



3007 Series Electromagnetic Transmitter Operating Manual

The 3007 Transmitter is an electromagnetic transmitter that can be used for pig tracking and locating functions, intended for use in pipeline diameters above 16”



Collaborate • Innovate • Succeed



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CONFIGURATION INFORMATION	
MODEL:	
SERIAL NUMBER:	
REPETITION RATE 1:	
RATE 1 BATTERY LIFE AT +5°C:	
REPETITION RATE 2:	
RATE 2 BATTERY LIFE AT +5°C:	
BATTERY TYPE:	
DELAY:	

3007_5001

Rev	Date	By	Summary of change
A00	08/08/17	BG	CR00485: Was 3007 EM TRANSMITTER MANUAL RevC00. CR00380 Address change. CR00499 Front Cover update.
A01	06/01/17	BG	CR00499: Cover page update
A02	06/11/19	TL	CR00813: Battery Voltage Corrected
A03	13/10/20	TL	CR00947: New front page

COMMENTS:

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1. GENERAL DESCRIPTION

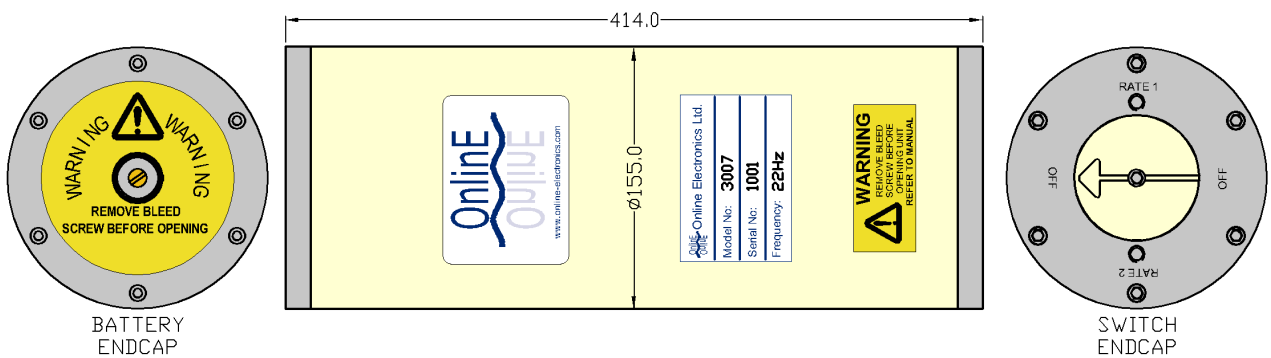
The 3007 Electromagnetic transmitter is a high-power unit which is used for pig tracking and locating either subsea or topside.

The transmitter operates effectively in buried pipelines, pipelines carrying gas, and in pipeline bundles where acoustic transmitters are either less effective or ineffective.

The transmitter emits a 22Hz signal and an inherent EM null spot is detectable when the antenna is at 90 degrees to, and pointing at the centre of, the transmitter allowing accurate positioning of a pig.

The standard transmitter can be changed between two pulsing transmission rates via an external rotating switch.

Parameters such as lifetime, pulse mode and battery type can be customised at the customers' request, please contact Online Electronics Ltd to discuss any special requirements.



DELAY ACTIVATION OPTION: The 3007 has a configurable time delay which commences when the unit is switched on, after the time delay has expired the unit will activate.

2. SPECIFICATIONS

NOTE THAT THE SPECIFICATIONS BELOW ARE VALID FOR THE STANDARD CONFIGURATION ONLY. REFER TO PAGE 1 OF THIS MANUAL FOR THE CONFIGURATION INFORMATION SPECIFIC TO THE TRANSMITTER BEING USED.

GENERAL:

Alkaline battery type.....	30.0V, alkaline battery pack
Lifetime in continuous mode at 5°C in air	21 days
Lifetime pulsing 0.4sec ON / 0.6sec OFF at +5°C in air	51 days
Lifetime pulsing 0.4sec ON / 1.6sec OFF at +5°C in air	106 days
Lifetime pulsing 0.4sec ON / 2.6sec OFF at +5°C in air	144 days
Lifetime pulsing 0.4sec ON / 3.6sec OFF at +5°C in air	200 days
Standard signal at 1m with OEL reference antenna at +20°C in air	1Vpp
Operating temperature range.....	0°C to +70°C
External pressure rating	200 bar
Weight in air	17.5kg

MATERIALS:

Housing material	WHITE ACETAL
Endcap material	316 STAINLESS STEEL EN 1.4401
Bleedscrew material.....	ALLOY BRONZE CA104 EN 12163
Endcap o-rings	2x BS 50-245 NBR70
Bleedscrew o-ring	1x BS 50-008 NBR70

3. OPERATION

NOTE 1 - DO NOT EXPOSE TO AGGRESSIVE SOLVENTS OR CHEMICALS WHICH COULD BE HARMFUL TO THE HOUSING, ENDCAPS, OR NITRILE RUBBER O-RINGS.

NOTE 2 - OPENING OF THE UNIT SHOULD ONLY TAKE PLACE IN A CLEAN, DRY, LABORATORY ENVIRONMENT.

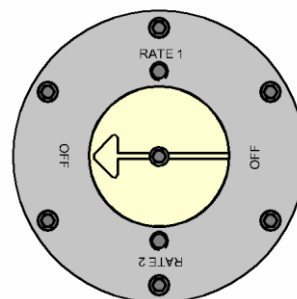
NOTE 3 - TO PREVENT THE FORMATION OF CONDENSATION WITHIN THE UNIT ALLOW THE UNIT TO STABILISE WITHIN THE LABORATORY ENVIRONMENT FOR A MINIMUM OF 6 HOURS PRIOR TO OPENING.

NOTE 4 - IF THE TRANSMITTER IS BEING OPENED FOR THE FIRST TIME AFTER IMMERSION IN PIPELINE PRODUCTS THEN EXPECT SOME LIQUID TO BE PRESENT WITHIN THE ENDCAP THREADS. CARE SHOULD BE TAKEN WHEN OPENING THE UNIT TO ALLOW ANY LIQUID TO DRAIN OUT OF AND NOT IN TO THE TRANSMITTER.

NOTE 5 - ALWAYS LOOSEN THE BLEEDSCREW TO RELIEVE ANY INTERNAL PRESSURE PRIOR TO OPENING.

3.1. TURNING ON AND OFF

1. To turn the transmitter ON rotate the large white plastic disc on the top of the switch endcap to either RATE 1 or RATE 2 using the activation key. The transmitter will begin transmitting in the mode selected.
2. Use an EM receiver to confirm that the transmitter is functioning properly at the expected pulse rate.
3. To turn the transmitter OFF rotate the plastic disc on the top of the switch endcap to either of the OFF positions using the activation key.
4. Use an EM receiver to confirm that the transmitter has turned OFF and stopped transmitting.



3.2. FUNCTION TEST

An OEL EM receiver system is required to receive the signal from a 3007 EM transmitter.

1. Ensure that the bleedscrew on the rear of the transmitter is fully engaged, do not over tighten.
2. Place the 3007 transmitter approximately 10m away and parallel to the antenna.
3. Activate the transmitter as detailed in section 3.1 TURNING ON AND OFF.
4. Switch the transmitter between OFF, RATE 1 mode, and RATE 2 mode several times and ensure that the EM signal received reacts as expected. Refer to section 3.1 TURNING ON AND OFF for further information on changing transmission rates.
5. An inherent EM null spot is detectable when the antenna is at 90 degrees to and pointing at the centre of the transmitter allowing accurate positioning of a pig. Refer to the relevant EM receiver manual for more information.
6. Turn OFF the transmitter as detailed in section 3.1 TURNING ON AND OFF.
7. System operation has been verified.

3.3. PIG INSTALLATION

The transmitter can be installed within the body of a pig or ideally towed using a flange and support disc arrangement. Steels and other metals absorb electromagnetic signals so for optimum signal strength the transmitter should overlap the pig body by as much as possible, typically at least 150mm. Any apertures which can be made in the pig body around the transmitter will be advantageous.

1. Ensure that the bleedscrew on the rear of the transmitter is fully engaged, do not over tighten.
2. Place the transmitter within the cavity of the PIG in a position which allows access to the switch endcap so the transmitter can be turned ON. Ensure that it is secure and cannot move around.
3. Use wedging blocks of PU if required to prevent movement and vibration.

3.4. DEPLOYMENT

The following section does not provide a comprehensive deployment procedure as every deployment is different. It does however outline the most important considerations when deploying an EM transmitter and should be read and understood well in advance of deployment.

1. At least 24 hours prior to deployment any personnel who will be involved with the operation of the transmitter should review this entire manual to familiarise themselves with the unit. They should also be allowed time to operate the unit and EM receiver. Simply allowing personnel to 'play' with the equipment before it is actually deployed can save significant costs compared to deploying the unit without understanding how it works and then suffering from an unnecessary operator error.
2. Refer to Page 1 of this manual for the expected battery lifetime and ensure it is adequate for the planned duration of operations.
3. Ensure that the bleedscrew on the rear of the unit is fully engaged, do not over tighten.
4. Activate the 3007 transmitter, refer to section 3.1 TURNING ON AND OFF for more information.
5. Using an OEL EM receiver system, confirm that the expected EM signal is received from the transmitter.
6. System operation has been verified and deployment can proceed.

3.5. TIME DELAY

Refer to Page 1 of the manual for the configured delay. If the transmitter has been configured with a delay, then immediately after switching ON it will transmit a continuous signal for 10 seconds to allow confirmation of operation before entering a low power state. The transmitter will remain in this low power state until the configured delay has expired and then it will start transmitting as normal at the selected transmission rate.

To reset the transmitter and delay, the transmitter must be turned OFF for at least 30 seconds. While in the low power state, the expected lifetime will be reduced by approximately 1% each month. For example, after 50 months, 50% of the expected battery lifetime should be achieved.

4. MAINTENANCE

NOTE 1 - DO NOT EXPOSE TO AGGRESSIVE SOLVENTS OR CHEMICALS WHICH COULD BE HARMFUL TO THE HOUSING, ENDCAPS, OR NITRILE RUBBER O-RINGS.

NOTE 2 - OPENING OF THE UNIT SHOULD ONLY TAKE PLACE IN A CLEAN, DRY, LABORATORY ENVIRONMENT.

NOTE 3 - TO PREVENT THE FORMATION OF CONDENSATION WITHIN THE UNIT ALLOW THE UNIT TO STABILISE WITHIN THE LABORATORY ENVIRONMENT FOR A MINIMUM OF 6 HOURS PRIOR TO OPENING.

NOTE 4 - IF THE TRANSMITTER IS BEING OPENED FOR THE FIRST TIME AFTER IMMERSION IN PIPELINE PRODUCTS THEN EXPECT SOME LIQUID TO BE PRESENT WITHIN THE ENDCAP THREADS. CARE SHOULD BE TAKEN WHEN OPENING THE UNIT TO ALLOW ANY LIQUID TO DRAIN OUT OF AND NOT IN TO THE TRANSMITTER.

NOTE 5 - ALWAYS LOOSEN THE BLEEDSCREW TO RELIEVE ANY INTERNAL PRESSURE PRIOR TO OPENING.

4.1. BATTERY PACK REPLACEMENT

Online Electronics recommends installing a new battery pack before each deployment to ensure maximum contingency lifetime, to replace the batteries follow the procedure below. The switch endcap holds the electronics and should only be removed under the direction of Online Electronics or as part of an approved servicing schedule.

1. Carefully and slowly loosen the bleed screw to enable any pressure within the battery housing to escape freely.
2. Remove the M8 retaining cap screws from the battery endcap, remove the endcap and ensure that the Oring seals are protected from damage and contamination while the unit is open.
3. Remove the plastic battery retaining plate which is secured with 2xM6 lock nuts. Identify the battery connector and observe how the battery connection is routed inside the transmitter.
4. Replace the battery pack and route the connections as observed previously (the connector should be tucked neatly down the side of the battery pack to enable easy fitting of the battery plate)
5. Examine the Oring seals for any signs of damage or contamination. Replace and/or lubricate with silicone grease if necessary.
6. Reassemble the unit following the above instructions in reverse.
7. Refit the bleedscrew.

4.2. ROUTINE MAINTENANCE AND STORAGE

All Online Electronics Ltd products are designed to require minimum maintenance. The housing should be cleaned using fresh water and cleaning agents as necessary (eg WD40). Do not use chemicals which could be damaging to the housing or o-rings.

Online Electronics Ltd can supply redress kits containing a complete set of replacement batteries, o-rings, o-ring grease, and endcap locking screws, contact Online Electronics Ltd for more information.

If the transmitter is to be placed in storage for a long period of time it is advisable to remove the batteries from the transmitter and store separately.

5. DISPOSAL OF UNIT

Online Electronics Ltd takes its responsibilities under the WEEE Regulations extremely Seriously and has taken steps to be compliant in line with our corporate and social responsibilities.

In the UK, OEL has joined a registered compliance scheme WeeeCare (registration number **WEE/MP3538PZ/SCH**)

Electrical and electronic equipment should never be disposed of with general waste but must be separately collected for the proper treatment and recovery.

The crossed-out bin symbol, placed on the product, reminds you of the need to dispose it correctly at the end of its life.

When buying a new product, you will have the possibility to return, free of charge, another end of life product of equivalent type that has fulfilled the same functions as the supplied equipment.

These items may be deposited at:

Online Electronics Ltd
Online House
Woodburn Road
Blackburn Business Park
Blackburn
Aberdeen
AB21 0PS
UK

Alternatively, to arrange a collection of any waste electrical equipment, obligated to OEL please telephone WeeeCare on **0844 800 2004**.

6. WARRANTY

Online Electronics Ltd products are guaranteed for one year from the date of purchase. Goods should be returned transportation prepaid to Online Electronics Ltd.

There is no charge for parts or labour should any product require repair due to a manufacturing deficiency during the guarantee period.

In the event of a manufacturing deficiency the inward transportation costs will be repaid to the client.