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REFLEX LR, MICROFLEX LR & SONARFLEX SERIES

ATEX Safety & Operating Instructions Manual

0038

**Hycontrol Limited, Larchwood House, Orchard Street,
Redditch, Worcestershire, UK. B98 7DP
Tel: + 00 44 (0)1527 406800 Fax: +00 44(0)1527 406810
Email: sales@hycontrol.com Web: www.hycontrol.com**

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This instruction manual should be read in conjunction with the ' Installation & Operation Instruction Manual' specific to your particular instrument.

1. General Description

Reflex LR, Microflex LR and Sonarflex instruments use high frequency acoustic waves to measure the distance from the sensor face to the material surface.
The instruments are available as Integral or Smart Transmitters, or as Remote two-part systems; refer to pages 6 - 8 for the possible configurations.

The Integral Transmitter comprises a transducer and amplifier in a single housing. Microflex LR type MI and Sonarflex type SI have a display and keypad whereas the smaller, Smart Transmitter types MS & SS, have no user interface except a communications port. All Integrals are usually mounted directly at the level measurement point, at the top of the vessel.

Reflex LR and Sonarflex Remote amplifiers use an RVT or RVS type transducer in a two-part system, the transducer being mounted at the top of the vessel and the amplifier some distance away in a more convenient, or non-hazardous location.

When the above instrumentation is to be installed in ATEX rated areas, you must observe these ATEX Safety & Operating Instructions, applicable National and International Standards and Codes of Practice.

Take note of any special conditions for safe use detailed on the appropriate EC Type-Examination Certificate (certificate number suffixed X)
Installation should be carried out only by suitably trained personnel.

2. Category 1 Equipment Identification (EEx ia) Gas or Dust, Zones 0 or 20

Reflex LR Remote Electronics (amplifier)
Sonarflex Remote Sonar Electronics (amplifier)
RVT Remote Transducer
RVS Remote Sonar Transducer
Microflex LR Integral Transmitter (type MI)
Sonarflex Integral Sonar Transmitter (type SI)
These units must be installed using the appropriate intrinsically safe barrier, see Page 5.
In addition to the standard '***HYCONTROL"*** label, they carry a second label showing:-

Additional EEx ia compliance label

CE 0038 Ex II 1 GD

EEx ia IIA T4
(Tamb = -20°C to 70°C)
ITS 05ATEX24698X

WARNING: Static Hazard
DO NOT rub with dry cloth

Refer to Page 6 for possible system configurations

3. Category 1 Equipment Identification (DIP) Dust, Zone 20

RVT Remote Transducer
RVS Remote Sonar Transducer
Microflex LR Integral Transmitter (type MI)
Sonarflex Integral Sonar Transmitter (type SI)
Microflex LR Smart Transmitter (type MS)
Sonarflex Smart Sonar Transmitter (type SS)

In addition to the standard '***HYCONTROL***' label, these units carry a second label:-

CE 0038 Ex II 1 D T85°C

IP67
Tamb = **-20°C to 75°C**

ITS 05ATEX14697X

Refer to Page 7 for possible system configurations

4. Category 2 Equipment Identification (EEx m) Gas or Dust, Zones 1 or 21

RVT Remote Transducer
RVS Remote Sonar Transducer
Microflex LR Smart Transmitter (type MS)
Sonarflex Smart Sonar Transmitter (type SS)

In additional to the standard '***HYCONTROL***' label, these units carry a second label:-

Additional EEx m compliance label

CE 0038 Ex II 2 GD

EEx m II IP68
T5 (Tamb = -20°C to 65°C)
T6 (Tamb = -20°C to 50°C)
ITS 05ATEX84696X

WARNING: Static Hazard
DO NOT rub with dry cloth

Refer to Page 8 for possible system configurations

5. Intrinsic Safe Input / Output parameters, IS Barrier Types

Note: All equipment in Zones 0 or 20 Hazardous areas must have ATEX Cat 1 marking.

<table>
<tr>
<td>2 Wire Integral Transmitter in Zone 0 or 20 Hazardous area

Current Loop Input:

Ui = 28 Volts
Ii = 93 mA
Pi = 0.66 W
Ci = 0
Li = 0
I.S. Barrier Eg, MTL 7787+</td>
<td>Optional Communication to PLC/DCS:
Ui = 9 Volts
Ii = 120 mA
Pi = 0.54 W
Ci = 0
Li = 0
Uo = 5.9 Volts
Io = 1.13 Amps
Po = 0.66 W
Co = 1000 µF
Lo = 223 µH
L/R Ratio = 170 µH/Ω

I.S. Barrier Eg, MTL 7758+</td>
</tr>
<tr>
<td>2 Wire Remote Amplifier in Zone 0 or 20 Hazardous area and Transducer also in Hazardous area

Current Loop Input:

Ui = 28 Volts
Ii = 93 mA
Pi = 0.66 W
Li = 0
Ci = 0

I.S. Barrier Eg, MTL 7787+</td>
<td>Optional Communication to PLC/DCS:
Ui = 9 Volts
Ii = 120 mA
Pi = 0.54 W
Ci = 0
Li = 0
Uo = 5.9 Volts
Io = 1.13 Amps
Po = 0.66 W
Co = 1000 µF
Lo = 223 µH
L/R Ratio = 170 µH/Ω
I.S. Barrier Eg, MTL 7758+</td>
</tr>
<tr>
<td>2 Wire Remote amplifier in Safe area
with Transducer only in Zone 0 or 20 Hazardous area

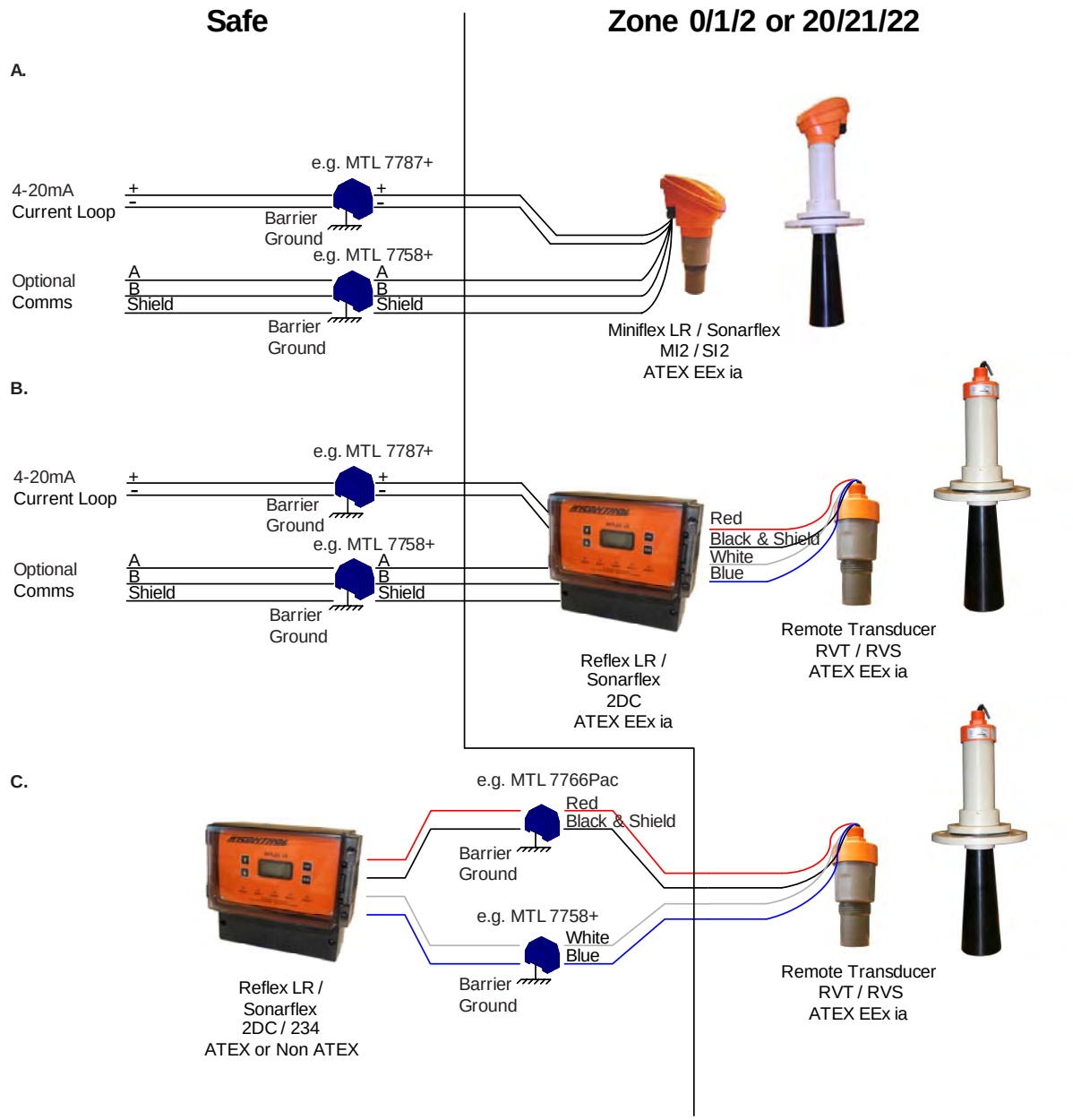
Transducer Power:

Uo = 12.6 Volts
Io = 2.41 Amps
Po = 1.2 W
Co = 13.5 µF
Lo = 25 µH
L/R Ratio = 37.5 µH/Ω
I.S. Barrier Eg, MTL 7766Pac</td>
<td>Essential Communication to Remote amplifier:

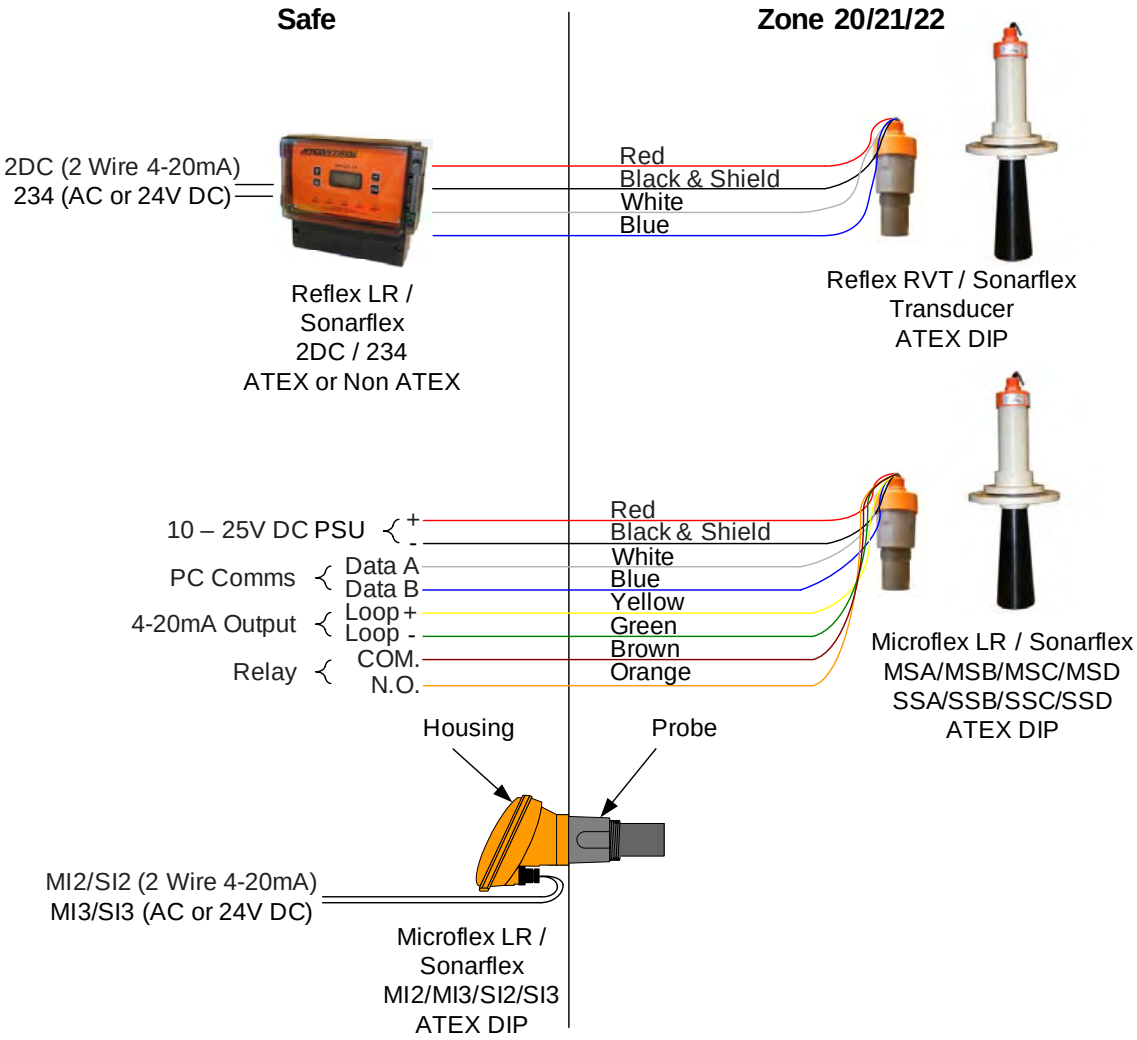
Ui = 9 Volts
Ii = 120 mA
Pi = 0.54 W
Ci = 0
Li = 0
Uo = 5.9 Volts
Io = 1.13 Amps
Po = 0.66 W
Co = 1000 µF
Lo = 223 µH
L/R Ratio = 170 µH/Ω
I.S. Barrier Eg, MTL 7758+</td>
</tr>
</table>

See wiring diagrams ‘6A’, ‘6B’ and ‘6C’ respectively for details.

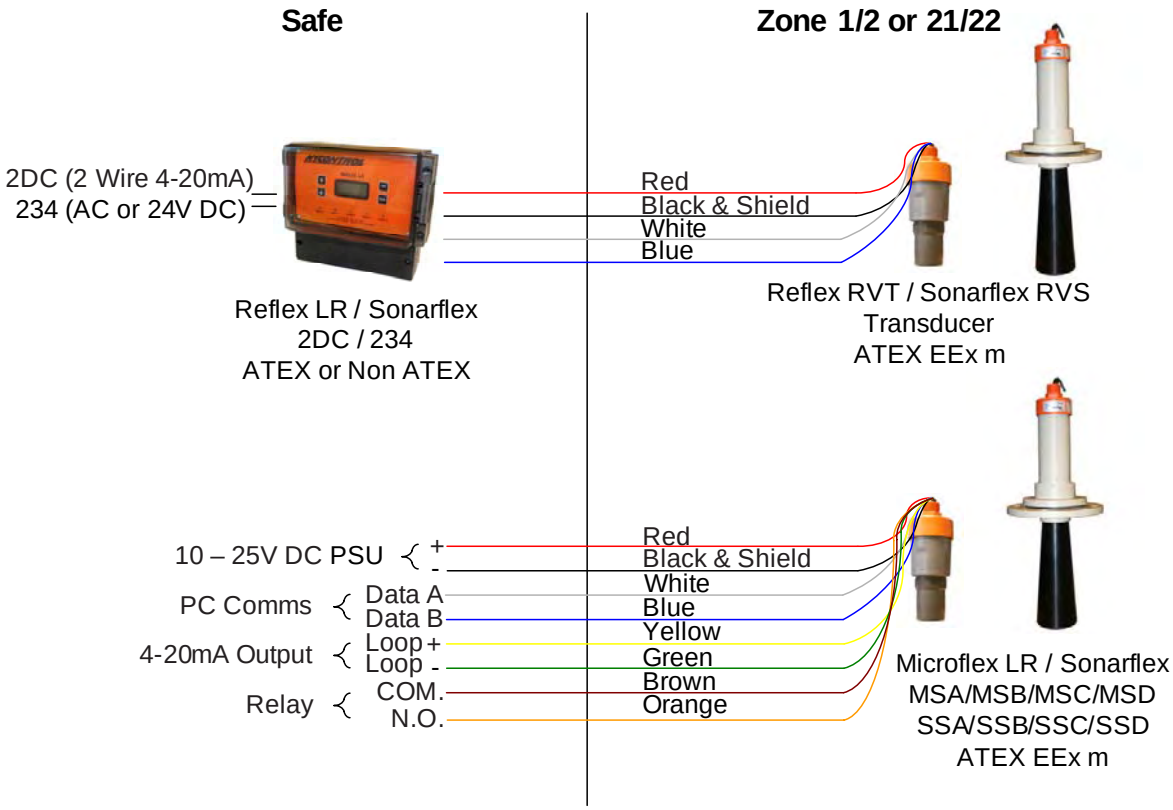
6. EEx ia configurations



7. DIP configurations



8. EEx m configurations



9. List of equipment types

Approvals

Reflex LR Remote Electronics	– 2DC	I
Sonarflex Remote Sonar Electronics	– 2DC	I
RVT Remote Transducer	– RVT series	I,D,M
RVS Remote Sonar Transducer	– RVS series	I,D,M
Microflex LR Integral Transmitter	– MI2 series	I,D
Microflex LR Integral Transmitter	– MI3 series	D
Sonarflex Integral Sonar Transmitter	– SI2 series	I,D
Sonarflex Integral Sonar Transmitter	– SI3 series	D
Microflex LR Smart Transmitter	– MS series	D,M
Sonarflex Smart Sonar Transmitter	– SS series	D,M

Approval codes: I = EEx ia, D = DIP, M = EEx m.