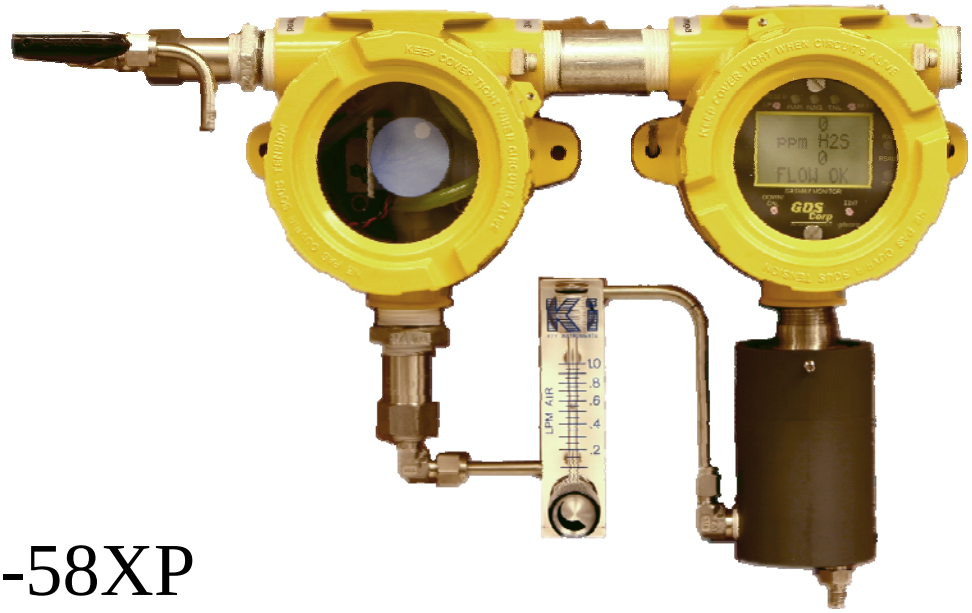
# Operation & Maintenance Manual




## GDS-58XP

Explosion-Proof Sample Draw System for Toxic & Combustible Gases

GDS Corp
Gas and Flame Detection

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CAUTION: FOR SAFETY REASONS THIS EQUIPMENT MUST BE OPERATED AND SERVICED BY QUALIFIED PERSONNEL ONLY. READ AND UNDERSTAND INSTRUCTION MANUAL COMPLETELY BEFORE OPERATING OR SERVICING.

ATTENTION: POUR DES RAISONS DE SÉCURITÉ, CET ÉQUIPEMENT DOIT ÊTRE UTILISÉ, ENTRETENU ET RÉPARÉ UNIQUEMENT PAR UN PERSONNEL QUALIFIÉ. ÉTUDIER LE MANUE D'INSTRUCTIONS EN ENTIER AVANT D'UTILISER, D'ENTRETENIR OU DE RÉPARER L'ÉQUIPEMENT.



For further *information* about GDS Corp, please call (409) 927-2980 or email support@gdscorp.com



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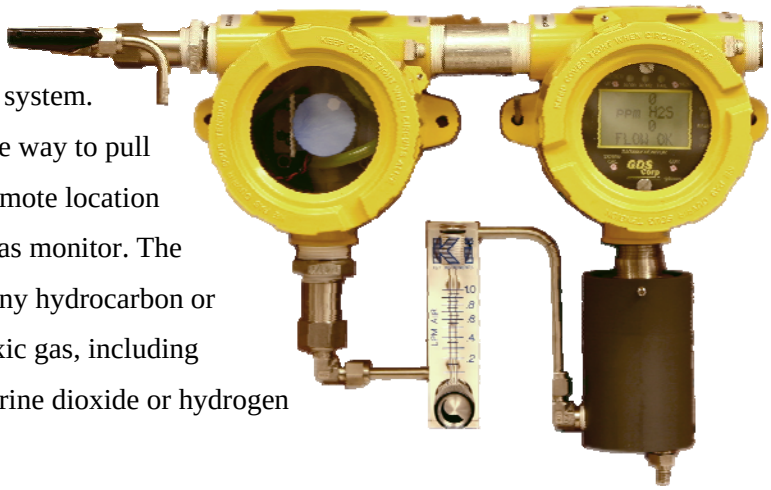
# 1 GDS-58XP SAMPLE DRAW SYSTEM

## 1.1 Description




Thank you for choosing the GDS Corp GDS-58XP Explosion Proof Sample Draw system. The GDS-58XP provides a safe and reliable way to pull toxic or combustible gas samples from a remote location for measurement by a local GASMAX II gas monitor. The GDS-58XP is recommended for use with any hydrocarbon or hydrogen-based combustible gas or any toxic gas, including reactive components such as chlorine, chlorine dioxide or hydrogen fluoride*.

The GDS-58XP features a long life brushless DC pump with low-flow warning switch with 5A local relay contacts. The GDS-58XP is designed for use in Class I Division 1 hazardous areas.

## 1.2 Features

- Designed for Class I Division 1 Hazardous Areas
- Long life Brushless DC sample pump with fixed 1.3 liters-per-minute flow rate
- Integrated flow switch connected to local 5A fault relay
- Local relay contacts for optional light or warning sounder
- Standard non-isolated 4-20mA current loop output (source)
- Optional 110 / 220VAC input
- Standard MODBUS slave interface for remote monitoring of signal and flow status
- High resolution display shows engineering units and trend data
- Built-in user-prompted calibration
- Magnetic interface for non-intrusive operation in hazardous areas
- *Reactive gases require ALUMINUM sensor head which can only be used in non-hazardous areas

# 2 GDS-58XP SPECIFICATIONS

- Input Power: +24VDC +/- 10%, 12.5W max.
- Sensor Type: Any GDS Corp Toxic or Combustible Sensor
- Analog Output: Single 4-20mA calibrated current loop (source),
- Relay Output: Dual 5A programmable relays for Alarm 1 and Alarm 2; Single 5A relay contacts for Sensor Fault and/or Low Flow Warning
- Digital Output: RS-485 Two-wire Serial MODBUS Slave Interface
- Flow rate: 0.5 to 1.0 liters / minute (adjustable)
- Maximum sample distance: Approximately 100 ft / 33 m
- Inlet and Outlet Fittings: ¼" Compression
- Dimensions: 15.25" (W) x 10.0" (H) x 6" (D)
- Weight 11 pounds / 4.9 KG

# 3 HARDWARE INSTALLATION

## 3.1 Installing the GDS-58XP

Install the GDS-58XP in a suitable location within 100 ft / 33 m of the intended sample location. The GDS-58XP features four mounting holes that can be used to securely attach the sample draw system to a bulkhead or wall. Make sure there is sufficient clearance to install the sample inlet tubing and sample outlet tubing (if used). Also make sure that the Run / Cal valve can operate freely and that access to the Cal Port is not blocked for any reason.

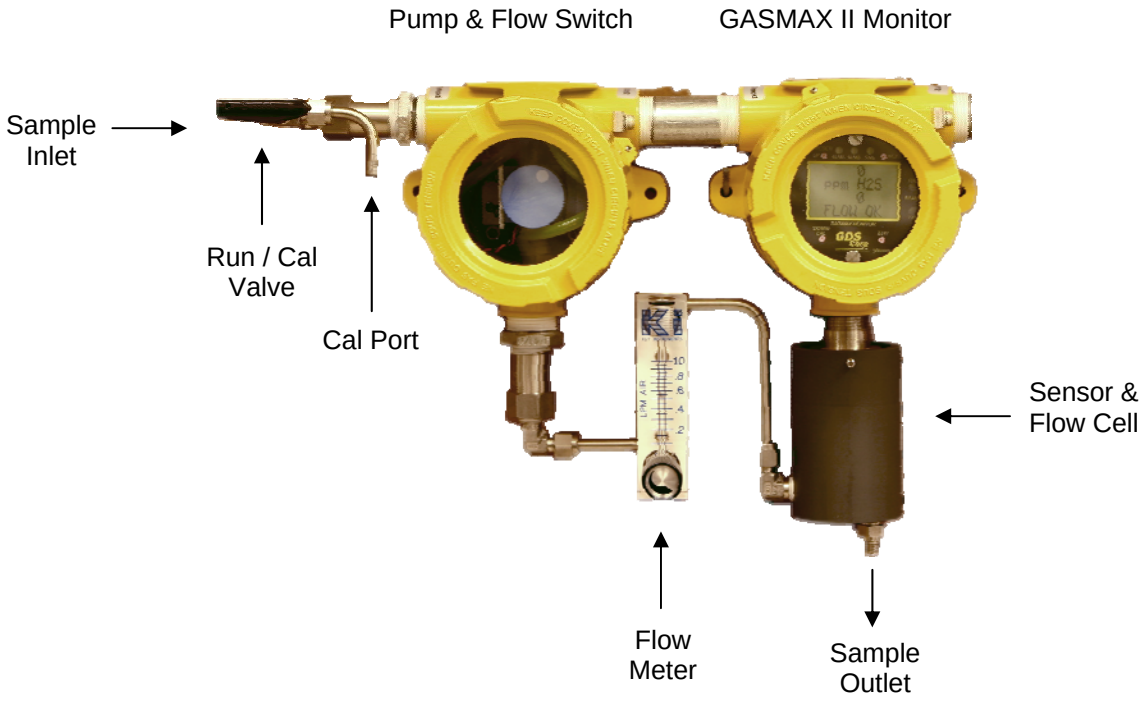



Figure 1 – GDS-58XP

**Note**: In order for low flow switch to operate properly, the GDS-58XP must be mounted vertically.

**DC Power:** Connect a source of +24VDC, +/- 10% power to the power supply wiring terminals (See Fig 2). An external power switch and / or circuit protection device should be provided by the customer's wiring. If the area is considered hazardous then all explosion proof wiring recommendations, guidelines and regulations should be observed.

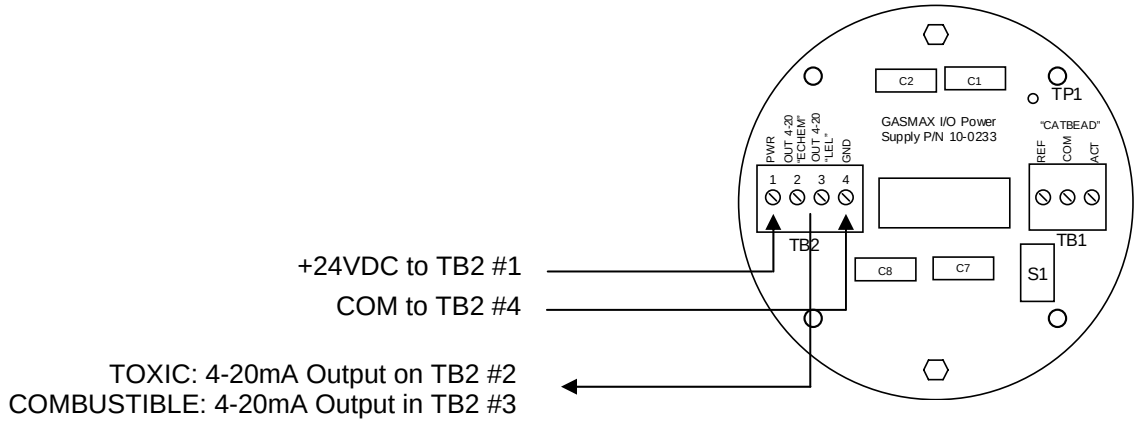



Figure 2 – GDS-58XP / GASMAX II Power Supply & Analog Signal Wiring Attach

**Note**: If the optional P/N 1200-0370 Class I Div 1 AC Power Supply is attached, connect the incoming AC wiring directly to the power supply Line, Neutral and Ground terminals.

**Analog Output:** Connect the output 4-20mA current loop wiring to the appropriate controller or DCS input. If a TOXIC sensor is used (Oxygen, Hydrogen Sulfide, etc) then the output is taken from TB2, Pin #2. If a combustible or PID sensor is used, the output is taken from TB2, Pin #3.

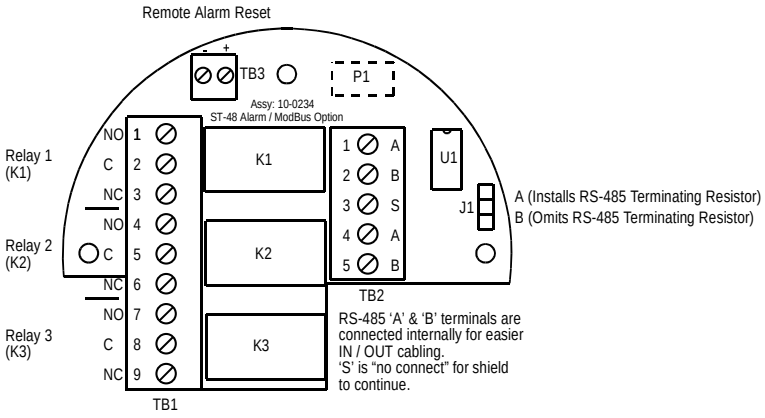



Figure 3 – GDS-58XP / GASMAX II Relay & MODBUS Wiring Attach

**Alarm Relay Output:** Alarm 1 (“Relay 1”, TB1 Pins 1,2,3) and Alarm 2 (“Relay 2”, TB1 Pins 4,5,6) contacts are located on the Relay / MODBUS board, attached to the back of the GASMAX II display (See Fig 3). These relays can be programmed via the main menu to close at preset signal levels, and can operate as either “Alarm Above” or “Alarm Below” contacts.

**Fault Relay Output:** Relay 3 (TB1 Pins 7,8,9) is programmed to indicate a FAULT condition under the following circumstances: 1) Excessive negative sensor drift; 2) Sensor removed or 3) Flow switch dropout (low flow). If only a single wiring pair is available, the 4-20mA output can be routed through the FAULT relay. This will cause the current loop signal to be interrupted in the event of a low flow indication.

**MODBUS Output:** The GASMAX II provides a two-wire RS-485 serial data link via TB2 Pins A & B. See the GASMAX II manual for more information on MODBUS registers and operation.

**Sample Inlet:** Attach a length of tubing to the Sample Inlet using the supplied ¼” compression fitting.

**Note:** If the sample location is excessively wet or dusty, GDS Corp recommends the installation of a coalescing or particulate filter on the intake end of the sample draw tubing. This will keep the particulate or moisture from being drawn into the sample tubing, sample draw pump and sensor. In the event the filter becomes clogged, the FLOW OK indication will be replaced by FAULT on the GASMAX II display and the Low Flow / Fault relay will energize.

**Sample Outlet:** Attach a length of tubing to the Sample Outlet using the supplied ¼” compression fitting and route the tubing to a safe area. Do not use more than 25ft of tubing and do not allow back pressure to build up in the sample flow cell.

**Note**: All GDS Corp sensors are designed to operate at ambient atmospheric pressure. Restricting the output in any way may create back pressure in the sensor flow cell that will generate erroneous readings and may damage the sensor if excessive pressure is present for long periods of time.

# 4 INITIAL SETUP

## 4.1 Flow Setup

Once hardware installation is completed, apply power to the GDS-58XP and verify that the display is operational. Adjust the Sample Flow Meter to indicate 0.5 liters per minute of flow. If the flow meter does not indicate proper flow, check the inlet tubing for restrictions or blockage. To verify that the pump is running properly, set the Run / Cal valve to the CAL position (pointing to the RIGHT). The pump should be able to pull in excess of 1.0 liters / minute (full scale on the flow meter). If full scale flow cannot be obtained, check the sample outlet tubing for blockage. If normal flow cannot be obtained, contact GDS Corp.

To check the Low Flow switch, set the Run / Cal valve to the blocked position (pointing straight up). The flow switch should activate and the FLOW OK message will be replaced by a FAULT indication.

## 4.2 Adjust Alarm Levels

Using a magnetic wand, select the GASMAX Main Menu by placing the magnet next to the EDIT switch located on the lower right side of the GASMAX II display. Select ALARMs to adjust the levels, polarity on/off delays and other alarm-related settings.

## 4.3 Verify Remote Readings

From the Main Menu, select DIAGNOSTICS. The GASMAX II will request an Access Code. Enter the access code by moving the magnetic wand over the UP key four times. The UP key is located on the upper left side of the GASMAX display. Activate the EDIT key to confirm. Select OUTPUT SIMULATION to set the 4-20mA signal to any value between 4ma (Zero) and 20mA (Full Scale). Confirm that the reading on the GASMAX matches the reading shown on any remote display or controller. Select RELAY TEST to activate the internal alarm relays and confirm that any remotely connected devices operate as expected.

## 4.4 Initial Calibration

The GDS-58XP is now ready for initial calibration. Set the Run / Cal switch to CAL and follow the detailed calibration instructions in the GASMAX II manual (See Section 5.2).

# 5 OPERATION & MAINTENANCE

## 5.1 Overview

Standard maintenance for the GDS-58XP consists of periodic checks on flow settings and sensor calibrations. Each time a toxic sensor is calibrated, a Sensor Life reading will appear that gives an approximate indication of the remaining sensitivity. Sensor Life is not necessarily linear and a rapid reduction in the senor life reading can be due to temperature extremes, high levels of target gas, the presence of certain gases that 'poison' toxic sensors and other environmental factors.

Sensor life readings also appear for combustible or PID sensors, but as these sensors operate on different principles and/or contain microprocessors that compensate for aging effects, the values shown may not accurately represent sensor life over time.

Always check the flow meter for the presence of moisture. In the event that moisture or liquid is drawn in the GDS-58XP, the entire unit should be disassembled and cleaned. In some cases the flow meter or flow switch may need to be replaced. If liquid is drawn into the GDS-58XP, always inspect the sensor for any sign of damage.

## 5.2 Calibration

On average, calibration should be performed approximately every two to three months, depending on target gas and sensor performance. Obtain a **cylinder of calibration gas** that is approximately ½ scale (For example, for a 0-100 ppm range, obtain 50 ppm gas). If it cannot be guaranteed that the ambient air contains no target gas, also **obtain a cylinder of "zero air".** In addition, a fixed flow regulator (0.5 to 1.0 liters / minute) and connecting tubing is required. Finally, make sure you have a **magnetic wand** to activate the GASMAX II monitor.

Set the Run / Cal valve to the CAL position (pointing to the RIGHT). If the area may contain ppm levels of the target gas, attach a cylinder of Zero Air to the cal port. Open the cylinder and confirm that the flow meter indicates gas flow.

Using a magnetic wand, put the GASMAX II in CAL MODE by activating the CAL key (lower left) and then the EDIT key to confirm. Select the desired channel, Toxic or Combustible. The display will indicate when to apply ZERO gas. Once the reading is stable, activate the EDIT key to confirm. The display will now say to apply SPAN gas.

Remove the cylinder of zero air and attach the cylinder of calibration gas. Open the regulator and verity flow on the flow meter. Once the reading stabilizes, activate the SPAN key to confirm. If readings are within proper limits, the message CAL SUCCESSFUL will appear.

Disconnect the cylinder of calibration gas and set the Run / Cal valve to the Run position (pointing LEFT).

For more information on calibration, see the GASMAX II manual.

## 5.3 Sensor Removal / Replacement

To remove & replace the GDS-58XP sensor:

1) Loosen and remove the stainless steel tubing that is attached to the sensor flow cell
2) Loosen the set screw located at the top of the sensor flow cell
3) Remote the flow cell by gently pulling down and twisting at the same time.
4) Unscrew the sensor head cover. Use sensor head wrench (p/n 10-0187) if stuck.
5) Remove the sensor by pulling straight down. DO NOT TWIST.
6) Install the new sensor by aligning the arrow on the sensor with the engraved arrow on the sensor head. Press UP to install sensor. DO NOT TWIST.
7) Reinstall the stainless steel sensor head cover. Tighten securely.
8) Reinstall the sensor flow cell. Use approved O-ring grease (p/n 1200-0064) if necessary.
9) Reinstall the stainless steel tubing and tighten securely.
10) Verify operation and calibrate new sensor.

# 6 SPARE PARTS

## 6.1 GDS-58XP Spare Parts

| | |
|---|---|
| 1200-0047 | Flow switch, non-explosive |
| 1200-0234 | Pump, 24VDC brushless |
| 1200-0056 | Flow meter, 0-1 liter / minute |
| 1200-0034 | Flashback arrestors |
| 10-0205 | Flow cell |

## 6.2 GASMAX Spare Parts

For a list of GASMAX spare parts,

# 7 WARRANTY

## 7.1 Overview

The GDS-58XP electronics is warranted for a period of two years from date of shipment. The Sample Pump and Sensor are warranted for a period of one year from date of shipment.

Toxic sensors have a limited shelf life and will lose sensitivity over time, even if not used. Combustible and PID sensors have no such shelf life limitations.