

Model 3050-OLV Moisture Analyzer

Division 2
Sample System
Manual Supplement



PN 305485001 Rev. L



Process Instruments
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Newark, DE 19702

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This manual is a guide for the use of the 3050-OLV Moisture Analyzer. Data herein has been verified and validated and is believed adequate for the intended use of this instrument. If the instrument or procedures are used for purposes over and above the capabilities specified herein, confirmation of their validity and suitability should be obtained; otherwise, AMETEK does not guarantee results and assumes no obligation or liability. This publication is not a license to operate under, or a recommendation to infringe upon, any process patents.

**SPECIAL WARNINGS AND INFORMATION FOR USE OF THIS
EQUIPMENT IN CLASS I, DIVISION 2 HAZARDOUS LOCATIONS**

**This Equipment is designed to meet the requirements for: Class I, Division 2,
Groups ABCD, T4 or Non-Hazardous Areas Only.**

**Warning - Explosion Hazard - Substitution of Components May Impair Suitability
for Class I, Division 2.**

AVERTISSEMENT - RISQUE D'EXPLOSION - LA SUBSTITUTION DE COM-
POSANTS PEUT RENDRE CE MATERIAL INACCEPTABLE POUR LES EMPLACE-
MENTS DE CLASSE I, DIVISION 2.

**Warning - Explosion Hazard - Do Not Disconnect Equipment Unless Power Has
Been Switched Off or the Area is Known to be Non-Hazardous**

AVERTISSEMENT - RISQUE D'EXPLOSION - AVANT DE DECONNECTER
L'EQUIPEMENT, COUPER LE COURANT OU S'ASSURER QUE L'EMPLACEMENT
EST DESIGNE NON DANGEREUX.

**All Input and Output Wiring Must be in Accordance with Class I, Division 2 Wir-
ing Methods and in Accordance With the Authority Having Jurisdiction.**

Installation

Unpacking and Inspection

Remove components from the packing case(s) carefully; check contents against packing list. Inspect all components for obvious damage and broken/loose parts or fittings. Notify the carrier and AMETEK Service (1-800-537-6044) immediately if parts are missing or damage is found.

Sample System Space Requirements

Nema-4x enclosure - approximately 64 x 35 x 67 cm plus clearance for analyzer connections. Refer to Figure 3.

Power Requirements

The System is shipped according to the customer order and is fused and set for the voltage of the required mains power. The power requirements are stated near the power entry for the analyzer and in the Specification Section of analyzer manual.

System Tubing

Recommended system tubing is 1/8 inch OD, 316 stainless steel meeting ASTM #632 specifications (AMETEK PN 571061017 or equivalent).

Dry Reference Gas

A dryer (AMETEK Dryer PN 305400901S or equivalent) is required to dry reference gas to less than 0.025 ppmv.

Dryers must be periodically replaced. In normal use, the dryer (PN 305400901S) should dry a 50-ppm reference gas to specification for 1 year.

Sample pressure and temperature requirements

Pressure reduction is user supplied to ensure sample pressure to the analyzer remains within the minimum and maximum range of 20 - 50 psig. The pressure reducer/regulator with gauge should be installed near the sample tap in-between the tap and analyzer. Refer to figure 2.3 in analyzer manual. For optimum performance, sample line should be heat traced to maintain a constant sample temperature. Optimum sample gas input is 60°C.

Mechanical Installation

Locate the 3050-OLV system as close as possible to the sample source. The unit should be protected from direct exposure to weather and sunlight, and located so that the ambient temperature specifications will not be exceeded.

1. If not already installed, install a main process shut-off valve and pressure reducer (recommended) at the sample tap. Refer to figure 2.3 of users manual.
2. Mount system in selected location and bolt in place. Refer to figure 3.
3. Connect the exhaust and drain fittings to an appropriate ventilation system.



WARNING

Insure venting does not empty into or create a hazardous atmosphere.

4. Open the main process shut-off valve and purge sample line to an appropriate area for at least five minutes. Close the main process shut-off valve. This will help prevent contamination from entering the cell.
5. Connect the sample line to the sample inlet 1/8-inch compression fitting.
6. Reinspect process line connections making certain that all are connected to the proper external supply, exhaust, and drain tubing such that there shall be no release of hazardous process gas to the atmosphere.
7. Open valve to dryer 1/4 to 1/2 turn prior to closing the lid.

Electrical Connections

1. Access terminal block. Refer to figure 6.
2. Connect the 4 to 20 mA analog output and alarm contacts from the terminal block to user recording equipment as shown on wiring diagram figure 2. Refer to figure 5 for conduit locations.
3. Connect serial communication from analyzer to the PC being used for customer parameter setup. Refer to figure 2 and 5.

RS-232 Out - Connect RS-232 cable to the back of the analyzer.

OR

RS-485 In - Connect RS-485 in cable to the terminal block. Refer to wiring diagram figure 2.

RS-485 Out - Termination plug is installed at the factory. Remove the RS-485 termination plug from the RS-485 Out connection when communicating with multiple analyzers except for the last analyzer in a chain.

4. Connect line power to analyzer.
5. When installing external wiring to the outer protective enclosure, use appropriate thru-wall bulkhead connections suitable for the hazardous area classification and the environmental conditions to be encountered. As an example, for Class 1, Division 2, Nema 4(X) outdoor applications, use only gasketed, self-sealing, UL Listed conduit hubs.

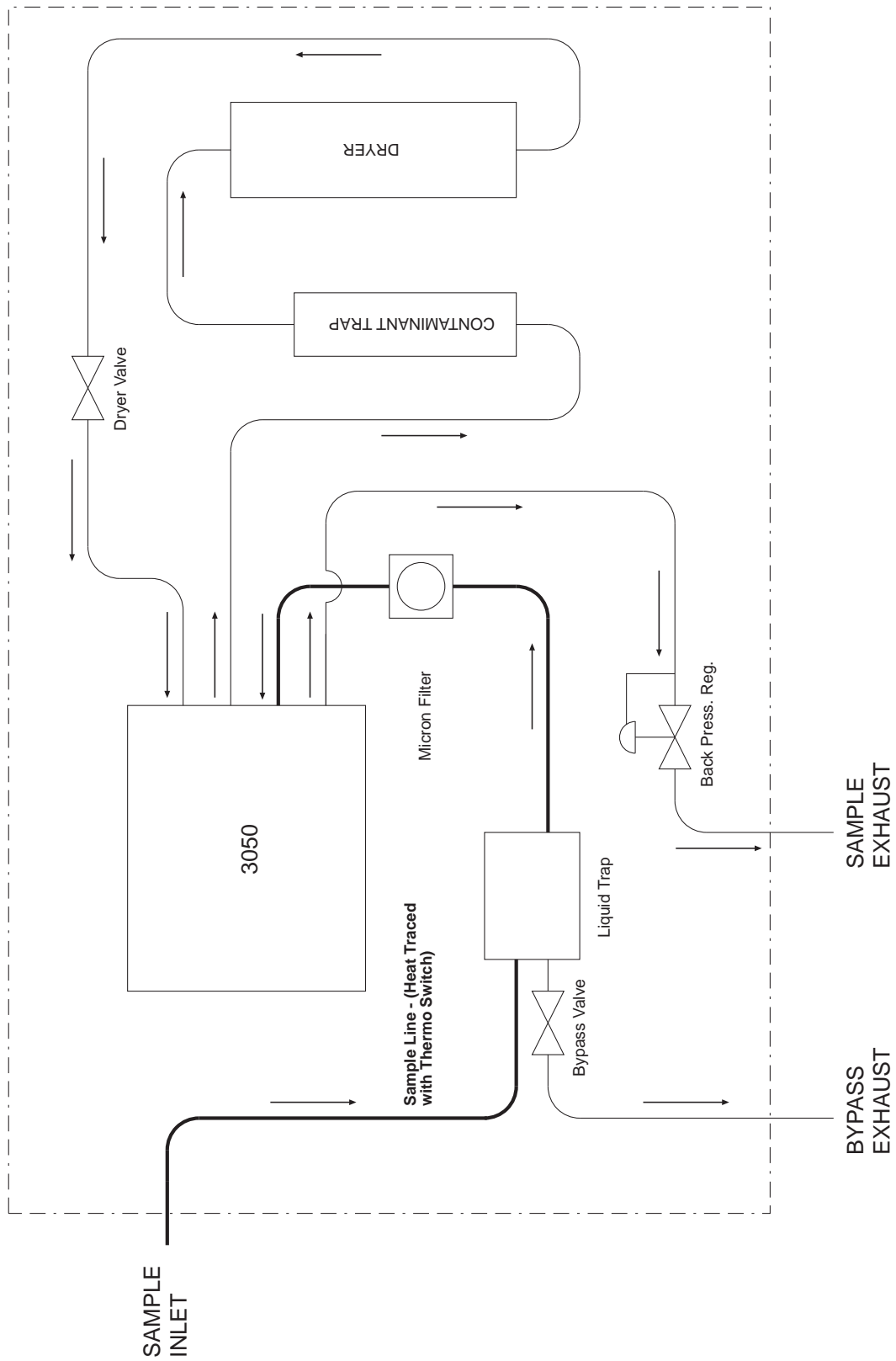
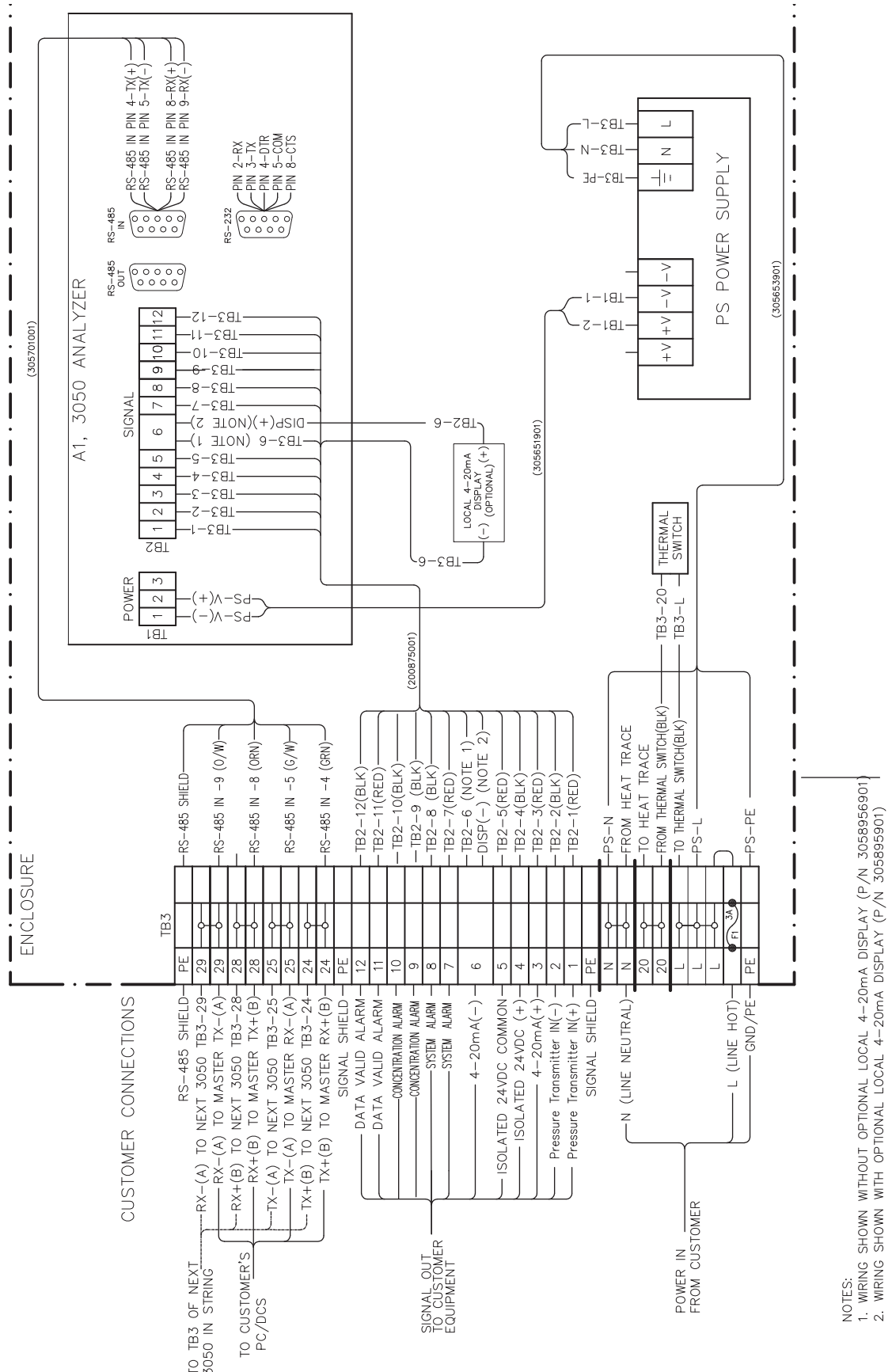


Figure 1: Sample system flow diagram

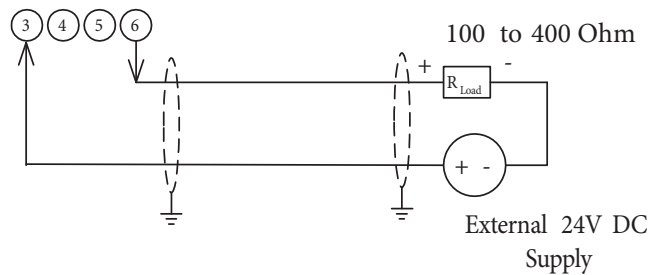


- NOTES:
1. WIRING SHOWN WITHOUT OPTIONAL LOCAL 4-20mA DISPLAY (P/N 3058956901)
 2. WIRING SHOWN WITH OPTIONAL LOCAL 4-20mA DISPLAY (P/N 305895901)

Figure 2: Sample System Wiring Diagram

4-20 mA Output, Wiring

4-20 mA Output, Loop Powered (TB-3) See Note 6



4-20 mA Output, Self Powered (TB-3) See Note 7

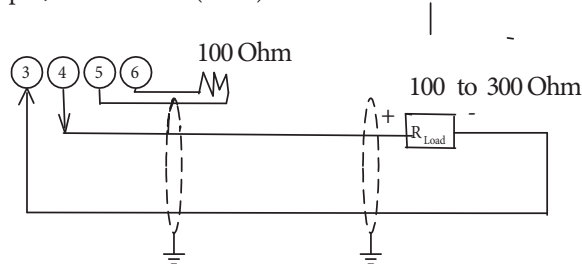


Figure 2A: SS-4-20mA Out-

Notes

1. Cable should be shielded with single twisted pair.
2. Cable shields should be connected to both the analyzer and the DCS. If this is not possible, cable shields should be tied to the chassis at each 3050-OLV. If this is not possible, tie the shield at the PC or DCS to chassis and remaining shield to the chassis through a 0.1 mF @ 500V capacitor.
3. The 3050 signal common is connected to earth ground. If the analog output is also grounded, the analog output will no longer be electrically isolated. Contact AMETEK if this situation occurs.
04. Analyzer power must be removed when connecting or disconnecting the 4-20 mA signal.
5. The 4-20 mA loop circuit must have a load resistance of between 100 and 500 ohms or malfunction may occur (Max 100 ohms when local 4-20 ma display is present). If a loop check is performed, a 100 ohm resistor must be placed in series with the ammeter.
6. In Loop Powered mode, remove factory installed 100 Ω resistor at TB3-5 to TB3-6 and jumper at TB3-3 to TB3-4.
7. In Self Powered mode when the optional local 4-20 ma display is present and no remote device is in use, the circuit must be completed with factory installed jumper from TB3-3 to TB3-4 and an additional 100 Ω resistor from TB3-5 to TB3-6.

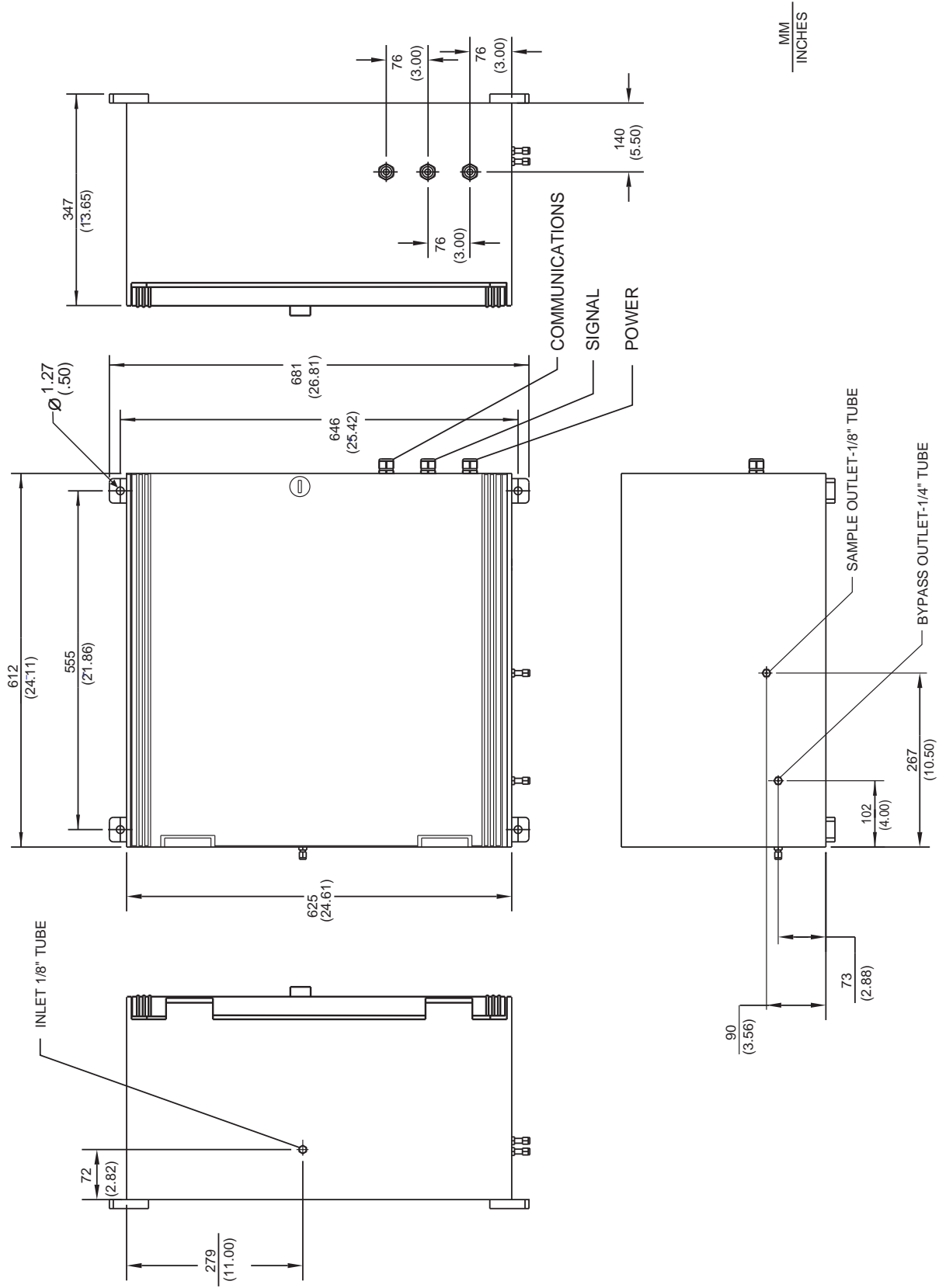


Figure 3: NEMA Enclosure

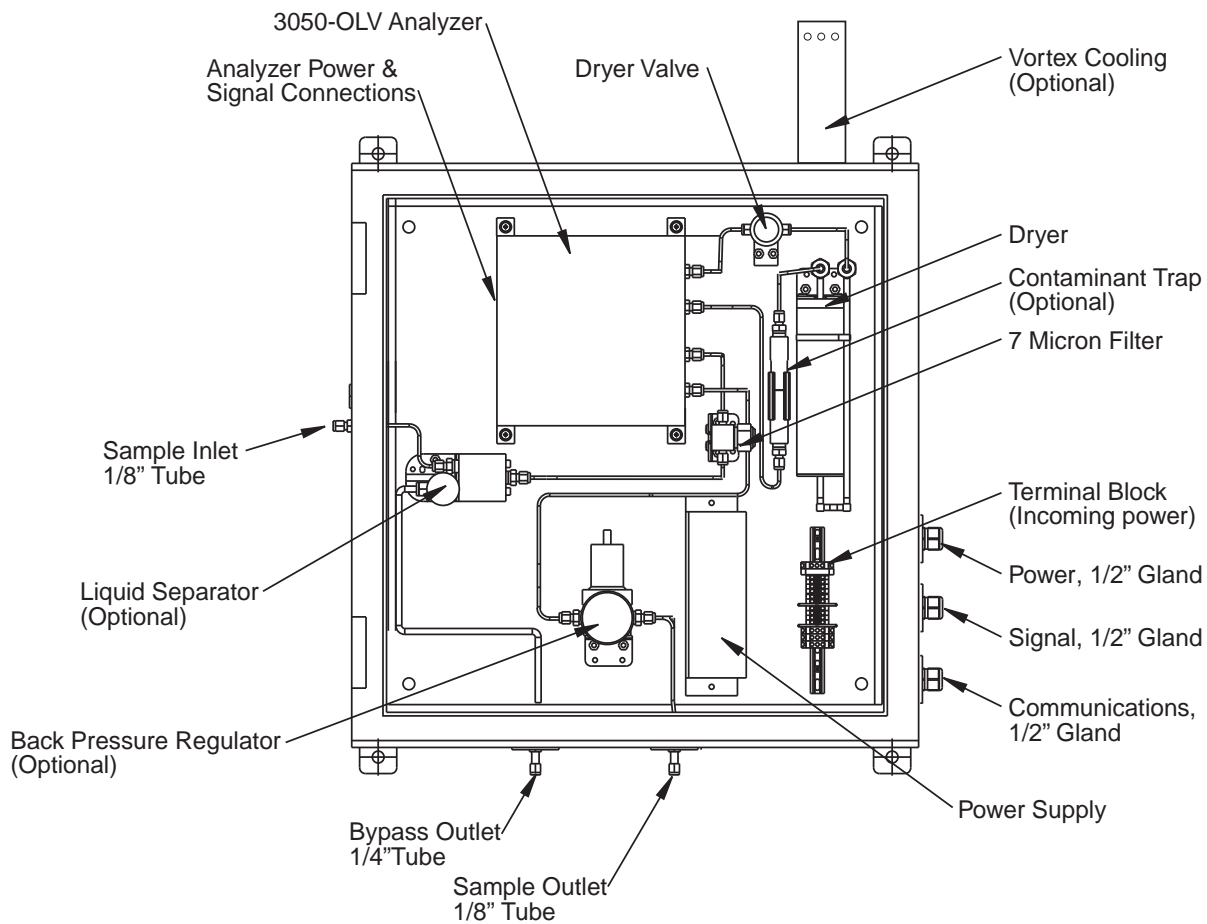


Figure 4: Sample system components and options



Figure 5: Power and signal conduits

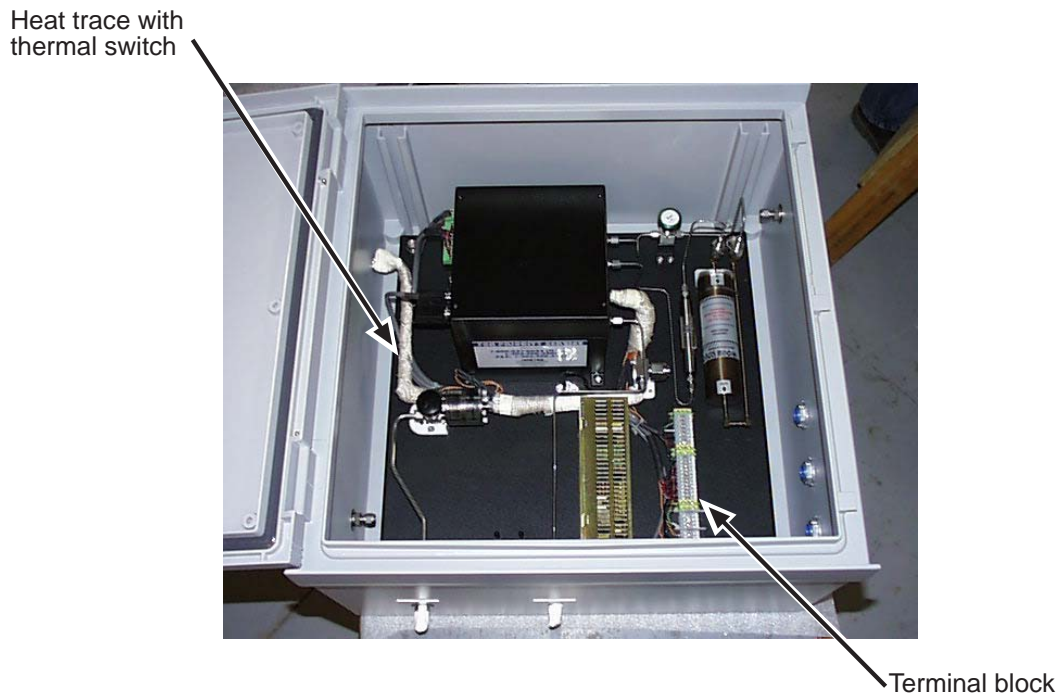


Figure 6: Heat trace and terminal block

Replacement Parts

Table 1 lists the replacement parts available for the Model 3050-OLV Moisture Analyzer. Please contact the AMETEK Sales office (800-222-6789) for pricing and ordering information.

Table 1
Model 3050-OLV Sample System Replacement Parts

Part Description	AMETEK Part Number
Dryer*	305 400 901S
Contaminant Trap	305 007 901S
Contaminant Trap Cartridge	305 527 901S
Liquid Trap	305 008 901S
Liquid Trap Membrane Fltr Replacement Kit	305 529 901S
Pressure Regulator, standard	305 170 901
Pressure Regulator, heated (115V)	259 891 001
Pressure Regulator, heated (240V)	259 891 002
Back Pressure Regulator	305 426 901S
Sample System 24 Volt DC Power Supply	230 539 001
2 Micron Filter	305 448 902S
Fuse (3.0A)	271 081 001
System Tubing, 1/8 inch OD, 316 SST	571 061 017
Heat Trace Replacement Kit 120 V	305 512 901
Heat Trace Replacement Kit 240 V	305 513 901
Vortec Cooler	305 444 901

Sample System Options

Back Pressure Regulator

The 3050-OLV can operate with an exhaust pressure from 0 to 15 psig, and the sensor measurements (i.e. - the moisture readings) are automatically compensated for the measured pressure. However, for proper operation of the analyzer, the exhaust pressure that the analyzer sees must remain stable. If the 3050-OLV is to be vented to an exhaust line with varying pressure, AMETEK recommends the use of a back pressure regulator (part number 305426901S) to stabilize the outlet pressure of the analyzer.

Contaminant Trap

When using the 3050 OLV on sample streams that are likely to contain small amounts of heavy hydrocarbons, glycols, compressor oils, or other agents that could potentially foul the QCM sensor, AMETEK recommends the use of a contaminant trap (part number 305007901) in series with the system dryer (see Figure 1). The contaminant trap removes these potential fouling agents from the reference-gas stream, and thereby reduces the amount of these materials that the QCM sensor is exposed to. AMETEK also recommends that the Contaminant Trap Cartridges (part number 305527901S) are changed at regular intervals (monthly), as part of the analyzer's normal maintenance cycle. By proper use of the contaminant trap, and configuring the analyzer for the sensor savor mode, the life time of the QCM sensor can be extended.

Liquid Separator

When using the 3050 OLV on sample streams that are likely to contain entrained liquids, AMETEK recommends the use of a liquid separator/trap (part number 305008901S). The liquid separator is a membrane filter system, designed to remove any entrained liquids from the sample-gas stream. This device is required to prevent any liquid phase material from entering the analyzer, and causing permanent damage to the QCM sensor. AMETEK also recommends that the membrane filters (part number 305529901S) are changed at regular intervals (every 3 months), as part of the analyzer's normal maintenance cycle.

Flame Arrestor

The use of an in-line flame arrestor is required for bringing the sample gas into, or out of, the explosion proof casting in a Div 1 (or Zone 1) area. These devices must not be removed from the sample system.

Isolation Valve

The isolation valve provides barrier (i.e. - a means of turning off the flow of sample gas), upstream of the analyzer, so that the analyzer can be worked on (normal maintenance, etc.). AMETEK recommends that an isolation valve is installed upstream of the analyzer, and preferably at the sample tap. Because AMETEK recommends that this valve is installed at the sample tap, we have not included it as part of the sample system package. It is the customer's responsibility to install a process isolation valve, prior to the installation of the analyzer.

Power Terminal Junction Box

For convenience in installation and maintenance, the 3050 OLV sample systems are provided with a junction box (optional) for wiring the power, and signal, connections. The wiring of the terminal strips in the junction boxes is consistent across all of the 3050 sample systems (see Figure 2), but the box construction varies with the specific hazardous area requirements.

Vortec Cooler

The vortec cooler uses filtered compressed air to cool industrial control cabinets without the use of refrigerants. Hot air in the cabinet is vented to the surroundings through a built in relief valve in the cooler. The mechanical thermostat is set to maintain the internal cabinet temperature between 90 and 110°F.

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