Macurco™ GD-6 / GD-12

Combustible Gas Detector

Operation Manual

IMPORTANT: Keep these user instructions for reference.

www.macurco.com   1-877-367-7891   info@macurco.com   1504 W 51st St.
Sioux Falls, SD 57105

1 General Safety Information

1.1 List of warnings

⚠ WARNING
Each person using this equipment must read and understand the information in this user manual before use. Use of this equipment by untrained or unqualified persons or use that is not in accordance with this user manual, may adversely affect product performance.
Use only for monitoring the gas which the sensor and monitor is designed to detect. Failure to do so may result in exposures to gases not detectable and cause serious injury or death. For proper use, see supervisor or user manual, or contact Technical Support at 1-844-325-3050.
This equipment may not function effectively below 0°F or above 125°F (-18°C or above 52°C). Using the detector outside of this temperature range may adversely affect product performance.
This detector helps monitor for the presence and concentration level of a certain specified airborne gas. Misuse may produce an inaccurate reading, which means that higher levels of the gas being monitored may be present and could result in overexposure and cause serious injury or death. For proper use, see supervisor or User manual, or contact Technical Support at 1-844-325-3050.
High voltage terminals (120/240 VAC) are located within this detector, presenting a hazard to service technicians. Only qualified technicians should open the detector case and service the internal circuits. Ensure power is de-energized from the detector relays prior to servicing the unit. Failure to do so may result in electrical shock.
Do not disassemble unit or attempt to repair or modify any component of this instrument. This instrument contains no user serviceable parts, and substitution of components may impair product performance.
Using a certified gas with a concentration other than the one listed for this detector when conducting a calibration verification test (bump test) will produce inaccurate readings. This means that higher levels of the gas being monitored may be present and could result in overexposure. For proper use, see supervisor or User manual, or contact Technical Support at 1-844-325-3050.
The following steps must be performed when conducting a calibration verification test (bump test) to ensure proper performance of the monitor. Failure to do so may adversely affect product performance. • When performing a calibration verification test (bump test) only use certified calibration gas at the required concentration level. • Do not test with expired calibration gas. • Do not cover or obstruct display or visual alarm cover. • Ensure sensor inlets are unobstructed and are free of debris Failure to follow instructions outlined in this user manual can result in sickness or death.

2   Use Instructions and Limitations

The GD-6 is a low voltage, dual relay combustible gas detector and automatic ventilation controller. The GD-6 uses a microcomputer controlled, electronic system to measure the concentration of combustible gas, actuate relays and provide a 4-20 mA output. The GD-6 has a low maintenance long life (5+ years) pellistor sensor and optional gas test and calibration kits. The GD-6 is a low-level meter capable of displaying from 0-50% LEL of combustible gas.

⚠ WARNING
Each person using this equipment must read and understand the information in this user manual before use. Use of this equipment by untrained or unqualified persons or use that is not in accordance with this user manual, may adversely affect product performance.

NOTE: Combustible gas detectors will respond to a wide range of hydrocarbons, including aerosol sprays, cleaning solvents, paint thinner and other common household items. Be alert to other hydrocarbons near the detector before assuming that the unit is false alarming or is defective.

2.1   Use For

The GD-6 provides combustible gas detection and automatic exhaust fan, louver or valve control for automotive maintenance facilities, enclosed parking garages, utility rooms, battery rooms, warehouses with forklifts and other commercial applications. The GD-6 can be used stand alone, with the Macurco DVP-120 Detection and Ventilation Control Panel, other 12 VAC or 24 VDC fire/security panels or building automation systems.

⚠ WARNING
Use only for monitoring the gas which the sensor and monitor is designed to detect. Failure to do so may result in exposures to gases not detectable and cause serious injury or death. For proper use, see supervisor or user manual, or contact Technical Support at 1-844-325-3050.

2.2   Do NOT use for

The GD-6 is not intended for use in hazardous locations or industrial applications such as refineries, chemical plants, etc. Do not mount the GD-6 where the normal ambient temperature is below 0°F or exceeds 125°F (-18°C or above 52°C). The GD-6 mounts on a type 4S electrical box supplied by the contractor. Do not install the GD-6 inside another box unless it has good air flow through it.

⚠ WARNING
This equipment may not function effectively below 0°F or above 125°F (-18°C or above 52°C). Using the detector outside of this temperature range may adversely affect product performance.

2.3 Features

- ETL Listed to UL 61010-1 and CAN/CSA C22.2 No 61010-1
- Low level meter capable of displaying from 0-50% LEL
- Selectable target gas – Methane (mE), Propane (Pro) or Hydrogen (Hy)
- Selectable fan and alarm relay activation
- 5 A SPDT fan relay controls starters of exhaust fans
- 0.5 A N.O. or N.C. alarm relay connects to warning devices or control panels
- 4-20 mA current loop
- GD-6 mounts on a standard 4x4 electrical box and becomes cover for the box
- Supervised system: any internal detector problem will cause the fan & alarm relay to activate
- Calibration kit is available. One screw allows access for calibration or gas test

2.4 Specifications

- Shipping Weight: 1 pound (0.45 kg)
- Size: 4 1/2 x 4 x 2 1/8 in. (11.4 X 11.4 X 5.3 cm)
- Color: Dark gray
- Connections: plugs/terminals
- Mounting box: (not included) 4x4 electric
- Fan relay: 5 A, 240 VAC, pilot duty, SPDT, latching or non-latching
- Fan relay actuation: selectable at diS (disable) 3, 4, 5, 6, 7, 8, 9, 10 (default), 11, 12, 13, 14, 15, 16, 17, 18, 19, 20% LEL
- Fan Delay Settings of 0, 1, 3 (default), 5 and 10 minutes
- Fan Minimum Run Time settings are 0 (default), 3, 5, 10 or 15 minutes
- Fan relay latching or not latching (default) selectable
- Alarm relay: 0.5A 120 V, 60 VA
- Alarm relay actuation: selectable N.O. default or N.C.
- Alarm relay settings: diS, 5, 10, 15, 20 (default), 25% LEL
- Current loop, 4-20 mA for 0-50% LEL, selectable to off or on (default)
- Buzzer: 85 dBA at 10cm settable to off (default) or on
- Digital display: 3-digit LED selectable to off (default) or on.
- Operating Environment: 0 ° F to 125 ° F (-18 ° C to 52 ° C). 10 to 90% RH noncondensing

2.4.1 6-Series Low Voltage

- Power: 3 W (max) from 12 to 24 VAC or 12 to 48 VDC
- Current @ 24VDC: 75 mA in alarm (two relays), 50 mA (fan relay only) and 23 mA stand by

2.4.2 12-Series Line Voltage

- Power: 100-240VAC (50 TO 60 HZ)
- Current: 1.0 A MAX

3   Installation and Operating Instructions

The following instructions are intended to serve as a guideline for the use of the Macurco GD-6 Combustible Gas Detector. It is not to be considered all-inclusive, nor is it intended to replace the policy and procedures for each facility. If you have any doubts about the applicability of the equipment to your situation, consult an industrial hygienist or call Technical Service at 844-325-3050.

⚠ WARNING
This detector helps monitor for the presence and concentration level of a certain specified airborne gas. Misuse may produce an inaccurate reading, which means that higher levels of the gas being monitored may be present and could result in overexposure and cause serious injury or death. For proper use, see supervisor or User manual, or contact Technical Support at 1-844-325-3050.

3.1   Location

A GD-XX mounting height is dependent upon the target gas.

• If the target gas is lighter than air; methane (NG) or Hydrogen (H2), mount the GD-6 high on a wall or column (about one foot down from the ceiling) in a central area where air movement is generally good. • If the target gas is heavier than air; propane (LP), mount the GD-6 low on a wall or column (about one foot above the floor) in a central area where air movement is generally good.

The unit, on average, can cover approximately 900 sq. ft. (84 sq. meters) to 1,257 sq. ft. (117 sq. meters). The coverage depends on air movement within the room or facility. Extra detectors may be needed near any areas where people work or where the air is stagnant. Some of the factors that affect the coverage area are application type, personnel work areas and movement, room size, air movement, potential threat, mounting location, along with other site-specific factors that must be considered. Please check local regulations or requirements prior to installation. The GD-6 mounts on a 4x4 electrical box supplied by the contractor. Do not install the GD-6 inside another box unless it has good air flow through it. Do NOT mount the GD-6 where the normal ambient temperature is below 0°F or exceeds 125°F (below -18°C or above 52°C).

⚠ WARNING
High voltage terminals (120/240 VAC) are located within this detector, presenting a hazard to service technicians. Only qualified technicians should open the detector case and service the internal circuits. Ensure power is de-energized from the detector relays prior to servicing the unit. Failure to do so may result in electrical shock.

3.2   Installation

3.2.1   6-Series Low Voltage

1. The GD-6 mounts on a 4" square (or 4x4) electrical box supplied by the contractor. Do not mount the GD-6 inside another box, unless it has good air flow through it.
2. Connect the GD-6 to Class 2 power supply only. It is suggested to use a separate transformer for powering the unit or units because of possible interferences from other devices on the same power supply.
3. Connect the GD-6 to the control cables with terminal plugs. When making connections, make sure the power is off.
4. There are two terminals for Power: 12 to 24 VAC or 12 to 48 VDC, with no polarity preference.
5. There are two terminals for the dry alarm relay contacts, again with no polarity preference. The alarm relay can switch up to 0.5 A 120 V, or 60 VA. The alarm relay is activated if gas reaches or exceeds the alarm settings. See OPERATION section of these User Instructions for details on relay settings.
6. The alarm relay can be configured to normally open (default) (N.O.) or normally closed (N.C.) and will activate if the gas concentration exceeds alarm set point. It will deactivate once the gas concentration drops below the alarm set point. Note that the "disable" setting will cause the alarm relay not to engage at all.
7. The dry contact, SPDT fan relay has three terminals. The common (COM.), normally open (N.O.) and the normally closed (N.C.) contact. The fan relay can switch up to 5.0 A up to 240 VAC. See OPERATION section of these User Instructions for details on relay settings.
8. The Fan Relay can be configured for latching or non-latching (default) when activated (when the gas concentration exceeds fan relay set point). Once latched in, power will need to be interrupted or the "TEST" button pressed to un-latch the relay condition.
9. The Fan Relay will engage if the fan setting Combustible Gas concentration is exceeded for longer than the Fan Relay Delay time. Unless it is configured for latching, the fan relay will disengage once both of these conditions have been met:
    a. Combustible Gas concentration has dropped below fan setting
    b. Fan Relay Run time has been exceeded
    Note that the "disable" fan setting will cause the fan relay to not engage. The fan relay will engage in trouble fault condition (if the Trouble Fan Setting Option is set to "ON") and will disengage once trouble fault condition is cleared.
10. The Current Loop is 4 mA in clean air and 4-20 mA for 0-50% LEL

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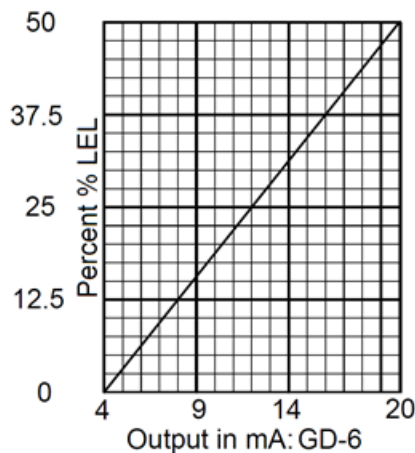
Figure 3-1 – 6-Sereis 4-20 mA Output diagram

Figure 3-2 – 6-Series Rear View

Figure 3-3 – 6-Series typical Standalone Installation
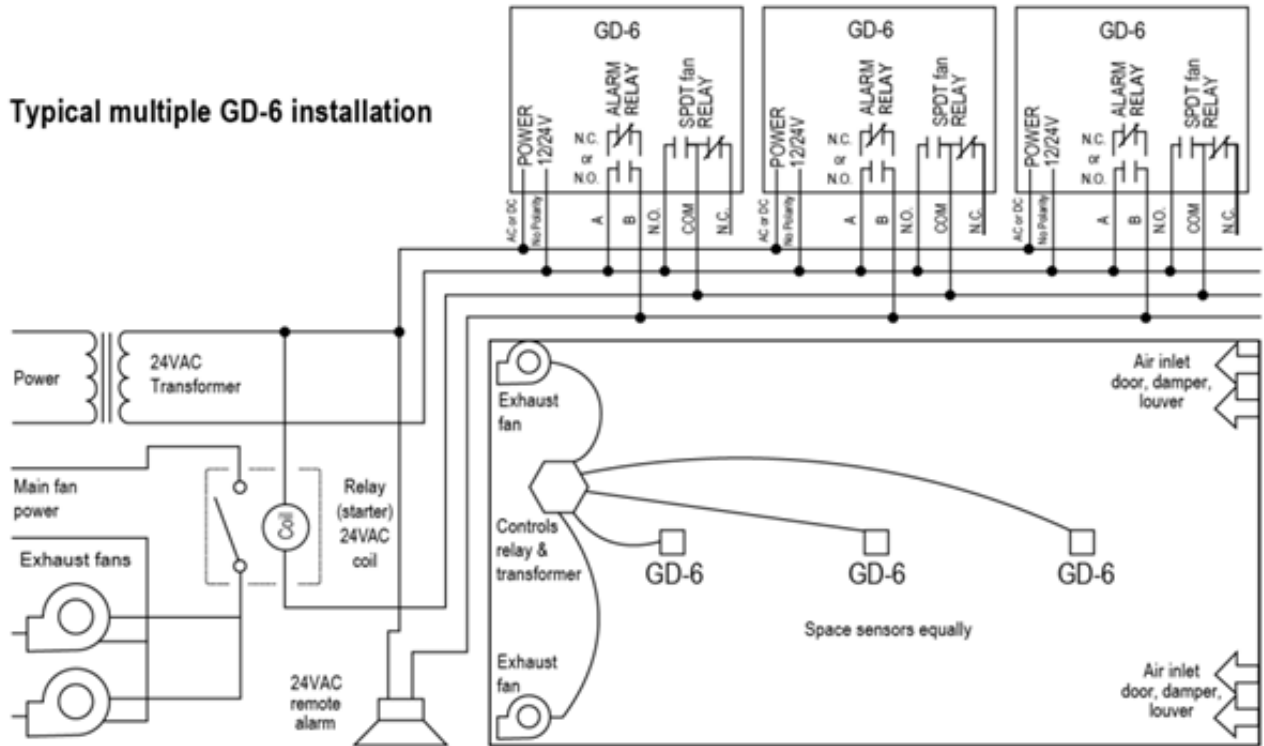
Figure 3-4 – 6-Series Multiple Device
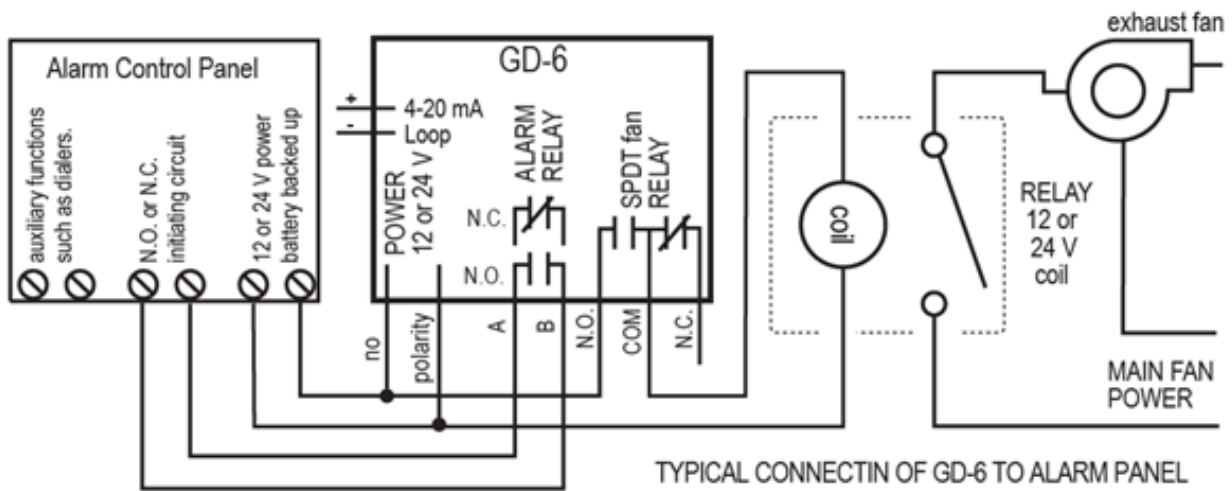
Figure 3-5 – 6-Series Alarm Control Panel
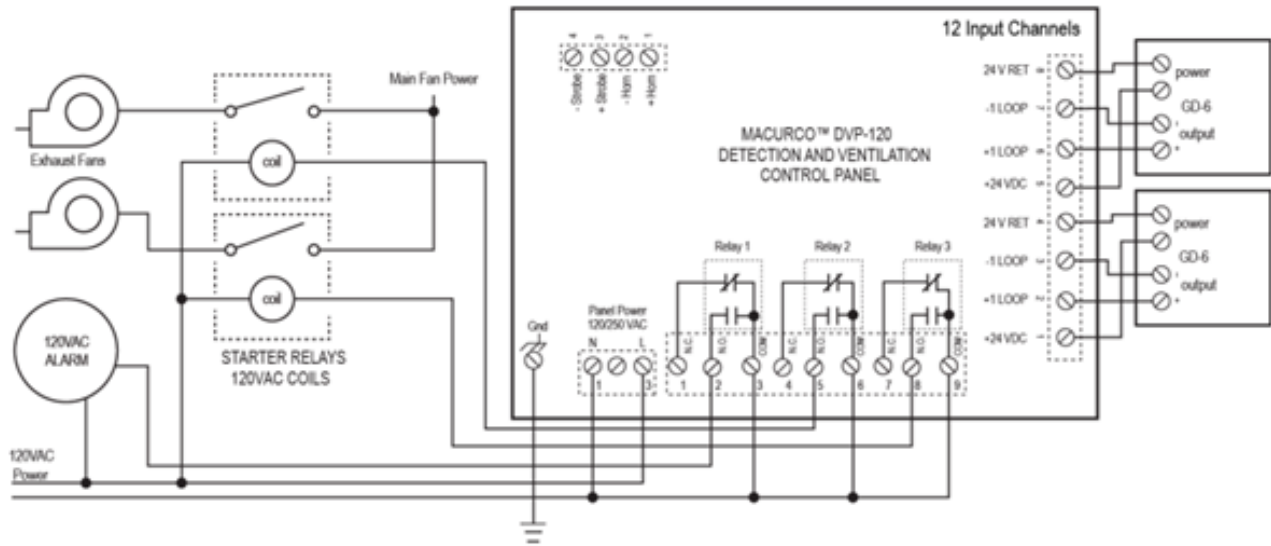
Figure 3-6 – 6-Series DVP-120 Control Panel
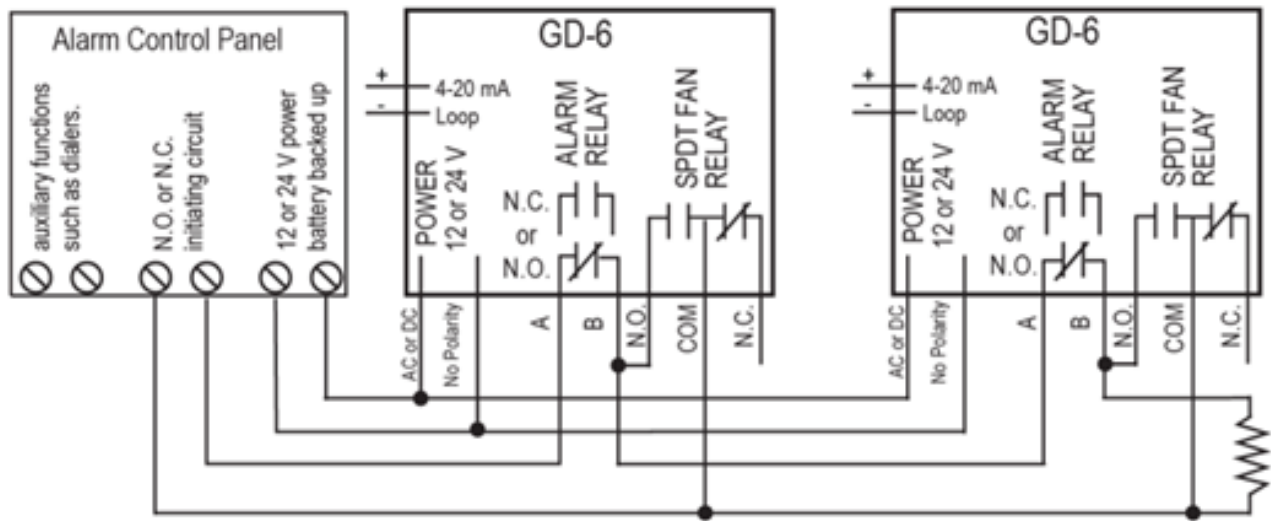
Figure 3-7 – 6-Series Alternate Alarm Panel

In this application (above) the Fan or primary relay is used as a low-level alarm relay. The Alarm or secondary relay is used as a supervisory relay when utilized in the normally closed configuration. The GD-6 monitors all critical functions of the unit through software diagnostics that continually test and verify its operations. If a problem is found, the unit will switch to a fail-safe/error mode or trouble condition. In this error mode the Fan* and Alarm relays will be activated indicating the trouble condition at panel and the GD-6 display will flash the error. *See the Trouble Fan Setting Option.
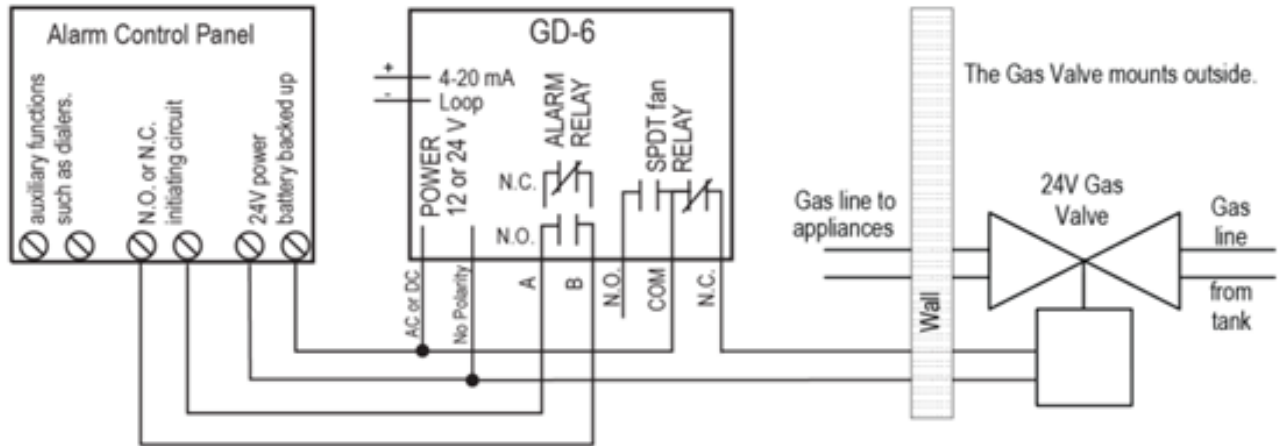
Figure 3-8 – 6-Series Alarm Panel and Shutoff Valve Wiring
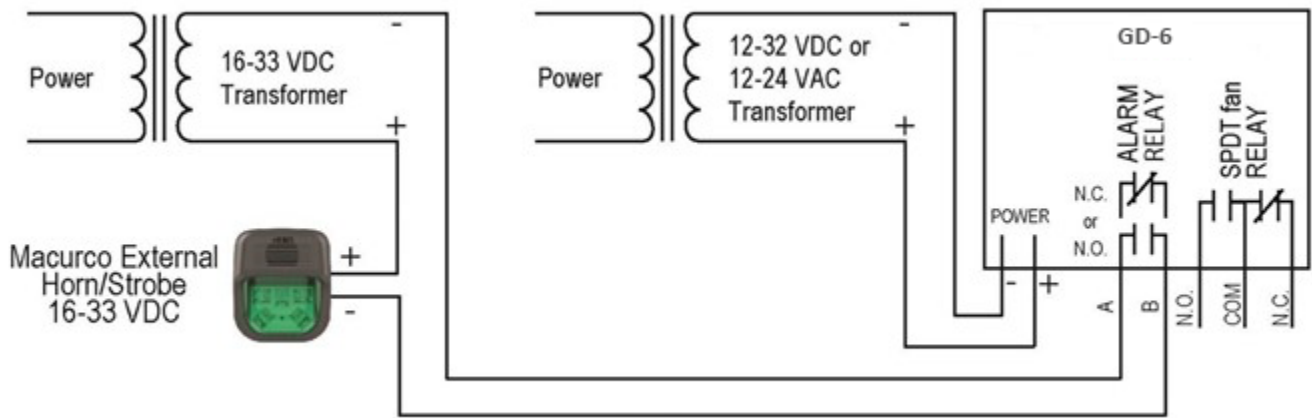
Figure 3-9 – 6-Series Horn & Strobe Combo Wiring

3.2.2 12-Series Line Voltage

1. The GD-12 mounts on a 4" square (or 4x4) electrical box supplied by the contractor. Do not mount the GD-12 inside another box, unless it has good air flow through it.
2. There are two terminals for the dry alarm relay contacts, again with no polarity preference. The alarm relay can switch up to 0.5 A 120 V, or 60 VA. The alarm relay is activated if gas reaches or exceeds the alarm settings. See OPERATION section of these User Instructions for details on relay settings.
3. The alarm relay can be configured to normally open (default) (N.O.) or normally closed (N.C.) and will activate if the gas concentration exceeds alarm set point. It will deactivate once the gas concentration drops below the alarm set point. Note that the "disable" setting will cause the alarm relay not to engage at all.
4. The dry contact, SPDT fan relay has three terminals. The common (COM.), normally open (N.O.) and the normally closed (N.C.) contact. The fan relay can switch up to 5.0 A up to 240 VAC. See OPERATION section of these User Instructions for details on relay settings.
5. The Fan Relay can be configured for latching or non-latching (default) when activated (when the gas concentration exceeds fan relay set point). Once latched in, power will need to be interrupted or the "TEST" button pressed to un-latch the relay condition.
6. The Fan Relay will engage if the fan setting Combustible Gas concentration is exceeded for longer than the Fan Relay Delay time. Unless it is configured for latching, the fan relay will disengage once both of these conditions have been met:
   - Combustible Gas concentration has dropped below fan setting
   - Fan Relay Run time has been exceeded

   Note that the "disable" fan setting will cause the fan relay to not engage. The fan relay will engage in trouble fault condition (if the Trouble Fan Setting Option is set to "ON") and will disengage once trouble fault condition is cleared.
7. The Current Loop is 4 mA in clean air and 4-20 mA for 0-50% LEL
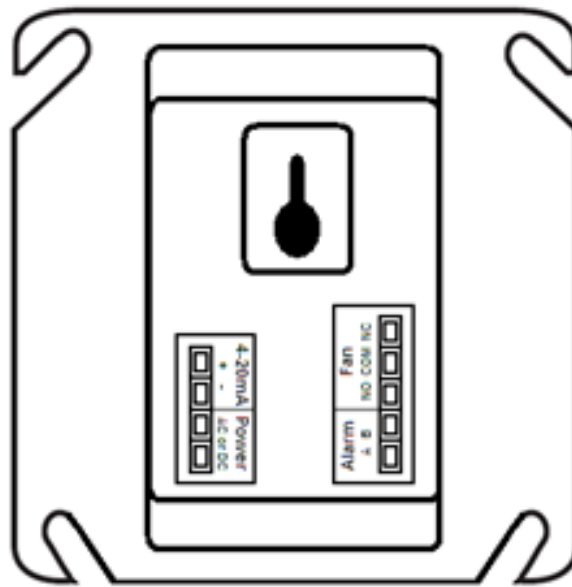

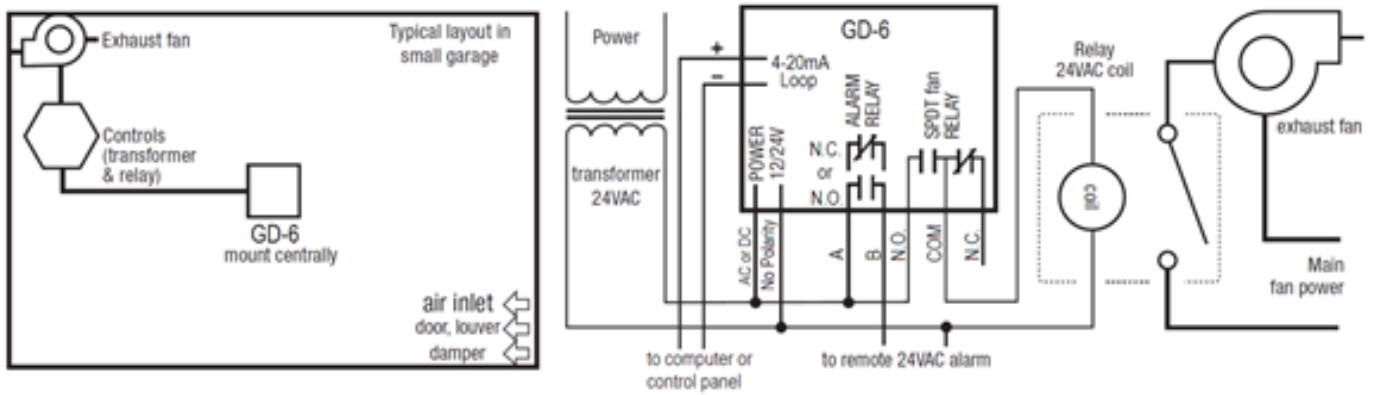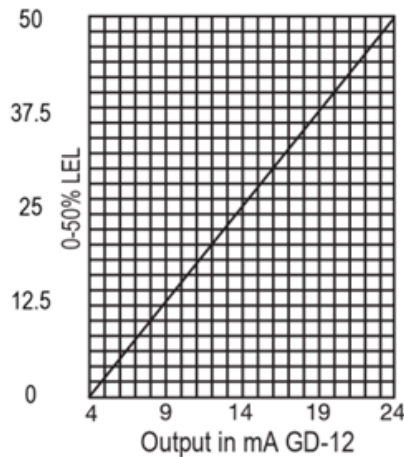Figure 3-9 – 12-Series 4-20 mA Output
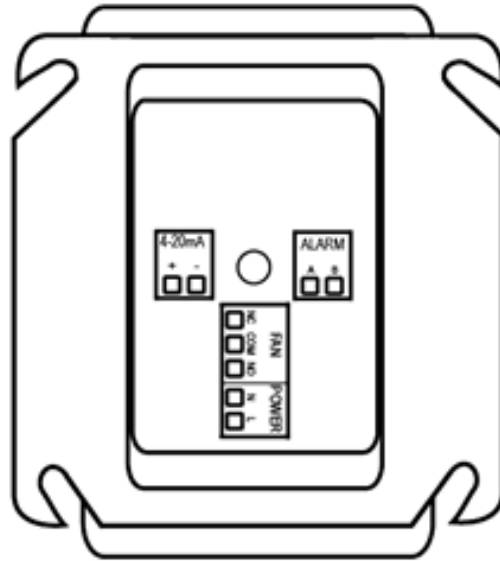
Figure 3-10 – 12-Series Rear View

Figure 3-11 – 12-Series Typical Standalone Installation
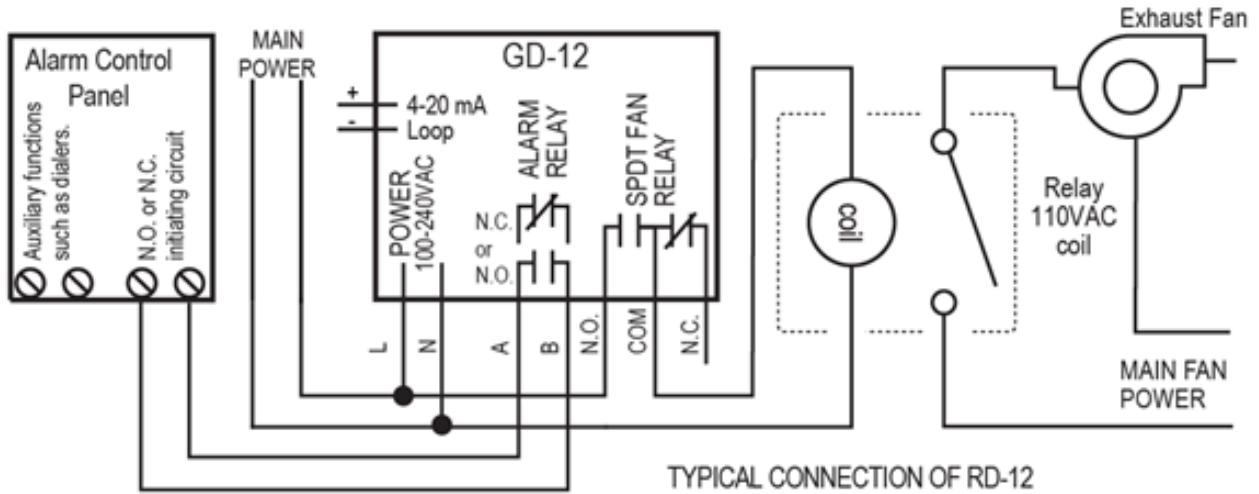
Figure 3-12 – 12-Series Use with Alarm Panel

Figure 3-13 – 12-Series DVP-120 Control Panel

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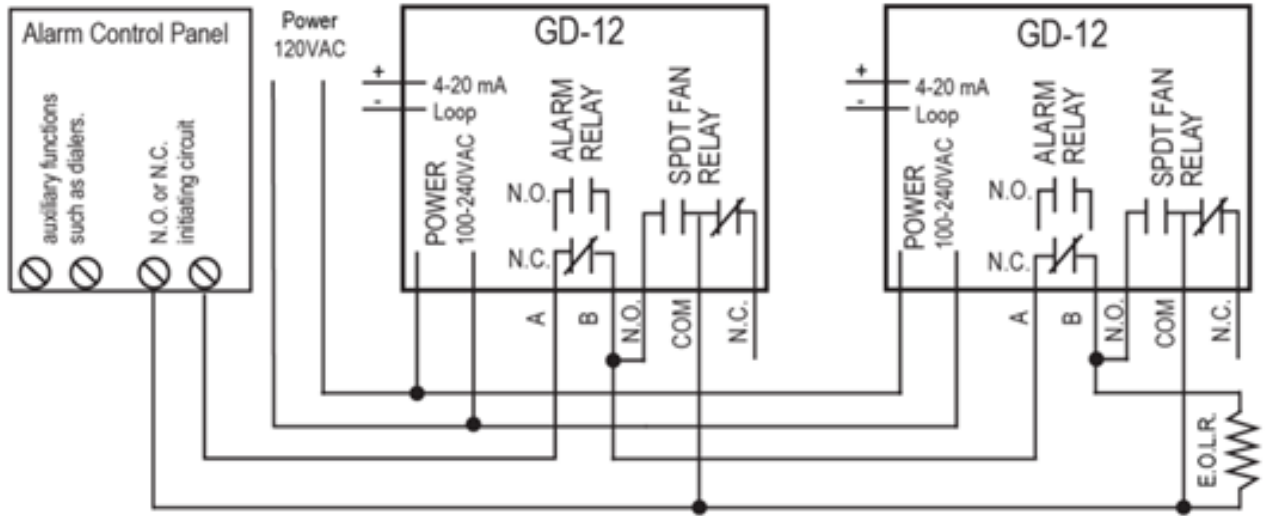
Figure 3-14 – 12-Series Alternate Alarm Panel
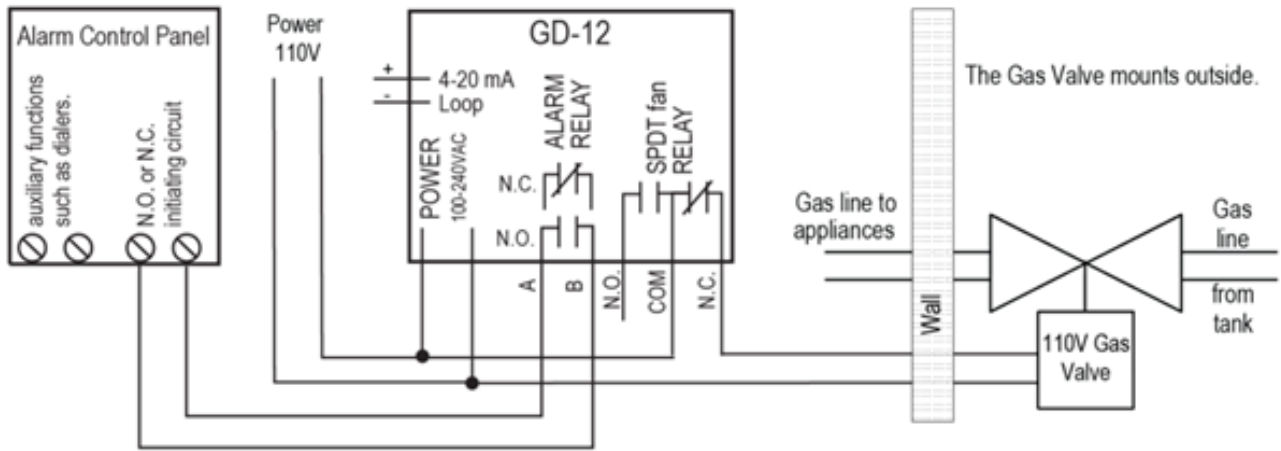
Figure 3-15 – 12 Series Alarm Panel with Shutoff Valve
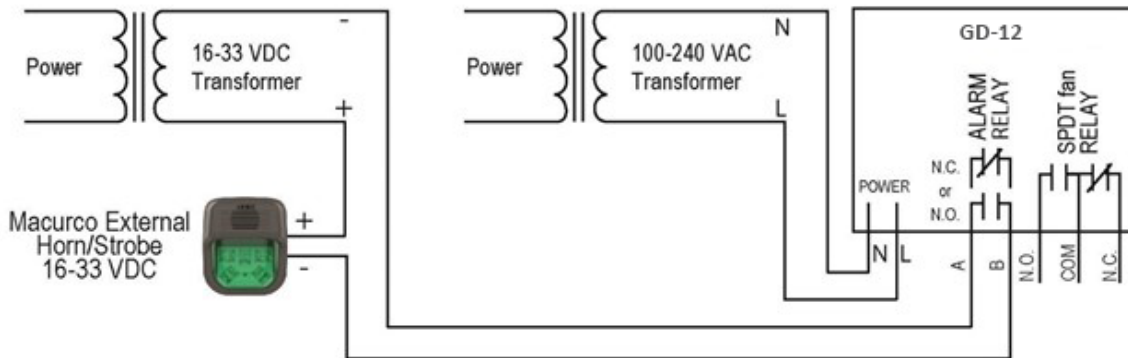
Figure 3-15 – 12-Series Horn & Strobe Combo Wiring

3.3   Terminal Connection

3.3.1   6-Series Low Voltage
With the exception of the safety ground, all field wiring is completed via modular connectors (provided). After wiring, simply plug the modular connectors into the matching connectors on the back side of the detector.
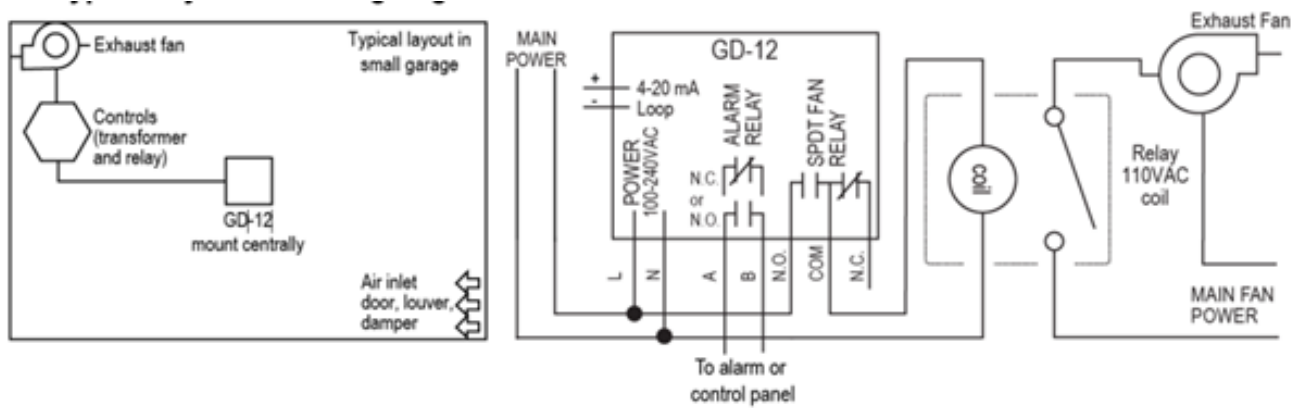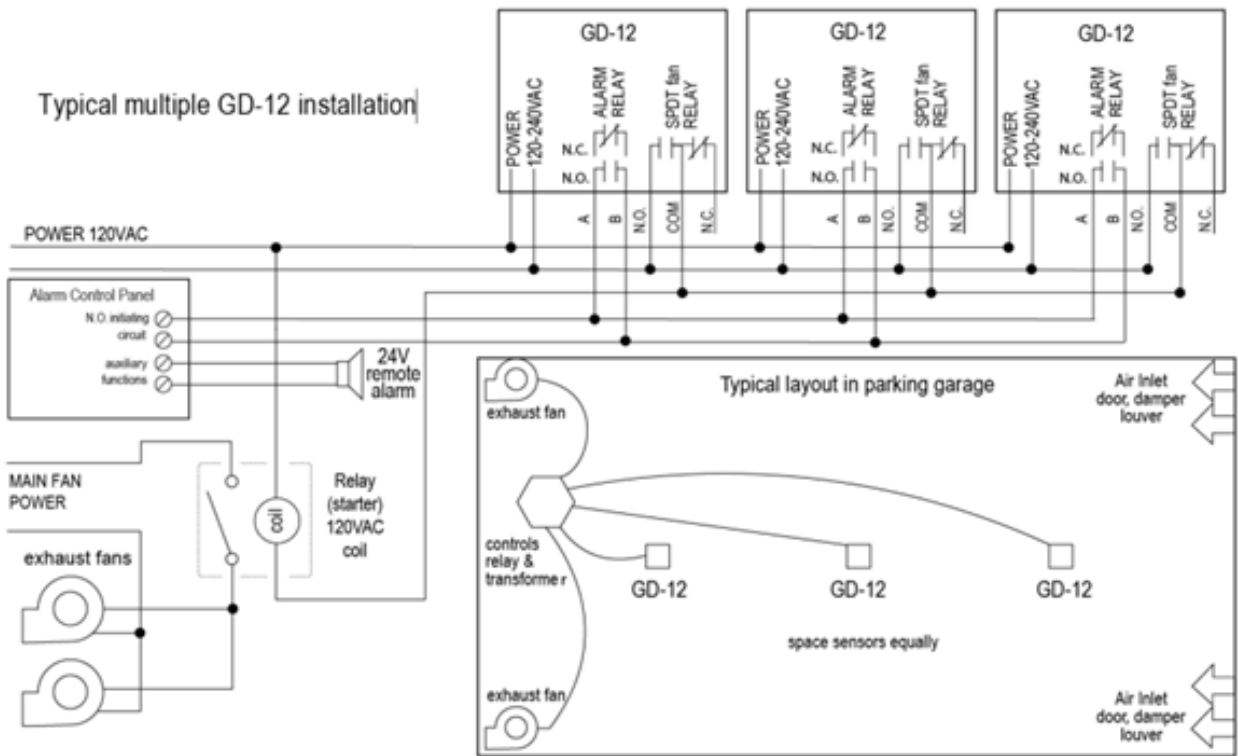
NOTE: 22 to 12 AWG wire shall be used. Wire used shall meet the temperature range of the detector i.e. 0°F to 125° F (-18°C to 52°C).

3.3.1.1   *Mains Power Connection*
Connect the GD-6 to Class 2 power supply only. It is suggested to use a separate transformer for powering the unit or units because of possible interferences from other devices on the same power supply. Connect the GD-6 to the control cables with terminal plugs. When making connections, make sure the power is off. There are two terminals for Power: 12 to 24 VAC or 12 to 32 VDC, with no polarity preference

Ensure that the wire cannot be easily pulled from the connector. Plug the modular connection into the Fan/Power connection and ensure that it latches into the header properly.

3.3.1.2   *Fan Relay Connection*
All of the SPDT Fan relay terminals are available at the Fan/Power modular connector. Each Fan relay terminal normally open, common and normally closed (NO, COM and NC) can accommodate a wire size 12 to 22 AWG. To install the wiring for the relays, disconnect the connector from the header. Strip the insulation of each wire back approximately 1/4 in. (6.5 mm), insert the bare wire into the terminal and tighten the screw clamp. Ensure that the wire cannot easily be pulled from the connector. Plug the modular connection into the Fan/Power connection and ensure that it latches into the header properly.

3.3.1.3   *Alarm Relay Connection*
The external alarm connections (A and B) are available at the Alarm modular connector. There is no polarity for these connections. To install the wiring for the alarm contacts, disconnect the connector from the header on the detector. Strip the insulation of each wire back approximately 1/4 in. (6.5 mm), insert the bare wire into the terminal and tighten the screw clamp. Ensure that the wire cannot easily be pulled from the connector. When the wires are connected seat the modular connector into the header ensuring that the latch engages

3.3.1.4   *4-20 mA Signal Connection*
The positive and negative 4-20mA signal connections (+ and -) are available at the 4-20mA modular connector, a 2-position connector. To install the wiring for the 4-20 mA contacts, disconnect the connector from the header on the detector. Strip the insulation of each wire back approximately 1/4 in. (6.5 mm), insert the bare wire into the terminal and tighten the screw clamp. Ensure that the wire cannot easily be pulled from the connector. When the wires are connected seat the modular connector into the header ensuring that the latch engages

3.3.2   12-Series Line Voltage
With the exception of the safety ground, all field wiring is completed via modular connectors (provided). After wiring, simply plug the modular connectors into the matching connectors on the back side of the detector.

3.3.2.1   Power Connection

Mains connections should be done in accordance with National and Local Electrical Codes. Only qualified personnel should connect Mains power to any device. Macurco recommends a minimum wire size of AWG18 and the wire insulator must be rated for 140°F (60°C) service. The modular connector will accept wire from 12 to 24 AWG.

The safety ground wire should be secured to the ground screw of the metal electrical box. Tighten the screw and make sure the wire is snug. Ensure that the wire cannot be pulled out from under the screw.

The Line (L) and Neutral (N) wires should be stripped 1/4 in. (6.5 mm), insert the wire into the "L" and "N" wire positions of the modular Fan/Power connector and tighten the screw clamp. Ensure that the wire cannot be easily pulled from the connector. Plug the modular connection into the Fan/Power connection and ensure that it latches into the header properly.

3.3.2.2   Fan Relay connection

All of the SPDT Fan relay terminals are available at the Fan/Power modular connector. Each Fan relay terminal normally open, common and normally closed (NO, COM and NC) can accommodate a wire size 12 to 24 AWG. To install the wiring for the relays, disconnect the connector from the header. Strip the insulation of each wire back approximately 1/4 in. (6.5 mm), insert the bare wire into the terminal and tighten the screw clamp. Ensure that the wire cannot easily be pulled from the connector. Plug the modular connection into the Fan/Power connection and ensure that it latches into the header properly.

3.3.2.3   Alarm Relay Connection

The external alarm connections (A and B) are available at the Alarm modular connector. There is no polarity for these connections. To install the wiring for the alarm contacts, disconnect the connector from the header on the detector. Strip the insulation of each wire back approximately 1/4 in. (6.5 mm), insert the bare wire into the terminal and tighten the screw clamp. Ensure that the wire cannot easily be pulled from the connector. When the wires are connected seat the modular connector into the header ensuring that the latch engages.

3.3.2.4   4-20 mA Signal connection

The positive and negative 4-20mA signal connections (+ and -) are available at the 4-20mA modular connector, a 2-position connector. To install the wiring for the 4-20 mA contacts, disconnect the connector from the header on the detector. Strip the insulation of each wire back approximately 1/4 in. (6.5 mm), insert the bare wire into the terminal and tighten the screw clamp. Ensure that the wire cannot easily be pulled from the connector. When the wires are connected seat the modular connector into the header ensuring that the latch engages.

NOTE: The 4-20mA current loop outputs may be used with the Macurco DVP-120 control panel or other systems. The 4-20mA signal connections to detectors should be size AWG18 (minimum) for short runs. Refer to the table for recommended wire gauges. Do not bundle detector 4-20mA signal connections with AC power cables to prevent electrical interference. If AC power connections must be bundled with the detector 4-20mA signal cables, the signal connections should be made with twisted pair of the appropriate gauge, with an overall foil and braid shield. All shields should be terminated at the DVP-120 end of the cable only. A ground stud is provided near the bottom left corner of the DVP-120 panel.

4   Operations

4.1   Power up

The GD-6 cycles through an internal self-test cycle for the first minute that it is powered. The unit will execute the test cycle any time power is dropped and reapplied (i.e. power failure). During the self-test cycle, the unit will display the firmware version number, then count down from 60 to 0 (if the display setting is "On") and finally go into normal operation. The alarm relay will be activated for 10 seconds and the fan relay for 60 seconds during the power-up cycle unless the "Power Up Test" (PUt) option is OFF. The indicator light (LED) will flash green during the self-test cycle. At the end of the 1-minute cycle, the unit will take its first sample of the air and the indicator light will turn solid green.

4.2   Display turned "On"

Clean Air – With the display function turned "On", the GD-xx will show the current concentration of combustible gas in % LEL or "0.0" (zero) in clean air.

Fan level – When the gas concentration reaches the Fan Relay setting (10.0, for example) the display will flash back and forth between "FAn" and "10.0" or current concentration of gas.

Alarm level – With the display function turned "On" and the gas concentration reaching the Alarm Relay setting, (20.0 %, for example) the display will flash back and forth between "ALr" and "20.0" or current concentration of gas. The buzzer will sound indicating "Alarm" if the buzzer is turned "On".

Trouble – With the display function turned "On" and the device is in a trouble state, the display will display the "t" Error code (t01 for example). If the Trouble Fan Setting is enabled, the Fan relay will switch activating the relay. See section 4.5.11 Trouble Fan Setting – "tFS" and section 5.1.2 "t" Error Codes and

Calibration Due- With Calibration Period functionality enabled, if a detector is within 1 month of calibration period, then display will flash back and forth between "dUE" and current gas reading. Calibration Due is resolved only with successful field calibration.

4.3   Display turned "Off"

Clean Air – With the display function turned "Off", the display does not show the gas concentration. Only the Power indicator light on will be on.

Fan Level – When the gas concentration reaches the Fan Relay setting (10.0, for example) the display will show "FAn" continuously as long as the fan relay is enabled. This appears as slowly flashing "FAn".

Alarm Level – With the display function turned off the display does not show the gas concentration but will show "ALr" when the Alarm relay is activated.

Trouble – With the display function turned "Off" and the device is in a trouble state, the display will display the "t" Error code (t01 for example). If the Trouble Fan Setting is enabled, the Fan relay will switch activating the relay. See Section 4.5.11 Trouble Fan Setting – "tFS" and Section 5.1.2 "t" Error Codes.

Calibration Due- With Calibration Period functionality enabled, if a detector is within 1 month of calibration period, then display will show "dUE" continuously. Calibration Due is resolved only with successful field calibration.

4.4   4-20mA Loop

4-20mA settings selected to 'bAS' or 'EnH' is considered as 4-20mA function turned ON.

Clean Air – With the 4-20 mA function turned "On" and the current concentration of gas at "0.0" (zero), the 4-20mA loop will output 4 mA.

Gas read – With the 4-20 mA function turned "On" the output will read between 4 mA and 20 mA depending on the current concentration of methane, propane or hydrogen.

Trouble – With the 4-20 mA function turned "On" and Trouble Fan Setting enabled. The 4-20mA loop will output 1 mA or 24 mA depending on the Trouble condition. See Section 5.1 On-Board Diagnostics.

4.5   Default – Factory Settings

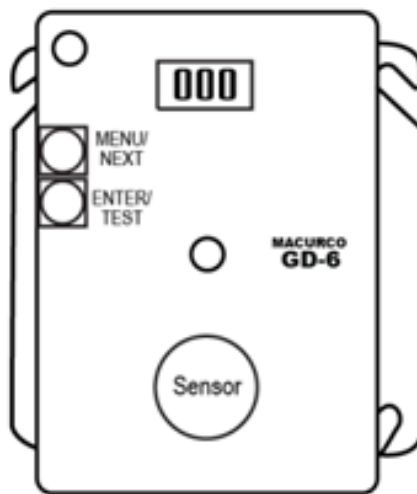| Setting:	Default:
Gas	mE (methane)
Power Up Test	On
Display	Off
Buzzer	Off
Alarm Relay Setting	20% LEL
Alarm Relay Configuration	Normally Open (NO)
Fan Relay Setting	10% LEL
Fan Relay Delay	3 minutes
Fan Relay Minimum Runtime	0 minutes
Fan Relay Latching	Off
Trouble Fan Setting	Off
4-20mA	On

Table 4-1 – Default settings

Figure 4-1 – Board View

4.5.1   Gas Selection
To select the Gas Option, in normal mode, press the Next button once to display the current gas selection (**mE** is Methane, **Pro** is Propane and **Hy** is Hydrogen). Then press the Enter button twice to enter the selection menu. The currently selected gas will be shown on the display. Press Next to scroll through the available gases selections. The selected gas will be flashing, press Enter to select the gas and Enter again to confirm the selection. To return back to normal mode press Next until "End" is displayed and press Enter.

4.5.2   Selecting Default Configuration – "dEF"
To select the Default Configuration, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. The first selection is the "dEF" or Default setting. Press Enter. If it is already in Default configuration, there will be no action. If it is not already in Default configuration, "nO" will be displayed. Press Next to change it to "yES" (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "dEF" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.3   Power-Up Test Setting – "PUt"
To select the Power Up Test Configuration, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. Then press the Next button to get to the second selection "PUt" or Power Up Test setting. Press Enter. If the test is "On" press Next to turn it "OFF" (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "PUt" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.4   Display Setting – "dSP"
To select the Display Configuration, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. Then press the Next button twice to get to the third selection "dSP" or Display setting. Press Enter. If the display is "On" press Next to turn it "OFF" (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "dSP" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.5   Buzzer Setting – "bUZ"
To select the Buzzer Configuration, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. The fourth selection is the "bUZ" or Buzzer setting. Press Next three times to get to "bUZ" then press Enter. If the display is "On" press Next to turn it "OFF" (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "bUZ" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.6   Alarm Relay Setting – "ArS"
To select the Alarm Relay Setting, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. The fifth selection is the "ArS" or Alarm Relay Setting. Press Next four times to get to "ArS" then press Enter. If the display is "dIS" (disabled) press Next to change it to 5, 10, 15, 20 or 25% LEL (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "ArS" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.7   Alarm Relay Configuration – "Arc"

To select the Alarm Relay Configuration, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. The sixth selection is the "Arc" or Alarm Relay Configuration. Press Next five times to get to "Arc" then press Enter. If the relay is "nO" (normally open) press Next to turn it to "nC" (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "Arc" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.8   Fan Relay Setting – "FrS"

To select the Fan Relay setting, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. The seventh selection is the "FrS" or Fan Relay setting. Press Next six times to get to "FrS" then press Enter. If the fan relay is "dIS" (disabled) press Next to change it to 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19 or 20% LEL (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "FrS" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.9   Fan Relay Delay Setting – "FrD"

To select the Fan Relay Delay setting, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. The eighth selection is the "FrD" or Fan Relay Delay. Press Next seven times to get to "FrD" then press Enter. If the delay is "0" (disabled) press Next to change it to 1, 3, 5, or 10 minutes (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "FrD" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.10   Fan Relay Minimum Runtime Setting – "Frr"

To select the Fan Minimum Runtime setting, in normal mode, press the Next button twice to get to "Con" or the Configuration menu. Then press the Enter button to enter the Con menu. The ninth selection is the "Frr" or Fan Minimum Run Time. Press Next eight times to get to "Frr" then press Enter. If the runtime is "0" (disabled) press Next to change it to 3, 5, 10 or 15 minutes (flashing) then press Enter to confirm the change (solid) and press Enter again to return to "Frr" in the Con menu. Press Next until "End" is displayed then press Enter to return to normal operation.

4.5.11   Fan Relay Latching Setting – "FrL"

To select the Fan Relay Latching Option, in normal mode, push the Next button twice to get to "Con" or the Configuration menu. Then push the Enter button to enter the Con menu. The tenth selection is the "FrL" or Fan Relay Latching Option. Push Next nine times to get to "FrL" then Enter. If latching is "OFF" push Next to turn it to "On" (flashing) then push Enter to confirm the change (solid) and push Enter again to return to "FrL" in the Con menu. Push Next until "End" is displayed then push Enter to get back to normal operation.

4.5.12   Trouble Fan Setting – "tFS"

To select the Trouble Fan Setting Option, in normal mode, push the Next button to get to "Con" or the Configuration menu. Then push the Enter button to enter the Con menu. The eleventh selection is the "tFS" or Trouble Fan Setting Option. Push Next ten times to get to "tFS" then Enter. If Trouble Fan Setting is "OFF" push Next to turn it to "On" (flashing) then push Enter to confirm the change (solid) and push Enter again to return to "tFS" in the Con menu. Push Next until "End" is displayed then push Enter to get back to normal operation.

4.5.13 4-20mA Output setting – "420"

To select the 4-20mA Output Option, in normal mode, push the Next button to get to "Con" or the Configuration menu. Then push the Enter button to enter the Con menu. The twelfth selection is the "420" or 4-20mA Output Option. Push Next eleven times to get to "420" then Enter. If the 4-20mA is "On" push Next to turn it to "OFF" (flashing) then push Enter to confirm the change (solid) and push Enter again to return to "420" in the Con menu. Push Next until "End" is displayed then push Enter to get back to normal operation.

5 Troubleshooting

5.1 On-Board Diagnostics

The GD-6 monitors all critical functions of the unit through software diagnostics that continuously test and verify unit operations. If a problem is found, the unit will switch to a fail-safe/error mode or trouble condition. In this error mode, the Alarm relay will be activated, the 4-20 mA current loop will go to 24 mA, the unit will display the error code, the green status indicator LED light will flash, and the buzzer will chirp intermittently. The Fan relay will also engage if the Trouble Fan Setting Option is set to "ON". This is a safety precaution. To clear this mode, simply turn off power to the unit for a few seconds or push the TEST switch (inside the unit). This will cause the unit to restart the 1-minute self-test cycle.

5.1.1 4-20mA troubleshooting

- 0 mA is most likely a connection problem
- 4-20 mA is normal gas reading range (0-50% LEL)
- 24 mA indicates a Trouble condition

5.1.2 "t" Error Codes

tXX	
t01	Sensor Fatal Error
t02	Sensor Offset Regulation Error
t04	Sensor Algorithm Error
t08	Sensor Output Error
t10	Sensor Self Diagnostic Error
t20	Sensor Out of Range Error
t40	Sensor Memory Error

tYYY	
t001	Missing Sensor (At Power Up only)
t002	At each power-up it checks if that ABC is disabled. If it is not disabled it will try to set it to disable. If it fails it will trigger trouble t002.
t004	EEPROM bad checksum.
t008	Modbus communication error (during normal operation).
t010	Bad EEPROM
t020	Bad Factory calibration.
t040	Never Factory calibrated.
t080	Bad pressure during factory calibration
t100	Under range. Reading is under -100ppm for more than 15 seconds
t200	Sensor Expired
t400	Trouble Pressure Sensor
t800	Board not tested

NOTE: For trouble codes over 080 the display will alternate between t_1 and t00 for t100 and between t_2 and t00 for t200.

If the error mode repeats frequently, check for continuous power and proper voltage. If power is not the problem and a unit has repeating error conditions, it may need to be returned to Macurco for service, per these User Instructions.

If the error mode indicates "Sensor expired" see the Sensor Life Reset section of these User Instructions.

5.2   Sensor Poisons
The gas sensor in the detector is designed with extreme sensitivity to the environment. As a result, the sensing function may be deteriorated if it is exposed to silicones, such as the common oil and lubricants with silicon compounds used as additives in machinery, halogen compounds, which are used in fire extinguishers and Freon used in refrigerants, organo-metallic compounds, sulfur compounds, chlorine compounds, acetylene, olefins or high concentrations of combustible gas.

5.3   End-of-Life Signal
The GD-6 has a long life, non-replaceable catalytic bead sensor. Five (5) years after the GD-6 is installed the sensor end-of-life signal will be activated indicating that the GD-6 has reached the end of its typical usable life. The end-of-life signal will cause an error code t200 "Sensor expired". See Error Codes section. The end-of-life signal can be silenced for 48 hours by pressing the "ENTER/TEST" button or by temporarily dropping power to the unit. The end-of-life signal provides the user an opportunity to test and/or calibrate the sensor assuring that it is still performing within acceptable parameters though the sensor is nearing the end of its expected life. The silence function will continue to be available for 29 days after the GD-6 initiates the initial end-of-life signal. After this 29-day period the GD-6 can no longer be silenced, and the sensor must be calibrated, and the sensor life reset or the GD-6 detector replaced.

⚠ WARNING
Do not disassemble unit or attempt to repair or modify any component of this instrument. This instrument contains no user serviceable parts, and substitution of components may impair product performance.

6 Maintenance

The GD-6 is low maintenance. The unit uses a long life pellistor sensor that has a 5+ year life expectancy. The detector's performance should be tested regularly by using gas as detailed in the Testing and Field Calibration sections. All other maintenance and repair of products manufactured by Macurco are to be performed at the appropriate Macurco manufacturing facility. Macurco does not sanction any third-party repair facilities.

6.1 Sensor Life Reset

1. Remove the Philips screw on the front of the GD-6. Pull the front cover of the unit off.
2. To reset the sensor life (rSt), from normal or warm-up mode, press the Next button five times to get to SEn or Sensor Mode.
3. Then press the Enter button to get to "rSt" - Reset Sensor Mode.
4. Press the Enter button again to see the sensor reset status. If the sensor life has already been reset, done "don" will be displayed. If it has not already been reset, "no" will be displayed. Push Next to change it to " YES" (flashing) then push Enter to confirm the change (solid) and push Enter again to return to "rSt" in the SEn menu. Push Next until "End" is displayed then push Enter to get back to normal operation. The sensor life will be reset for 1 year.

NOTE : If the sensor is reset and the detector not replaced it is necessary to test and/or calibrate the sensor to assure that it is still performing within acceptable specifications though the sensor is nearing the end of its expected life. There will be no other indication of sensor performance.

6.2 Cleaning

Cleaning of the external surfaces is best carried out using a damp cloth with a mild detergent or soap. Use a vacuum cleaner with soft brush to remove dust or contamination under the cover. Do not blow out the sensor with compressed air.

CAUTION

Avoid the use of harsh cleaning materials, abrasives, and other organic solvents. Such materials may permanently scratch the surfaces and damage the display window, labels, sensor, or instrument housing.

7   Testing

⚠️ **WARNING**
Using a certified gas with a concentration other than the one listed for this detector when conducting a calibration verification test (bump test) will produce inaccurate readings. This means that higher levels of the gas being monitored may be present and could result in overexposure. For proper use, see supervisor or User manual, or contact Technical Support at 1-844-325-3050.

All GD-6 units are factory calibrated and 100% tested for proper operation. During normal operation the green status indicator LED light will be on steady, the fan & alarm relay will be in standby mode and the 4-20 mA output will be at 4mA (in clean air). The unit also performs a regular automatic self-test during normal operation. If the unit detects an improper voltage or inoperable component, it will default into Error mode. In this error mode, the Alarm relay will be activated, the 4-20 mA current loop will go to 24 mA, the unit will display the error code, the green status indicator LED light will flash, and the buzzer will chirp intermittently. The Fan relay will also engage if the Trouble Fan Setting Option is set to "ON".

7.1   Testing

7.1.1   Operation Test

Check that the green GD-6 status indicator LED light is illuminated continuously. If not, do not proceed with the tests. If the unit is in error mode, contact your local representative or Macurco technical service representative for information on resolving the problem.

1. Remove the single screw in the middle of the front cover of the GD-6.
2. Remove the front cover.
3. Observe the LED light on the front of the GD-6.
4. If the light is solid green proceed to step 6.
5. If the green status indicator LED light is off or flashing, refer to the General section above.
6. Locate the switch labeled ENTER/TEST on the left side of the printed circuit board. Press the Test switch once.
7. The GD-6 will step through a cycle test:
   a. The display progresses through the BUZ (Buzzer Test) Art (alarm relay test), Frt (fan relay test) then 42t (4-20 mA output test). Make sure that the settings are "on" or not disabled "diS".
   b. During the first 10 seconds of the test cycle, the display will show BUZ and set off the audible buzzer
   c. The alarm relay will be closed, so any devices connected to that relay will be tested.
   d. The Fan relay will be activated for the next 1 minute of the test, so if the fan circuits are wired in the normal manner, the fan should run.
   e. The 4-20mA output will then ramp up from 4 to 16 mA over the next 130 seconds of the test, so if the circuit is wired in the normal manner, the control panel or building automation system should respond.
   f. At the end of the test cycle, the light will turn green and be on steady (Normal Operation), the fan & alarm relay will be in standby mode and the 4-20 mA output will return to 4 mA (in clean air).
8. When testing is completed reassemble the unit or units.

7.1.2   Manual Operation Test

This option gives the user the opportunity to manually initiate an individual test for each relay, the analog output and the sensor response to gas. From normal operation mode press the Next button 3 times to get to the Test Mode (tSt). Press the Enter button once to get into the Test Menu. Press the Next button to scroll through the four test options and press Enter to initiate the selected test. Note that if the relay or 4–20 mA output has been disabled, the test selection will not be displayed in the test menu.

> bUZ –Buzzer test, 3 seconds
>
> Art - Alarm Relay Test, 10 seconds
>
> Frt - Fan Relay Test, 60 seconds
>
> 42t - 420 loop test, 25 seconds
>
> gtS - Gas Test, 3 minutes (no output to the panel during the gas test)

The display will flash during the test or in the case of the gas test the level will alternate with the expected gas (mE, Pro or Hy). Once the test is complete, the display will return to steady display. To exit the test menu, press the Next button until "End" is displayed, then press Enter to return to normal mode.

7.2   Calibration and Test Kits

┌───┐
│   ⚠ WARNING   │
├───┤
│ The following steps must be performed when conducting a calibration or calibration verification test (bump test) to ensure proper performance of the monitor. Failure to do so may adversely affect product performance. │
│   • When performing a calibration or calibration verification test (bump test) only use certified calibration gas at the required concentration level. │
│   • Do not test with expired calibration gas. │
│   • Do not cover or obstruct display or visual alarm cover. │
│   • Ensure sensor inlets are unobstructed and are free of debris │
│ Failure to follow instructions outlined in this user manual can result in sickness or death. │
└───┘

- When performing a calibration or calibration verification test (bump test) only use certified calibration gas at the required concentration level. Do not calibrate with expired calibration gas.
- If the instrument cannot be calibrated, do not use until the reason can be determined and corrected.
- Do not cover or obstruct display or visual alarm cover.
- Ensure sensor inlets are unobstructed and is free of debris

A Field Calibration Kit, Cal-Kit 1, and one bottle of calibration gas is needed to complete gas test. These are available through local distribution or from Macurco.

NOTE: GD-xx must be tested or calibrated at regular intervals in accordance with the requirements of the National Fire Protection Association (NFPA) 720 or local code requirements. Macurco recommends testing and calibration at a least once per year at a minimum but depending on the application and risk potential of the application a greater frequency might be needed. Check with local authorities for any specific local regulations.

Contents of the Cal-Kit 1

- Cal-Kit 1 (30-0011-1110-2)
  - o Calibration Case
  - o Two feet of Tygon tubing
  - o Cal Hood-Macurco Pack
  - o 0.2 LPM Gas regulator (F)

Also needed are the following gas bottles depending on the target gas (Sold Separately):

- **Hydrogen**
  - o 70-0716-1758-6 Hydrogen H2 Cal Gas Cylinder 34L 10% LEL (M) **(For Calibration and Testing)**
  - o 70-0716-1759-4 Hydrogen H2 Cal Gas Cylinder 34L 20% LEL (M) **(For Testing)**
- **Methane**
  - o 70-0716-1754-5 Methane CH4 Cal Gas Cylinder 34L 10% LEL (M) **(For Calibration and Testing)**
  - o 70-0716-1755-2 Methane CH4 Cal Gas Cylinder 34L 20% LEL (M) **(For Testing)**
- **Propane**
  - o 70-0716-1756-0 Propane C3H8 Cal Gas Cylinder 34L 10% LEL (M) **(For Calibration and Testing)**
  - o 70-0716-1757-8 Propane C2H8 Cal Gas Cylinder 34L 20% LEL (M) **(For Testing)**

Cal-Kit 1 Information

Several detectors can be calibrated with one Cal-Kit. The only limitation is the amount of gas in the cylinder. The 34-liter cylinder has approximately 170 minutes of continuous calibration run time. The gas cylinder should be replaced when the pressure gauge on the regulator shows 25-psi or less.

Note: For optimum test results it is suggested that the unit be in clean air, green light on, and be in a low ambient air flow.

7.3   Gas Testing

7.3.1   Testing the Fan Relay

Note: The gas concentration to activate the fan relay depends on the setting.

1. Remove the Philips screw on the front of the GD-6. Remove the front cover.
2. Connect the 10% LEL cylinder of Combustible Gas to the regulator. Ensure that the gas used for calibration matches the gas selected in the GD-6 configuration.
3. Assemble regulator, hose and test hood and place the test hood over the gas sensor.
4. Check the pressure gauge on the regulator. If you have 25-psi or less you will need to replace the gas canister.
   Note: The time to activate the fan relay depends on the delay setting.
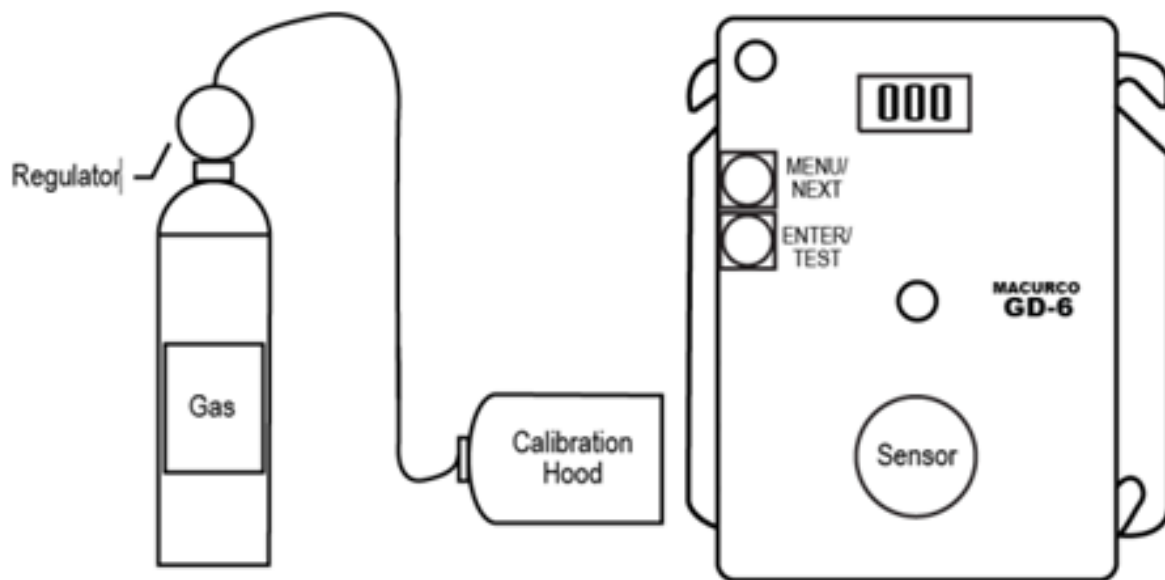

Figure 7-1 – Calibration Connection

5. Turn on the regulator to start the gas flow and wait with the gas applied continuously.
6. With the display function turned "On", the GD-6 will show the current concentration of gas or "0" (zero) in clean air. When the gas concentration reaches the fan relay setting (10% LEL, default setting) the display will flash back and forth between "FAn" and "10". With the display function turned" Off", the display does not show the gas concentration, but will show "FAn" as long as the fan relay is activated.

   Note: If the Fan relay does not close within 2 minutes, consider these possibilities:
   a. Gas cylinder is empty, check the pressure gauge. Replace the gas cylinder if 25-psi or less.
   b. Unit needs to be re-calibrated (go through recalibration and re-test).
   c. Detector needs servicing (return unit to factory for servicing).
   d. Detector has fan relay set to disable (OFF) or 20% LEL. Set fan relay to 10% LEL and repeat the test.
7. Remove the gas from the sensor. Proceed to test the alarm relay or replace the top cover.

7.3.2   Testing the Alarm Relay

Note: The gas concentration to activate the Alarm relay depends on the setting.

Connect the 20% LEL cylinder of Combustible Gas to the regulator. Ensure that the gas used for calibration matches the gas selected in the GD-6 configuration.

1. Check the pressure gauge. If there is 25-psi or less the cylinder should be replaced.
2. Place the test hood over the gas sensor. Turn on the regulator to start the gas flow.
3. The Fan relay should activate according to the settings.
4. With the display function turned "On" and the gas concentration reaching the Alarm Relay setting, (20% LEL, for example) the display will flash back and forth between "ALr" and "20". The buzzer will sound indicating "Alarm" if the buzzer is turned "On". With the display function turned off the display does not show the gas concentration but will show "ALr" when the Alarm relay is activated.

   Note: If the Alarm relay fails to operate within 2 minutes, consider these possibilities:
   a. Gas cylinder is empty, check the pressure gauge. Replace the gas cylinder if 25-psi or less.
   b. Unit needs to be re-calibrated (go through recalibration and re-test).
   c. Detector needs servicing (return unit to factory for servicing).
   d. Detector has Alarm relay set to disable (OFF). Set Alarm relay to 20% LEL and repeat the test.
5. Remove the gas from the sensor after test. Proceed to test the 4-20 mA output or replace the top cover.

7.3.3   Testing the 4-20mA loop

Connect the 20% LEL cylinder of Combustible Gas to the regulator. Ensure that the gas used for calibration matches the gas selected in the GD-6 configuration.

1. Check the pressure gauge. If there is 25-psi or less the cylinder should be replaced.
2. Place the test hood from the regulator over the gas sensor. Turn on the regulator to start the gas flow.
3. The fan relay should activate according to the settings.
4. The alarm relay should activate according to the settings.
5. The 4-20 mA output should ramp up from 4mA in clean air to 20 mA at 50% LEL. See 4-20 mA diagram in these User Instructions.
   Note: If the 4-20mA output does not ramp up within 2 minutes, consider these possibilities:
   a. Gas cylinder is empty, check the pressure gauge. Replace the gas cylinder if 25-psi or less.
   b. Unit needs to be re-calibrated (go through recalibration and re-test).
   c. Detector needs servicing (return unit to factory for servicing).
   d. Detector has 4-20 mA option set to "OFF". Set 4-20 mA option to "On" and repeat the test.
6. Remove the gas from the sensor. Re-assemble the GD-6 (make sure the LED is aligned with the hole on the front of the case).

7.4   Field Calibration Procedure

Note: For optimum calibration results the unit should be in clean air and be in a low ambient air flow.

7.4.1   Zero the Sensor

1. Remove the Philips screw on the front of the GD-6. Pull the front cover of the unit off.
2. To select Calibration Zero Mode (000), from normal mode, press the Next button four times to get to CAL or Calibration Mode.
3. Then press the Enter button to get to "000" - Calibration Zero Mode.
4. Press the Enter button and the display will read 0 alternating with 000 (blinking) indicating zero calibration in progress (max 165 sec).
5. If the process is successful, the display will read __0 alternating with PAS (blinking) Zero Calibration complete.
6. If the process was not successful, the display will read __1 alternating with Fail (blinking) Zero Failed. If this occurs, repeat steps 2 through 4. If the sensor fails to zero twice contact Technical Assistance: 844-325-3050
7. To return to Normal Mode press Enter and then press Next until "End" is displayed. Press Enter to return to Normal Mode.

7.4.2   Calibration

1. Remove the Philips screw on the front of the GD-6. Pull the front cover of the unit off.
2. Assemble the 10% LEL gas cylinder and regulator together. Ensure that the gas used for calibration matches the gas that the GD-6 is configured to (mE, Pro or Hy).
3. Check the pressure gauge on the regulator. If you have 25-psi or less you will need to replace the gas canister.
4. Place the test Hood from the regulator over the gas sensor.
5. To select Calibration Span Mode (SPn), from normal mode, press the Next button four times to get to CAL or Calibration Mode.
6. Then press the Enter button to get to "000" Calibration Zero Mode, then press the Next button to get to "SPn" – Calibration Span Mode.
7. Press the Enter button and the display will read 10 alternating with the gas, mE, Pro or Hy (blinking), indicating the sensor is looking for gas.
8. Start applying gas to the gas sensor.
   Note: The sensor will look for the gas for 45 seconds. If no gas is applied or detected in that time, the display will return to CAL.
9. When the sensor detects the gas, the display will flash back and forth between the gas concentration and SPn and the calibration will progress. The display will show this for a maximum of 165 seconds.
10. When the calibration is successful, the display will flash back and forth between 10 and PAS.
11. Remove the gas. The display will return to "SPn", then normal mode. The calibration is done.
12. If the calibration fails, the display will flash back and forth between the gas concentration and FAL (fail). If this occurs, check the pressure gauge on the regulator. If the pressure is less than 25-psi the flow of gas may not be adequate to properly calibrate the unit. If there is proper pressure in the cylinder repeat steps 4 through 11. If the unit fails to calibrate twice contact Macurco Technical Assistance at 1-877-367-7891.
13. Disassemble the cylinder and regulator.
14. Re-assemble the GD-6 (make sure the LED is aligned with the hole in the front case).
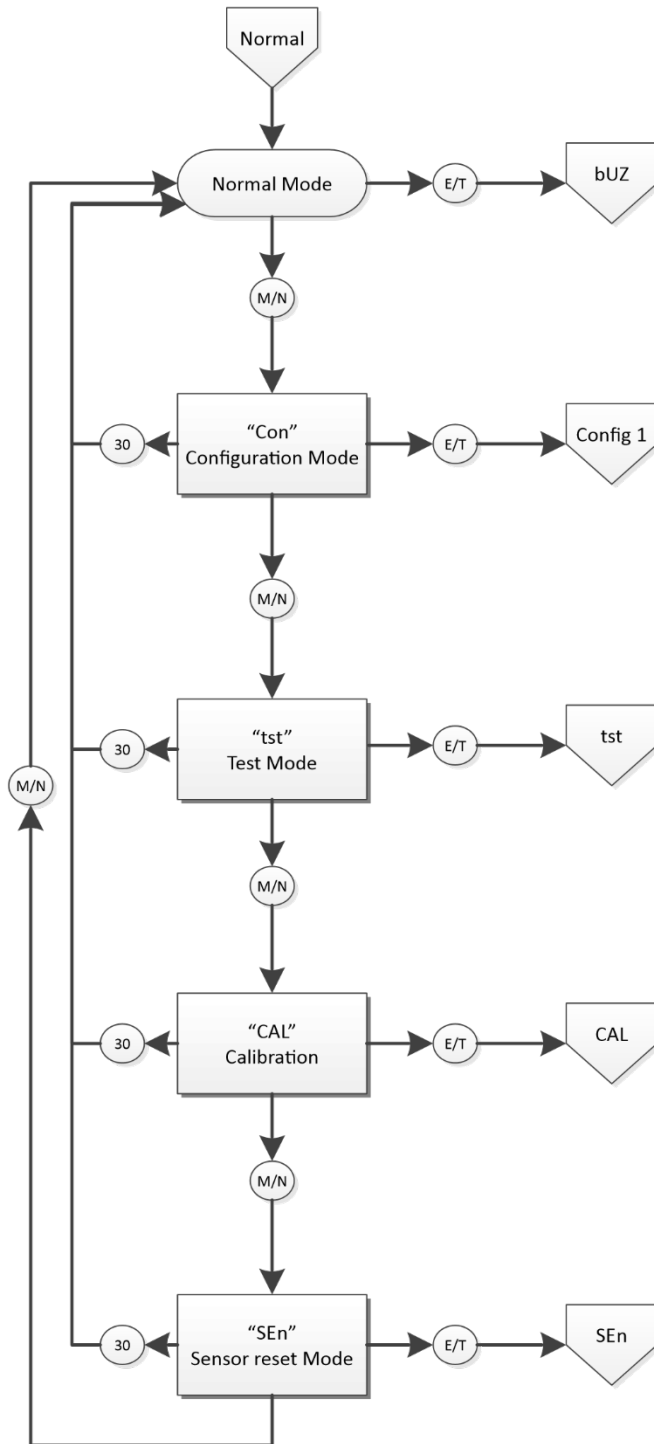15. See Calibration Flowchart on the inside of the housing.
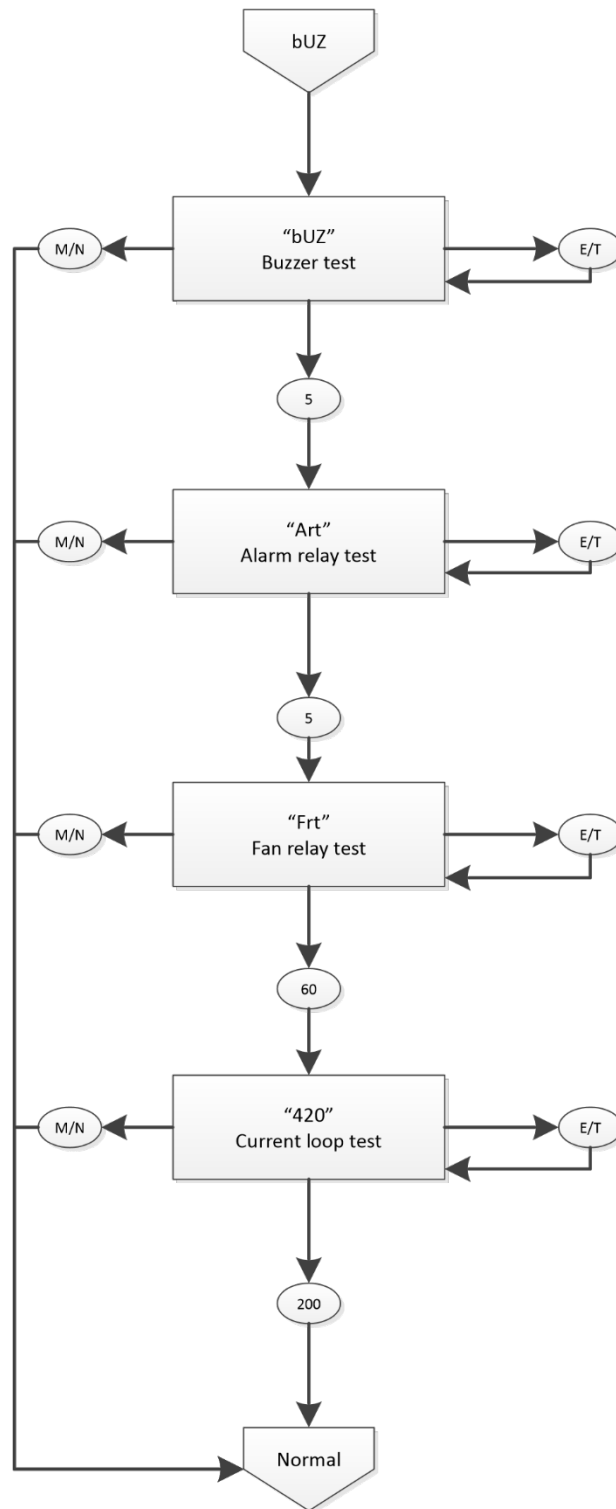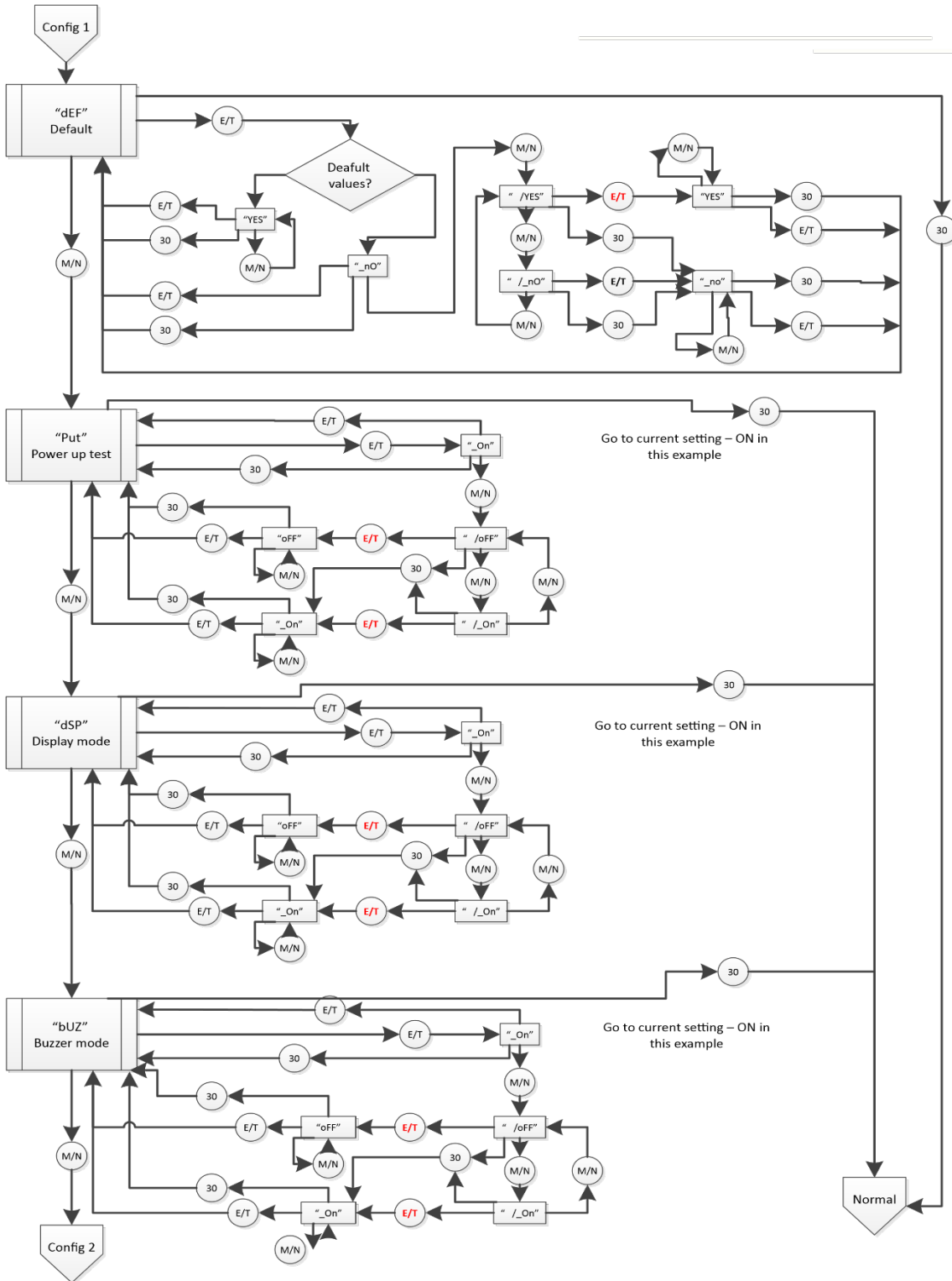
8   Appendix A – Table of Figures

9   Appendix B – Menu Structure

9.1   Main Menu

9.2 Auto Test Menu "bUZ"

```
                              ┌──────────┐
                              │   bUZ    │
                              └────┬─────┘
                                   │
                                   ▼
         ┌─────┐           ┌───────────────┐          ┌─────┐
         │ M/N │◄──────────│     "bUZ"     │─────────►│ E/T │
         └─────┘           │  Buzzer test  │◄─────────└─────┘
                           └───────┬───────┘
                                   │
                                  ( 5 )
                                   │
                                   ▼
         ┌─────┐           ┌───────────────┐          ┌─────┐
         │ M/N │◄──────────│     "Art"     │─────────►│ E/T │
         └─────┘           │ Alarm relay   │◄─────────└─────┘
                           │     test      │
                           └───────┬───────┘
                                   │
                                  ( 5 )
                                   │
                                   ▼
         ┌─────┐           ┌───────────────┐          ┌─────┐
         │ M/N │◄──────────│     "Frt"     │─────────►│ E/T │
         └─────┘           │ Fan relay test│◄─────────└─────┘
                           └───────┬───────┘
                                   │
                                  ( 60 )
                                   │
                                   ▼
         ┌─────┐           ┌───────────────┐          ┌─────┐
         │ M/N │◄──────────│     "420"     │─────────►│ E/T │
         └─────┘           │Current loop   │◄─────────└─────┘
                           │     test      │
                           └───────┬───────┘
                                   │
                                  (200)
                                   │
                                   ▼
                           ┌───────────────┐
                           │    Normal     │
                           └───────────────┘
```
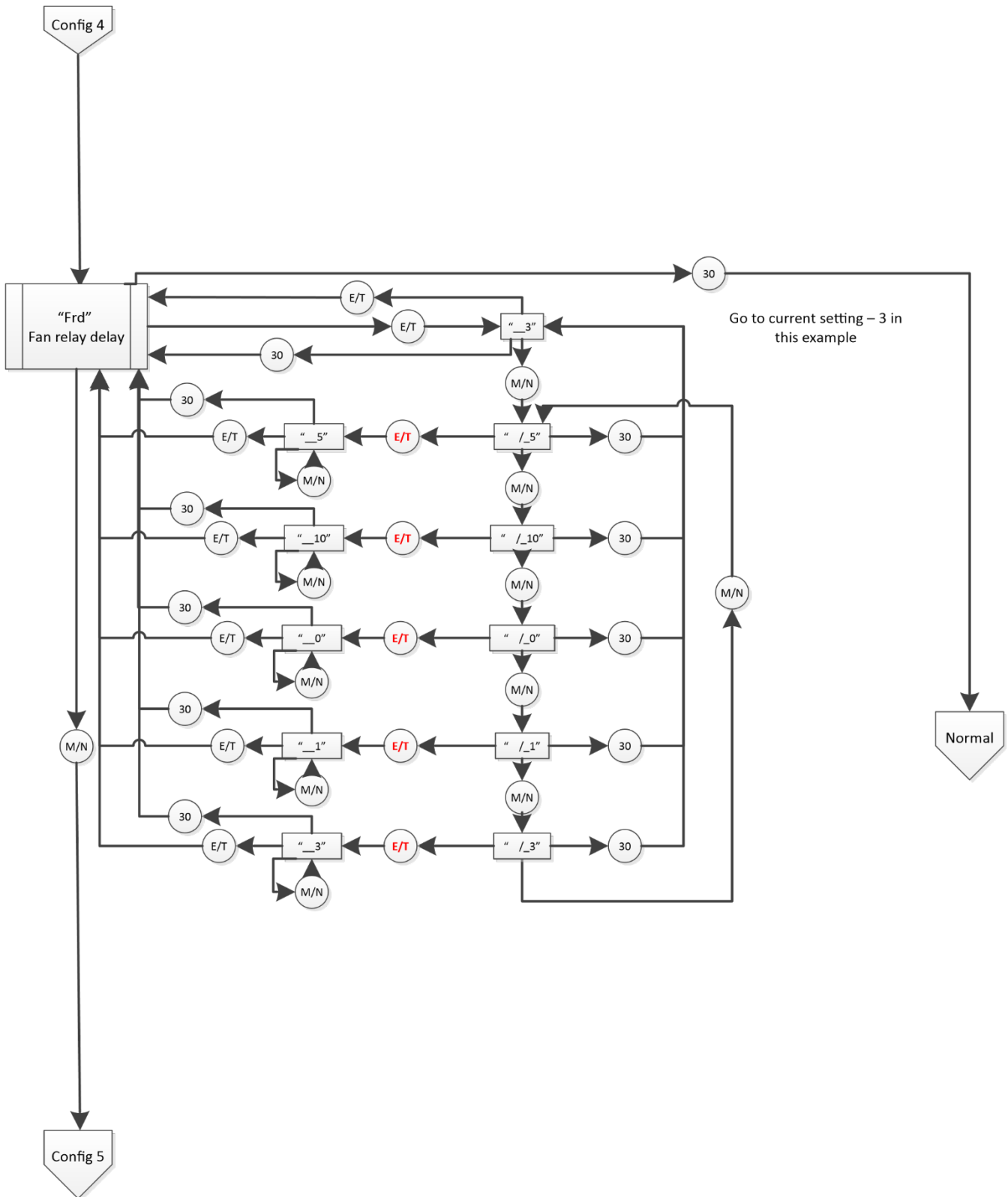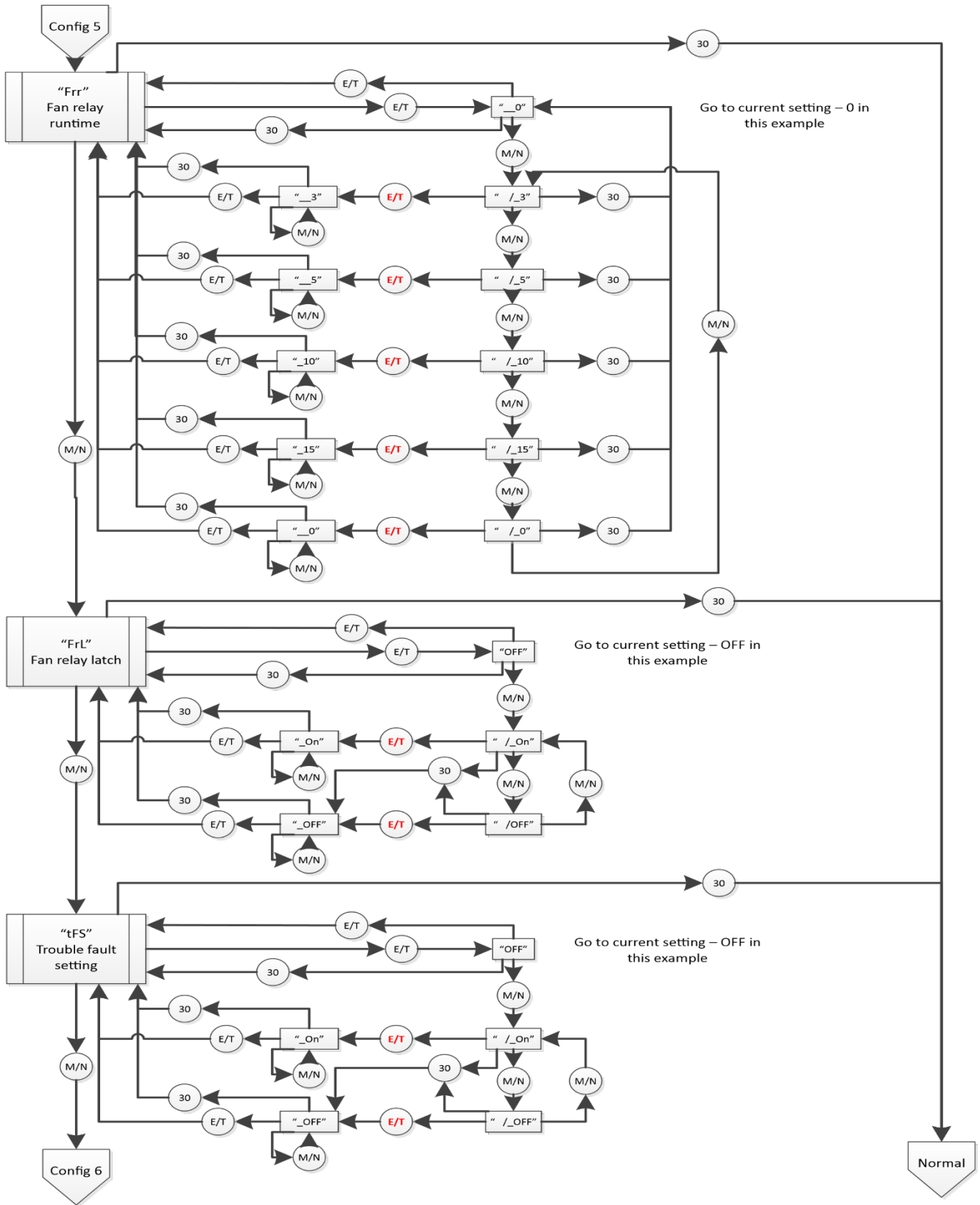
9.3 Configuration Menu "CON"

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Sioux Falls, SD 57105

Go to current setting – 200 in this example

Config 3

"Arc"
Alarm relay
configuration

Go to current setting – nO in
this example

"__nO"

"/_nC"
"_nC"
"/_nO"
"_nO"

Wait

"FrS"
Fan Relay
Setting

Go to current setting – 35 in
this example

"__35"

"/_50"
"_50"

"/_100"
"_100"

"/_diS"
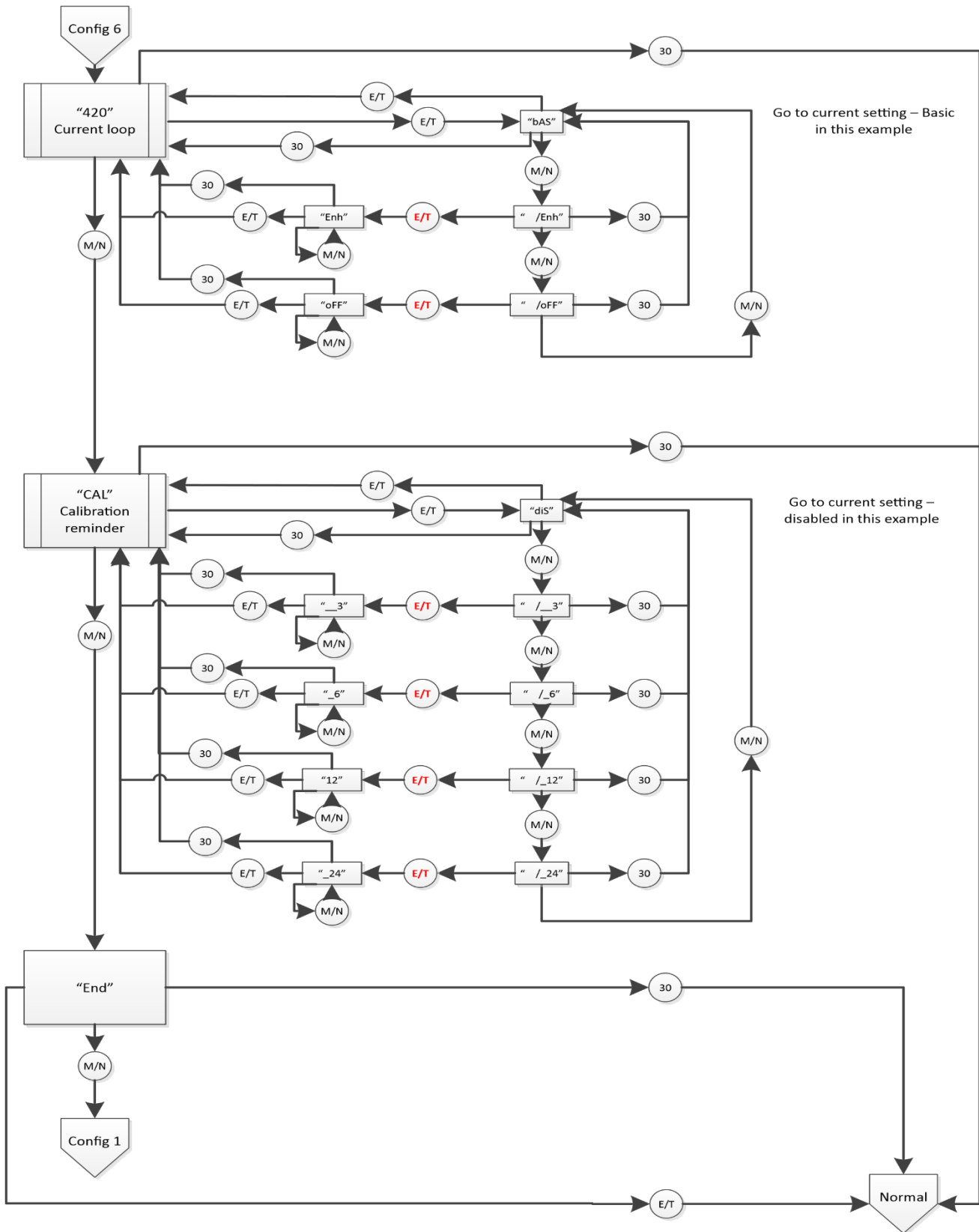"_diS"

"/_15"
"_15"

"/_25"
"_25"

"/_35"
"_35"
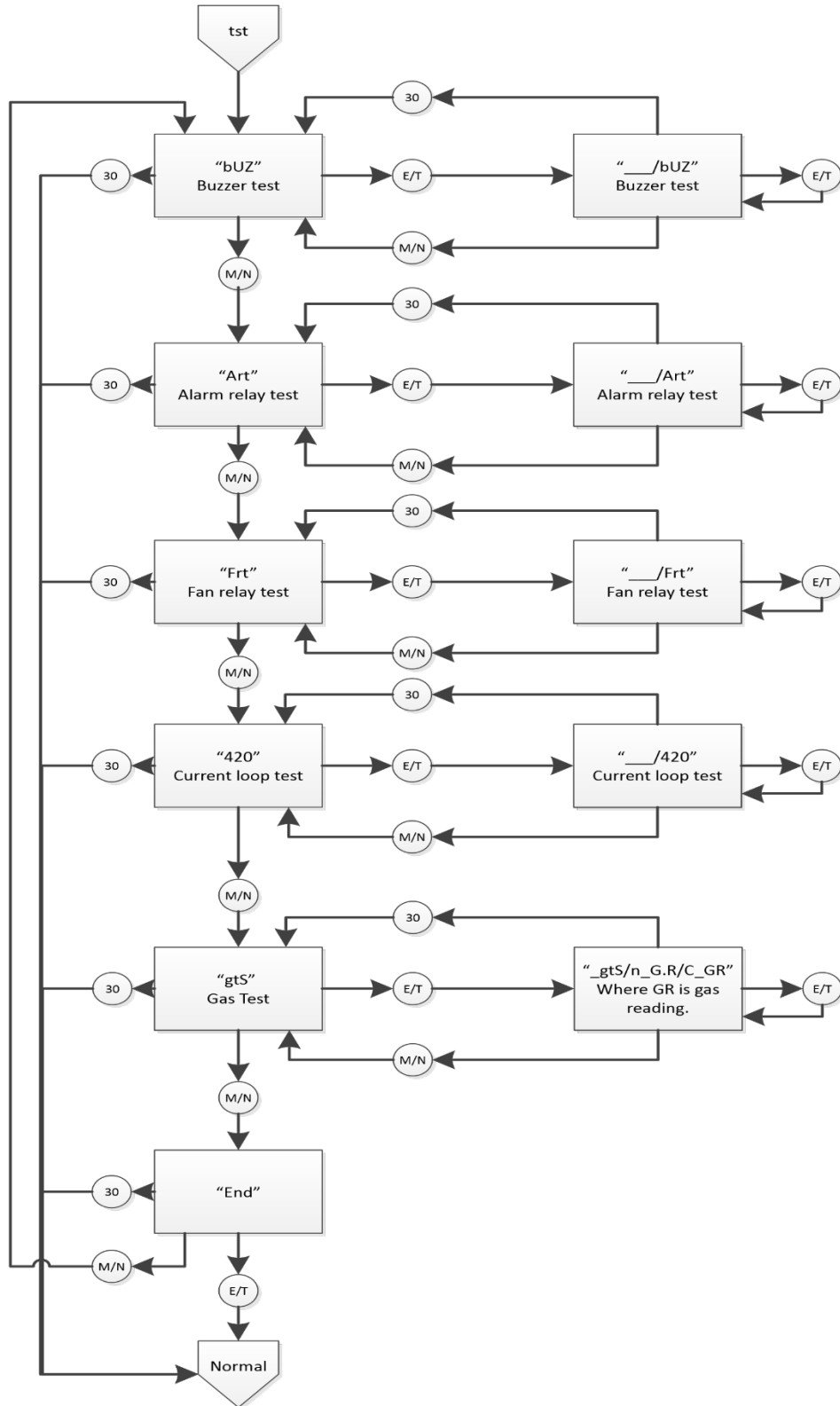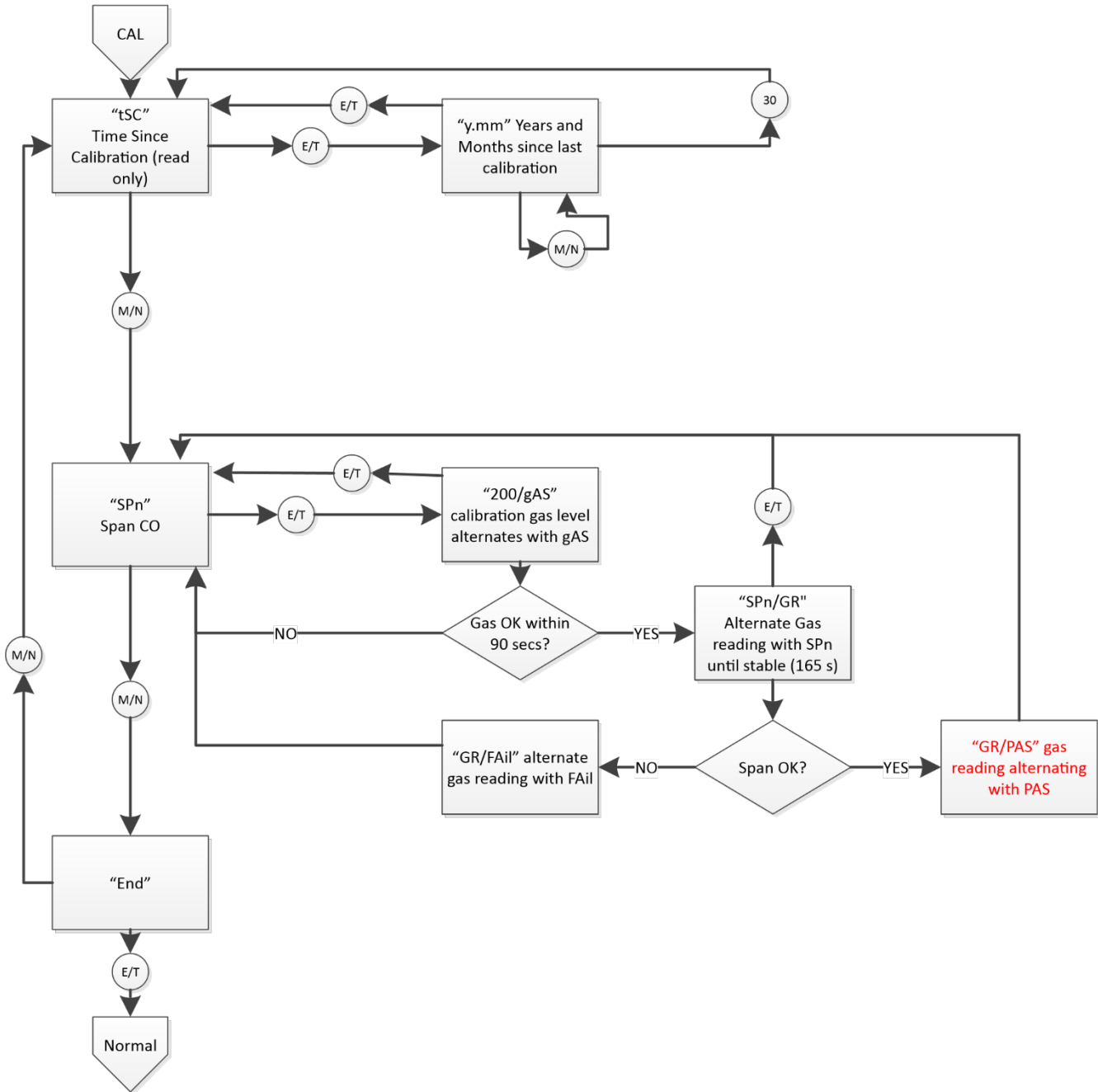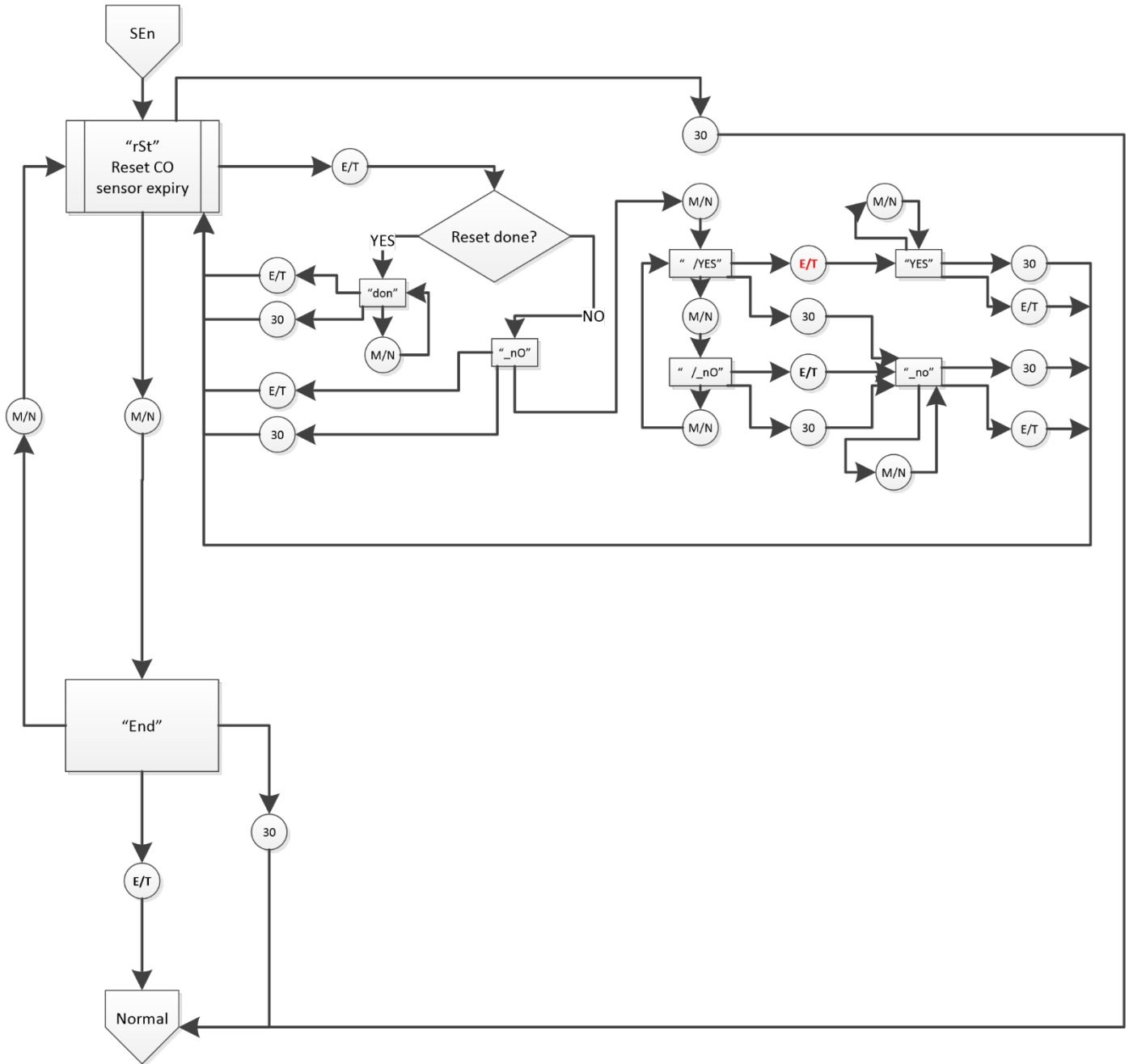
Config 4

Normal

9.4 Select Test Menu "tst"

9.5   CAL Menu

9.6   Sensor Reset Menu "Sen"

10 Macurco Gas Detection Product limited warranty

Macurco warrants the GD-6 / GD-12 gas detector will be free from defective materials and workmanship for a period of two (2) years from the date of manufacture (indicated on inside cover of the GD-6 / GD-12), provided it is maintained and used in accordance with Macurco instructions and/or recommendations. If any component becomes defective during the warranty period, it will be replaced or repaired free of charge, if the unit is returned in accordance with the instructions below. This warranty does not apply to units that have been altered or had repair attempted, or that have been subjected to abuse, accidental or otherwise. The above warranty is in lieu of all other express warranties, obligations, or liabilities. THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE ARE LIMITED TO A PERIOD OF TWO (2) YEARS FROM THE PURCHASE DATE. Macurco shall not be liable for any incidental or consequential damages for breach of this or any other warranty, express or implied, arising out of or related to the use of said gas detector. The manufacturer or its agent's liability shall be limited to replacement or repair as set forth above. Buyer's sole and exclusive remedies are the return of the goods and repayment of the price, or repair and replacement of non-conforming goods or parts.

Macurco Inc.

1504 W 51st St
Sioux Falls, SD 57105

Technical Support Contact Information

Phone: 1-844-325-3050
Fax: 1-605-951-9616
Email: support@macurco.com
Website: www.macurco.com/support/

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General Contact Information

Phone : 1-877-367-7891
Fax : 1-605-951-9616
Email : info@macurco.com
Website: www.macurco.com

www.macurco.com   1-877-367-7891   info@macurco.com   1504 W 51st St.
Sioux Falls, SD 57105