Quick Start Guide

Honeywell

MDA Scientific Midas
Toxic, Flammable And Oxygen Gas Detector

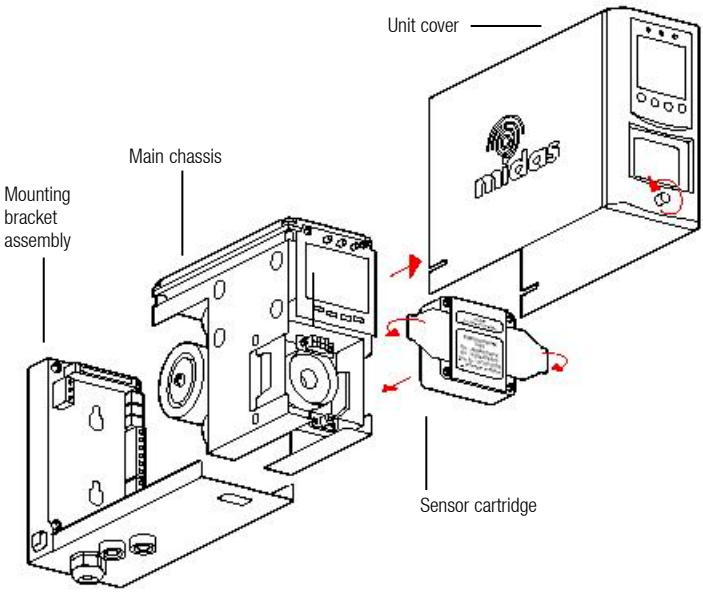
1. Introduction

The Honeywell Analytics MIDAS® gas detector is an extractive gas sampling system that draws a sample locally or from a remote point to a sensor cartridge that is located inside the detector's chassis. A wide range of toxic, flammable and oxygen gas sensor cartridges are available that enable detection of gases used or generated in the Semiconductor manufacturing industry and other manufacturing industries.

The MIDAS® gas detector comprises of 4 main parts: the main chassis, the mounting bracket assembly, the sensor cartridge and the unit cover. Diagram 1 details the MIDAS® general arrangement. Additionally, there is an optional Pyrolyzer module required for the detection of NF_3 and an optional Analog module for the connection of external 4-20 mA devices.

This Quick Start Guide provides basic installation, set up and operation information for the main detector unit. For more detailed information on other features and options please refer to the operating manual part number MIDAS-A-001.

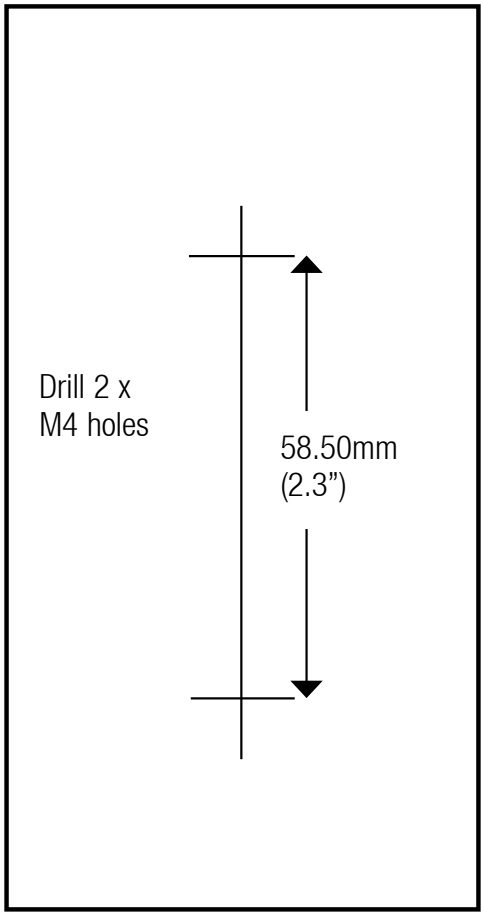
Diagram 1. MIDAS® general arrangement exploded view



2. Mounting Details

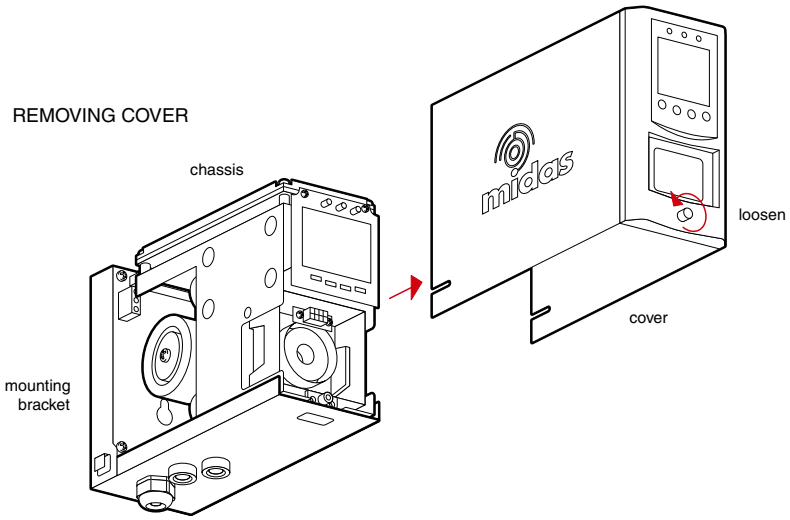
The MIDAS® gas detector has an integral mounting bracket assembly that is easily mounted to a suitable vertical surface such as a wall, tool housing, mounting plate on a pole etc.

Drill Template

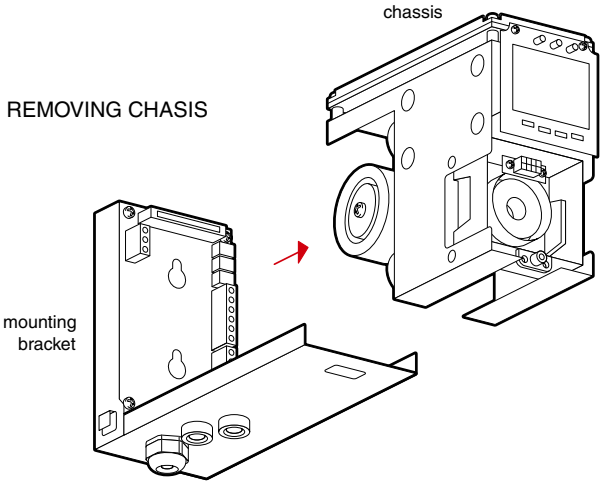


1. Unscrew the thumbscrew located on the front panel.
2. Remove the cover by pulling it forwards off the main chassis.
3. Unscrew the two retaining screws located at the bottom front of the chassis.
4. Holding the mounting bracket assembly with one hand use the other to carefully pull the main chassis forwards to disconnect it from the mounting bracket assembly.
5. Using the drill template provided drill two holes 58.50mm vertically apart for 2 x round head M4 fixing screws.
6. Partially screw the fixings into the mounting surface.
7. Place the mounting bracket assembly over the screws so they pass through the mounting holes and then slide down to locate in the slots.
8. Tighten the screws to secure the mounting bracket assembly.

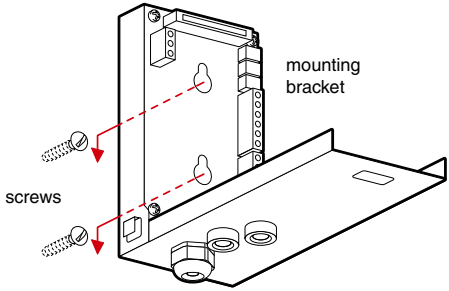
Diagram 3. Mechanical installation



REMOVING CHASIS



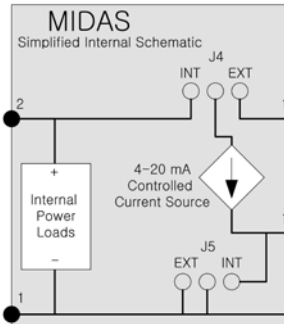
ATTACHING BRACKET TO
SCREWS ON A WALL

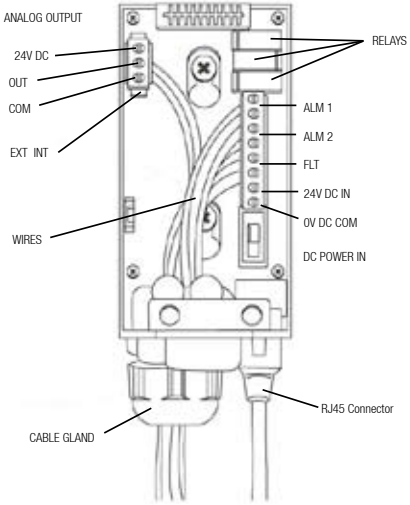


3. Electrical installation

Access for the electrical wires to the terminal module is made via the PG16 cable gland located at the bottom of the mounting bracket assembly. The cable gland can be removed and replaced with a suitable conduit fitting if required. The wire routing of a typical installation is shown in the diagram.

Diagram 4. Typical wire routing





The terminals used are suitable for conductors of 24 to 14 AWG (0.5 to 1.8mm Dia.). The use of 16 AWG (1.5mm Dia.) conductors is recommended.

NOTE: When powered by Power over Ethernet (PoE) the 3 on board relays do not require separate 24 VDC to be energized

If Power over Ethernet (PoE) is used to power the device, then 24 VDC power must not also be connected to the device, (or conversely if 24 VDC is used to power the MIDAS®, then electrical power via the Ethernet port must not be applied). Failure to observe this requirement may cause damage to the gas detection system and will not be covered by the standard warranty.

When connecting the wires ensure that the power switch is in the off position.

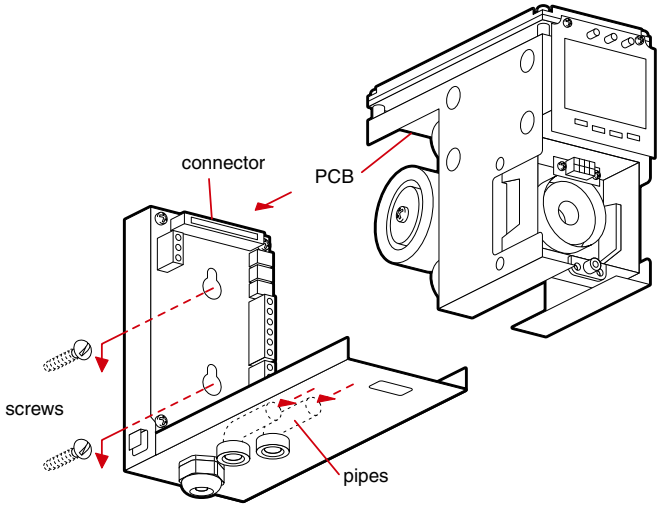
4. Refitting the main chassis

The main chassis can be refitted to the mounting bracket assembly using the following steps.

1. Align the PCB at the top rear of the main chassis with the connector located at the top of the mounting bracket assembly.
2. At the same time align the two tubes at the bottom rear of the main chassis with the two tubes located on the bottom of the mounting bracket assembly.
3. Slide the chassis backwards on the mounting bracket assembly so that the PCB and connector and tubes engage simultaneously. (See diagram below).
4. Ensure the PCB, connector and tubes are fully engaged by firmly pushing the main chassis horizontally backwards on the mounting bracket assembly

   (WARNING: DO NOT PUSH ON THE LCD AS THIS MAY CAUSE DAMAGE).
5. Align the two fixing screws located at the bottom of the chassis with the screw threads on the mounting bracket assembly.
6. Tighten the screws to secure the chassis to the mounting bracket assembly.

Diagram 13. Refitting the chassis

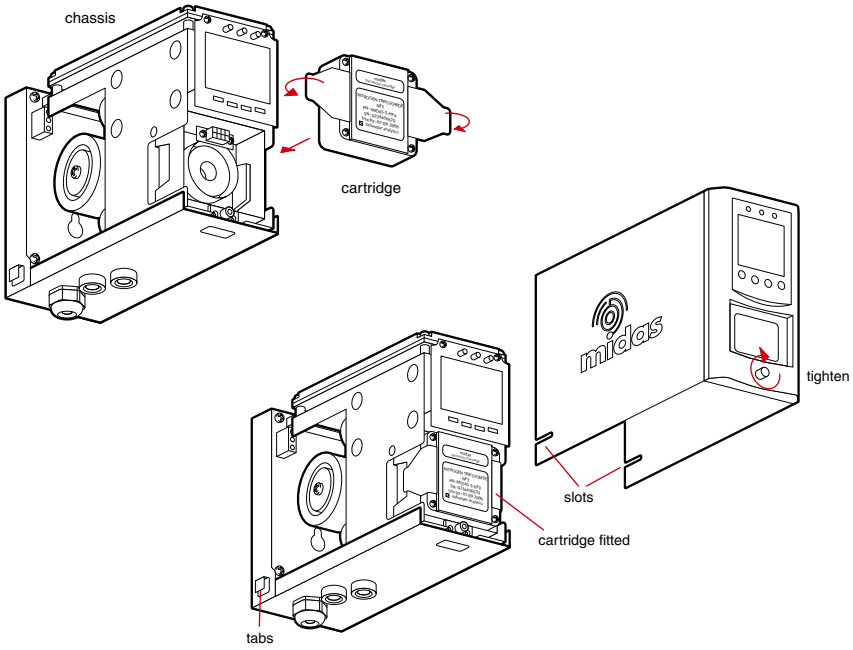


5. Installing the sensor cartridge

The MIDAS® sensor cartridge is supplied separately and needs to be fitted to the detector's main chassis. The following steps and diagrams detail the procedure for installing the sensor cartridge for the first time. This procedure is carried out with the detector cover removed.

1. Remove sensor cartridge from packaging
2. Check the part number and type of sensor cartridge is correct.
3. Check the activate by date.
4. Align the pins at the top of the sensor cartridge with the socket in the sensor cartridge chamber.
5. Carefully push the sensor cartridge into the sensor cartridge chamber until fully home.
6. Lock the sensor cartridge in place using the tabs either side of the sensor cartridge to lock the sensor cartridge to the main chassis.
7. Switch the power switch located on the terminal board to the 'on' position.
8. Refit the detector's cover by aligning the slots either side with the locating tabs on the mounting bracket assembly.
9. Push the cover horizontally until home.
10. Tighten the thumbscrew located on the front panel.

Diagram 14. Installing the sensor cartridge



6. Diagnostics

Fault code	Description	Condition	Recovery
m10	Over range.	A large concentration has been detected. The MIDAS® requires an independent confirmation that the gas hazard is gone.	Supply known clean air to the MIDAS® and clear this fault.
m11	Calibration expires soon.	The user specified calibration interval has elapsed.	Perform zero and span calibrations. Increase span calibration period.
m12	Cartridge expires soon.	Cartridge is old and will expire soon.	Replace the cartridge with a new cartridge.
m13	Flow low.	MIDAS® is no longer able to regulate flow.	Check filters and pump.
m14	Interferent present.	An interferent is degrading the ability of the MIDAS® to detect gas.	Check application.
m15	Temperature near limit.	Temperature within 2 Celsius of limit.	Check installation environment.
m16	BaseLine fault.	Sensor baseline has drifted.	Check for background gas concentration, temperature or humidity fluctuations. Perform zero calibration. Replace cartridge.
m17	Inhibit timeout.	Transmitter has been in inhibit mode too long.	Resume monitoring or increase timeout value.
F40	Sensor overdosed.	Sensor has been exposed to high gas concentrations for long periods.	Replace cartridge.
F41	BaseLine fault.	Sensor baseline has drifted.	Check for background gas concentration, temperature or humidity fluctuations. Perform zero calibration. Replace cartridge.
F42	Calibration expired.	Too long since last calibration.	Replace or calibrate the cartridge.
F43	Cartridge expired.	Cartridge is too old.	Replace cartridge.
F44	Cell failure.	Cartridge has failed Reflex™ check.	Replace cartridge.
F45	Stabilization timeout.	Cartridge has failed to stabilize.	If temperature or humidity shocks exist, precondition the cartridge. Check for background gas concentration. Replace cartridge.
F46	Cartridge analog failure.	Various reasons.	Replace cartridge.
F47	Cartridge memory invalid.	Checksum error.	Replace cartridge.
F48	Cartridge absent.	No communications.	Reseat cartridge. Replace cartridge.
F49	Cartridge wrong type.	Cartridge type found to be incorrect after boot-up.	Replace cartridge.
F80	Temperature limits Exceeded.	Temperature is outside limits	Check installation environment.
F81	Flow fail.	Flow < 70% of nominal for 15 seconds.	Check filters. Check for kinked tubing, Replace pump.
F82	Excessive electrical noise.	Internal electronics repeatedly noisy.	Check grounding of MIDAS® chassis. Check termination of cable shields. Relocate the MIDAS® further from noise sources. Add ferrite inductors to cables.
F83	Pyrolyzer fail.	Pyrolyzer fails to heat.	Check electrical connection to pyrolyzer. Replace heater. Replace pyrolyzer.
F84	Misc. transmitter fault.	Transmitter is defective.	Service or replace MIDAS®.

7. 4-20 mA current output levels

Current level	Description
0mA	Fault (open circuit)
1.0mA	Fault
2.0mA	Inhibit (test mode)
3.0mA	Maintenance fault
4.0 to 20.0mA	Gas reading (normal operation)
21.0mA	Over range

8. Review menu

The detector settings can be reviewed safely without the possibility to make changes by using review mode. To select review mode press the '▲' up or '▼' down button once. The review mode icon '🕮' will show on the display and the first review mode menu icon is displayed.

The menu is simply navigated by using the '▲' up and '▼' down buttons to select the required menu, and then using the '✓' accept button to enter that submenu and scroll through to view the settings. The 'X' cancel button can be used to exit the submenu and allow selection of a different submenu, or can be pressed again to exit to normal operating mode. When in review mode the unit will automatically return to the main normal operation status display if either an alarm level is exceeded or no button is pressed for 60 seconds.

8.1. Review menu '🕮'

Review Submenu	OK	⇨	OK	⇨	OK	⇨	OK	⇨	OK	⇨	OK	
Software SW	✓	Displays software revision	✓	Displays software checksum	✓	Press ▲ or ▼ to select next menu or X to exit						
Alarms	✓	Displays sensor cartridge ID (X) and gas ID code (Y) in format (X -Y)	✓	Level 1 (L1) rising (U) or falling (d) alarm type followed by set point then same for level (L2) alarm	✓	Alarm time delay (secs)	✓	Alarm relays latching (L) or non latching (nL)	✓	Alarm relays normally energized (nE) or normally de-energized (nd)	✓	Press ▲ or ▼ to select next menu or X to exit
Faults	✓	Fault relay configuration	✓	Fault relay latching (L) or non latching (nL)	✓	Fault relay normally energized (nE) or normally de-energized (nd)	✓	Press ▲ or ▼ to select next menu or X to exit				
Calibration	✓	Days remaining to next calibration due	✓	Year of last calibration	✓	Month and day of last calibration	✓	Press ▲ or ▼ to select next menu or X to exit				
Date/Time timE	✓	Year	✓	Date	✓	Time	✓	Press ▲ or ▼ to select next menu or X to exit				
Address	✓	Auto address detect (AU Y) or manual set (AU n)	✓	IP address segments (x4)	✓	Sub net address segments (x4)	✓	Press ▲ or ▼ to select next menu or X to exit				
Event Log	✓	Number of dots on display shows number of viewable events (0-7)	✓	Date of first event	✓	Time of event	✓	Icon and event code	✓	Repeat for next event or X to exit		
▲▼	OK	⇨	OK	⇨	OK	⇨	OK	⇨	OK	⇨	OK	

9. Set-up, calibration and test menus

WARNING: Set-up, calibration and test modes are intended for use by trained personnel or service engineers only. Access to these modes can be pass code protected by following the procedure in the table below.

Set-up, calibration and test modes are used to make setting changes, calibrate and test the detector. To select set-up, calibration and test mode press and hold the '▲' up button or '▼' down button for a second. The unit will automatically go to the main normal operation status display from setup/calibration/test menus (but not from inside a setup/calibration/test function) if no button is pressed for 5 minutes or if an alarm level is exceeded.

PASS CODE: If a pass code has been set the display will show 0000 with the first 0 flashing. Use the '▲' up or '▼' down buttons to set the first digit of the pass code. Press '✓' to enter the first digit. The second digit will then flash. Repeat the process until all four pass code digits have been entered. If an incorrect code is entered the display will show 'Err' and return to the normal operation mode. If a pass code is forgotten contact your local Zellweger Analytics service department.

Please record your pass code in a separate archive that can be securely retrieved. Failure to be able to retrieve your pass code may lead to delays in gaining access to all the protected functions in each MIDAS® unit.

After successfully entering the pass code (if set) the first menu 'SET' set-up icon will show on the display. The 'CAL' calibration or 'tESt' test menu can also be selected using the '▲' up or '▼' down buttons. Press the '✓' accept button to enter the selected menu or the 'X' cancel button to return to normal operation mode.

9.1 Set up menu '

Set up Submenu	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	
Alarms	✓	Change gas ID code (only for multi gas sensor cartridge)	✓	Set level 1 (L1) rising (U) or falling (d) alarm type. Set alarm set point. Repeat for level (L2) alarm	✓	Set alarm time delay (X-X secs)	✓	Set alarm relays latching (L) or non latching (nL)	✓	Set alarm relays normally energized (nE) or normally de-energized (nd)	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu	
Faults	✓	Set fault relay configuration (1FLt, 2FLt, CmbF	✓	Set fault relay latching (L) or non latching (nL	✓	Set fault relay normally energized (nE) or normally de-energized (nd)	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu					
Calibration	✓	Set calibration interval (0-365 days)	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu									
Date/Time timE	✓	Set date format (dd:mm or mm:dd)	✓	Set year (2003-2030)	✓	Set month (1-12)	✓	Set day (1-31)	✓	Set hours (00-23)	✓	Set minutes (0-59)	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu
Set Address	✓	Set auto address detect (AU Y) or manual set (AU n)	✓	If AU Y, address is detected, then returns to set-up, calibration and test menu. If AU n, set the first part of the IP address (0-255)	✓	Repeat setting address for 2nd, 3rd and 4th segments of IP address.	✓	Set the 4 sub net addresses (0-255) using same method	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu			
Set Pass Code	✓	Press ▲ or ▼ to set pass code 1st digit	✓	Press ▲ or ▼ to set pass code 2nd digit	✓	Press ▲ or ▼ to set pass code 3rd digit	✓	Press ▲ or ▼ to set pass code 4th digit	✓	Repeat to confirm pass code	✓	Pass code saved if both entries are the same	
▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	

9.2 Calibration menu ‘ CAL’

Calibration submenu	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK
Zero 	✓	Icon flashes alerting user to prepare to apply zero gas	✓	Level 1 (L1) rising (U) or falling (d) alarm type followed by set point then same for level (L2) alarm	⇨	If ok ‘‘PASS” is displayed. If fail fault code is displayed.	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu			
Span 	✓	Select gas ID code of calibration gas (for multi gas ID sensor cartridges only)	✓	Select if humidified ‘HUm’ or dry ‘drY’ calibration gas	✓	Adjust value to display span gas concentration being used	⇨	Display goes steady and displays span gas reading. The dots indicate span progress. If ok ‘‘PASS” is displayed. If fail fault code is displayed	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu	
Flow	✓	Icon flashes and display shows ‘0’ indicating that flow zero will be set	✓	Unit counts down from 10 to 0 and sets flow zero. Display shows 1st set point target flow rate. Use ▲ or ▼ to make reading on external flow meter 350cc/min +/- 50cc/min	✓	Use ▲ or ▼ to change the flashing display to the actual reading from the external flow meter	✓	Unit counts down from 10 to 0 and sets 1st set point. Icon flashes and displays 2nd set point target. Repeat process to set.	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu	
4-20 mA mA	✓	4 mA is displayed indicating analog output should be 4 mA	⇨	Adjust until analog output is 4 mA	✓	20 mA is displayed indicating analog output should be 20 mA	⇨	Adjust until analog output is 20 mA	✓	Press ▲ or ▼ to select next menu or X for set-up, calibration and test menu	
▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK	▲ ▼	OK

9.3 Test menu ‘ tEST’

Test submenu	OK	▲▼	OK	▲▼	OK	▲▼	OK	▲▼	OK	▲▼
Bump	✓	Apply bump test gas and display shows measured gas concentration with all alarm outputs inhibited	⇨	Press ‘X’ to exit to test menu	⇨	Press ▲ or ▼ to select next submenu or X for to return to the set-up, calibration and test menu				
Alarm/fault	✓	Display shows ‘Sim’ and the A1 ‘▲’ symbol. Select either A1, A2 ‘’ or Fault ‘’ for simulation	✓	Display shows ‘SuRE’.	✓	Display flashes ‘on’ and simulates the selected A1, A2 or Fault display and output.	⇨	Press x to exit and select another simulation or x again to return to test submenu	⇨	Press ▲ or ▼ to select next sub menu or X for set-up, calibration and test menu
Inhibit	✓	Press ▲ or ▼ to select ALm, ALm-Ft, ALL or nonE inhibit state	✓	Set inhibit timeout period	✓	UPdt is displayed and unit enters selected inhibit state. Display returns to submenu	⇨	Press ▲ or ▼ to select next sub menu or X for set-up, calibration and test menu		
▲▼	OK	▲▼	OK	▲▼	OK	▲▼	OK	▲▼	OK	▲▼

10. Ordering information

Please refer to the Operating Manual (MIDAS-A-001) for full details of monitors and accessories
MIDAS® Transmitter system: MIDAS-T-001 / MIDAS® Pyrolyzer module: MIDAS-T-00P /
MIDAS® Analog Input module: MIDAS-T-00A

10.1 MIDAS® plug in sensor cartridges

The plug in sensor cartridges for the MIDAS® Gas Transmitter are sold separately with a standard 1 year (12 month) standard warranty. Extended 2 year warranty sensor cartridges are also available. Some sensor cartridges can be configured to detect more than 1 target gas. Details of the gases, ranges and part numbers for the sensor cartridges available are listed below.

Description	Range	Part no. 12 month warranty	Part no. 24 month warranty
Ammonia	0-100 ppm	MIDAS-S-NH3	MIDAS-E-NH3
Arsine	0-0.2 ppm	MIDAS-S-ASH	MIDAS-E-ASH
Boron Trichloride	0-8 ppm	MIDAS-S-HCL	MIDAS-E-HCL
Boron Trifluoride	0-8 ppm	MIDAS-S-HFX	MIDAS-E-HFX
Bromine	0-0.4 ppm	MIDAS-S-BR2	MIDAS-E-BR2
Chlorine	0-2 ppm	MIDAS-S-HAL	MIDAS-E-HAL
Chlorine Dioxide	0-0.4 ppm	MIDAS-S-BR2	MIDAS-E-BR2
Chlorine Trifluoride	0-0.8 ppm	MIDAS-S-SF4	MIDAS-E-SF4
Carbon Dioxide	0-2.0% vol	MIDAS-S-CO2	MIDAS-E-CO2
Carbon Monoxide	0-100 ppm	MIDAS-S-COX	MIDAS-E-COX
Diborane	0-0.4 ppm	MIDAS-S-HYD	MIDAS-E-HYD
Dichlorosilane	0-8 ppm	MIDAS-S-HCL	MIDAS-E-HCL
Disilane	0-20 ppm	MIDAS-S-SHX	MIDAS-E-SHX
Fluorine	0-4 ppm	MIDAS-S-HAL	MIDAS-E-HAL
Germane	0-0.8 ppm	MIDAS-S-HYD	MIDAS-E-HYD
Hydrogen [1]	0-1000 ppm	MIDAS-S-H2X	MIDAS-E-H2X
Hydrogen	0-100% LEL [1]	MIDAS-S-LEL	MIDAS-E-LEL
Hydrogen Bromide	0-8 ppm	MIDAS-S-HCL	MIDAS-E-HCL
Hydrogen Chloride	0-8 ppm	MIDAS-S-HCL	MIDAS-E-HCL
Hydrogen Cyanide	0-20 ppm	MIDAS-S-HCN	MIDAS-E-HCN
Hydrogen Fluoride	0-12 ppm	MIDAS-S-HFX	MIDAS-E-HFX
Hydrogen Selenide	0-0.4 ppm	MIDAS-S-HSE	MIDAS-E-HSE
Hydrogen Sulfide	0-40 ppm	MIDAS-S-H2S	MIDAS-E-H2S
Methane	0-100% LEL [1]	MIDAS-S-LEL	MIDAS-E-LEL
Nitric Oxide	0-100 ppm	MIDAS-S-NOX	MIDAS-E-NOX
Nitrogen Dioxide	0-12 ppm	MIDAS-S-NO2	MIDAS-E-NO2
Nitrogen Trifluoride	0-40 ppm	MIDAS-S-HFX	MIDAS-E-HFX
Oxygen	0-25% v/v	MIDAS-S-O2X	MIDAS-E-O2X
Ozone	0-0.4 ppm	MIDAS-S-O3X	MIDAS-E-O3X
Phosphine	0-1.2 ppm	MIDAS-S-PH3	MIDAS-E-PH3
Phosphorous Oxychloride	0-0.8 ppm	MIDAS-S-POC	MIDAS-E-POC
Silane	0-20 ppm	MIDAS-S-SHX	MIDAS-E-SHX
Silane low level	0-2 ppm	MIDAS-S-SHL	MIDAS-E-SHL
Sulfur Dioxide	0-8 ppm	MIDAS-S-SO2	MIDAS-E-SO2
Sulfur Tetrafluoride	0-0.8 ppm	MIDAS-S-SF4	MIDAS-E-SF4
TEOS Tetraethyl Orthosilicate	0-40 ppm	MIDAS-S-TEO	MIDAS-E-TEO
Tungsten Hexafluoride	0-12 ppm	MIDAS-S-HFX	MIDAS-E-HFX

[1] MIDAS® detectors are not ETL approved for monitoring in or sampling from classified areas above 25% LEL

Find out more
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