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Subject to change without notification.
CHAPTER 1
INTRODUCTION

This transmitter consists of an explosion proof Ex db IIB T6, IP65 aluminium housing includes a non-linear low torque precision potentiometer and a voltage to current converter in order to provide an output of 4-20mA proportional to the tank liquid content of an horizontal cylindrical tank.

On the potentiometer shaft, two powerful magnets are mounted in order to transmit the level indication to the dial and so to maintain a direct reading of the liquid level on the tank.

The transmitter is supplied with its cable gland and with a 2m double insulated, shielded 2x0.75mm² (LiCY-OB) cable.

1.1 Certification

The technical box 6315-xxxxxE, Group II Category 2 G is designed to be used in areas where potentially explosive atmosphere due to gas vapours could exist. It has been certified "Ex db IIB T6", safety equipment by explosion proof housing corresponding to the subdivision IIB (explosive atmosphere other than firedamp mines) and to the temperature class T6 (surface temperature less than 85°C). The conformity with the European Directive ATEX 2014/34/UE has been verified by APRAGAZ who delivered the certificate APRAGAZ 10 ATEX 0127X. The suffix X indicates that the extremity of the cable must be located in an appropriate junction box with respect of the external influences, the explosion hazard and the required IP degree. The ambient temperature where the box is mounted must be between [-20°C and +65°C].

The technical box can not be used in explosive gas atmospheres containing Acetylene.

1.2 General Data

- Power supply (Ups) : 24 to 40Vdc regulated (not included)
- Mechanical rotation : 360°
- Conformity : ± 0.5%
- Hysteresis : ± 1.8%
- Number of cycle : > 10’ revolutions
- Operating temperature : -20° to +65°C
- Maximum impedance of the 4-20mA loop (in Ω) (with Ups in Volts)

The transmitter should not be opened. Should it be the case the warranty on the product will not be applicable.

1.3 Ordering Information

- Specify model number
- Specify length of cable required (2 meter in standard)
- Specify type of gauge on which transmitter will be used (C, P, S or X)
- Specify the thread for mounting the transmitter (M12 or 1/2" UNC)
Special Notes:

The shield is connected in the transmitter housing.
This device is a "Passive Transmitter".

For a Magnetel with 3-97% dial : R1=0Ω and R2=0Ω
For a Magnetel with 5-95% dial : R1=100Ω and R2=100Ω (high precision resistors)
2.1 General Instructions for connecting a Transmitter

CAUTION: ALL ELECTRICAL WORKS MUST BE CARRIED "OUT OF POWER"!

The opening of the technical box and/or the dismount of the cable gland are forbidden. They automatically induce the loss of warranty. The cable has to be installed in conformity with the local rules. The wiring of each transmitter has to be made by authorized people following the guidelines concerning each type of transmitter and receiver. This equipment cannot be modified. It must be repaired only by the builder "ROCHESTER GAUGES International". About electrical data please refer to the specific documentation.
(Vmax 40VDC, Imax 20mA.)

2.2 Transmitter Electrical Wiring

Please refer to the specific documentation supplied with each transmitter. As a standard our transmitter are supplied with a shielded cable of 2m long LiYCY-OB type with the required wire quantity and appropriate size (0.75mm²). The transmitter connection to the receiver has to be done with the same cable type by means of an junction box (not supplied). The cable shield is wired to the technical box. The brown wire is the I- one (different of the electrical earth) and the white wire is the I+ one (refer to the specific documentation).

2.3 Earth Wiring

In general the electrical devices have to be wired to a local electrical earth. The technical boxes for transmitter are supplied with an earth screw spotted with the traditional marker. This screw must be connected to the global electrical earth of the installation before transmitter powering.
LiYCY-OB 0.75 mm²
CABLE DATA SHEET

Multi-core cables shielded by a synthetic material with extra-flexible multi-strand conductors twisted in layers, with electromagnetic protection (CY shielding: tinned copper braid). These cables are manufactured in accordance with DIN 47100. The cores are counted starting from the outer layer, towards the centre.

Temperature range:
- Installation and service: -20°C à +80°C
- Transport and storage: -30°C à +80°C

Use:
Shielded connecting cables used for the transmission of signals, measuring, controls, telephony, interphone systems and for applications in the electrical industry.

LiYCY-OB standards:
Manufactured in accordance with standards VDE 0295, 0250, 0271, 0812, 0814, 0817. In accordance with CEI 40-35/IEC 332.1 and CEI 20-22/IEC 332.3 Cat. C, lead-free CEI 20-52
Nominal section: 0.75mm²
Conductor diameter: 2.2mm
No. strands: 24 x 0.22 mm in diameter

Cable Description:
- Core: multi-strand, red copper
- Insulation: coloured PVC in accordance with DIN 47100, 105°C PVC
- Twisted: by layer
- Assembly: by mylar sheet
- Screening: tinned copper braid (90% density)
- Outer sheath: RAL 7001 grey PVC, flame-retardant NPI CEI 20-22

Cable specifications:
Bending radius: 10 x cable diameter
Insulation resistance: minimum 20MΩ/Km
Operating voltage: 500V
Test voltage: minimum de 1.200V (1.2KV)

Electrical properties at 25°C:
- Conductor resistance: maximum 26Ω/Km
- Capacitance between 2 conductors: 130pF/m at 800Hz frequency
- Capacitance entre cond. & shield: 230pF/m
- Load: maximum 13 A

Mechanical properties:

<table>
<thead>
<tr>
<th>Number of conductors</th>
<th>diameter extérieur [mm]</th>
<th>weight [Kg/Km]</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 0.75</td>
<td>6.0</td>
<td>57.0</td>
</tr>
<tr>
<td>3 x 0.75</td>
<td>6.2</td>
<td>66.0</td>
</tr>
<tr>
<td>4 x 0.75</td>
<td>8.0</td>
<td>87.0</td>
</tr>
<tr>
<td>6 x 0.75</td>
<td>8.6</td>
<td>125.0</td>
</tr>
</tbody>
</table>

Colour standard DIN 47100:
- Conductor number: Colour
  1: white
  2: brown
  3: green
  4: yellow
  5: grey
  6: pink

Source: Valentin catalogue (0.75mm² part specification), Legrand electrical catalogue (part standard DIN 47100)
3.1 Mounting on a Magnetel Gauge (with 8" dial)

Refer to attached drawing « 63*3 S ***** C or X » for a transmitter with 8" dial.

Remove the dial and dismount the dial plate (0056S00005E) if necessary from the transmitter. Install on the gauge head the two extended studs and the two big nuts supplied in the mounting kit with the transmitter. Screw two normal nuts on the extended studs. Place the transmitter on the two extended studs and screw it with the last two normal nuts. Mount the dial plate and after mount the dial and fix it with the dial screws.
Installation with a Magnetel “C” and a 8” dial

Installation note

1 x (M4/6 DIN84) to be connected to local ground

8 Nuts : ASTM A194 GR.2H (fix with a 22 wrench)

6 x (M5/10 DIN7985) and 3 x Stand off post Nylon Ø9.5mm

Cable with shield LiYCY-OB 0.75mm² (the shield is connected to the transmitter’s housing)

2 x Extended studs Ø1/2”-UNC x 2”3/4 (ASTM A193 GR.B7)

6 x (M4/6 DIN84) to be connected to local ground

Note relative position of cable gland and 2 extended studs towards six screws holes.
3.2 Mounting on a Magnetel Gauge (with 4" dial)

Refer to attached drawing « 63°3 S 5**** C or X » for a transmitter with 4" dial.

Remove the dial from the transmitter. Install on the gauge head the two extended studs and the two big nuts supplied in the mounting kit with the transmitter. Screw two normal nuts on the extended studs. Place the transmitter on the two extended studs and screw it with the last two normal nuts. Mount the dial on its brackets and fix it with the dial screws.
DON'T REMOVE THE TRANSMITTER DIAL FOR MOUNTING THE TRANSMITTER!

1 x (M4/6 DIN84) to be connected to local ground

Note relative position of cable gland and 2 extended studs towards six screws holes.

Cable with shield LIYCY-OB 0.75mm² (the shield is connected to the transmitter's housing)

2 x Extended studs Ø1/2"-UNC x 2 3/4" (ASTM A193 GR.B7)

8 Nuts : ASTM A194 GR.2H (fix with a 22 wrench)
8 Nuts : Steel (fix with a 19 wrench)

1 x (M4/6 DIN84) to be connected to local ground

Note relative position of cable gland and 2 extended studs towards six screws holes.

Cable with shield LIYCY-OB 0.75mm² (the shield is connected to the transmitter's housing)

2 x Extended studs Ø1/2"-UNC x 2 3/4" (ASTM A193 GR.B7)

8 Nuts : ASTM A194 GR.2H (fix with a 22 wrench)
8 Nuts : Steel (fix with a 19 wrench)
3.3 **Mounting on a Magnetel Gauge with ASA/DIN head**

- Refer to attached drawing « 63*3 S 5**** C » for a transmitter with 4” dial.
- Refer to attached drawing « 63*3 S ***** C » for a transmitter with 8” dial.

Remove the dial and dismount the dial plate (0056S00005E) from the transmitter. Install on the gauge head the two « sleeve head ASA/DIN » supplied in the mounting kit with the transmitter. Place the transmitter on the two « sleeve head ASA/DIN ». Place the two « washer plain M6 DIN9021 » on the transmitter. Insert and fix the two Bolt (M6/50mm DIN912). Mount the dial plate and after mount the dial on its brackets and fix it with the dial screws.
### Installation with a Magnetel “ASA/DIN” & a 8” dial

- **Installation note**

#### DON’T REMOVE THE TRANSMITTER DIAL FOR MOUNTING THE TRANSMITTER!

- 1 x (M4/6 DIN84) connected to local ground
- 8 Nuts : ASTM A194 GR.2H
- Note relative position of **cable gland and 8 screws holes.**

#### Cable with shield

- LIVCY-OB 0.75mm²
- (the shield is connected to the transmitter’s housing)

#### Transmitter

- Installation with a Magnetel “ASA/DIN” & a 4” dial
- Installation note

#### DON’T REMOVE THE TRANSMITTER DIAL FOR MOUNTING THE TRANSMITTER!

- 1 x (M4/6 DIN84) connected to local ground
- 8 Nuts : ASTM A194 GR.2H
- Note relative position of **cable gland and 8 screws holes.**

#### Cable with shield

- LIVCY-OB 0.75mm²
- (the shield is connected to the transmitter’s housing)

---

<table>
<thead>
<tr>
<th>Date</th>
<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawn</td>
<td>07-12-00</td>
<td>DS</td>
</tr>
<tr>
<td>Transfer</td>
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<td></td>
</tr>
<tr>
<td>Modif.</td>
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</table>

**ROCHESTER GAUGES INT. S.A. BELGIUM**

**Computer file:** Inst-T4Casa-an (A).cdr

**Scale:** 1/3

---

<table>
<thead>
<tr>
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<th>Name</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drawn</td>
<td>07-12-00</td>
<td>DS</td>
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<tr>
<td>Transfer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modif.</td>
<td></td>
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</tr>
</tbody>
</table>

**ROCHESTER GAUGES INT. S.A. BELGIUM**

**Computer file:** Inst-T5Casa-an (B).cdr

**Scale:** 1/3

---
3.4 Mounting on a 629x Gauge (with 4" dial)

Refer to attached drawing « 63* S 40*** P » for a transmitter with 4" dial.

Remove the gauge dial by unscrewing the two screws and remove the dial bracket. Locate the transmitter on the gauge head with the cable gland on the same side as the squared mark. Block the transmitter by screwing the four clamping M6 screws gradually.

VARIABLE DIMENSIONS AS REQUIRED

<table>
<thead>
<tr>
<th>S</th>
<th>F</th>
<th>a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stem</td>
<td>Float Arm</td>
<td>Angle to horizontal Center Ligne</td>
</tr>
<tr>
<td>β</td>
<td>7°</td>
<td>15°</td>
</tr>
<tr>
<td>Vertical</td>
<td>90°</td>
<td>0°</td>
</tr>
<tr>
<td>Horizontal</td>
<td>15°</td>
<td>15°</td>
</tr>
</tbody>
</table>

NB: a can be negative (below horizontal CL)

General view (angle mount)

Mounting on 629* gauge with a 5013S00453 dial

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Mount.</th>
</tr>
</thead>
<tbody>
<tr>
<td>6290</td>
<td>Vertical</td>
</tr>
<tr>
<td>6293</td>
<td>Horizontal</td>
</tr>
<tr>
<td>Angular</td>
<td>a</td>
</tr>
</tbody>
</table>

General view

Bolts circle Ø 63,5 (SR)
Mounting hole 4 x Ø 8,2

ROCHESTER GAUGES INT. S.A.
BELGIUM

Computer file: last update: 11/04/93

Date | Name | Material
--- | --- | ---
13-06-12 | DS | Format: A4

| Computer file: last update: 11/04/93 | B | DC
|--- | --- |

Rochester Gauges Int. S.A.
Belgium

BOLTS CIRCLE Ø 63.5 (SR)
Mounting hole 4 x Ø 8.2

TOP

GAGE HEAD

FRONT VIEW

139.5

TRAVEL

VOLUME %

HIGH STOP

LOW STOP

15/18
3.5 Mounting on a 729x Gauge (with 4" dial)

Refer to attached drawing « 63*3 S 40*** S » for a transmitter with 4" dial.

Usually the gauge is supplied with the transmitter installed on the head. The transmitter is located on the gauge head cavity and blocked by a clamping M5 screw. During reassembly be sure to install correctly the screw on its place because the proper reading conformity is related to the perfect angular alignment of the head and the transmitter.

![Diagram of Mounting on a 729x Gauge (with 4" dial)]
### Composition of different Mounting Parts Kits for Transmitters

#### 0056S00005E MOUNT. PART 8”/STD TRANSMITTER
For mounting a 8” dial on a transmitter.

**MOUNTING IN SERIES ON EACH 8” TRANSMITTER.**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Bolts M4/6mm INOX A2 DIN84</td>
<td>0040-40601E</td>
</tr>
<tr>
<td>6</td>
<td>Bolts M5/8mm INOX A2 DIN7045</td>
<td>0040-50802E</td>
</tr>
<tr>
<td>3</td>
<td>Nylon spacers M5/15mm Fem/Fem</td>
<td>0070-50315E</td>
</tr>
<tr>
<td>1</td>
<td>Dial support plate</td>
<td>0093U00005E</td>
</tr>
</tbody>
</table>

#### 0056S00011E MOUNT. PART STD TRANS./HEAD MAGNETEL UNC
For mounting a transmitter on a standard Magnetel with 1/2”UNC thread.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Extended Studbolts 1/2x2”3/4 UNC AcZn (ASTM A193 grade B7)</td>
<td>0056-00010E</td>
</tr>
<tr>
<td>4</td>
<td>Nut 13 UNC AcZn (ASTM A194 grade 2H)</td>
<td>0044-00121E</td>
</tr>
</tbody>
</table>

#### 0056S00015E MOUNT. PART STD TRANS./HEAD MAGNETEL M12
For mounting a transmitter on a standard Magnetel with M12 thread.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Extended Studbolts M12/70mm AcZn (ASTM A193 grade B7) DIN976A</td>
<td>0056-00020E</td>
</tr>
<tr>
<td>4</td>
<td>Nut M12 AcZn (ASTM A194 grade 2H)</td>
<td>0044-00120E</td>
</tr>
</tbody>
</table>

#### 0070S00110E MOUNT. PART 4” STD TRANS./HEAD ASA-DIN
For mounting a transmitter on a ASA/DIN Magnetela with a 4” dial.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Washers Plain M6/1.6mm Ø18mm INOX A2 DIN9021</td>
<td>0023-26182E</td>
</tr>
<tr>
<td>2</td>
<td>Bolts M6/50mm INOX A2 DIN912</td>
<td>0040-65000E</td>
</tr>
<tr>
<td>2</td>
<td>Sleeve head ASA/DIN (RGI Product)</td>
<td>0070U00100E</td>
</tr>
</tbody>
</table>
EU DECLARATION OF CONFORMITY

Wavre, 20th April 2016

I, PIERRE Lionel, Managing Director of

ROCHESTER Gauges International S.A.
Zone Industriel Nord
Avenue Lavoisier, 6
B-1300 Wavre BELGIUM

hereby certify that the
TECHNICAL BOX (6315-xxxxxE),
enclosures for Remote System Sensor dedicated to industrial or light-industrial pressurised tanks are
in conformity with the European Directives and Standards applicable:

Directive ATEX 2014/34/EU, with limits required by:
EN 60079-0 ed.7 (2012-12)
EN 60079-1 ed.7 (2014-06)

type certified by

APPRAGAZ - Chaussée de Vilvorde, 156 - B-1120 Brussels (Belgium)

Marked

Ex II 2 G Ex db IIB T6 EPL Gb APRAGAZ 10ATEX0127X

£ 0029 T° ambient : -20°C to +65°C

European Directives MD 2006/42/EC do not apply and Low Voltage 2014/35/EU and EMC
2014/30/EU also do not apply as the power supply is less than 75Vdc or 50Vac.

EC Type Examination Certificate according Annex 3 of the ATEX
directive 94/9/EC. Certificate n°: 10ATEX0124X

Production Quality Assurance Certificate according Annex 4 of the ATEX
directive 94/9/EC. Certificate n°: 07/BE/1303

Certificate can be downloaded from our web site www.rochester-gauges.be

PIERRE Lionel
Managing Director