



GAS DESIGN STANDARD VOLUME PULSE OUTPUT CONNECTION FOR GAS METERS

J-65.1

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Purpose and Scope

This gas design standard describes the typical installation of a volume pulser on a gas meter to provide the customer with a volume pulse output under the terms of the Electric and Gas Monitoring Meter Pulse Agreement, [Form 79-1049, "Agreement to Install Applicant Requested Common Special Facilities - Gas and Electric Rule 2."](#) Contact advanced metering service and support personnel for any volume pulser request and the latest copy of the pulse agreement form.

General Information

1. Pulsers installed or with connections within a 15' area of the meter-set flanges, valves, and threaded fittings must conform to NEC Class I, Division 2, Group D hazardous area requirements. Conduits must be sealed to prevent gas migration to areas classified as non-hazardous. For the purpose of this document, underground is considered non-hazardous.
2. All wiring between equipment must be in threaded rigid steel or intermediate steel conduit. Where provisions must be made for limited flexibility, liquid-tight flexible metal conduit in lengths not exceeding 3' may be used without securing or supporting the flexible conduit between termination points.
3. For a volume pulse output from an electronic corrector, see [Gas Design Standard J-65.2, "Volume Pulse Output Connection for Mercury Electronic Correctors."](#)

PG&E Responsibilities

1. Provide intrinsic safety barrier enclosure to customer ("PG&E Responsibilities," Item 2). (Note: Customer must install the enclosure in the non-hazardous area, at least 15' but no more than 500' away from the gas meter set).
2. Install intrinsic safety barrier Item 3 for 120 Vac or Item 4 for 24 Vdc.
3. Provide and install pulser ("PG&E Responsibilities," Item 1).
4. Connect power wires provided by customer.
5. Connect pulser to intrinsic safety barrier.
6. Connect customer pulse output to intrinsic safety barrier.
7. Check for pulse connection.
8. Complete end-to-end test of the system.
9. Pour conduit seal after successful completion of end-to-end test.

Customer Responsibilities

1. Install enclosure (Table 1, Item 2) in the non-hazardous area, at least 15' but no more than 500' from the gas meter.
2. Install all conduit and wire (Table 1, Items 5 & 6) from intrinsic safety barrier enclosure to no farther than 3' from the gas meter and to customer power source. Leave extra 5' of wire at meter end and an extra 2' of wire at enclosure.
3. Install a conduit seal (Table 1, Item 9) on wall or out of ground if conduit is buried as close to the hazardous area transition zone as practicable.
4. Supply 24 Vdc power for intrinsic safety barrier. Alternatively, customer can supply 120 Vac. Provide PG&E with information on which type of power (120 Vac or 24 Vdc) must be provided.

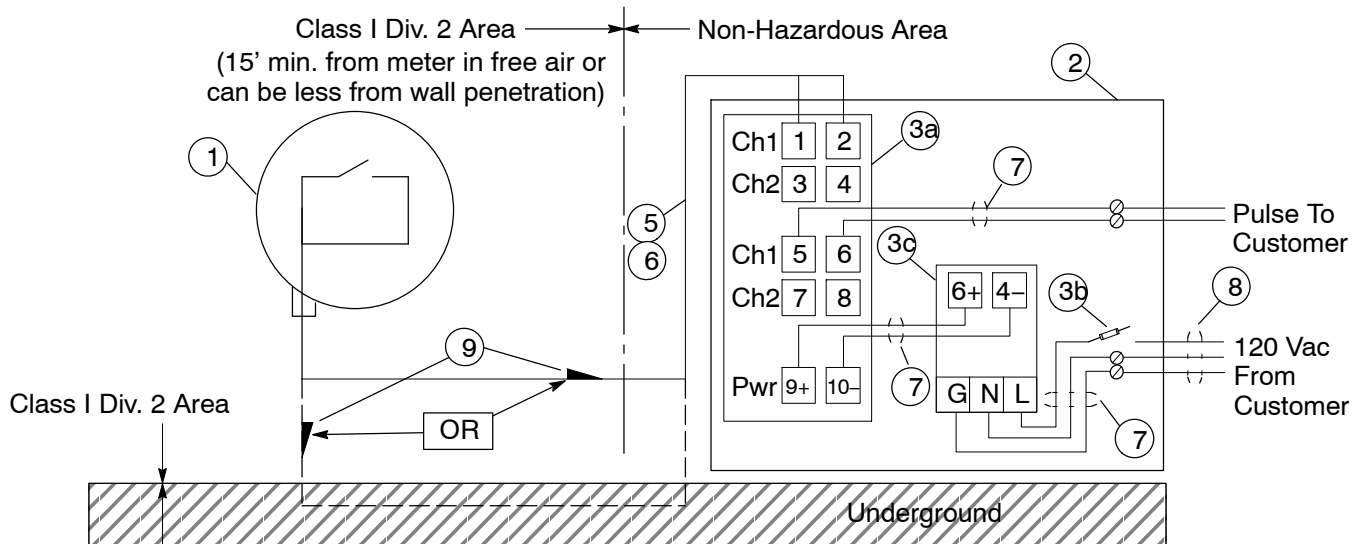


Figure 1
Volume Pulse Output Connection (120 Vac Power)

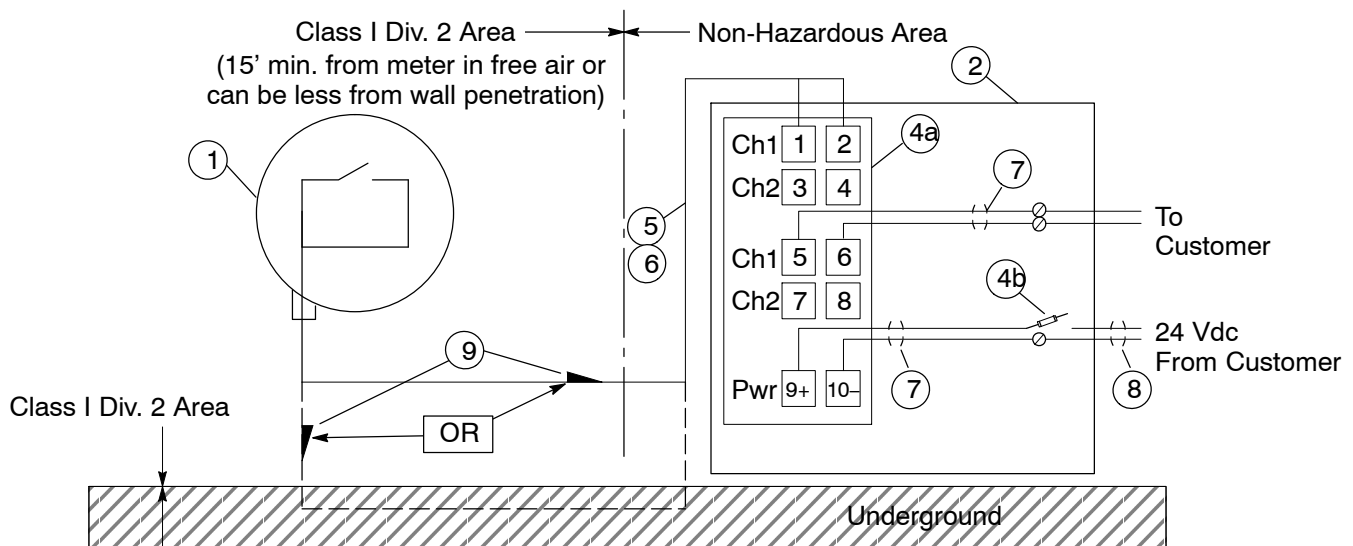


Figure 2
Volume Pulse Output Connection (24 Vdc Power)

Table 1 Bill of Materials

| Item | Quantity by Customer | Quantity by PG&E | Description |
|------|----------------------|------------------|---|
| 1 | - | 1 | Pulser Specified in Table 2 |
| 2 | - | 1 | Intrinsic Safety Barrier Enclosure - Hoffman QLINE E, Type 4X, Model Q251815ABE with Mounting kit QEMFK (installed by customer) |
| 3 | - | 1 | Intrinsic Safety Barrier system (120 Vac version) consisting of: a) Intrinsic Safety Barrier - 2-Chanel, 24 Vdc, Pepperl+Fuchs KCD2-SR-EX2 or equal b) Fused Power Disconnect. Phoenix UK 5 - HESI with 3 amp fuse c) Power Supply - 120Vac/24Vdc, Mean Well DR-4524 |
| 4 | - | 1 | Intrinsic Safety Barrier system (24 Vdc version) consisting of: a) Intrinsic Safety Barrier - 2-Chanel, 24 Vdc, Pepperl+Fuchs KCD2-SR-EX2 or equal b) Fused Power Disconnect - Phoenix - UK 5 - HESI with 3 amp fuse. |
| 5 | 1 | - | Conduit, 1/2" Rigid, and 1/2" Liquid-Tite Metallic Flex (as required) |
| 6 | 1 | - | Three-Conductor Shielded Cable ¹ , Stranded #22 AWG , Belden 9363, or Equal (for signal wiring) |
| 7 | - | 1 | Single Conductor #18 AWG for power wiring within enclosure |
| 8 | 1 | - | Single Conductor #12 AWG max for power wiring from customer power source (Note: Wire size used must be based on customer breaker size providing the power to enclosure) |
| 9 | 1 | - | Conduit Seal, EYS 1/2", Crouse-Hinds |

¹ NEC Type PLTC per Article 725, which is approved for wiring in Class I Division 2 hazardous areas.

Table 2 Volume Pulsers for Gas Meters

| Pulser Make and Model | Gas Meter Make | Gas Meter Model |
|---|---|--|
| American RVP-FI ¹ | American Diaphragm Meters | AC 175, AC 250, AL 175, AL 310, AL 425, AT 175, AT 210, AT 250 |
| | Rockwell Diaphragm Meters | 175, 175S, 250, R275, 310, R315, 415 |
| | Schlumberger/Sprague Diaphragm Meters | 240, 250, 305, 400, 400A, 675, 1000, 2, 3, 4, 5, 5A |
| American RVP-VI ¹ or Mercury 206 Pulse Transmitter ^{2, 3} | American Diaphragm Meters | AC 630, AL 800, AL 1000, AL 1400, AL 2300, AL 5000, 25-B, 35-B, 60-B, 80-B, 250-B, 500-B |
| | Sensus/Invensis/Equimeter/Rockwell Diaphragm Meters | 750, 800, 1000, 3000, 5000, 10000, 2, 2-1/2, 3, 4, 4-1/2, 5 |
| | Itron/Actaris/Schlumberger/Sprague Diaphragm Meters | 675A, 800A, 1000A |

¹ One pulse per revolution of the index test hand.

² One pulse per revolution of the instrument drive.

³ American Meter Mounting Kit Part #20-4187, MS Code 230504 is required to install Mercury 206 Pulse Transmitter on Rockwell and Sprague meters.

Ordering Instructions

When ordering a volume pulser, specify the make and model of the pulser and the make and model of the gas meter.

Target Audience

Gas control technicians, gas measurement technicians, gas transmission and regulation (T&R) supervisors, gas estimators and gas engineers

Definitions

NA

Acronyms and Abbreviations

Vac: Volt alternating current
AWG: American wire gauge
Vdc: Volt direct current
NEC: *National Electric Code*

Compliance Requirement/ Regulatory Commitment

NA

References

| | |
|--|-------------------------|
| Volume Pulse Output Connection for Mercury Electronic Correctors | J-65.2 |
| Agreement to Install Applicant Requested Common Special Facilities - Gas and Electric Rule 2 | 79-1049 |

Appendices

NA

Attachments

NA

Revision Notes

Revision 04 has the following changes:

1. Added AC-630 in Table 2.
2. This document is part of Change 66.

Asset Type: Gas Metering

Function: Design and Construction

Document Contact: [Gas Design Standard Responsibility List](#)