Author: Jac Williams

OEM Manual

Midas M2

Misfuel identification & avoidance system

UL version

Berrys Global Innovations ltd
141 Lichfield Rd
Aston
Birmingham
B6 5SP
United Kingdom
www.berrys.com

Contents

Project overview:

Midas is an intelligent valve system in either fixed or portable format that prevents tanker drivers from delivering incorrect fuel into bulk fuel storage tanks.

Safe use of Product

The MIDAS valve is designed to be used with volatile hydrocarbon liquids such as petrol and diesel fuel. Installing or working on this equipment means working in an environment in which these highly flammable liquids and vapours are present.

Specific conditions of use:

- The MIDAS M2 has been tested and found suitable for use in atmospheres containing the following chemicals in accordance with UL1203-Fuel reference C
- The equipment is designed to be connected to an external process fluid. The process temperature is between -5˚C and +30°C.
- Use Fasteners with Yield Stress ≥ A2-50
- RFID Tags to be used in conjunction with the equipment have not been assessed for use in Hazardous Locations,
- Flamepaths are not intended to be repaired
- End user is prohibited from opening the motor compartment door
- External charging of the MIDAS M2 rechargeable battery must only be charged in a non-hazardous (safe) area. Charging must only be performed within an ambient temperature range of -15°C to +47°C. The metallic door frame must be refitted after charging.

This presents a risk of severe injury or death if these instructions and standard industry practices are not followed. Read and follow this entire instruction booklet before installing or working on this equipment.

⚠WARNING – DO NOT OPEN COMPARTMENTS WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT

⚠ The Equipment supplied must not be modified or tampered with in any way since this may not only inhibit the devices ability to function correctly but also may damage safety features there to protect from possible ignition of explosive atmospheres.

⚠ Highly flammable vapours may be present in the environment in which this equipment is being installed or serviced. The unit must be removed from the zoned area before attempting any repairs. Failure to follow this instruction could result in serious fire or explosion.

⚠ In some installations the MIDAS valve may be located in below ground containment sumps designed to trap hazardous liquid spills and prevent contamination of the environment. These containment sumps can also trap dangerous quantities of hydrocarbon vapours which, if inhaled, could lead to dizziness and fainting, or, if ignited, could result in an explosion causing serious personal injury or death.

⚠ The MIDAS valve must be installed using recognised standard industry practices. Follow all local industry practices and laws governing the installation of this equipment in a hazardous area. When no other regulations apply, follow *EN 60079-14*. Electrical Apparatus for Explosive Gas Atmospheres Part 14: Electrical Installations in Hazardous Areas. Failure to do so could result in severe injury, death, serious property damage and/or environmental contamination.

⚠ The equipment must be installed, commissioned and maintained by a trained, certified engineer in accordance with information contained in this manual. The procedures described about INSTALLATION are not permitted for operators.

⚠ Repair of the equipment cannot be carried out by the user and must be replaced by an equivalent certified product. Repairs should only be carried out by the manufacturer or an approved service centre.

Installer: This instruction booklet MUST be left with the owner of the service station at which the equipment is being installed.

Station Owner: Retain these instructions for future use and provide them to persons servicing or removing this equipment.

Design specification:

- Discriminates between gasoline and diesel as well as other fuel types
- Portable or fixed applications
- Internal shut off valve that always fails to the closed position
- Self-powered
- Backlit LCD display
- Wireless communications
- Internal storage in non-volatile memory
- Low maintenance

Types:

Midas M2 -FIXED

- Installed as a fixed system to either above ground or below ground filling points

Midas ELBOW

- Used as a replacement for standard fuel delivery elbows and can be carried on the road tanker or stored on site

Midas COMPACT

- Used as an "in line" system attached to above or below ground filling points and can be carried on the road tanker and or stored on site

Installation:

Midas M2-Fixed

- The exiting filling point hose connection will need to be removed
- An adapter flange obtained from Fluid ID systems will then need to be fitted in place of the removed hose connector
- The Midas is bolted directly to the adapter flanged using the supplied gaskets and fixing bolts
- An adapted flange to hose connector must then be bolted to the inlet of the Midas, again using the bolts and gaskets supplied.
- Once the valve has been mechanically fixed into position, the trained, certified engineer must then configure the Midas valve using the supplied electronic tool.
- The unit is now ready to accept fuel

Midas -ELBOW & COMPACT

- Midas ELBOW and COMPACT requires no installation as a portable device
- The operation of the Midas ELBOW/COMPACT is no different to that of an industry standard fuel delivery elbow
- The act of depressing the lever (Elbow) into the locked position, or depressing the "start" button (Compact)activates the Midas and the rest is fully automated

- Accessories that are required for the use of a portable system are RFID tags(passive)
- The passive RFID tags are installed around or nearby the collar of the filling point
- The tags are supplied with zip tie type security cables and or split collar clamps
- Once the cable/collar is tightened into position the tag cannot be removed, unless the cable is cut or collar is mechanically removed

Operation:

Successful delivery

- Activation of the MIDAS units are done either by depressing the handle or activate button
- Once the system is active it will immediately request the operator to "present tag" or look to see what tag is present on the filling point, this is to confirm the identification of the fuel grade assign to this filling point/tank.
- The system will then run a diagnostic check on the both electrical and mechanical components, once the diagnostic check is complete, the valve will prompt the driver to the next steps via a back lit LCD display
- If the fuel being delivered into the Midas marries up with the tank identification either via a pre-set calibration (Fixed) or through a matching RFID tag (ELBOW/ COMPACT), the internal valve will open and the delivery will commence as normal
- At the end of the delivery the driver will be alerted via an audible signal and a message on the LCD display to indicate the fuel delivery is complete.
- Once the unit is detached from the filling point or a pre-set time of "no activity" elapses the units will drop into hibernation mode and switch off all non-essential electronics

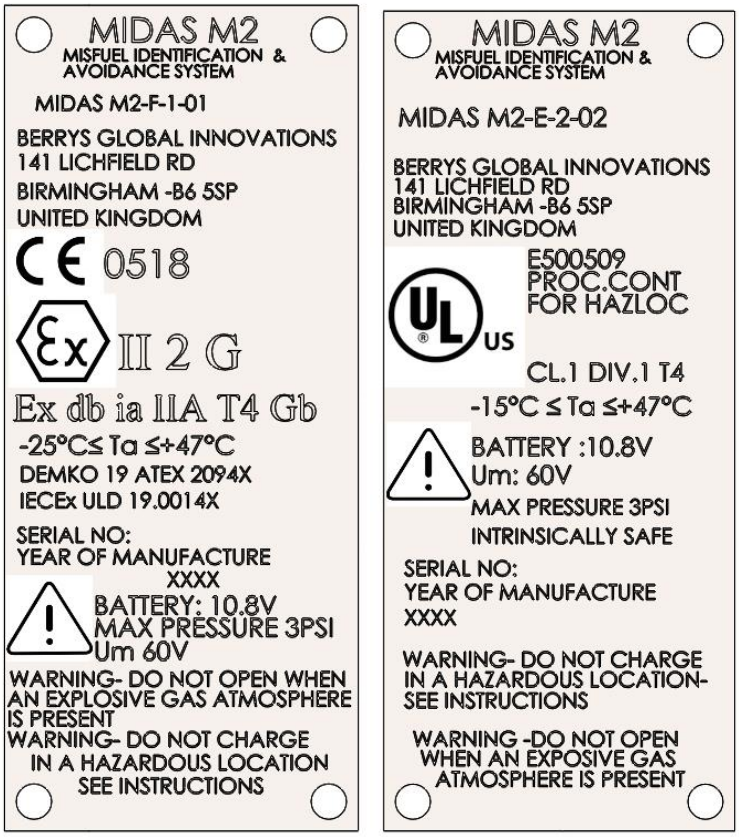
Misfuel detected

- If the fuel being delivered in the Midas does not match the id of the tank the internal valve will remain in the closed position and the system will alarm audibly and visually and display a message on the LCD alerting the driver of the attempted misfuel.

Marking

- All units will have Identification tag attached containing information in conformance with EC directive 2014/34/EU ATEX annex II section 1.0.5.
- Material 304 stainless and or aluminum, secured to the body with hammer drive head screws

The format of the identification tag will be similar to that shown below:



Specification:

- IECEx/ATEX

  ATEX Certificate No: DEMKO 19 ATEX 2094X

  IECEx Certificate No: IECEx ULD 19.0014X

  Ex II 2 G -Ex db ia IIA T4 Gb

- UL Listing:

  E500509

  Class I; Division 1; Group D

Technical Data

Mechanical	
Housing Material:	LM 25 Aluminum (A357)
Housing Covers Material:	LM25 and Acetal
Housing Color:	Natural
Surface Finish-***Optional***	Electroless nickel plating
Housing Dimensions:	Height- approx 123 mm Width- approx 189 mm Depth- approx 186 mm
EXD compartment door	A2-50 stainless Pin Torx button head M5 x30 to ISO 7380
Cable Gland Entries:	M8 electrical glands need to be used for cable entry point. Fitted as standard with a blanking plug
Electrical	
Battery Pack: Non user replaceable, contact authorized distributor or manufacturer	10.8v 300 mAh Lithium ion rechargeable cell pack
Um	60V
Max pressure	3.0 PSI

Environmental ratings	
Altitude	Up to 2000m
Indoor and outdoor use	NEMA 4 Rated Watertight for both indoor and outdoor use
Humidity	Max relative humidity 80% for temp up to 31°c decreasing linearly to 50% relative humidity at 40°c
Ambient temperature-IECEx/ATEX	-25°C≤Ta ≤+47°C
Ambient temperature-UL	-15°C ≤Ta ≤+47°C
Process temperature range	-5°C – 30°C
Process fluids	Gasoline, diesel, kerosene, biodiesel up to B5, ethanol up to E10 and water
Weight	
Midas Fixed	Approx-5 kgs / 11 lbs.
Midas Compact	Approx-9 kgs / 20 lbs.
Midas Elbow	Max-11.8 / 26 lbs.

Cleaning

- Use warm soapy water and a soft cloth or sponge to clean the Midas unit, do not use corrosive cleaning agents and do not use a pressure washer.
- Washing this unit is any other manner could cause irreparable damage and will void the warranty

- Use of a water displacement oil spray such as WD40 can be applied to the cast aluminum parts of the system and wiped down with a cloth to protect against oxidization.

Handling and lifting:

- Please note the portable Midas systems are supplied with handles for carrying and lifting the equipment. Failure to use the supplied lifting/ caring handles could lead to injury.
- Use industry approved lifting postures to prevent strains and or injury

Flame paths

Motor compartment door
Valve shaft /sleeve bearing
Servo motor shaft /sleeve bearing
Potted bushing/cemented joint(internal)
Potted bushing /threaded joint (external)

*****No repair or modification to any flame paths allowable under any circumstances*****

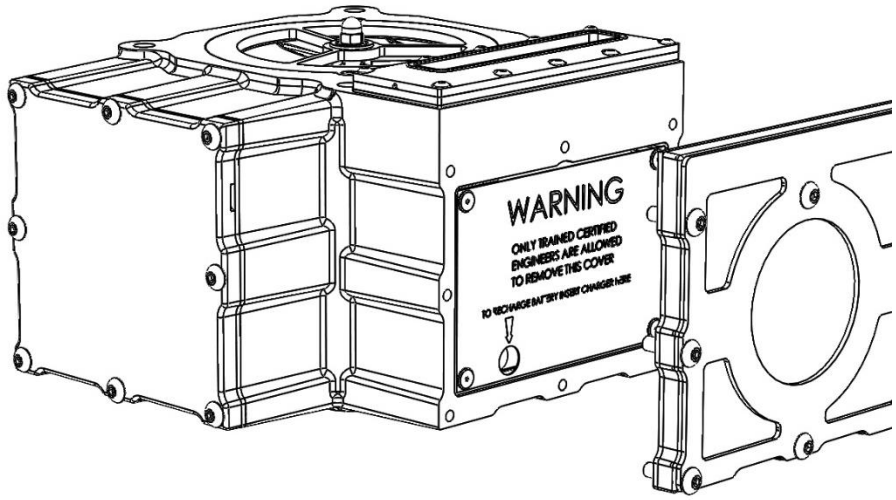
Battery external charging:

*If the Midas unit during either storage or infrequent use does not get enough activity to recharge the internal battery pack the unit will reach a "low voltage" state*******"Charging of the battery must only be performed with an SELV supply proving a Um of <60V"****

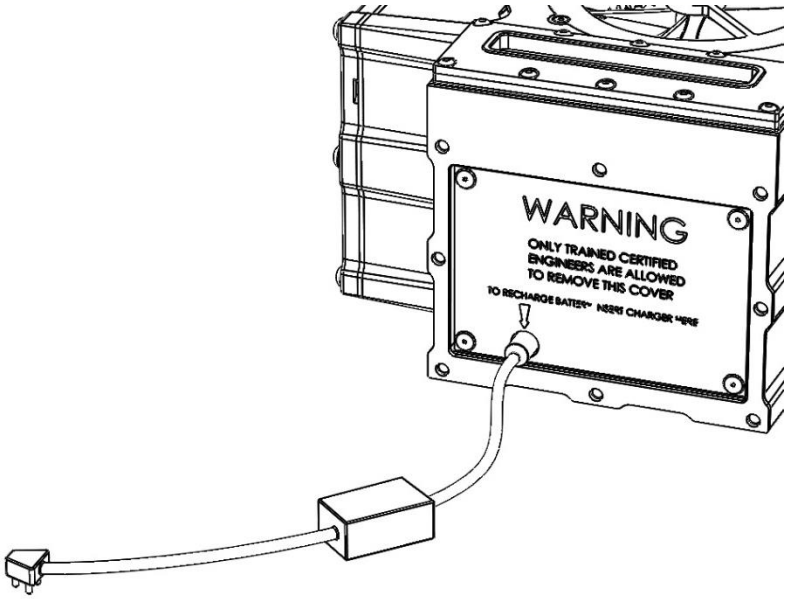
- The system when activated will briefly show a command on the LCD "external charge" required. this will be the prompt to connect the Midas to the external SELV (Um<60V) charging system (contact your local representative for further information)

- Remove the sensor compartment door (black plastic door) and locate the charging port as indicated by the arrow.

- Note*** Do not remove the protective cover plate shown below. Only trained certified engineers may remove this cover. Removal of this cover could damage the circuitry.



- Plug the SELV (Um<60V) charge device to a mains outlet and plug the jack plug on the charging device into the charge port indicated on the protective cover plate



- Activate the unit by depressing the handle (Elbow) or the button (Compact) and the LCD will indicate a “charging” status.

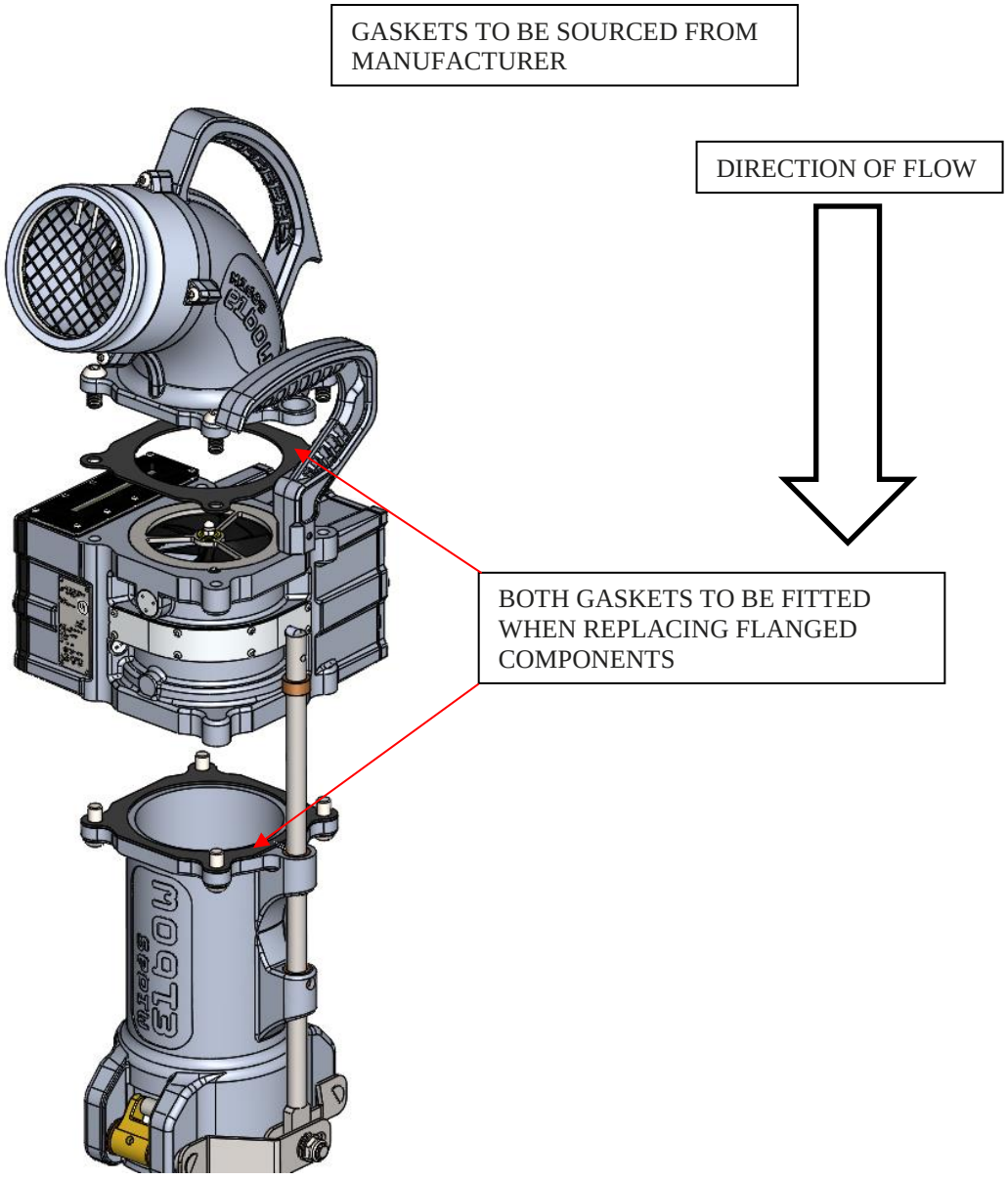
- When the charging is complete the LCD display will indicate fully charged.

- The charging device can be removed from the pcb charge port and the plastic door can be reattached to the body

- *****IMPORTANT NOTE**** ensure that the silver aluminum door cover is reattached, failure to do so could lead to product failure.

User replaceable parts:

- When replacing either top or bottom attachments to the Midas systems ensure that the supplied gasket is fitted between the Midas main body and the interchangeable flanged components



Warranty:

- The warranty shall cover a period of 12 months from the date of purchase. Problems occurred during the warranty period shall be corrected free of charge. Either by repairing or replacing the equipment as we deem fit.
- Warranty claims covers repairs only, shipping of goods back for warranty claim is at the cost of the end user.
- In case of problems, the customer should contact the Distributor from whom the equipment was purchased, or the manufacturer directly using the contact details on the front of this manual.
- If a problem arises with this equipment, please inform us of the nature of the problem and the circumstances under which it developed, including the model specification and serial number. Any diagrams, data and other information you can include in your communication will also be helpful.
- Responsible party for repair cost for the problems shall be determined by the distributor based on findings.
- The Purchaser shall bear the responsibility for repair costs, even during the warranty period, if the malfunction is due to:
    - Improper and/or inadequate maintenance by the purchaser.
    - Failure or damage due to improper handling, use or storage which is out of design conditions.
    - Use of the equipment in question in a location not conforming to the standards specified or due to improper maintenance of the installation location.
    - Failure or damage due to modification or repair by any party other than approved certified engineers.
    - Malfunction or damage from improper relocation of the product in question after delivery.
    - Reason of force majeure such as fires, earthquakes, storms/floods, thunder/lightening, or other natural disasters, or disturbances, riots, warfare, or radioactive contamination.

Standards applied:

- CENELEC EN 60079-0:2012+A11:2013. EXPLOSIVE ATMOSPHERES - PART 0: EQUIPMENT - GENERAL REQUIREMENTS
- IEC 60079-0 - Edition 6. EXPLOSIVE ATMOSPHERES. PT. 0: EQUIPMENT GENERAL REQUIREMENTS;CORR. 1:2012-11 + CORR. 2:2013-12
- CENELEC EN 60079-1:2014. EXPLOSIVE ATMOSPHERES - PART 1: EQUIPMENT PROTECTION BY FLAMEPROOF ENCLOSURES 'D'
- IEC 60079-1 - Edition 7. ELECTRICAL APPARATUS FOR EXPLOSIVE GAS ATMOSPHERES - PART 1: FLAMEPROOF ENCLOSURES 'D'
- CENELEC EN 60079-11:2012. EXPLOSIVE ATMOSPHERES - PART 11: EQUIPMENT PROTECTION BY INTRINSIC SAFETY 'I'
- IEC 60079-11 - Edition 6. EXPLOSIVE ATMOSPHERES – PART 11: EQUIPMENT PROTECTION BY INTRINSIC SAFETY 'I' - CORR. 1: 2012-01
- UL 1203 - Edition 5. STANDARD FOR EXPLOSION-PROOF AND DUST-IGNITION-PROOF ELECTRICAL EQUIPMENT FOR USE IN HAZARDOUS (CLASSIFIED) LOCATIONS
- UL 913 - Edition 8. STANDARD FOR INTRINSICALLY SAFE APPARATUS AND ASSOCIATED APPARATUS FOR USE IN CLASS I, II, III, DIVISION 1, HAZARDOUS (CLASSIFIED) LOCATIONS
- UL 61010-1 - Edition 3. SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE - PART 1: GENERAL REQUIREMENTS
- UL 429 - Edition 7. STANDARD FOR ELECTRICALLY OPERATED VALVES

Revision table:

Issue number	Date	Reason for revision
1	04/06/2019	FIRST PUBLICATION

Contact details:

For technical support, please contact your local distribution outlet or the manufacture for further details

Manufacturer
Berrys Global Innovations ltd
141 Lichfield rd
Aston
Birmingham B6 5SP
United Kingdom
www.berrys.com