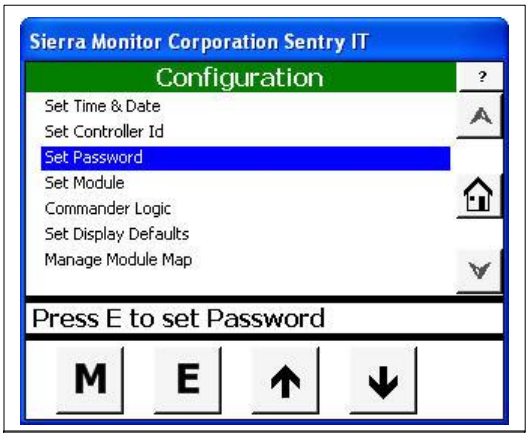


Figure 8-43 – Password Menu

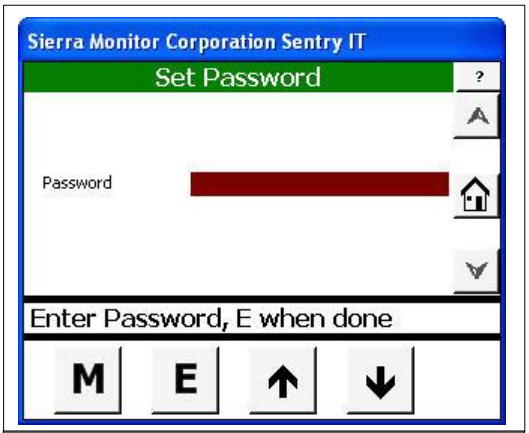


Figure 8-44 – Password Setup

8.10.1.4 Log in

Log in is required to access the protected functions. The Login page is automatically displayed when it is required. Alternately, user can navigate to the Access Management page for logging in.

When the log in is complete, the system is considered to be unsecured.

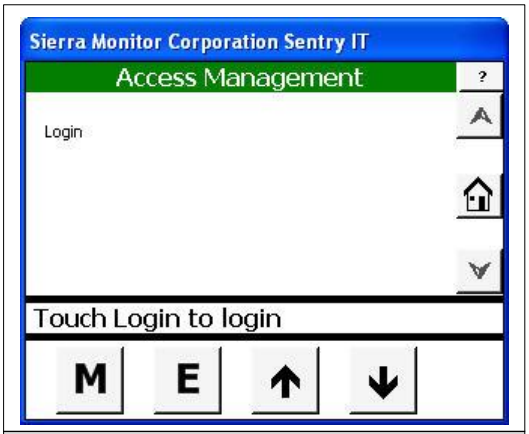


Figure 8-45 – Login Access

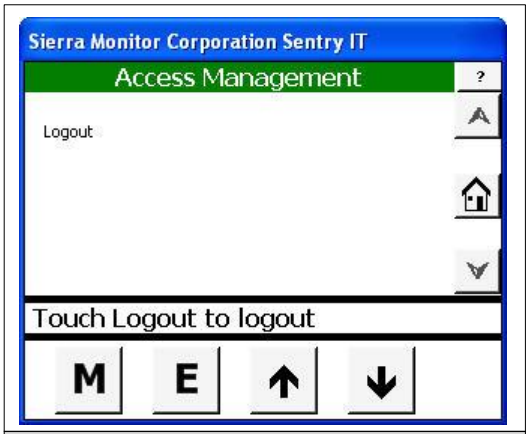


Figure 8-46 – Logout

8.10.1.5 Log out

To secure a protected system:

- Navigate to Access Management
- The Detail Bar will display “Touch Logout to logout”
- Touch Enter (E) key

8.10.1.6 Timeout

An unsecured protected system will automatically return to secure mode after a factory preset timeout of 90 minutes.

8.10.1.7 Set Module

The Set Module option defines two sensor module attributes: the sensor module number and the sensor module tag.

To select a sensor module after full module discovery:

- Select Set Module
- Touch Enter (E) key to select the option
  - System will display set of available modules
- Select a module number
- Touch E key to select the function

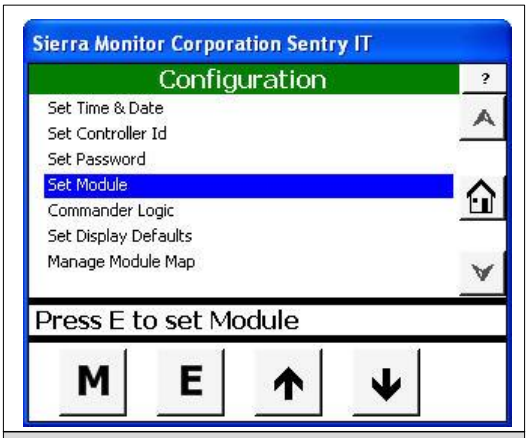


Figure 8-47 – Set Module

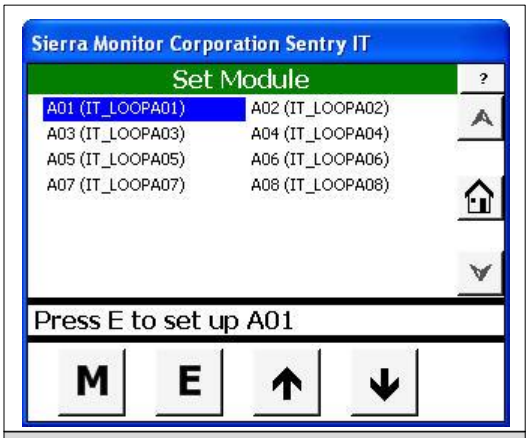


Figure 8-48 – Select a Module

After selecting a module number, the system will display a set of parameters for individual sensors.

NOTE: Module Discovery needs to be completed in order to set individual modules. All fields are populated by Module Discovery for modules connected to the Modbus, editing is optional. Analog module does not provide any information about the device so all fields need to be populated by user. See **Section** 8.10.1.10.1 for module discovery process.

To define the sensor module attributes:

NOTE: Fields with gray area are not selectable or programmable.

- Select Module type from drop down menu
- Touch the Alarm Level field to display the Keyboard
  - Type the alarm level and touch the keyboard return key
- Select the Latch on Alarm field (Y or N) from drop down menu
- Select Gas Type from drop down menu
- Touch the Warning Level field to redisplay the keyboard
  - Type the warning level and touch the keyboard return key
- Touch the Latch on Warning field (Y or N) from drop down menu

- Select Calibration Gas field from drop down menu
- Touch the Calibration Span field to display the Keyboard
  - Type the calibration span and touch the keyboard return key
- Touch the Module Tag field to display the Keyboard
  - Type the Module name and touch the keyboard return key
- Touch the Module # field to display the Keyboard
  - Type the module number and touch the keyboard return key
- Select Unites from drop down menu
- Touch Commit to save the parameter information
  - System will display sequence of "***" characters to indicate save function.
- Touch Enter (E) when finished

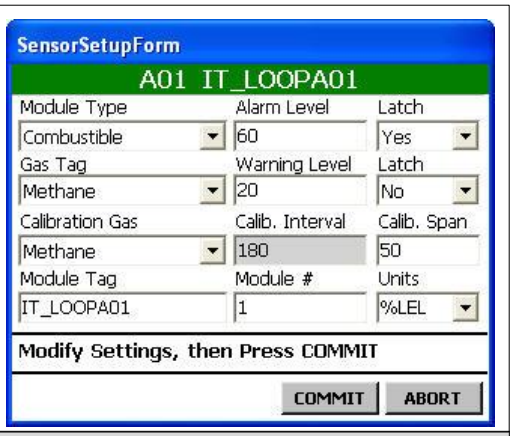


Figure 8-49 – Modify Settings

Figure 8-50 – Commit to Save

8.10.1.8 Commander Logic

Sentry IT provides USB upload and download functions to enable changes to Commander Logic. A USB memory stick must be inserted into the USB socket on the back of the TPC display and a folder titled "Commander" must be on the USB.

To begin, select "Commander Logic" on the TCP display and touch E to enter the menu. The Commander Logic menu allows the following actions:

- **Install User Logic from USB** – Prepare a comma delimitated excel document named "userlogic.csv" on the USB under the Commander folder.
- **Save User Logic onto USB** – A .csv file named "userlogic.csv" will be put onto the USB under the Commander folder and the snapshot subfolder. A snapshot subfolder will be automatically generated if none exists.

Sentry IT looks for the following directories and file names on the USB.

USB Folder	Commander
User Logic File Name	userlogic.csv (Commander\userlogic.csv)
Copy Logic file onto USB	Main sub-directory Snapshot (Commander\snapshot)
Copied Logic File Name	userlogic.csv (Commander\snapshot\userlogic.csv)

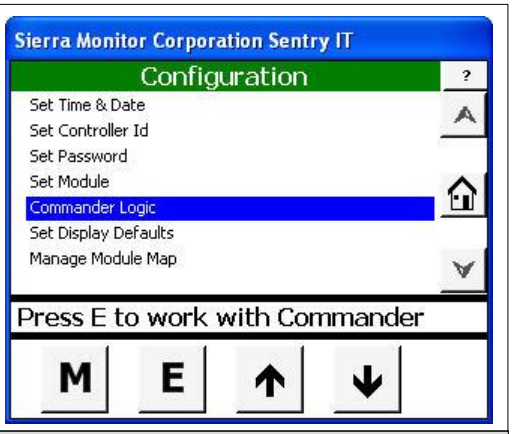


Figure 8-51 – Commander Logic Module

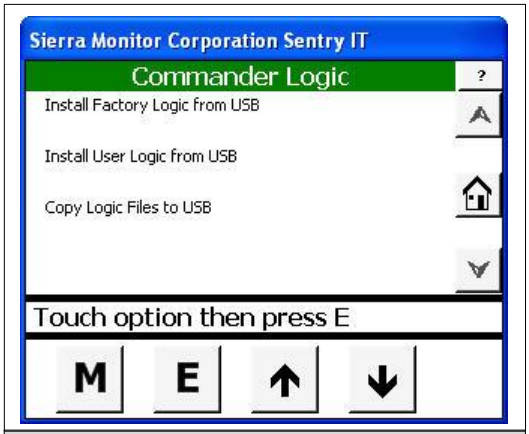


Figure 8-52 – Commander Logic Menu

Changes will take effect after following process:

- Power down the system
- Plug in the USB memory stick and power up the system – Sentry IT will detect the USB Memory Stick and upload the files
- Remove the USB memory stick after confirmation is displayed

8.10.1.9 Set Display Defaults

The Home Page display on the TPC can be selected from the following list:

- Display Zones with Banner
- Display Zones without Banner
- Display Modules with Banner
- Display Module without Banner
- Display only Alarms with Banner

The Default Banner for all Home page displays is shown in Figure 8-54.

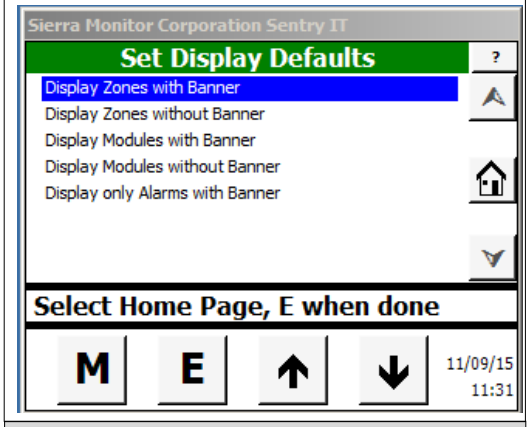


Figure 8-53 – Set Display Defaults

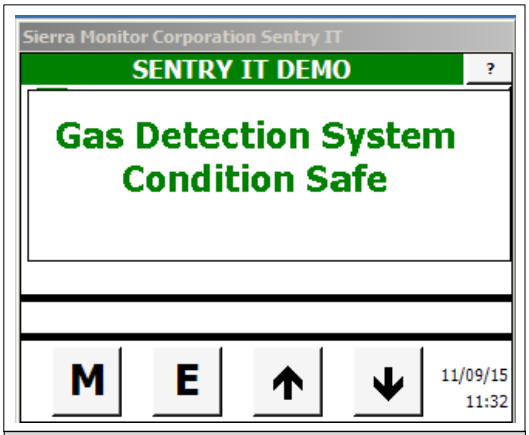


Figure 8-54 – Home Page Banner

The Display options allow viewing the Home Page with the following defaults:

- **Zone View**
  - Sensor Modules can be grouped into Zones via the Commander Logic file. Each Zone is defined with a Name. Each Zone is displayed as a line item by name and condition.
  - To display a bar chart view of the modules in a zone, touch the respective line and press Enter.
  - To view the concentration reading on any module touch the module bar and read the information bar immediately below.
  - To view detailed information regarding the selected module press Enter €.
- **Module View**
  - Sensor Modules are displayed as individual bars in a bar chart.
  - When there are more than eight sensors on the system use the scroll bar on the right hand side of the screen to view additional bars
  - To view the concentration reading on any module touch the module bar and read the information bar immediately below.
  - To view detailed information regarding the selected module press Enter (E).
- **Alarm View**
  - Alarm View always displays the Condition Safe banner until any event occurs.
  - When a warning or alarm event occurs the banner is automatically cleared in favor of a line item listing of modules that are in alarm.

On all Display Views the color bars on the top line of the display and the annunciator lights act in a common manner as described below:

- **Flashing Red** .....Unacknowledged alarm
- **Solid Red** .....Acknowledged alarm
- **Amber** .....Warning
- **Green** .....Normal/Safe
- **Blue** .....Trouble
- **Gray** .....Ignored

8.10.1.10 Manage Module Map

The Manage Module Map screen provides facilities to perform the tasks shown in **Figure 8-56**.

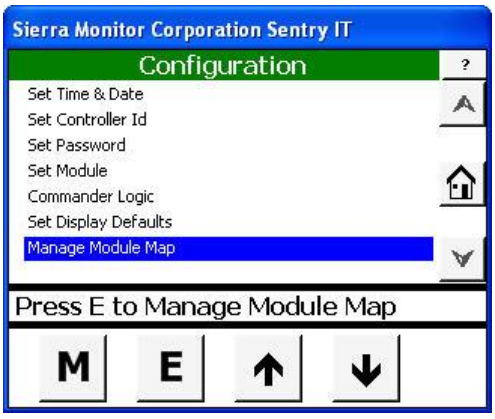


Figure 8-55 – Manage Module Map

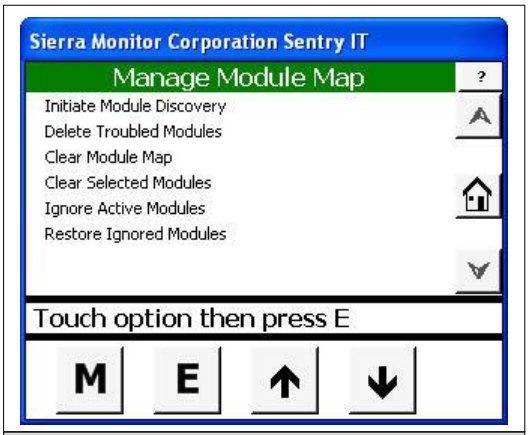


Figure 8-56 – Module Map Sub Menu

8.10.1.10.1 Initiate Module Discovery

Module discovery is used to detect existing and newly installed modules.

- Select Initiate Module Discovery
- Press E to start the discovery
  - Module Discovery will scan all ports to identify existing and newly installed modules. Once this process is completed, “Module discovery done press E” will be displayed in the information bar.
- Enter (E) key to finish the process

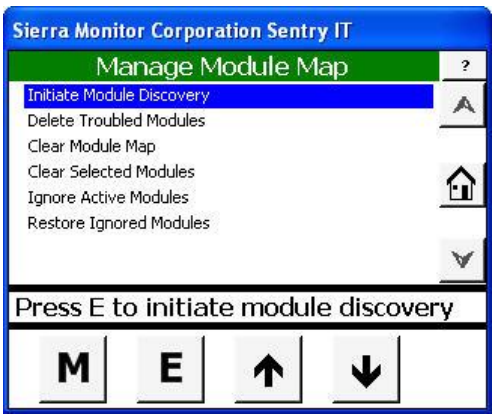


Figure 8-57 – Module Discovery

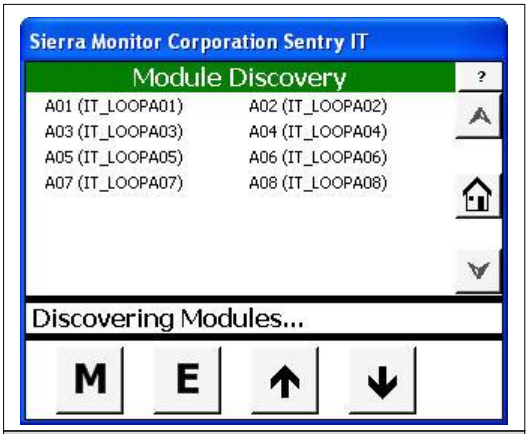


Figure 8-58 – Available Modules

8.10.1.10.2 Delete Trouble Modules

Identified troubled modules can be removed from the Map list.

- Select Delete Troubled Module
- Press the E key to display a screen listing of any Trouble modules on the system
- Select any module numbers that are to be removed from the Module Map
- Press the E key to remove the modules

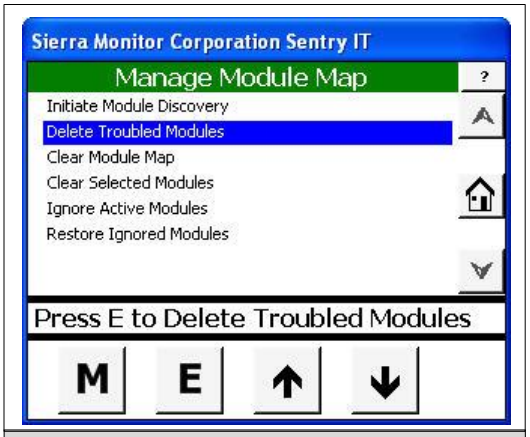


Figure 8-59 – Delete Trouble Module

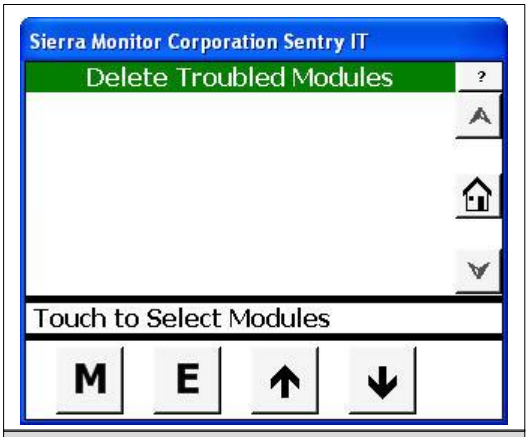


Figure 8-60 – Troubled Module List

8.10.1.10.3 Clear Module Map

The Clear Module Map function can be used to re-commission the controller when a number of changes have been implemented. As described on the screen **Figure 8-62**, after a Clear Module Map instruction has been executed it will be necessary to re-discover all sensor modules.

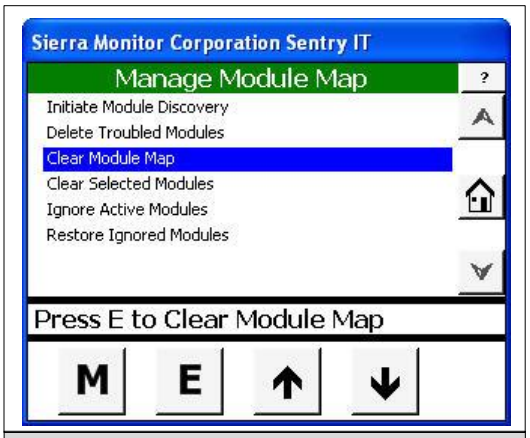


Figure 8-61 – Clear Module Map

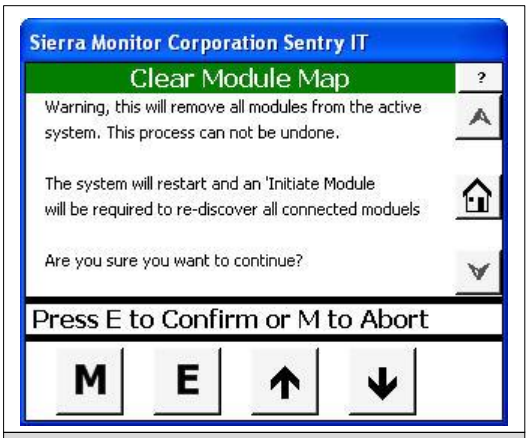


Figure 8-62 – Clear Module Warning

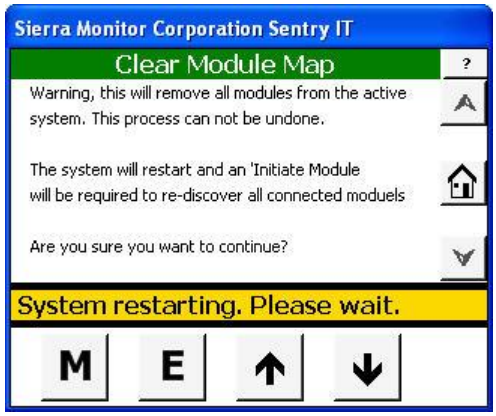


Figure 8-63 – System Restart

8.10.1.10.4 Clear Selected Modules

An alternative to the Clear Module Map is to use Clear Selected Modules.

- Select Clear Selected Modules
- Touch Enter (E) key to select the function
- Select Desire Modules to be removed
- Touch E key to clear the modules

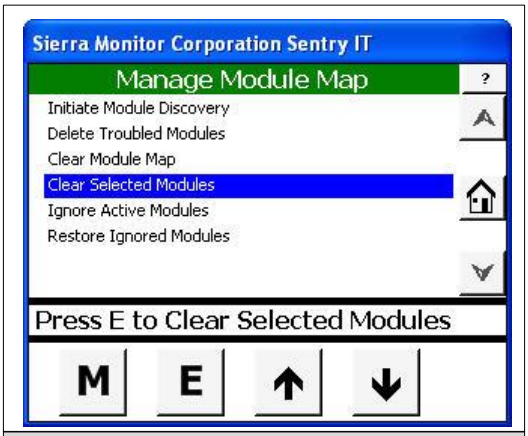


Figure 8-64 – Clear Selected Module

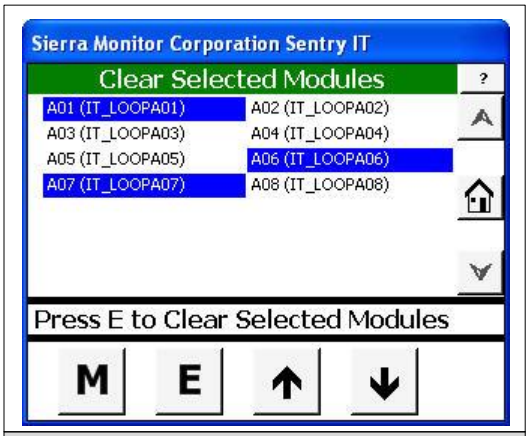


Figure 8-65 – Selected Modules

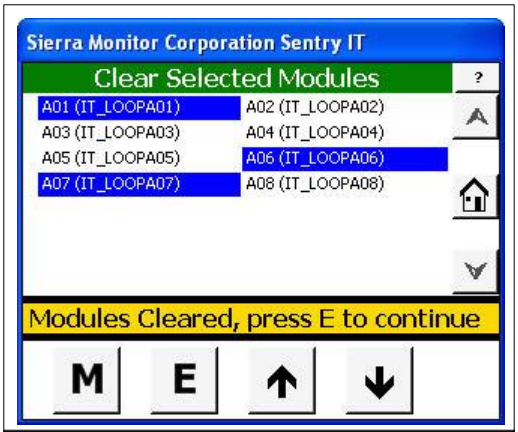


Figure 8-66 – End of Process

- Touch Enter (E) to return to Managed Module Map after "Modules Cleared, press E to continue" is displayed

8.10.1.10.5 Ignore Active Modules

The Ignore Active Module function allows the user to select modules to be ignored in alarm processing. The ignored modules remain on the module map and continue to operate but their concentration and alarm values are ignored by the controller logic process.

- Select Ignore Active Module
- Touch Enter (E) key to activate the process
- Touch E key again to go back to Managed Module Map Menu

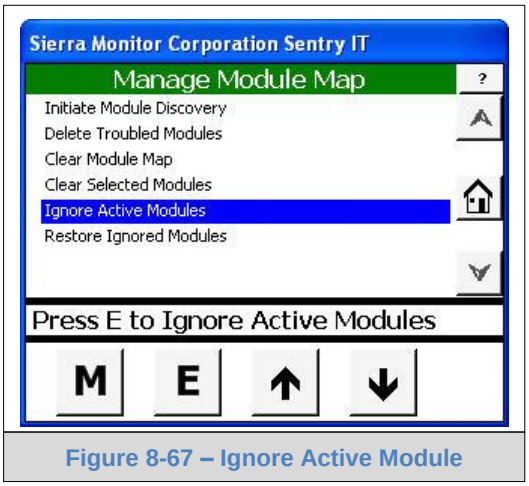


Figure 8-67 – Ignore Active Module

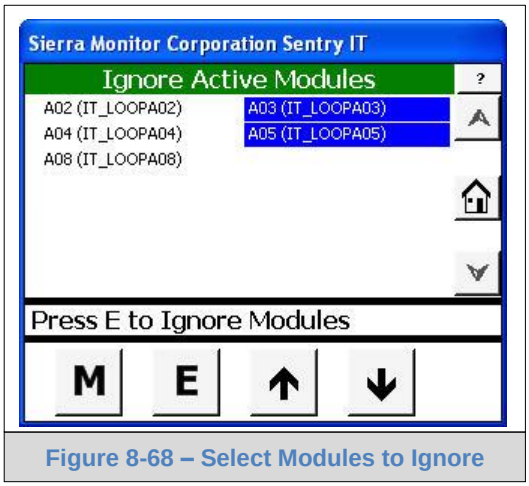


Figure 8-68 – Select Modules to Ignore

The bars display colors to indicate that a sensor module has one of the following conditions:

- **Flashing Red** .....Unacknowledged alarm
- **Solid Red** .....Acknowledged alarm
- **Amber** .....Warning
- **Green** .....Normal/Safe
- **Blue** .....Trouble
- **Gray** .....Ignored

8.10.1.10.6 Restore Ignored Modules

Restore Ignore Module function restores previously ignored module (s) to active mode. List of previously ignored module(s) is provided for restore operation.

- Select Restore Ignore Modules
- Touch Enter (E) key to display the ignore modules list
- Select Module(s) to be restored
- Touch the E key to restore
- Touch E key again after “Module Restored, press E to continue” message appears

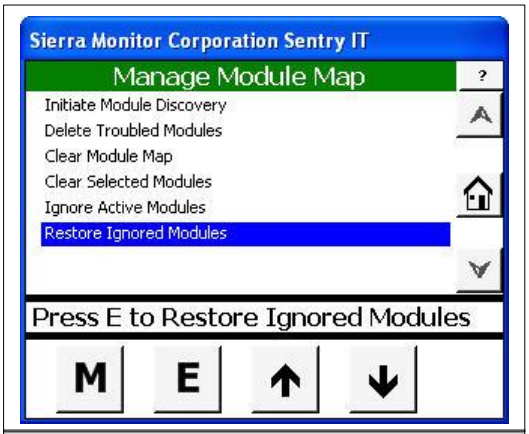


Figure 8-69 – Restore Ignored Modules

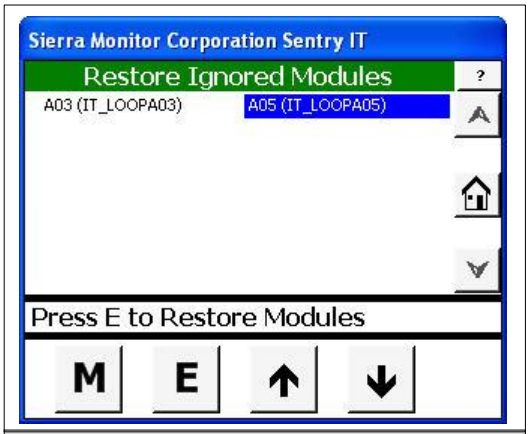


Figure 8-70 – Selected Modules

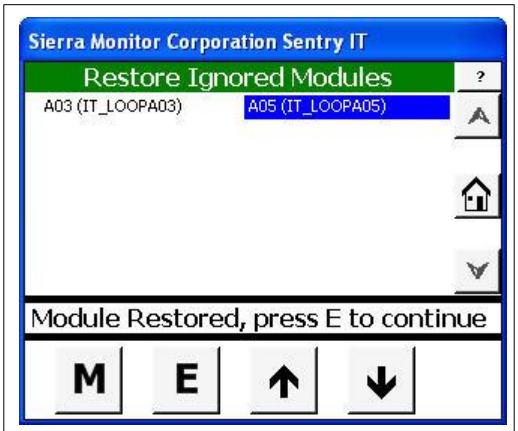


Figure 8-71 – Restored

8.10.2 Maintenance

System Maintenance provides access to the following functions:

System Maintenance			
Manual Control			
	Force Inputs		
		Force Value	(**Modbus only**) Select a module address and force a gas value. The value will be forced to the Module and read by the controller for display and alarm purposes.
		Force Trouble	(**Modbus only**) Select a module address and force trouble condition. The value will be forced to the Module and read by the controller for display and alarm purposes.
		Clear Forced Status	(**Modbus only**) Select a module address and clear any forced condition.
		Restart Module	Restart module having the same effect as cycling power.
	Force/Clear Address Display		
		Force Address Display	TBD
		Clear Address Display	TBD
	Test Lamps		
		Test Lamps	Causes each front panel light to activate in turn (one time only).
Calibrate 20mA Input			
	Steps the user through calibrating each analog input channel (applicable only for Analog Input stacks).		
Update SBC Firmware from USB			
	Steps the user through the process of copying firmware files from a USB memory stick to the SBC.		

8.11 Module Summary

The Module Summary page allows the user to select a module for the purpose of viewing module details. The information includes physical address, module number, module tag, and gas tag.

- From the Home page press touch Mode (M) key to sequence through the modes
- Select the Module Summary module
- Press Enter (E) key

The display will show the sensor modules in numerical order. Scroll down the list as necessary to locate the module of interest.

- Select the module of interest

When the module parameters are displayed three screens of data can be scrolled Up and Down.

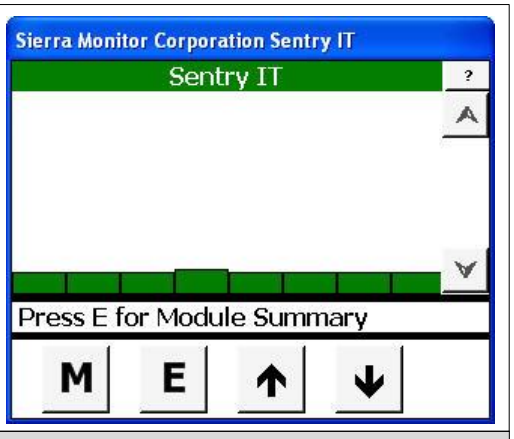


Figure 8-72 – Module Summary Mode

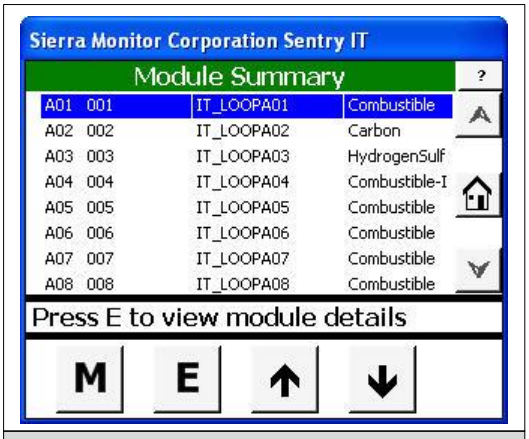


Figure 8-73 – Module Summary

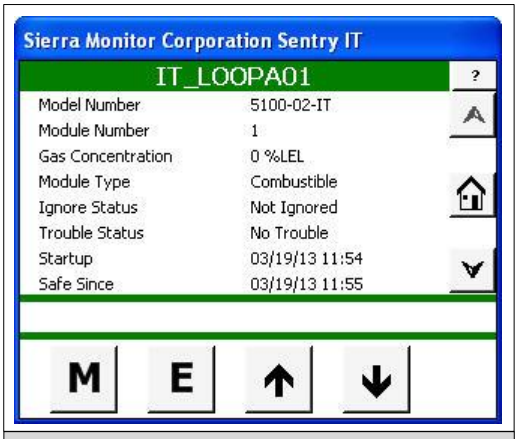


Figure 8-74 – Module Summary Cont.

Module summary parameters are listed below:

Model Number	Model number of the selected module
Module Number	System Module Number
Gas Concentration	Current gas reading
Module Type	Combustible, Toxic or Oxygen module
Ignore Status	Ignored for alarm processing
Trouble Status	If module is in a Trouble state
Startup	Latest date and time of module power up
Safe Since	
Days to Next Calibration	Calibration countdown in days
Calibration Gas Type	Gas to be used for calibration
Calibration Level	Gas concentration for calibration
Gas Range	Measuring range of the module
Display Gas Type	Gas name for controller displays
Warning Relay	Warning level & latch/non latch setting
Last Warning Occurrence	Date & time of last Warning
Alarm Relay	Alarm level & latch/non latch setting
Last Alarm Occurrence	Date & time of last Alarm
Min Occurrence	Date & time of lowest reading
Min Gas	Lowest gas reading – generally zero
Max Occurrence	Date & time of highest reading
Max Gas	Highest gas reading
IT Code Level	Version control number
IT Code Version	Software release number

8.12 About System

The About System screen provides the following information:

Item	Typical Value	Comment
Touch	2.01bB	Firmware version for TPC
Controller	2.00dA	Firmware version for SBC
Order	2015-1234	Sierra Monitor Factory Order #
Stack 1	Modbus 485	Function of Stack 1
Stack 2	Digital Input	Function of Stack 2
Stack 3	Relay	Function of Stack 3
Stack 4	Amalog Output	Function of Stack 4

- From the Home page press touch Mode (M) key to sequence through the modes
- Select the About System module
- Touch Enter (E) key

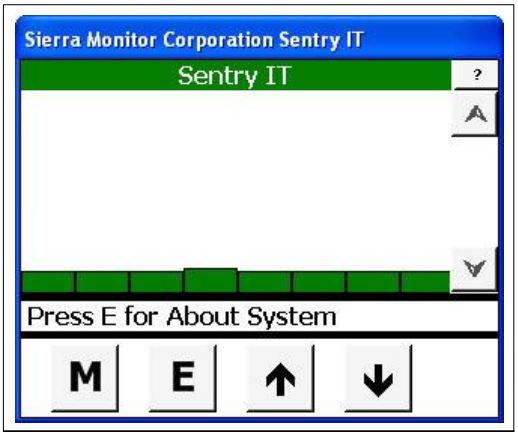


Figure 8-75 – About System

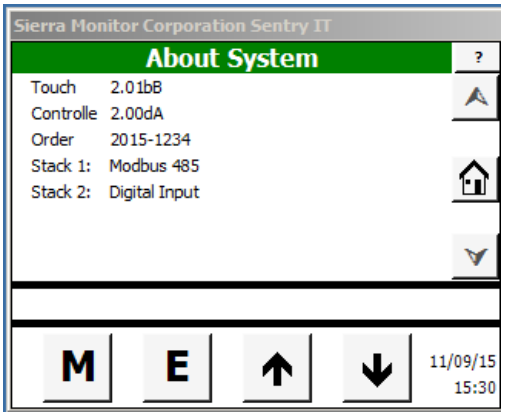


Figure 8-76 – System Details

9 SPECIFICATIONS

	Sentry IT Controller	
Power	AC Version: DC Version: Power consumption: Battery Backup capability:	120/240 VAC +/- 10%, 50/60 Hz 24VDC Nominal (21-27 VDC) Controller 50W, Typical max system 200W Seamless power transfer
Environmental	Operating Temperature: Storage Temperature: Relative Humidity:	-14 to 131°F (-10 to 55°C)* -4 to 140°F (-20 to 60°C) 0-95% Non-condensing
Display	Type: Environmental rating: Views: Other Indicators:	7" color, backlit touch-screen NEMA 4 Bar charts, text data screens, configuration screens Integral long-life, high-intensity LED lights for Safe, Warning, Alarm and Trouble
Connectivity to External Controls and Systems	Controller to Ethernet: External monitoring: Remote management: Mass storage:	Modbus TCP/IP (other protocols available) PC Interface and Web browser interface Sentry InSite is standard to view logs and editing of variables and changes Flash Drive via USB port
Connectivity to Modules	Channels: Channel power: Communication: Modbus RTU: Baud: Parity: Stop bit: Data bits: Flow control: SentryBus: Dry contact:	Up to 32 module addresses 24VDC Analog 4-20 mA 3-wire or 4-wire per ISA specifications RS-485 38400 baud (adjustable 2400 – 38400) None 1 8 None Proprietary Power, Signal, Ground (PSG) Supervised or Non-supervised
Output	4-20 mA: Relay: Standard: Optional: Trouble:	Re-transmit or re-scale 3-wire or 4-wire Programmable, SPDT (multiples of 8) 6 Amps 10 Amps 6 Amps, Fail-safe
Enclosure	Design: Material: Dimensions (HXWxD): Weight: Rating:	Wall-mount 14 gauge cold rolled Steel with powder coat finish 18.0 x 14.0 x 6.0 inches (45.7 x 35.6 x 15.2 cm) 30.0 Lbs, (13.6 Kg) NEMA 12
Approvals	UL 60950, UL 2017, CB Certified, ATM Cert, ABS Cert	
(Specifications subject to change without notice)		

Figure 9-1 – Specifications

* Check with factory for applications outside of 32 to 122°F (0 to 50°C)

10 LIMITED 2 YEAR WARRANTY

Sierra Monitor Corporation warrants its products to be free from defects in workmanship or material under normal use and service for two years after date of shipment. Sierra Monitor Corporation will repair or replace any equipment found to be defective during the warranty period. Final determination of the nature and responsibility for defective or damaged equipment will be made by Sierra Monitor Corporation personnel.

All warranties hereunder are contingent upon proper use in the application for which the product was intended and do not cover products which have been modified or repaired without Sierra Monitor Corporation's approval or which have been subjected to accident, improper maintenance, installation or application, or on which original identification marks have been removed or altered. This Limited Warranty also will not apply to interconnecting cables or wires, consumables or to any damage resulting from battery leakage.

In all cases Sierra Monitor Corporation's responsibility and liability under this warranty shall be limited to the cost of the equipment. The purchaser must obtain shipping instructions for the prepaid return of any item under this warranty provision and compliance with such instruction shall be a condition of this warranty.

Except for the express warranty stated above, Sierra Monitor Corporation disclaims all warranties with regard to the products sold hereunder including all implied warranties of merchantability and fitness and the express warranties stated herein are in lieu of all obligations or liabilities on the part of Sierra Monitor Corporation for damages including, but not limited to, consequential damages arising out of/or in connection with the use or performance of the product.

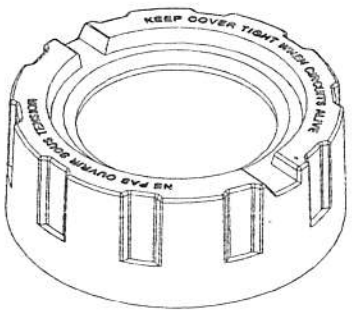
11 TROUBLESHOOTING

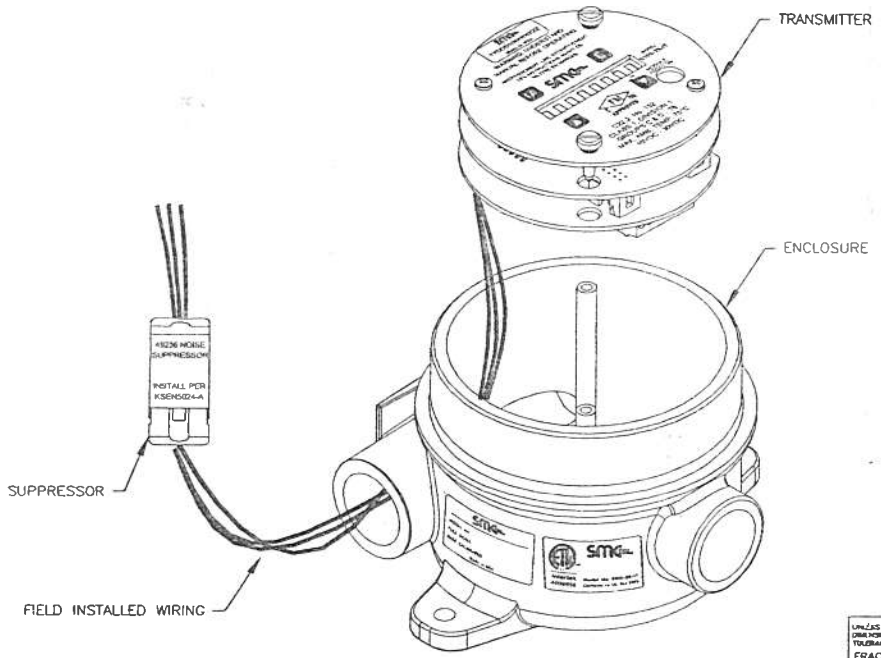
11.1 Sentry Knowledge base to be added – future

12 APPENDICES

12.1 Appendices to be added – future

REVISIONS				
REV	DESCRIPTION	BY	DATE	APPR
1	RELEASED PER ECR 3657	MN	9/1/06	MF
2	REV PER ECR 3757	MN	1/17/07	MF
A	REV PER ECR 3885	MN	9/15/08	MF
A1	REV PER DCN 1288	YN	3/29/10	MF
B	REV PER ECR 4734	MN	8/11/11	MF
C	REV PER ECN 3183	MN	9/14/12	MF
---	UPDATED PER ECR 5227	YN	5/15/13	MF
C1	REV PER ECO-000120	YN	3/29/17	MF





INSTALLATION INSTRUCTIONS
RFI NOISE SUPPRESSOR

NOTE: THE NOISE SUPPRESSOR IS REQUIRED TO BE INSTALLED IN ALL MODEL 5100-28 APPLICATIONS. WHERE GAS SENSOR MODULES ARE DAISY CHAINED BOTH SETS OF WIRE REQUIRE SUPPRESSORS.

FOR APPLICATIONS WITH SINGLE HOME RUN WIRING (NO DAISY CHAIN BOARD)

1. PULL APPLICABLE WIRING INTO THE ENCLOSURE PER NORMAL FIELD PRE-WIRE PROCEDURE
2. CONNECT THE THREE CONDUCTORS TO THE TRANSMITTER (GENERALLY PINS 1, 2, 3 OF P2) LEAVING A SERVICE LOOP TO ALLOW INSTALLATION AND REMOVAL OF THE TRANSMITTER.
3. PLACE THE SUPPRESSOR OVER THE THREE WIRES AND SNAP IT CLOSED SO THE WIRES RUN THROUGH THE CENTER HOLE.
4. SLIDE THE SUPPRESSOR INTO THE ENCLOSURE AS CLOSE TO THE ENTRY HUB AS POSSIBLE - TO ALLOW WORKING SPACE.
5. INSTALL THE TRANSMITTER INTO THE ENCLOSURE PER STANDARD MODULE INSTRUCTIONS.

FOR APPLICATIONS WITH DAISY CHAIN BOARD (FOR MULTI-DROP WIRING.)

1. PULL THE APPLICABLE PAIR OF THREE CONDUCTOR CABLES OR WIRES INTO THE ENCLOSURE PER NORMAL FIELD PRE-WIRE PROCEDURE
2. CONNECT EACH SET OF THREE CONDUCTORS TO THE DAISY CHAIN BOARD LEAVING SERVICE LOOPS TO ALLOW INSTALLATION AND REMOVAL OF THE TRANSMITTER.
3. PLACE ONE SUPPRESSOR OVER EACH SET OF THREE WIRES AND SNAP IT CLOSED SO THE WIRES RUN THROUGH THE CENTER HOLE.
4. SLIDE THE SUPPRESSORS INTO THE ENCLOSURE AS CLOSE TO THE ENTRY HUB AS POSSIBLE - TO ALLOW WORKING SPACE.
5. INSTALL THE TRANSMITTER INTO THE ENCLOSURE PER STANDARD MODULE INSTRUCTIONS.

	T12013
NEXT ASSY	USED ON
APPLICATION	
DRAWING SEQUENCE INFORMATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE
FRACTIONS ±1/16 DECIMALS .XX ±.01 .XXX±.005 ANGLES 1°
MATERIAL:
FINISH:

DISK # SERIES K
FILE # KSEN5024-A-C1.DWG

APPROVALS		DATE
DWN	M NGUYEN	8/24/06
CHK	S FERREE	9/18/06
ENG	E HAGUE	8/25/06
OPS	M FARR	8/25/06
MRKT	G ARNOLD	9/15/06

sierra monitor
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FERRITE CORE INSTALLATION GUIDE FOR MODEL 5100-28-IT
PART NUMBER 49236

SIZE	CAGE CODE	DWG NO	REV
B		KSEN5024-A	C1

SCALE 1:1.5 | DO NOT SCALE DRAWING | SHEET 1 OF 1

FORM# ANSI-B.DWG REV-A1