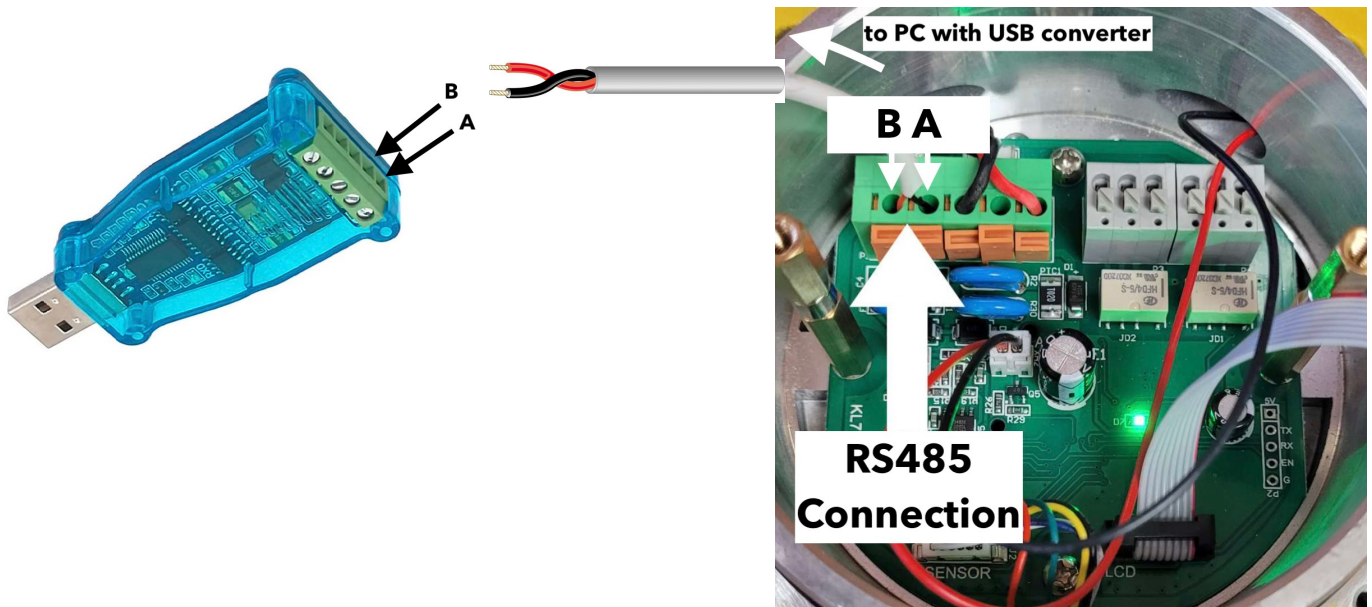# User Manual - **FD-60 MODBUS RS485 Communication**
Version 1.0 05/05/2023

The FD-60 gas monitor communicates with the external world via RS485 (physical layer) and MODBUS (communication application layer protocol). This is a serial communication standard that has been developed many years ago for electrically noise environments, designed for industrial instrumentation control and communication. To communicate with your PC, the RS485 serial information needs to be converted to USB for easy computer communication. To setup communication you will need a Windows PC, RS485 to USB converter, 2 wires A and B and your FD-60 wall mount gas monitor.

**STEP 1:** Connect the wires A and B between Converter and the FD-60.

STEP 2: Connect the Converter to your computer USB port. The converter is a DSD

TECH SH-U11 USB to RS485 Converter compatible with Windows 10, 8, 7, XP. Ensure the driver is installed. On some Windows versions, it will install the driver automatically. Refer to the online links for driver instruction links and driver software.

STEP 3: Install the ModbusPoll software on a compatible PC Windows computer (sorry no Mac version). This software communicates and interfaces with the analyzer. The software has a 30-day FREE period, registration obtained from www.modbustools.com.

STEP 4: Within the ModbusPoll software open the FD60.mbp file. This is a file created to interface with the analyzer's data registers for easy viewing. See below.
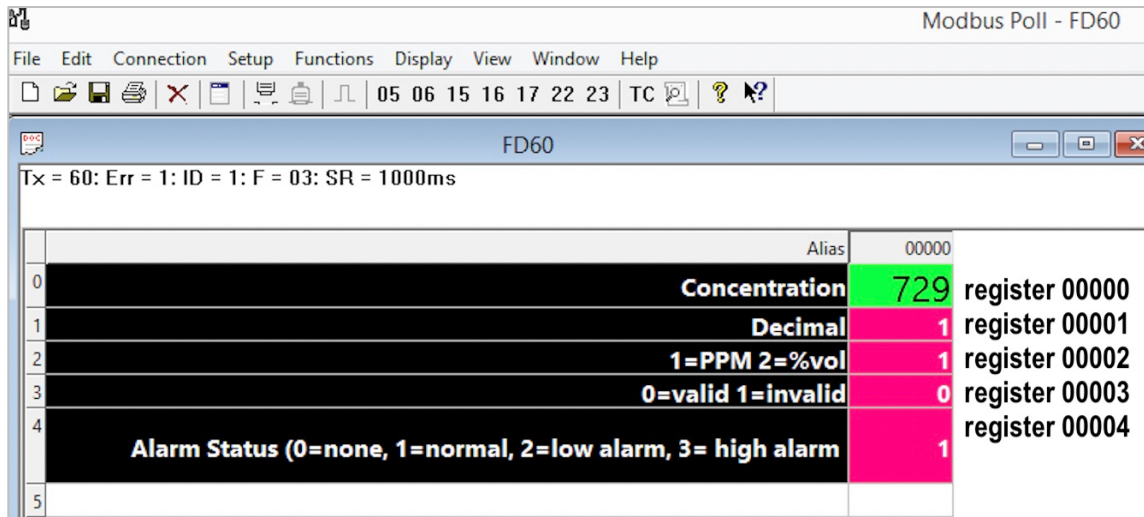
The analyzer stores data in five registers. The MODBUSPoll software reads these registers and then presents the data on the screen.

| Register #	Modbus Poll Descriptor (Alias)	Value
00000	**Gas Concentration** Readout Value	integer
00001	**Decimal Place** Locator from right to left: 1,2,3,4. If none, then 0	integer
00002	**Concentration Units** 1=ppm, 2=%vol, 3=%LEL, 0=none	integer
00003	**Monitor Status** 0=valid, 1=invalid	integer
00004	**Alarm Status** 0=none, 1=normal, 2=low alarm, 3=high alarm	integer

STEP 5: Next you need to set the address of the FD-60 analyzer. Go to the **Main Menu-> 2. Setting-> 9. Set Address**. Set the address to 001. Save. The address will then appear on the main screen to confirm it is set as shown below.

Address [1] confirmed

STEP 6: Next, you need to connect the software to operate with the MODBUS data coming from the FD-60 using MODBUSPoll. Click to **Connection menu > Connect.** Ensure all parameters are set as in the picture below and then press OK.
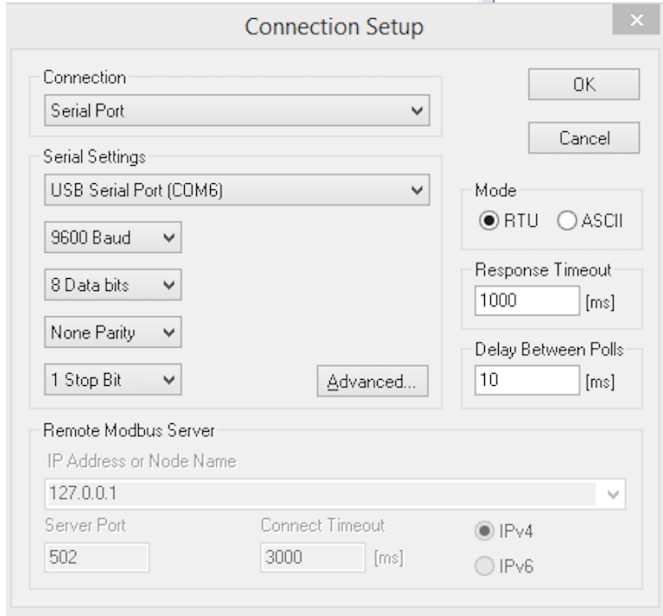
Ensure you select the correct USB port. In this example is it COM6, it may be different for your computer and will depend on which COM port you have inserted the RS485 to USB Converter. Ensure NONE parity and ensure 9600 Baud and 1 stop bit.

STEP 7: Success. At this point, the computer and the FD-60 analyzer should be communicating and talking every second. If it is not, a RED colored error message will appear on the top left of the Modbus Poll window.

- **If you have any problems, we first recommend you view our YouTube software installation that shows step-by-step installation of the Modbus Poll software, configuration and datalogging.**

- **The software links for all items mentioned is on our FORENSICS DETECTORS website at www.forensicsdetectors.com then go to the SOFTWARE page and select FD-60.**

Computer Datalogging

Datalogging is performed in the ModbusPoll software. Connect the analyzer to the computer and begin the ModbusPoll software per the previous section.

STEP 1: Click **Setup menu > Log Setup.** This dialog box will allow you to set your parameters for datalogging. Ensure to specify a file for saving by clicking the Browse button. Select the various logging parameters as you desire prior to pressing OK. A basic example of the Log Setup Dialog Box is shown below:
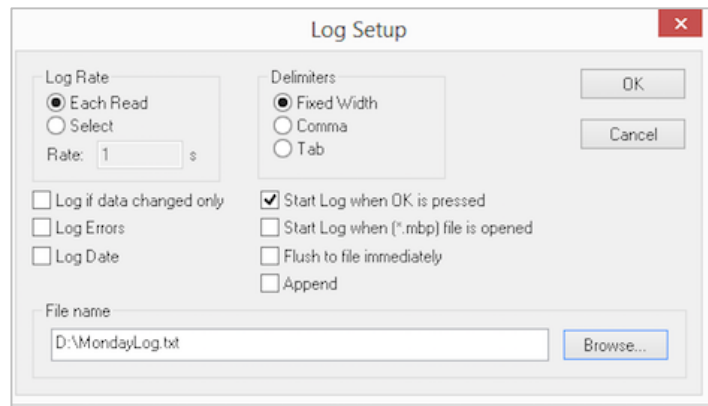
STEP 2: As datalogging proceeds, the Modbus Poll software appends the file and adds data as logging continues. Go back and Open the file that was designated to store the data, in the above example it is MondayLog.txt. As shown in the figure, this file has been opened in Notepad. The data is time stamped. Here is a 20 second logging example. The columns represent each register. Export this file into your favorite spreadsheet or data graphing software for data manipulation.