



CONSPEC[®]

Innovation that digs deeper.

T1200



SMART HEAD[®]

Smart Solutions for Safety and Productivity.



The T1200 Smart Head Controller Integrated Atmospheric Monitoring Station provides improved accuracy, response time and long life while reducing cost, equipment redundancy, and configuration time.

Each Smart Head Controller can interface with up to eight interchangeable Smart Head Sensors for toxic and combustible gases, air velocity, atmospheric conditions (wet and dry-bulb temperatures, barometric pressure, humidity) or any choice of third party analog (4~20mA) sensing devices.

- **Plug and Play Sensor Technology – Controller Automatically Recognizes Sensor Technology and Sensor Ranges**
- **Low Power Consumption**
- **Long Range (+4000ft) Sensor Separation**
- **Reduced Signal Noise as Sensor Reading is Digitized at the Source**
- **Comes with Conspec CDI Windows Software for remote monitoring/configuration**
- **Full Range of Electrochemical Toxic Gases and O2 Available**
- **Full Range of Infra-Red Combustible Gases and CO2 Available**
- **Air Velocity and Mini-Weather Station (Dry & Wet Bulb Temperatures, Barometric Pressure and Humidity) Available**
- **Three User Defined Alarm Settings per Sensor**
- **One Year Warranty**

Up to Eight Connected Sensors

The need to purchase multiple separate atmospheric monitors has been eliminated. Each Smart Head Controller can be connected to up to eight different Smart Head or Third Party Sensors. You can easily mix and match any of our Smart Head sensor technologies and/or third party 4~20mA analog sensors to meet your monitoring requirements.

Plug and Play Sensor Technology

The Smart Head Controller auto-detects and configures itself to the default settings for the specific Smart Head Sensor type connected to it internally or via local Smart Head Trunk.

High Environmental Immunity

Smart Head Sensors undergo factory calibration through the full operating range (temperature and target gas) of the sensor to allow individualized temperature compensated readings through the full span of the sensor cell. Humidity is also controlled through the unique design of the sensor cell assembly. The Smart Head Controller also compensates readings based on known cross-sensitivities of the connected sensors, such as diesel discrimination to reduce nuisance alarms.

Preventative Maintenance Condition Monitoring

Calibration Alert Mode can be activated to remind users ahead of pre-planned calibration schedule for each attached Smart Head Sensor. Calibration History for all attached Smart Head Sensors is stored and analysis mode can be activated to alert for the need for plug-in sensor replacement.

Increased Sensor Data Through Digital Communications

The Smart Head Controller communicates with each attached Smart Head Sensor using digital communications (either MODBUS RTU/TCP-IP or Conspec Accessor Protocols). This ensures that signal noise between the Smart Head Controller and each Smart Head Sensor is significantly reduced and allows for the retrieval of other important operating parameters such as operating temperature and voltage for improved sensor cell performance analysis.

Certified for use in Coal Mines

The Smart Head Controller is internationally certified for use in high methane environments when connected to a certified intrinsically safe power source.



T1200 Specifications

Mechanical

Enclosure	NEMA 4x/IP66 Anti-Static PVC & Stainless Steel Enclosure
Dimensions	7.5" x 5" x 3" / 19.1cm x 12.7cm x 7.6cm
Weight	3 ½ lbs / 1.6 kg
Mounting	Plate Mounted, Holes for Suspension, Grooves for Slot Usage
Conduit Entry	One (¾" Cable Grip), One NEMA 4X/IP66 Quick Connect for Local Smart Head Sensor Trunk

Electrical

Operating Voltage	12-24VDC (15VDC or 18VDC for Intrinsically Safe Operation)
Cable Requirements	4-Conductor 18 AWG Suggested, Conspec P1209 Trunk Cable Recommended
Cable Connection - Output	Choice of 1 x Conspec Trunk Connection (Required for Intrinsically Safe Connections), RS-485, RS-232 Output, CAT 5 Ethernet over Copper, Multi-Mode Fiber 3 x Open Collector Digital Outputs
Cable Connection - Input	1 x Digital Conspec Local Sensor Trunk via Quick Connect 1 x 4~20mA Input 1 x Open Collector Digital Input
Current Consumption	Without internal Sensor – 50mA Full Scale With Internal Sensor – 60mA~110mA Depending on Sensor Type With External Sensor Trunk – Varies Depending on Sensor Types
Communication protocol	Conspec Accessor (Legacy or CN2) MODBUS (RTU or TCP/IP) 4~20mA (single channel only coming fall 2014) Allen Bradley Factory Talk (coming Winter 2014/2015)

Environmental

Operating Temperature	14°F to 120°F (-10°C to 50°C)
Operating Humidity	10% to 95% RH Non-Condensing

System

Display	3.5" (9cm) LCD Display
Keypad	4 Button Keypad
Status LEDs	4 x Status LEDs - Green - Power; Red - Alarm; Yellow - Fault; Green - Comm.
Operating Modes	2 - Normal and Calibration
Alarm Set Points	3 Alarm Set Points per Attached Sensor. Maximum of 24.
Remote Configuration	Conspec CDI Windows Software (Included with Purchase), Conspec Senturion SCADA System Software.



T1200 Sensor Specifications

Specifications - Without Gas Sensor

	No Internal Sensor T1200-00	Mini-Weather Station T1200-MW
Specifications		
Sensor Type	N/A	Temperature (Dry and Wet Bulb), Humidity, Barometric Pressure
Detection Range	N/A	
Performance		
Response Time	N/A	< 10s
Accuracy	N/A	< 1%
Zero Drift	N/A	Max 1%
L-T Output Drift	N/A	< 1% of signal per year
Certifications		
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Pending
ATEX	Pending	Pending
MSHA	Pending	Pending
UL/FM	Pending	Pending
Replacement Sensor Cell		
Part Number	N/A	N/A

Smart Head Controllers with Internal Electrochemical Sensors for other gasses not listed are available upon request.

See the Smart Head Remote Sensors Spec Sheets for Available Sensors for Remote Connection to the Smart Head Controller.
 Contact Conspec or your local Conspec Distributor for Availability.

T1200 Sensor Specifications

Specifications - With Internal Electrochemical Gas Sensors (Toxic Gases, Oxygen & Hydrogen)

	Oxygen T1218-1125	Carbon Monoxide (CO) T1218-03XX (XX- range)	Nitric Oxide (NO) T1218-0912
Specifications			
Sensor Type	Electrochemical	Electrochemical	Electrochemical
Detection Range	0-25% Vol.	0-50ppm, 0-100ppm, 0-500ppm, 0-1000ppm	0-100ppm
Performance			
Response Time	T90: <15s	T50: <10s T90: <30s	T90: <10s
Accuracy	0.1% Vol.	0.5ppm	0.5ppm
Zero Drift	<5% per year	<5% per year	Max. 9ppm
L-T Output Drift	<0.1% of signal per year	<1% of signal per year	2% of signal per month
Certifications			
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Ex ia Ma IP66	Ex ia Ma IP66
CE/ATEX	Pending	Pending	Pending
MSHA	Pending	Pending	Pending
UL	Pending	Pending	Pending
Replacement Sensor Cell			
Part Number	CA0037	CA0040	CA0050

Specifications - With Internal Electrochemical Gas Sensors (Toxic Gases, Oxygen & Hydrogen)

	Nitrogen Dioxide (NO2) T1200-1051	Ammonia (NH3) T1200-0112	Sulfur Dioxide (SO2) T1200-1322
Specifications			
Sensor Type	Electrochemical	Electrochemical	Electrochemical
Detection Range	0-50ppm	0-100ppm	0-20ppm
Performance			
Response Time	T50: <10s T90: <40s	T50: <20s T90: <120s	T90: <15s
Accuracy	0.1ppm	2ppm	0.1%
Zero Drift	Max. 0.2ppm	<10% per 6 months	Max: 0.1ppm
L-T Output Drift	<2% of signal per month	<5% of signal per month	<2% of signal per month
Certifications			
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Ex ia Ma IP66	Ex ia Ma IP66
CE/ATEX	Pending	Pending	Pending
MSHA	Pending	Pending	Pending
UL	Pending	Pending	Pending
Replacement Sensor Cell			
Part Number	CA0007	CA0004	CA0046



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T1200 Sensor Specifications

Specifications - With Internal Electrochemical Gas Sensors (Toxic Gases, Oxygen & Hydrogen)

	Hydrogen (H2) T1200-0623	Hydrogen Chloride (HCl) T1200-0751	Hydrogen Sulfide (H2S) T1200-0822
Specifications			
Sensor Type	Electrochemical	Electrochemical	Electrochemical
Detection Range	0-2000ppm	0-50ppm	0-20ppm
Performance			
Response Time	T50: <25s T90: <50s	T50: <25s T90: <120s	T50: <10s T90: <35s
Accuracy	2ppm	0.5ppm	0.25ppm
Zero Drift	Max -35ppm	Max 1.5ppm	Max. 2ppm
L-T Output Drift	<2% of signal per month	<2% of signal per month	<1% of signal per month
Certifications			
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Ex ia Ma IP66	Ex ia Ma IP66
CE/ATEX	Pending	Pending	Pending
MSHA	Pending	Pending	Pending
UL	Pending	Pending	Pending
Replacement Sensor Cell			
Part Number	CA0015	CA0005	CA0008

	Hydrogen Cyanide (HCN) T1218-XX31	Chlorine (Cl2) T1218-0421	Ozone (O3) T1218-1220
Specifications			
Sensor Type	Electrochemical	Electrochemical	Electrochemical
Detection Range	0-30ppm	0-20ppm	0-2ppm
Performance			
Response Time	T50: <25s T90: <50s	T50: <30s T90: <60s	T50: 30T90: <150s
Accuracy	0.5ppm	0.1ppm	20ppb
Zero Drift	<5%	Max. 0.2ppm	Max. 36ppb
L-T Output Drift	<5% per month	<2% of signal per month	<4% of signal per month
Certifications			
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Ex ia Ma IP66	Ex ia Ma IP66
CE/ATEX	Pending	Pending	Pending
MSHA	Pending	Pending	Pending
UL	Pending	Pending	Pending
Replacement Sensor Cell			
Part Number	CA0053	CA0014	CA0034

Smart Head Controllers with Internal Electrochemical Sensors for other gasses not listed are available upon request.
 See the Smart Head Remote Sensors Spec Sheets for Available Sensors for Remote Connection to the Smart Head Controller.
 Contact Conspec or your local Conspec Distributor for Availability.



T1200 Sensor Specifications

Specifications - With Internal Infrared Gas Sensors (Combustibles & Carbon Dioxide)

	Combustibles T1220-1511	Combustibles T1220-1521	Carbon Dioxide (CO2) T1220-0253
Specifications			
Sensor Type	Point Infrared	Point Infrared	Point Infrared
Detection Range	0-5% Volume, 0-	0-100%LEL	0-5000ppm
Performance	100%LEL		
Response Time	Performance	T50: <10s T90: <30s	T50:<10s T90: <30s
Accuracy	T50: <10s T90: <15s	0.1% Vol.	50ppm<2500ppm<100p
Zero Drift	0.01% Vol.	<3%	pm
L-T Output Drift	<3%	<1% of signal per year	<2%
Certifications	<0.1% of signal per year		<1% of signal per month
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Ex ia Ma IP66	Ex ia Ma IP66
CE/ATEX	Pending	Pending	Pending
MSHA	Pending	Pending	Pending
UL	Pending	Pending	Pending
Replacement Sensor Cell			
Part Number	CA0038	CA0049	CA0048

	Dual Combustibles/Carbon Dioxide (CO2) 1220-1531 Combustibles Specifications	Dual Combustibles/Carbon Dioxide (CO2) 1220-1531 Carbon Dioxide Specifications
Specifications		
Sensor Type	Point Infrared	Point Infrared
Detection Range	CH4: 0-100% Vol.	CO2: 0-5% Vol.
Performance		
Response Time	T50: <10s T90: <30s	T50: <10s T90: <30s
Accuracy	0.01%Vol.<5%Vol.<0.1%Vol.	0.01% Vol.
Zero Drift	<1%	<500ppm
L-T Output Drift	Max. <3% per year	500ppm per month
Certifications		
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Ex ia Ma IP66
CE/ATEX	Pending	Pending
MSHA	Pending	Pending
UL	Pending	Pending
Replacement Sensor Cell		
Part Number	CA0052	CA0052

Smart Head Controllers with Internal Electrochemical Sensors for other gasses not listed are available upon request.
 See the Smart Head Remote Sensors Spec Sheets for Available Sensors for Remote Connection to the Smart Head Controller.
 Contact Conspec or your local Conspec Distributor for Availability.



T1200 Sensor Specifications

Specifications - With Internal Ultraviolet Photo-Ionization Sensor

	Photo-Ionization Sensor T1200-PID21	Photo-Ionization Sensor T1200-PID23	Photo-Ionization Sensor T1200-PID14
Specifications			
Sensor Type	Ultra-Violet Photo-Ionization	Ultra-Violet Photo-Ionization	Ultra-Violet Photo-Ionization
Detection Range	0-20ppm (Isobutylene)	0-2000ppm (Isobutylene)	0-10000ppm (Isobutylene)
Performance			
Response Time	T90: <3s	T90: <3s	T90: <3s
Accuracy	0.01ppb	0.1ppb	1ppb
Min. Detectible Quantity	5ppb	50ppb	100ppb
Zero Drift	<1%	<1%	<1%
LT Output Drift	Negligible	Negligible	Negligible
Certifications			
CSA/ESA	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available	Pending, ESA Evaluation Available
IECeX	Ex ia Ma IP66	Ex ia Ma IP66	Ex ia Ma IP66
CE/ATEX	Pending	Pending	Pending
MSHA	Pending	Pending	Pending
UL	Pending	Pending	Pending
Replacement Sensor Cell			
Part Number	CA0054	CA0055	CA0056

Smart Head Controllers with Internal Ultraviolet Photo-Ionization Sensors can be configured for the detection of a variety of Gases.

List of some common gas types detectible by Conspec Ultraviolet Photo-Ionization Gas Sensors:

Acetic Acid (CH₃COOH), Acetone ((CH₃)₂CO), Ammonia (NH₃), Arsine (AsH₃), Benzene (C₆H₆), Butadiene (C₄H₆), Carbon Disulfide (CS₂), Diesel Fuel (Various), Ethanol (C₂H₆O), Ethyl Mercaptan (C₂H₆S), Gasoline (Various Grades), Heptane (C₇H₁₆), Hydrogen Sulfide (H₂S), Methanol (CH₄O), Methyl Mercaptan [Stench Gas] (CH₄S), n-Hexane (C₆H₁₄), Nitric Oxide (NO), Nitrogen Dioxide (NO₂), Octane (C₈H₁₈), o-Xylene (C₈H₁₀), p-Xylene (C₈H₄(CH₃)₂), Styrene (C₈H₈), Toluene (C₇H₈).

Contact Conspec for Availability of Ultraviolet Photo-Ionization Detection of Other Gases.

See the Smart Head Remote Sensors Spec Sheets for Additional Available Sensors for Connection to the Smart Head Controller.

Contact Conspec or your local Conspec Distributor for Further Information and Availability.



T1200 Sensor Specifications

Accessories

T1218-XXXX	Replacement Smart Head Plug In Sensor Assembly (XXXX - Specify Gas and Range)
T1218-XXXX-IS	Replacement Smart Head Plug In Sensor Assembly (Intrinsically Safe) (XXXX - Specify Gas and Range)
CDI	Conspec CDI Software
T1383-X	Smart Head External Serial to Ethernet Adaptor (X = Specify number of RS-485 Serial Connections 1-6)
855PC	Allen Bradley 855PC Horn and Strobe 110db (non-intrinsically safe applications only)
T1309	Conspec Intrinsically Safe Horn and Strobe 90db
EE0261-SH	Replacement Smart Head Junction Box with NEMA 4x/IP68 Quick Connects for Smart Head Sensor Trunk
EE0261-SHX	Smart Head Cable Splitter Box with NEMA 4x/IP68 Quick Connects (X = Specify Number of Quick Connects 1-3)
P1209SH-X	P1209 Smart Head Local Sensor Trunk Cable with NEMA 4x/IP68 Quick Connects (XX - Specify Length)
P1209AV-X	P1209 Smart Head Local Sensor Trunk Cable with NEMA 4x/IP68 Quick Connects for Conspec's T1355 Air Velocity Remote Sensors (XX - Specify Length)
P3013-SH	Smart Head Calibration Cap
P3013-SH-1	Smart Head Calibration Cap w/ 4"x3/16" I.D. x 5/16" O.D Tubing
P1879	Calibration Kits (see Calibration Supplies Specifications Sheet)
P1880	Calibration Gas Cylinders (see Calibration Supplies Specifications Sheet)

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