CGS
CANADIAN GAS SAFETY

CGSCH4CO-TWA
Mini Merlin
Datasheet

Combined Natural Gas & Carbon Monoxide Monitor

MINI MERLIN
Dual Gas Detector

NG **1.8**
CO **0**

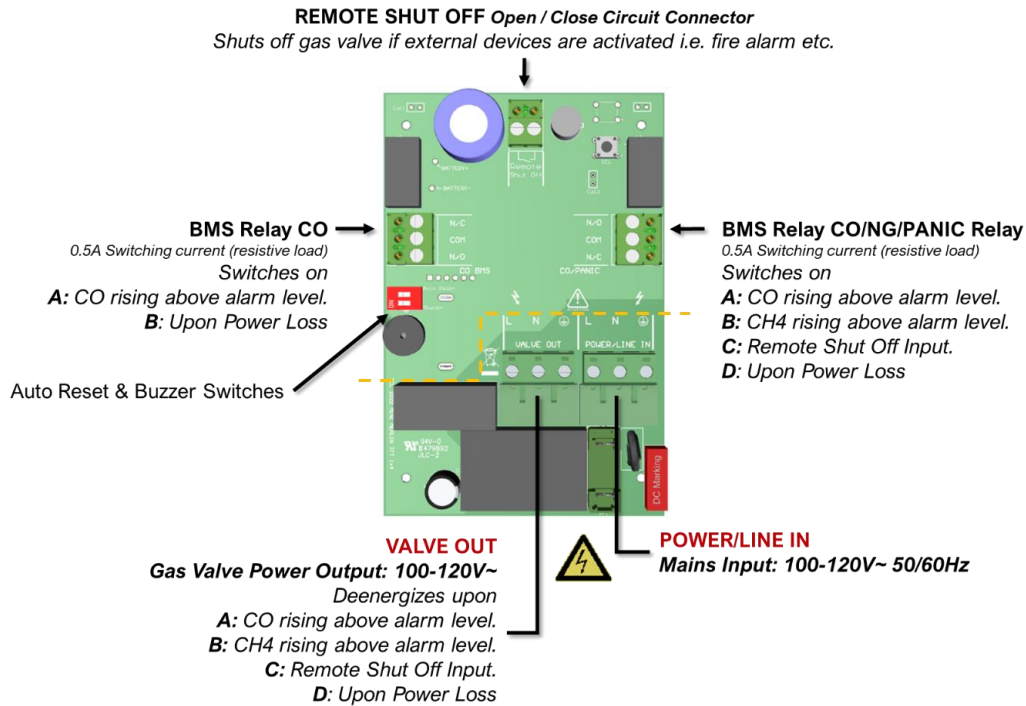## Product Overview

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The CGS Mini Merlin CH4CO-TWA is a dual gas sensor designed and tested to UL standards for the purpose of monitoring levels of Natural Gas - Methane (CH4) and Carbon Monoxide (CO) in the air.

If there is a dangerous build-up of gas or unsafe levels of carbon monoxide at the sensor, this device can shut off fuel supplies or power supplies via gas valves and/or electrical contactors. On board relays can interrupt appliances built in safety circuits such as fan proving switch or louver proving switch.
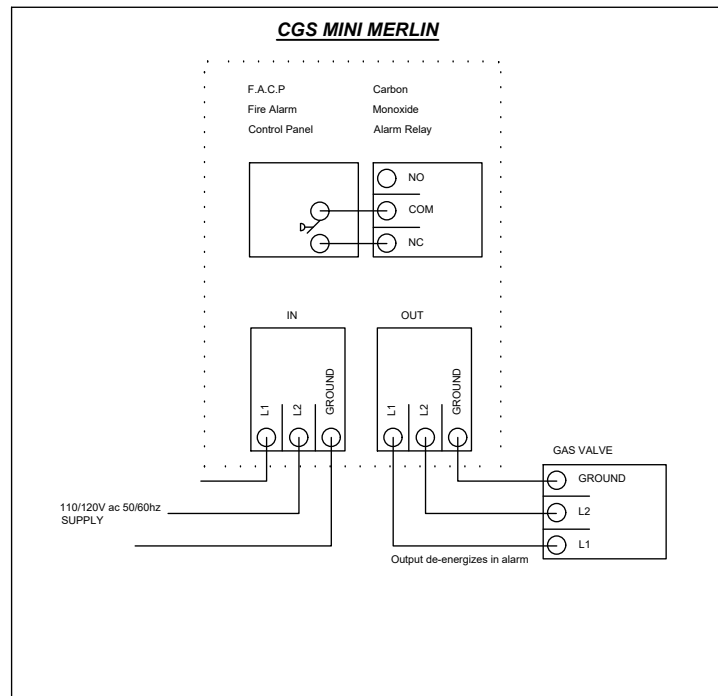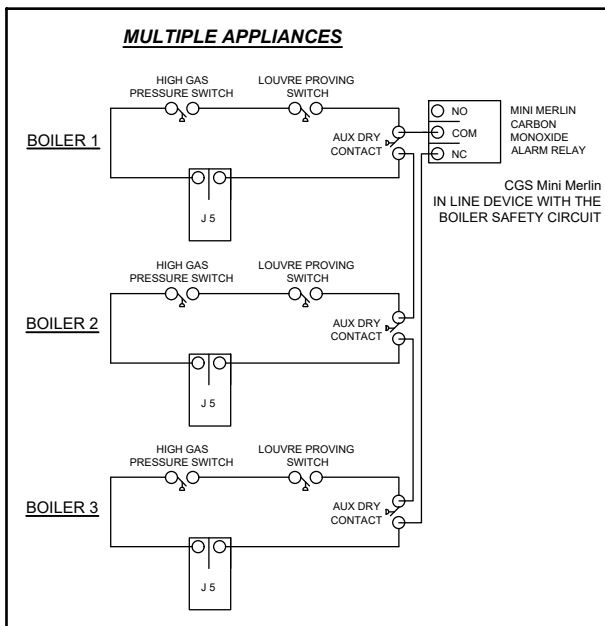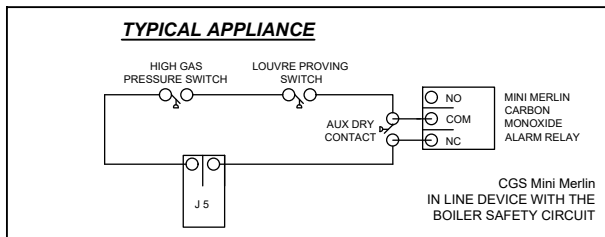
This device has a manual reset button, as well as audible and visual alarm - it can also be integrated with a Building Management Systems and fire alarm control panels. Meets the TWA guidelines for Carbon Monoxide (CO) & Natural Gas (NG).

General	
Model:	Mini Merlin CH4CO-TWA
Target Gases:	Methane/Natural Gas & Carbon Monoxide
Size: (H x W x D)	5.95 x 4.37 x 1.97" (151 x 111 x 50mm)
Housing Material:	ABS PA765 (Flame Rating UL94 V-1)
Mounting:	Safe Zone - Indoor use - Wall Mounted
Weight:	12.24oz (0.347kg)
Display:	1.8" TFT
Visual Indicators:	TFT visual. Green: Normal; Yellow: Pre-Alarm; Red: Alarm
Audible Alarm:	>70dB @ 3.28ft (1m). Quiet conditions.
Buttons:	Multi-Function – Initial Start / Reset / Circuit Test
Power Consumption:	3W max
AC Power:	100-120V~ 50/60Hz
Internal Fuse:	Anti-Surge 3.15A 250Vac
Overvoltage Category:	II
Volt Free BMS relay output:	0.5A switching current (resistive load)
Ingress Protection:	Not Formally Evaluated
Operating:	-10 ~ 50°C / 14 ~ 122°F 30 ~ 80% RH (non-condensing)
Storage:	-25 ~ 50°C / -13~122F° up to 95% RH (non-condensing)
Wiring	Min. 18-22AWG
Electrical Safety and Electromagnetic Compatibility	UL61010-1/2012/R:2019-07. UL2075 R:2013-02 Gas and Vapor Detectors and Sensors. CAN CSA C22.2 No. 61010-1-12/A1:2018-11 / EMC EN 61326-1:2013

Sensor Specification   ▲ Rising Alarm ▼Falling alarm *EOL – Expected Operational Life

Gas Sensor	Indicating Range	Steps	Response (t90)	Recovery (t10)	Alarm: 1 (Pre alarm warning)	Alarm: 2	*EOL (Years)
Electrochemical Sensors							
Carbon Monoxide (CO)	0-999ppm	1	<60s	<60s	▲20ppm	▲20ppm @ 2 hours / 50ppm @ 1 hour / 100ppm @ 10 minutes / 300ppm @ 1 min.	5
Semiconductor Sensors							
Methane (CH4)	0-20% LEL	0.1	<30s	<30s	▲8% LEL	▲10% LEL	10

Circuit Board Overview

REMOTE SHUT OFF *Open / Close Circuit Connector*
Shuts off gas valve if external devices are activated i.e. fire alarm etc.

BMS Relay CO
0.5A Switching current (resistive load)
Switches on
A: CO rising above alarm level.
B: Upon Power Loss

Auto Reset & Buzzer Switches

BMS Relay CO/NG/PANIC Relay
0.5A Switching current (resistive load)
Switches on
A: CO rising above alarm level.
B: CH4 rising above alarm level.
C: Remote Shut Off Input.
D: Upon Power Loss

VALVE OUT
Gas Valve Power Output: 100-120V~
Deenergizes upon
A: CO rising above alarm level.
B: CH4 rising above alarm level.
C: Remote Shut Off Input.
D: Upon Power Loss

POWER/LINE IN
Mains Input: 100-120V~ 50/60Hz

Wiring Examples

TYPICAL APPLIANCE

HIGH GAS PRESSURE SWITCH
LOUVRE PROVING SWITCH
AUX DRY CONTACT
NO
COM
NC
MINI MERLIN CARBON MONOXIDE ALARM RELAY
J 5
CGS Mini Merlin
IN LINE DEVICE WITH THE BOILER SAFETY CIRCUIT

MULTIPLE APPLIANCES

BOILER 1
HIGH GAS PRESSURE SWITCH
LOUVRE PROVING SWITCH
AUX DRY CONTACT
NO
COM
NC
MINI MERLIN CARBON MONOXIDE ALARM RELAY
J 5
CGS Mini Merlin
IN LINE DEVICE WITH THE BOILER SAFETY CIRCUIT

BOILER 2
HIGH GAS PRESSURE SWITCH
LOUVRE PROVING SWITCH
AUX DRY CONTACT
J 5

BOILER 3
HIGH GAS PRESSURE SWITCH
LOUVRE PROVING SWITCH
AUX DRY CONTACT
J 5

CGS MINI MERLIN

F.A.C.P
Fire Alarm
Control Panel

Carbon Monoxide
Alarm Relay

NO
COM
NC

IN
OUT

L1
L2
GROUND

L1
L2
GROUND

110/120V ac 50/60hz SUPPLY

GAS VALVE
GROUND
L2
L1

Output de-energizes in alarm

Find out more

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