

AWS2-LP

Automatic Warning System Low Profile Suppressor Inductor



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1 General Information

1.1 Introduction

AWS are provided primarily to aid drivers in observing the fixed signals, particularly under adverse weather conditions, and is supplementary to the fixed signals, which the driver must observe. Although supplementary, its correct operation is of the highest importance since any conflict between the fixed signal and the AWS indications will confuse drivers.

The AWS1 is an Electro Inductor which, when energised, has it's South Pole Uppermost and this South Pole, following the North Pole of the permanent inductor, gives a "clear" indication to the driver.

On bi-directional lines, special permanent inductors called Suppressor Inductors (AWS2) may be used to prevent a train receiving AWS indications which were intended for trains going the opposite direction. These Inductors have a permanent inductor and, in addition, a supressing coil which, when energised, diverts the magnetic flux, supressing any indication to the train. This suppression is in accordance with section b8.31 of the group standards GE/RT8035.

1.2 Part Numbers

Part numbers for AWS-LP units are as follows.

Part Number	Description of Unit
AWS1-LP	Low Profile Electro Inductor
AWS2-LP	Low Profile Suppressor Inductor
AWS3	Permanent Magnet

1.3 Contact Information

MRD Rail Technologies Pty Ltd
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 E-mail: sales@mrd.com.au

1.4 Disclaimer

In issuing this document MRD makes no warranties, expressed or implied, that the compliance with all or any of the documents provided is sufficient on its own to ensure a safe system of work operation. Each user is reminded of its own responsibilities to ensure OH&S at work and its individual duties under the OH&S legislation.

2 Features and Benefits

2.1 Features

- 1) Low profile design suitable for installation on Slab Track or Sleepers
- 2) High strength enclosure machined from solid aluminium block
- 3) Watertight - Internals encapsulated in 3M re-enterable gel
- 4) Powder coated
- 5) Corrosion protected
- 6) Australia made
- 7) Local support
- 8) Low maintenance costs
- 9) 3-Year Warranty

2.2 Warranty

The AWS-LP unit is assured to live up to quality standards with a 10+ year life expectancy, backed up with a 5 year warranty. The unit is incredibly reliable with over 400 AWS2 units having been supplied since 1995 with absolutely no failures to date.

Any damage incurred during transport or due to incorrect storage or incorrect installation is not covered by this warranty and will be repaired at a quoted price after inspection.

2.3 Safety

The AWS-LP unit is designed to be as safe as possible. This is backed up by the fact that with over 400 AWS2 units supplied to date since 1995 not a single safety incident has been reported.

2.4 Compliance

The AWS-LP is designed to conform to all applicable and relevant standards. The unit conforms to ISO9001, AS3100-1990 and AS1874 and group standards GE/RT8035.

2.5 Documentation

Documentation provided includes a User Manual, Technical Specifications Manual, Warranty, and Maintenance Manual.

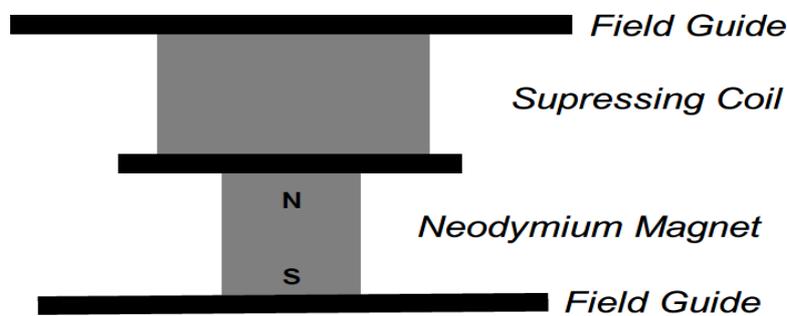
3 Technical Specifications

3.1 General Description of Operation

On bi-directional lines, special permanent inductors called suppressor inductors (AWS2) may be used to prevent a train receiving AWS-LP indication at a signal for the opposite direction to which the train is travelling. These inductors have a permanent inductor and, in addition, a suppressing coil which, when energised, diverts the magnetic flux, suppressing any indication to the train.

This means that the AWS unit can accurately give indications to passing trains without interfering or giving misdirected signals to trains going the opposite way. The way the AWS2 is internally laid out is outlined below.

Figure 1



3.2 Operating Values

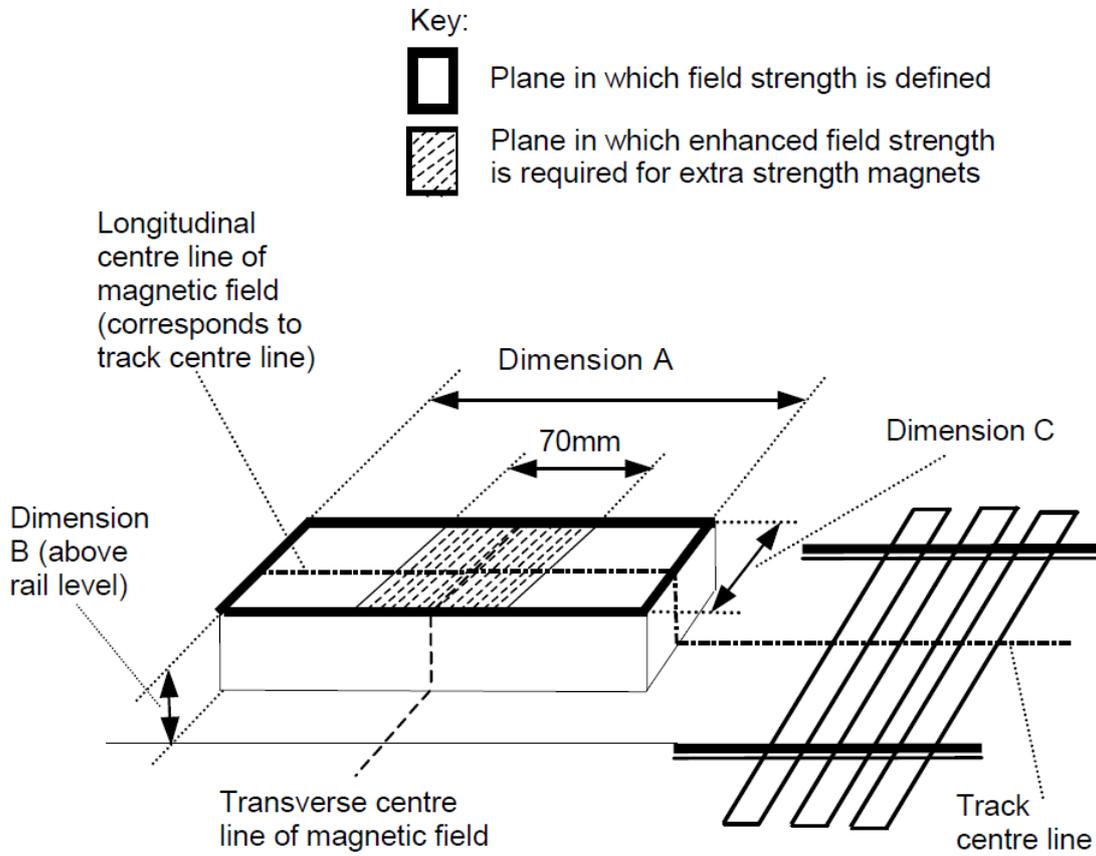
Nominal Coil Resistance	17 ohms \pm 10% @ 26°C
Nominal DC Current	1.41A \pm 10%
Minimum Volts	22V DC
Nominal Volts	24V DC
Maximum Volts	28V DC

3.3 Magnetic Flux Densities

All AWS2-LP units are tested to be in compliance with section b9.1 of Group Standards GE/RT8035.

Magnet Type	Maximum Flux Density (mT)	Minimum Flux Density (mT)	Distance in Dimension A in figure 2	Distance in Dimension B in figure 2	Distance in Dimension C in figure 2
Suppressor Magnet (AWS2-LP)	18mT (energised) 0.7mT (de-energised)	3.5mT (unsuppressed)	150mm	115mm	100mm

Figure 2 – Planes of measurement as specified in figure 5 of Group Standards GE/RT8035.

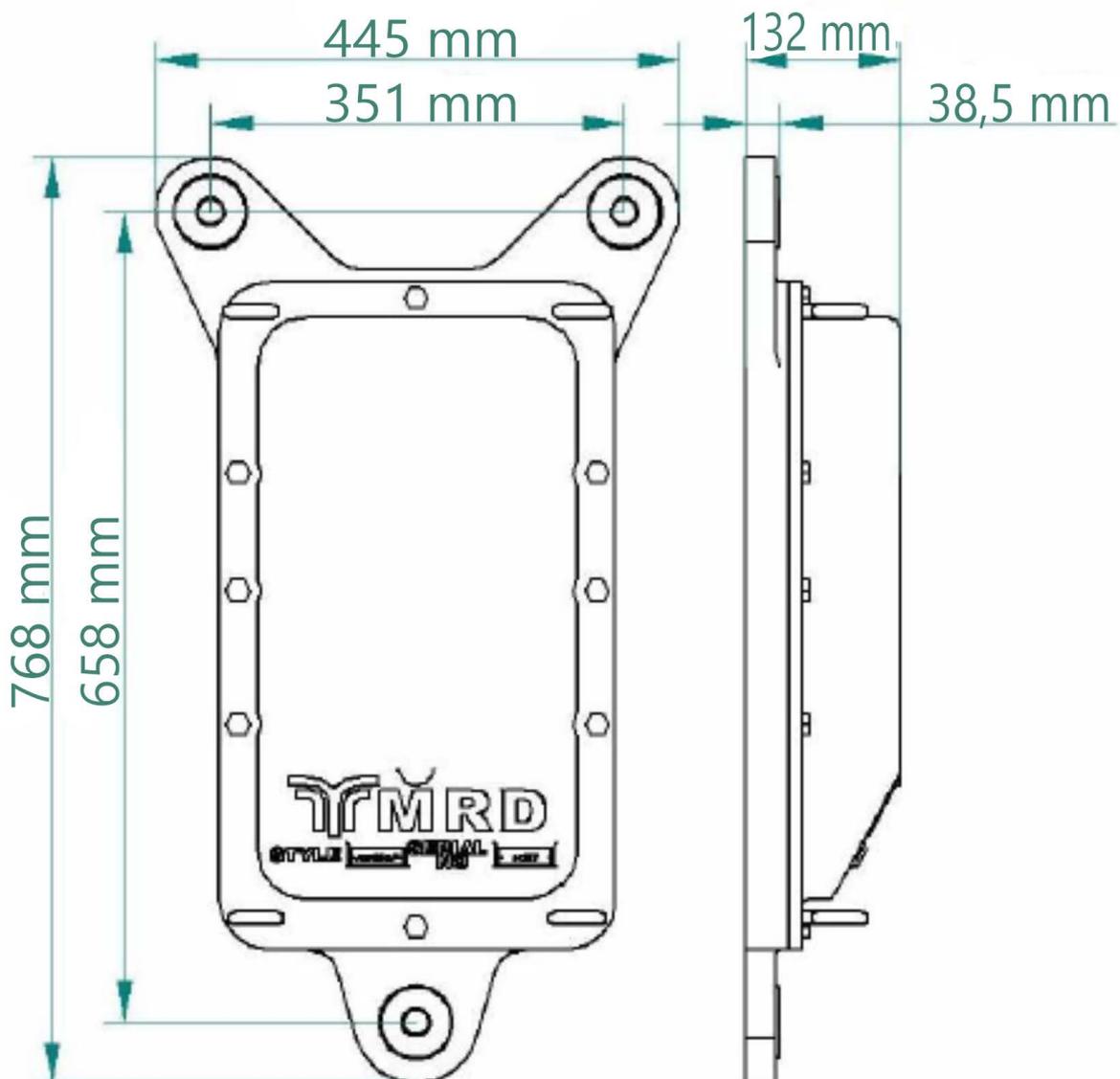


4 Physical Characteristics

4.1 Dimensions

The unit is 445mm x 768mm x 132mm. The unit is 53kg meaning that correct safety precautions must be taken into account when lifting it. The dimensions are illustrated below, from a top and side view.

Figure 3 – Dimensions of the AWS 2 – LP.



5 Material Specification

5.1 Enclosure

The lid and base enclosure are machined from a solid aluminium block Grade AA601. The enclosure is powder coated safety yellow. A red stripe is painted on the AWS-2 for visual identification.

5.2 Vibration mounts

The vibration mounts are manufactured from Vibrathane B-602. They are designed to be in accordance with EN61373, referred to in section b15.3.3 of the group standards GE/RT8035.

5.3 Connector

The AWS2-LP is fitted with an 8 metre long, 2.5mm square heavy duty cable with conduit.

5.4 Magnets

The magnets used in the AWS2-LP are neodymium.

5.5 Coil

The coil is made from copper wire wound on Bakelite formers. Coils are impregnated with lacquer to prevent vibration or moisture damage.

6 Testing, Maintenance and Approval

6.1 Testing

The units are tested and comply with AS3100 – 1990 Approval and Test Specification – General requirements for electrical equipment.

Although, like all electrical equipment, the AWS-LP is not 100% failsafe in operation and is supplementary, its correct operation is of the highest importance as any conflict between the fixed signals and the AWS-LP indications will cause confusion. For this reason, every effort is made during the manufacture and testing of the AWS-LP units to ensure that the end product is of the highest possible quality.

It is this kind of quality assurance which MRD upholds with great pride which allows over 400 of our AWS2 units to have been supplied to date since 1995 with no failures or safety incidents.

6.2 Maintenance

Maintenance of the track equipment is minimal and consists of checking that all fixtures are tight, observing that the inductor cases are undamaged and checking that the cable connection on the unit is secure. Also, regular tests of magnetic field strength must be carried out using a special instrument called a Strength and Polarity Indicator.

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6.3 Approval

The Low Profile (LP) variant of the AWS product has been Type Approved by Queensland Rail (Document No. C0125).