

GENERAL SPECIFICATIONS – Analysis Enclosure

Power:	Universal power supply 85 to 125 VAC, 50 to 60 Hz, +/-10% 1000 watts maximum at start up, 500 watts nominal	Analog inputs:	2 (4 optional) 4 to 20 mAdc
Microprocessor:	Intel Celeron processor, 556MHz, 64MB RAM, PC/104 architecture, Microsoft® Windows NT-embedded platform	Digital Outputs:	Quantity 6 dry contact relay outputs; maximum 110 VAC at 1 amp load. Depending upon configuration: O ₂ limit exceed, CO limit exceed, NO _x limit exceed, SO ₂ limit exceed, Data Valid, In calibration, In Mainte- nance, Stream Indicator and Trouble Alarm
Display:	Pocket PC: 206MHz, StrongArm processor, 32MB RAM, 32MB ROM, 240 X 320 pixels LCD, TFT color, backlit wireless LAN optional	Digital Inputs:	Quantity 3 (optional 6) interro- gated with 5 VDC typically used for Process on/off, Flame Detect, Boiler Shutdown or Calibration Initiation.
Detectors//Number:	NDIR, paramagnetic, electro- chemical, chemiluminescent NDUV; up to three in one analyzer	Instrument Weight:	75 lbs. (typical)
Mounting:	Wall-mount*	Size:	32" X 28" X 12" (H W D) typical
Area Classification:	General purpose / NEMA 4X (IP 65) fiberglass enclosure	Ranges:	O ₂ : 0 to 25% CO: 0 to 100 ppm selectable to 1000 ppm NO _x : 0 to 10 ppm selectable to 1000 ppm SO ₂ : 0 to 50 ppm selectable to 1000 ppm
Compliances:	CSA (pending)	Instrument Air Requirements:	NO _x requires 1 liter/minute instrument grade air, -40°C dewpoint, 12.5 psig +/-0.5 psig.
Ambient Range:		Sample Temperature:	0° to 55°C
Temperature:	-30° to 50°C	Sample Flow Rate:	.5 to 1.5 liters/minute
Relative Hum:	5 to 99%	Warm-up Time:	Maximum 45 minutes at low ambient temperatures
Inputs/Outputs:			
Digital:	RS485 multi-drop network RS232 serial data Ethernet 10/100-base modem		
Connectivity Protocols:	HTML (web browser) – Status, file transfer, modem/web browser TCP/IP		

* Avoid installing the enclosure in direct sunlight if high ambient temperatures are possible.

	Paramagnetic O ₂	Electrochemical O ₂	NDIR CO	Chemiluminescent NO _x	NDUV/SO ₂
Linearity	< +/-1%	< +/-1%	< +/-1%	< +/-1% ¹	< +/-1%
Zero Drift	< +/-1% /day	< +/-1% /day	< +/-1% /day	< +/- 1% /day ¹	< +/-2% per day
Span Drift	< +/-1% /day	< +/-1% /day	< +/-1% /day	< +/- 1% /day ¹	< +/-1% per day
Repeatability	< +/-1%	< +/-1%	< +/-1%	< +/-1% /day ¹	< +/-1%
Response Time (t₉₀)	10< +/-t ₉₀ < +/-15	10< +/-t ₉₀ < +/-15	15s< +/-t ₉₀ < +/-20s	15s< +/-t ₉₀ < +/-20s	30s < t ₉₀ < 45s
Influence of Ambient Temperature (-30° to 50°C)					
- On Zero	< +/-1%	< +/-1 %	< +/-2%	< +/-2%	< +/-1%
- On Span	< +/-2%	< +/-2 %	< +/-2%	< +/-2%	< +/-2%

¹ 0 to 10 ppm NO_x range is < +/- 3%.

GENERAL SPECIFICATIONS – Probe/Sample Handling Enclosure

<p>Power: Universal power supply 85 to 125 VAC, 50 to 60 Hz, +/-10% 750 watts maximum at start up. 500 watts nominal</p> <p>Mounting: Customer flange mount (2 hole tap or wall mount for high temp. option)</p> <p>Area Classification: General purpose / NEMA 4X (IP 65) fiberglass enclosure</p> <p>Compliances: CSA (Pending)</p> <p>Ambient Range: Temperature: -30° to 50°C Relative Humidity: 5 to 99%</p> <p>Instrument Weight: 85 lbs. typical</p> <p>Size: 24" x 24" x 12" (H W D)</p> <p>Stack Sample Moisture: Up to 25%</p> <p>Sample Cooler: Thermoelectric dual pass chiller. Permeation tube (-30°C dewpoint. 5 liter/minute instrument grade air -40°C dewpoint) 60 to 125 psig</p>	<p>Maximum Stack Temperature: Optional off-stack remote mounting also available for above 600°F applications.</p> <p>Stack Pressure: -5 to 15" water</p> <p>Sample Flow Rate: 1 liter/minute from sample handling enclosure to analysis enclosure</p> <p>Response Time: Maximum distance between analysis enclosure and sample conditioning/probe enclosure is 300'. (response time is 20 seconds/100' with 1/4" tubing)</p> <p>Probe Length: 48" length 316 Stainless Steel probe with .5 micron sintered filter. User to cut to length in field.</p> <p>Mounting Flange: 4" 150 lbs.</p> <p>Sample Pump: 316 Stainless Steel diaphragm type</p> <p>Instrument Air Requirements: Instrument grade air required. 15 SCFM at 60 to 100 psig (30 seconds two times per day) Pressure regulation by user.</p>
---	--

Equipment to be Supplied by User

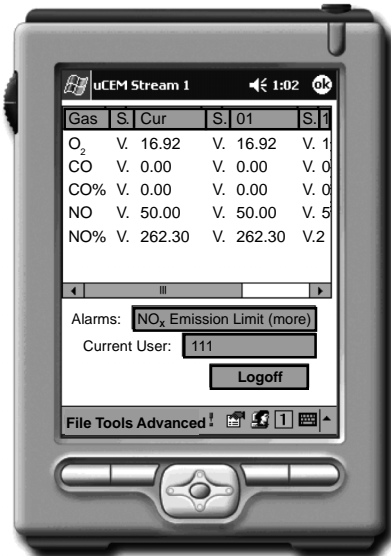
- Calibration gas bottles
- Calibration gas regulators, dual stage with CGA connector
- Instrument air supply
- 85 to 125 VAC, 50 to 60 Hz U.P.S. power supply
- Electrical interconnection wiring and tubing between the sample conditioning and analysis enclosures
- Wiring trays for electrical interconnection wiring
- Sample ports for probe connection
- Mounting hardware

* Avoid installing the enclosure in direct sunlight if high ambient temperatures are possible.

COST COMPARISON CHART

1 Year Ownership Cost Comparison		
ITEM	1 Year Cost MicroCEM	1 Year Cost Others
MicroCEM	\$75,000	\$80,000
DAS cost	\$45,000	\$60,000
Shelter cost	\$0	\$40,000
Annual shelter maintenance	\$0	\$5,000
Shelter installation	\$0	\$5,000
Analyzer installation	\$250	\$250
Peripheral installation costs	\$5,000	\$10,000
Certification	\$10,000	\$10,000
Installed sample line cost (250')	\$250	\$12,500
TOTALS	\$135,500	\$222,750
Savings PER MicroCEM =	\$87,250	

EXAMPLE MENU SCREENS



Main Screen 1



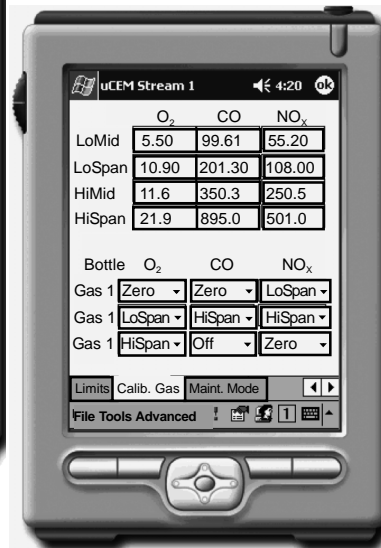
Manual Calibration



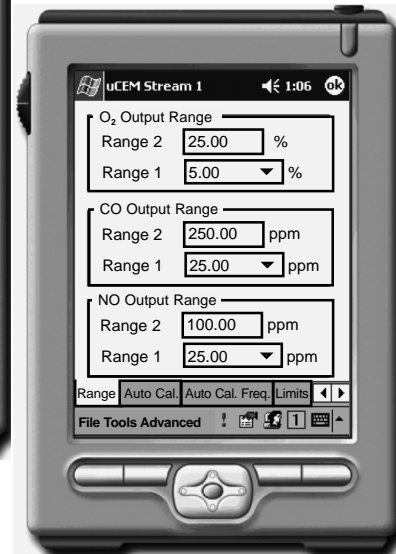
Auto-Calibration Settings



Alarm Logs



Calibration Bottle Settings



Settings 2

ORDERING INFORMATION

Model	Description
UCEMS	MicroCEM PC104-Controlled O ₂ /CO/NO _x CEM in a NEMA 4X Enclosure (UCEMS)

Level 1	Channel 1
	11 Single Channel Paramagnetic O ₂ (0-25%)
	12 Single Channel NDIR CO (Low range 0–10 ppm)
	13 Single Channel Chemiluminescent NO _x
	14 Single Channel Electrochemical O ₂ (0-25% range)
	21 Dual Channel Paramagnetic O ₂ - NDIR CO
	22 Dual Channel Paramagnetic O ₂ - Chemiluminescent NO _x
	23 Dual Channel Electrochemical O ₂ - NDIR CO
	24 Dual Channel Electrochemical O ₂ - Chemiluminescent NO _x
	31 Three Channel Paramagnetic O ₂ - NDIR CO - Chemiluminescent NO _x
	32 Three Channel Electrochemical O ₂ - NDIR CO - Chemiluminescent NO _x
	99 Custom

Level 2	Display Option
	01 Pocket PC with 4 ft. cord
	99 Special

Level 3	Modem Option
	00 None, HTML web browser standard
	01 Modem

Level 4	Input/Output Options
	01 Standard inputs/outputs
	02 Standard I/O with additional two analog inputs (necessary if customer MW and fuel flow signals are required for reporting.)
	99 Custom I/O

Level 5	Fiber Optic Output Option
	00 None
	01 Fiber optic output option (62.5 Micron with ST connectors)

Level 6	Special
	00 As-built
	99 Special

Option Notes	
General Notes:	<p>MicroCEM PC104-Controlled O₂/CO/NO_x CEM in NEMA 4X Enclosure</p> <p>Analysis Enclosure Standard Equipment: weather-proof NEMA 4X enclosure (-30 to 50°C ambient range); 3 automatic calibration Solenoid valves for zero, mid and span gasses; total flow flowmeter with meter adjust valve; Pentium-embedded PC104 processor; advanced monitoring menus; meets 40 CFR 60 regulations for calibration and diluent correctional values; automatic analog and digital signal processing; 3 months data storage for raw and diluent correct values; calibrations and alarms include: automatic or manual calibration. Also standard: standard inputs/outputs; 3 4-20 mA current individually isolated analog outputs (O₂, CO and NO_x instantaneous values). Digital outputs include: trouble alarm, sample pump on/off, drain pump on/off, purge on/off, calibrate on/off – 110 VAC at 1 A dry contact. Digital outputs include: O₂ limit exceed, CO limit exceed, NO_x limit exceed. TTL: 5-30 VDC maximum current 500 mA. Digital inputs include: process on/off, initiate auto calibration - RS485 multi-drop network; RS232 serial data; Ethernet 10/100-base TCP/IP communication protocol.</p>

ORDERING INFORMATION

Model	Description
UCEMTS	MicroCEM PC104-Controlled O ₂ /CO/NO _x Time-Sharing CEM in a NEMA 4X Enclosure (UCEMTS)
Level 1 Application Configurations	
11	Single channel, Paramagnetic O ₂
12	Single channel, NDIR CO
13	Single channel, NO _x
14	Single channel, Chem O ₂
15	Single channel, SO ₂
21	Dual channel, Paramagnetic O ₂ , NDIR
22	Dual channel, Paramagnetic O ₂ , NO _x
23	Dual channel, Chem O ₂ , NDIR
24	Dual channel, Chem O ₂ , NO _x
25	Dual channel, Paramagnetic O ₂ , SO ₂
26	Dual channel, Chem O ₂ , SO ₂
31	3 channel, Paramagnetic O ₂ , NDIR, NO _x
32	3 channel, Chem O ₂ , NDIR, NO _x
33	3 channel, Paramagnetic O ₂ , SO ₂ , NO _x
34	3 channel, Chem O ₂ , SO ₂ , NO _x
99	Special configuration
Level 2 Analog Output Options	
00	Standard analog outputs
01	Extended analog outputs
Level 3 Special Output Options	
00	None
01	Fiber optics (62.5 Micron)
99	Other special options
Level 4 uCEMS Configurations	
00	Basic MicroCEM System
01	Time Share MicroCEM System

ORDERING INFORMATION

Model	Description
USHS	MicroCEM Probe/Sample Handling System (USHS)
Level 1	Standard Interior Sample Handling System, In Fiberglass Enclosure
01	Standard SHS - Dual pass chiller, standard 4" 150 lb. flange, 4' probe, for applications to 400°F
02	Standard SHS with 600°F option - Includes spool piece and extended 5' probe
10	High temperature SHS, for applications to 1400°F - Off stack configuration
99	Custom SHS - for higher temperature / high corrosion applications - special materials, pumps, valves
Level 2	Ammonia Scrubber
00	None
01	Ammonia scrubber filter (Recommended for SCR applications)

Accessories	
Part #	Description
662170	Heated sample line option 10'
662195	Heated sample line option 15'
662196	Heated sample line option 25'
662197	Heated sample line option 50'

Probe/Sample Handling Enclosure Standard Equipment

NEMA 4X enclosure with compressor AC (-30 to 50°C)

48' length 316 Stainless Steel probe with .5 micron sintered filter. User to cut to length in field

Dual pass thermoelectric chiller with peristaltic pump

316 Stainless Steel diaphragm sample pump

Probe purge

Instrument grade air required. 15 SCFM at 60 to 100 psig (30 seconds 2 times per day)

Probe and direct local calibration

.5 micron probe filter

Permeation dryer (This will replace need for heated sample lines for outdoor applications when temperature is expected to go below 0°C.

User instrument air required at 5 liter/minute, -40°C dewpoint.

Maximum distance between analysis enclosure and sample conditioning/probe enclosure is 300'. (Response time is 20 seconds per 100' with 1/4" tubing)

* Consult Factory for Class I, Divisions II Applications



Contact Esys for more information about this product:

Esys® The Energy Control Company™

4520 Stine Road, Ste 7

Bakersfield, CA 93313

(661) 833-1902

email: esys@esys.us

website: <http://www.esys.us>

