

July 31, 2009

Ms. Trina Vielhauer Chief, Bureau of Air Regulation Florida Department of Environmental Protection Division of Air Resource Management 111 South Magnolia Drive, Suite 4 Tallahassee, Florida 32301

Re: Seminole Electric Cooperative, Inc.

Midulla Generating Station

PSD Permit No. PSD-FL-344A, Title V Permit No. 0490340-011-AV

RECEIVED

AUG 05 2009

BUREAU OF AIR REGULATION

Pratt & Whitney TwinPac Units - Request for Permit Revisions

Dear Ms. Vielhauer:

The Florida Department of Environmental Protection ("the Department") issued an air construction permit to Seminole Electric Cooperative, Inc. (SECI) authorizing the installation of five (5) Pratt & Whitney (P&W) aeroderivative simple cycle combustion turbine (SCCT) TwinPac units at the Midulla Generating Station (MGS); reference PSD Permit PSD-FL-344 dated June 29, 2005. Each P&W TwinPac unit is comprised of two SCCTs equipped with oxidation catalyst control systems. This air construction permit was subsequently revised on September 22, 2008 to replace the requirement to conduct periodic carbon monoxide (CO) tests prior to the oxidation catalyst with requirements to test, monitor, and report the catalyst reactivity. Operation of the MGS P&W TwinPac units is currently authorized by Title V Air Operation Permit No. 0490340-011-AV issued with an effective date of March 27, 2009 and an expiration date of December 31, 2012.

Currently, all P&W Twin Pac SCCTs utilize 40 CFR Part 75, Appendix E procedures for the purpose of monitoring and reporting nitrogen oxides (NO_x) emission rates required by the Acid Rain Program (ARP) and Clean Air Interstate Rule (CAIR). SECI request revisions of the MGS PSD and Title V permits with respect to the P&W TwinPac SCCTs to allow for the installation of NO_x/carbon dioxide (CO₂) CEMS on each SCCT. These CEMS will be used to monitor and report NO_x emissions as required by the ARP and CAIR in lieu of the current 40 CFR Part 75, Appendix E procedures.

Water to fuel ratio monitoring is presently used to monitor and report excess NO_x emissions pursuant to New Source Performance Standard (NSPS) Subpart GG requirements. In accordance with the monitoring option described in 40 CFR §60.334(b), the SCCT NO_x/CO₂ CEMS may also be used to monitor and report excess NO_x emissions pursuant to 40 CFR §60.334(j)(iii).

Ms. Trina Vielhauer July 31, 2009 Page -2-

The NO_x/CO₂ analyzers planned for the MGS SCCTs are Thermo Scientific Model 42i (for NO_x) and Model 410i (for CO₂) instruments. Specifications for each of these analyzers are enclosed. SECI plans to install and certify the NO_x/CO₂ CEMS during the first quarter of 2010.

The administrative portion of the Department's Application for Air Permit – Long Form, including signature pages, is enclosed. Please contact me at (813) 739-1224 or by email at wmroddy@seminole-electric.com if you have any questions regarding this permit revision request.

Sincerely,

Mike Roddy

Manager, Environmental Affairs

Enclosures



Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

`I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

<u>Id</u>	entification of Facility				
1.	. Facility Owner/Company Name: Seminole Electric Cooperative, Inc.				
2.	Site Name: Midulla Generating Station				
3.	Facility Identification Number: 0490340				
4.	Facility Location:				
	Street Address or Other Locator: 6697 Cou	nty Road 663			
	City: Bowling Green County: I	Hardee	Zip Code: 33834		
5.	<u> </u>		e V Permitted Facility?		
	Yes No	⊠ Yes	∐ No		
<u>Ar</u>	oplication Contact				
1.	Application Contact Name: Juan Ramirez				
2.	Application Contact Mailing Address				
	Organization/Firm: Seminole Electric Coo	perative, Inc.			
	Street Address: 16313 North Dale Mak	bry Highway			
	City: Tampa St	ate: FL	Zip Code: 33618-1427		
3.	Application Contact Telephone Numbers				
	Telephone: (813) 739-1219 ext.	Fax: (813) 26	4-7906		
4.	4. Application Contact Email Address: jramirez@seminole-electric.com				
Application Processing Information (DEP Use)					
1.	Date of Receipt of Application: 85 0	3. PSD Numb	er (if applicable): 344C		
	2. Project Number(s): 0490340 4. Siting Number (if applicable):				
	0490840-015-41/				

DEP Form No. 62-210.900(1) - Form

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)				
Air Construction Permit				
☐ Air construction permit.				
Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).				
Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.				
Air Operation Permit				
Initial Title V air operation permit.				
Title V air operation permit revision.				
Title V air operation permit renewal.				
Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.				
Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.				
Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)				
Air construction permit and Title V permit revision, incorporating the proposed project.				
Air construction permit and Title V permit renewal, incorporating the proposed project.				
Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:				
☑ I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.				

Application Comment

SECI requests revisions of Midulla Generating Station (MGS) PSD Permit No. PSD-FL-344A and Title V Air Operation Permit No. 0490340-011-AV with respect to the five Pratt & Whitney Twin Pac Emission Units 005 through 009. Revisions to these permits are requested to allow the installation of nitrogen oxides (NO_x) and carbon dioxide (CO₂) diluent continuous emission monitoring systems (CEMS) on each Twin Pac unit. The NO_x/CO₂ CEMS will replace the existing NO_x emissions monitoring systems and will be used to provide NO_x emissions data as required by the Acid Rain Program (ARP) and the Clean Air Interstate Rule (CAIR).

DEP Form No. 62-210.900(1) – Form

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
005	Pratt & Whitney FT-8 TwinPac	N/A	N/A
	Unit 4A and Unit 4B		
006	Pratt & Whitney FT-8 TwinPac	N/A	N/A
	Unit 5A and Unit 5B		
007	Pratt & Whitney FT-8 TwinPac	N/A	N/A
	Unit 6A and Unit 6B		
008	Pratt & Whitney FT-8 TwinPac	N/A	N/A
	Unit 7A and Unit 7B		
009	Pratt & Whitney FT-8 TwinPac	N/A	N/A
	Unit 8A and Unit 8B		
	-		
	·		

Application Processing Fee				
Check one: Attached - Amount: \$	_ Not Applicable			

DEP Form No. 62-210.900(1) – Form

Owner/Authorized Representative Statement NOT APPLICABLE
Complete if applying for an air construction permit or an initial FESOP.

1.	Owner/Authorized Representative Name:				
2.	Owner/Authorized Representation/Firm:	ative :	Mailing Address	3	
	Street Address:				
	City:		State:	Zip Code:	
3.	Owner/Authorized Representa	ative '	Telephone Num	bers	
	Telephone: ext.		Fax:		
4.	Owner/Authorized Representa	ative !	Email Address:		
5.	Owner/Authorized Representative Statement:				
	I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.				
	Signature Date				

DEP Form No. 62-210.900(1) – Form

Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1.	Application Responsible Official Name:				
	Michael P. Opalinski, Sr. Vice President of Strategic Services	_			
2.					
	options, as applicable):				
	For a corporation, the president, secretary, treasurer, or vice-president of the corporation in				
	charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such				
	person if the representative is responsible for the overall operation of one or more				
	manufacturing, production, or operating facilities applying for or subject to a permit under				
	Chapter 62-213, F.A.C.				
	For a partnership or sole proprietorship, a general partner or the proprietor, respectively.				
	For a municipality, county, state, federal, or other public agency, either a principal executive				
	officer or ranking elected official. The designated representative at an Acid Rain source, CAIR source, or Hg Budget source.				
3.	Application Responsible Official Mailing Address	\dashv			
٥,	Organization/Firm: Seminole Electric Cooperative, Inc.				
	Street Address: 16313 North Dale Mabry Highway				
	City: Tampa State: FL Zip Code: 33618-1427				
		\dashv			
4.	Application Responsible Official Telephone Numbers Telephone: (813) 963-0994 ext.1233 Fax: (813) 264-7906				
		\dashv			
	Application Responsible Official E-mail Address: mopalinski@seminole-electric.com	\dashv			
6.	Application Responsible Official Certification:				
	I, the undersigned, am a responsible official of the Title V source addressed in this air permit				
	application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best				
	of my knowledge, any estimates of emissions reported in this application are based upon				
	reasonable techniques for calculating emissions. The air pollutant emissions units and air				
	pollution control equipment described in this application will be operated and maintained so as to				
	· · · · · · · · · · · · · · · · · · ·				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject,				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and				
	comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject,				

DEP Form No. 62-210.900(1) – Form

Professional Engineer Certification

I.	Professional Engineer Name: Thomas W. Davis
	Registration Number: 36777
2.	Professional Engineer Mailing Address
	Organization/Firm: Environmental Consulting & Technology, Inc.
	Street Address: 3701 Northwest 98th Street
	City: Gainesville State: Florida Zip Code: 32606-5004
3.	Professional Engineer Telephone Numbers
	Telephone: (352) 332 – 0444 ext. Fax: (352) 332 - 6722
	Professional Engineer Email Address: tdavis@ectinc.com
٥.	Professional Engineer Statement:
	I, the undersigned, hereby certify, except as particularly noted herein*, that:
	(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and
	(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.
	(3) If the purpose of this application is to obtain a Title V air operation permit (check here, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.
	(4) If the purpose of this application is to obtain an air construction permit (check here \square , if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here \boxtimes , if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.
うついのヨーロー	(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit. The provision of this application of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit. The provision of this application of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit. The provision of the provi
<* A	ittach any exception to certification statement.
4	

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1.	Facility UTM Coordinates Zone 17 East (km) 365.70 North (km) 3,292.60		2. Facility Latitude/Longitude Latitude (DD/MM/SS) Longitude (DD/MM/SS)		
3.	Governmental	4. Facility Status	5.	Facility Major	6. Facility SIC(s):
	Facility Code:	Code:		Group SIC Code:	4911
	4	\mathbf{A}		49	
7.	Facility Comment:				
-					

Facility Contact

1 Facility Contact Name:

	Addition Continuor I tambe.			
	Walt Hentze, Plant Manager			
2.	Facility Contact Mailing Address			
	Organization/Firm: Seminole Electric Cooperative, Inc.			
	Street Address: 6697 County Road 663			
	City: Bowling Green	State: FL	Zip Code: 33834	

3. Facility Contact Telephone Numbers:

Telephone: (863) 375-2828

ext.

Fax: (863) 375-3100

4. Facility Contact Email Address: whentze@seminole-electric.com

Facility Primary Responsible Official

Complete if an "application responsible official" is identified in Section I that is not the facility "primary responsible official."

1.	Facility Primary Responsi	ble Offici	al Name:			
2.	Facility Primary Responsible Official Mailing Address Organization/Firm:					
	Street Address:					
	City:		State:		Zip Code:	
3.	Facility Primary Responsi	ble Offici	al Telephone	Numbers	_	
	Telephone: () -	ext.	Fax: ()	-		
4.	Facility Primary Responsi	ble Officia	al E-mail Ad	dress:		

DEP Form No. 62-210.900(1) – Form

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a "major source" and a "synthetic minor source."

1. Small Business Stationary Source Unknown			
2. Synthetic Non-Title V Source			
3. X Title V Source			
4. Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)			
5. Synthetic Minor Source of Air Pollutants, Other than HAPs			
6. Major Source of Hazardous Air Pollutants (HAPs)			
7. Synthetic Minor Source of HAPs			
8. One or More Emissions Units Subject to NSPS (40 CFR 60)			
9. One or More Emissions Units Subject to Emission Guidelines (40 CFR 60)			
10. One or More Emissions Units Subject to NESHAP (40 CFR 61 or Part 63)			
11. Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))			
12. Facility Regulatory Classifications Comment:			
NSPS for Stationary Gas Turbines (40 CFR Part 60 Subpart GG applies to Emission Units 005 through 009.			

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DEP Form No. 62-210.900(1) – Form

Model 42i NO-NO2-NOx Analyzer

Chemiluminescent gas analyzer with enhanced communication capabilities for ambient air and source emissions monitoring

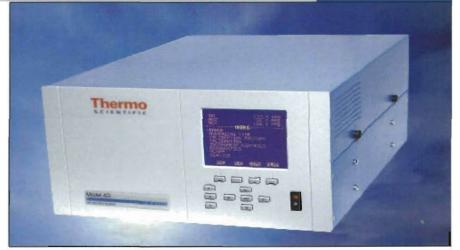






Key Features

- Ethernet connectivity for efficient remote access
- Enhanced user interface with one button programming and large display screen
- Flash memory for increased data storage and user downloadable software
- Enhanced electronics design optimizes product commonality
- Improved layout for easier accessibility to components



A change is in the air

The industry's new best-of-breed. Our customers told us exactly what they're looking for in a gas monitoring solution: reliability, simplicity, ease of use. The new iSeries platform delivers on all counts - and then goes a step farther. The flagship product in Thermo's new iSeries product line is the Model $42i \text{ NO-NO}_2\text{-NO}_X$ analyzer.

Using chemiluminescence technology, the Model 42i measures the amount of nitrogen oxides in the air from sub-ppb levels up to 100ppm. The Model 42i is a single Chamber, single photomultiplier tube design that cycles between the NO and NO_X modes.

The 42*i* has independent outputs for NO, NO₂, and Nox and each can be calibrated separately. Dual range and Auto range are standards features as well. If required, the instrument can be operated con-

tinuously in either the NO or $N0_X$ modes allowing for response times of less than 5 seconds.

Temperature and pressure correction are standard features. User settable alarm levels for concentration and for a wide variety of internal diagnostics are available from an easy to follow menu structure.

This state-of-the-art gas analyzer offers features such as an ethernet port as well as flash memory for increased data storage.

Ethernet connectivity provides efficient remote access, allowing the user to download measurement information directly from the instrument without having to be on-site.

You can easily program soft-keys to allow you to jump directly to frequently accessed functions, menus or screens. The larger interface screen can display up to five lines of measurement information, while primary screen remains visible.



Comprehensive Service Solutions

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. Thermo Scientific offers comprehensive, flexible support solutions for all phases of the product lifecycle. Through predictable, fixed-cost pricing, Thermo services help protect the return on investment and total cost of ownership of your Thermo Scientific air quality products.

Product Specifications

Preset Ranges	0-0.05, 0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50 and 100 ppm
	0-0.1, 0.2, 0.5, 1, 2, 5, 10, 20, 50, 100 and 150 mg/m ³
Custom Ranges	0-0.05 to 100 ppm
	0-0.1 to 150 mg/m ³
Zero Noise	0.20 ppb RMS (60 second averaging time)
Lower Detectable Limit	0.40 ppb (60 second averaging time)
Zero Drift (24 hour)	< 0.40 ppb
Span Drift (24 hour)	+/-1% full scale
Response Time	40 seconds (10 second average time)
	80 seconds (60 second average time)
	300 seconds (300 second average time)
Precision	+/-0.4 ppb (500 ppb range)
Linearity	+/-1% full scale
Sample Flow Rate	0.6 liters/min.
Operating Temperature	15 ⁰ C - 35 ⁰ C
Power Requirements	100 vac, 115 vac, 220-240 vac +/-10% @ 300W
Size and Weight	16.75"(W) x 8.62"(H) x 23"(D), 55 lbs. (25 kg)
Outputs	Selectable Voltage, RS232/RS485, TCP/IP, 10 Status Relays, and Power Fail Indication (standard).
	0-20 or 4-20 mA Isolated Current Outout (optional)
Inputs	16 Digital Inputs (standard), 8 0-10vdc Analog Inputs (optional)

Ordering Information

Model 42i NO-NO₂-NO_X Analyzer

Choose from the following configurations/options

to customize your own Model 42i

Voltage options:

A = 120 Vac 50/60 Hz (standard)

 $B=220\;Vac\;50/60\;Hz$

J = 100 Vac 50/60 Hz

Internal zero / span:

N = No zero / span assembly (standard)

Z = Internal zero span assembly

P = Internal permeation span source with zero/span assembly

Converter options:

M = Molybdenum (standard)

S = Stainless steel

Sample handling:

Other options:

Teflon particulate filter
Ozone particulate filer
Rack mounts

· Rear extender

S = Standard plumbing (standard)

A = Ammonia scrubber

L = LAg Volume

C = Lag Volume and Ammonia Scrubber

T = Standard Plumbing with Sample Permeation Dryer

V = Lag Volume with Sample Permeation Dryer

Ozone handling

D = Drierite scrubber (standard)

P = Permeation dryer

Optional I/O:

A = None (standard)

C = I/O expansion board

(4-20mA outputs - 6 channels, 0-10v inputs - 8 channels)

Mounting Hardware:

A = Bench mounting (standard)

B = Ears & handles, EIA

C = Ears & handles, Retrofit

Your Order Code: 42i - __ _ _ _ _ _ _





Lit _42iEID_0606

This specification sheet is for informational purposes only and is subject to change without notice. Thermo makes no warranties, expressed or implied, in this product summary. © 2007 Thermo Fisher Scientific Inc. All rights reserved Thermo Fisher Scientific Inc.

Environmental Instruments Air Quality Instruments

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Carbon Dioxide Analyzer, Model 410i

Utilizing advanced non-dispersive infrared technology





Key Features

- Advanced NDIR technology
- User-selectable reporting capabilities
- Expanded ambient temperature operating range
- High performance over a wider range of concentrations
- Linearity through all ranges



The Thermo Scientific Carbon Dioxide Analyzer, Model 410*i* utilizes advanced NDIR optical filter technology to measure the concentration of Carbon Dioxide in stack gas levels. Reporting capabilities are user-selectable for either of the accepted industry standards, straight extractive or dilution sampling methods.

This analyzer utilizes advanced Non-Dispersive Infrared technology (NDIR) with optically fixed bandpass interference filters and quantum detection to analyze the concentration of CO₂ in the gas stream.

In addition, the expanded ambient temperature operating range provides excellent performance over a wider range of concentrations.

The Model 410*i* is available in Standard, 410*i*-D, or High Level, 410*i*-E ranges and uses an internally stored calibration curve to accurately linearize the instrument output over any range up to a concentration of either 10,000 ppm (Standard) or 25% (High level).

The Model 410; in Standard or High Level combines proven detection, easy to use menu-driven software, and advanced diagnostics to offer unsurpassed flexibility and reliability.

iSeries features also include:

- Rack mountability
- Ethernet port & connectivity options
- Flash memory for increased data storage
- Easily programmable short-cut keys
- Large interface screen



Carbon Dioxide Analyzer, Model 410i

To maintain optimal product performance, you need immediate access to experts worldwide, as well as priority status when your air quality equipment needs repair or replacement. We offer comprehensive, flexible support solutions for all phases of the product life cycle. Through predictable, fixed-cost pricing, our services help protect the return on investment and total cost of ownership of your Thermo Scientific air quality products.

Product Specifications

Preset Ranges	Standard:	0-200, 500, 1000, 2000, 5000, and 10000 ppm
	High Level:	0-0.5, 1, 2, 5, 10, 20, 25%
Custom Ranges	Standard:	0-200 to 10000 ppm
	High Level:	0-0.5 to 25%
Zero Noise	Standard:	0.1 ppm RMS (300 second averaging time)
	High Level:	10 ppm RMS (60 second averaging time)
Minimum Detectable Limit	Standard:	0.2 ppm (300 second averaging time)
	High Level:	20 ppm (300 second averaging time)
Zero Drift (24 hour)	Standard:	+/- 1.0 ppm
	High Level:	+/- 40 ppm
Span Drift (24 hour)	Standard:	< 0.5% Reading - 24 Hours - <1% Reading - 7 Days
	High Level:	
Response Time (90% full scale)	90 seconds (30 second averaging time)	
Precision	+/- 1.0% of reading	
Linearity	+/- 1.5% of span (at concentrations of 10% - 100% of span)	
Sample Flow Rate	1.0 liter per minute	
Operational Temperature	41°F to 113°F (+5°C to +45°C)	
Power Requirements	110 VAC, 115 VAC, 220-240 VAC +/- 10% @ 275W	
Size and Weight	16.75" (W) x 8.62" (H) x 23"(D), 39 lbs. (17.7 kg)	
Outputs	Selectable voltage, RS232/RS485, TCP/IP, 10 status relays, and power fail indication (standard)	
	0-20 or 4-20 mA isolated current output (optional)	
Inputs	16 digital inputs (standard), 8 0-10 Vdc analog inputs (optional)	

Ordering Information

Carbon Dioxide Analyzer, Model 410i

Choose from the following configurations/options to customize your own Model 410*i*

1. Voltage options:

A = 120 Vac 50/60 Hz

B = 220 Vac 50/60 Hz

J = 100 Vac 50/60 Hz

2. Internal zero / span:

N = No zero / span valve

Z = Internal zero / span valves

3. Filter Wheel Purge:

P = Filter wheel purge setup (Standard)

4. Sample Gas Concentration Range:

D = 0 -10,000 ppm Concentration Range (Standard)

E = 0 - 25% Concentration Range (High Level)

5. Optional I/O:

A = No optional I/O (standard)

C = 0 - 20, 4-20mA Current output, 6 Channels

0 - 10v Analog Input, 8 Channel

6. Mounting Hardware:

A = Bench mounting (standard)

B -- Ears & handles, EIA

C = Ears & handles, Retrofit

Your Order Code: Model 410*i* - __ _ _ _ _ _ _



This specification sheet is for informational purposes only and is subject to change without notice. Thermo Fisher Scientific makes no warranties, expressed or implied, in this product summary. © 2009 Thermo Fisher Scientific, Inc. All rights reserved Thermo Fisher Scientific, Inc.

Environmental
Instruments Division
Air Quality Instruments

27 Forge Parkway Franklin, MA 02038 USA (866) 282-0430 (508) 520-0430 (508) 520-1460 fax www.thermo.com/air

