KiwiRail

MRWS Manual

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1. Introduction

The Mobile Radio Warning System (MRWS) uses a combination of components that communicate by radio to provide workers with audible and visual warnings of approaching rail vehicles.

MRWS users must be familiar with Zöllner publications:

- Participant Handbook – Operator and Installer MRWS
- Operating Manual 01808756 F500.

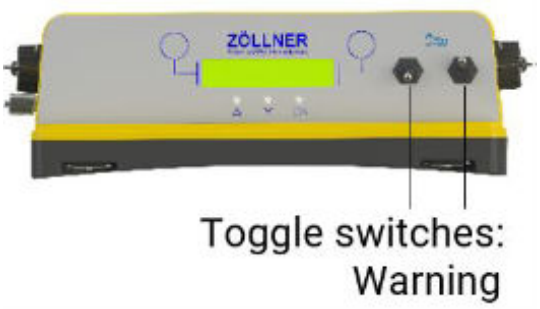
2. MRWS Components

2.1 ZFS-10 Radio Transmitter

The ZFS-10 radio transmitter transmits train activations either manually via manual activation or stationary via connected train detectors to the MRWS Control Unit.

ZFS-10 Radio Transmitter

ZFS-10 front/side view



ZFS-10 top view

ZFS-10 left side view

ZFS-10 right side view

2.2 ZPW-12 Personal Warning Device

The ZPW-12 is a radio-controlled warning device for collective warning in the track area.

ZPW-12 Personal Warning Device

ZPW-12 front/side view

ZPW-12 top view

ZPW-12 left side view

ZPW-12 right side view

2.3 F500-SEN Train Detector (Sensor)

The inductive train detector (sensor) F500-SEN is used to detect trains at a Strike-In and Strike-Out point.

Assembly / Operation:

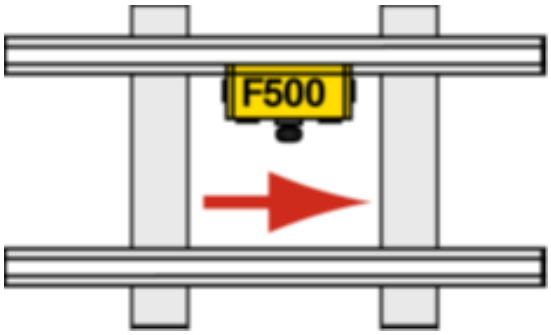
The F500-SEN is usually mounted on the inside of the track (flange side) on the left rail in the direction of travel. Note the direction indication on the top of the housing.

IMPORTANT
To ensure sufficient warning time, the position of the train detectors must be in accordance with the MRWS plan.

To operate the F500-SEN, a connection box F500-AB is required. It receives the sensor data and processes it for transmission to, for example, a ZFS-10 transmitter.

F500-SEN Train Detector

F500-SEN with 0,3m connection cable



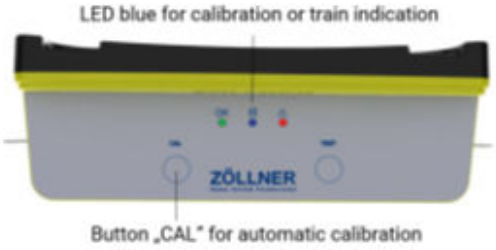
F500-SEN sticker for mounting in the direction of travel on the left rail

2.4 F500-AB Junction Box

The Junction box F500-AB is connected to the F500-SEN and evaluates its information.

F500-AB Junction Box

F500-AB in protective frame



F500-AB top view

F500-AB right connection side view

F500-AB left connection side

2.5 ZPW126-10 Personnel Warning Device

The ZPW126-10 is a radio-controlled warning device for collective warning in the track area. It can be used in different ways; both track side and on track construction machines:

- As a single warning device (MASTER operating mode)

- As one of several warning devices in a warning device group (REMOTE operating mode)
- On track construction machines individually as ERRI receiver to control the machine's own warning system

ZPW126-10 Personnel Warning Device

ZPW126-10 front view

ZPW126-10 side view with antennas

ZPW126-10 rear view

2.6 ZRC-10 Remote Control

The ZRC-10 serves as the Control Unit of the Mobile Radio Warning System (MRWS). It connects to and manages all radio components of the system.

The ZRC-10 must be used as the MRWS Control Unit when using ATWS.

ZRC-10 Remote Control

ZRC-10 front view

ZRC-10 top view

ZRC left side view

ZRC right side view

3. Task Matrix

The MRWS Task Matrix ensures tasks associated with the maintenance and renewal of KiwiRail's network infrastructure can be safely undertaken when applying the Mobile Radio Warning System (MRWS).

3.1 Determining Safe Application of Tasks

The safe application of MRWS for specific tasks is determined by:

- The ability for all workers to hear and immediately respond to the audible system warning.
- The ability for all workers to always see the warning lights.
- When working on a passable line, the ability to immediately remove themselves and tools and reach a safe place.
- When working on an impassable line, the ability to immediately stop work and observe a rail movement on an adjacent passable line.
- When operating plant behind authorised fencing without slew protection, the ability to immediately respond to audible warning and follow the prescribed procedures – refer **TS14 6.2 Capability to Foul Adjacent Lines.**

3.2 Approval to Apply Tasks

Tasks listed in the Task Matrix may be undertaken provided there are no worksite impediments that would compromise safety e.g., limited availability of safe places.

The task(s) must be included on the MRWS Plan for the worksite.

3.3 Assessment / Approval of Additional Tasks

When assessing additional task for inclusion in the MRWS Task Matrix you will be required to:

Tasks using light non-powered or battery tools / devices

1. Determine if the criteria outlined in ***3.1 Determining Safe Application of Tasks*** can be met without any change in task methodology or additional training.
2. If the criteria can be met submit a request, approved by GM Metro, for inclusion in the MRWS Task Matrix, to Rules & Standards.

Tasks using noise emitting equipment

1. Determine if the criteria in ***3.1 Determining Safe Application of Tasks*** can be met by applying the following:
    a. Complete simulated worksite testing to identify if audible warnings can be *immediately* heard by all workers.
    b. Undertake a risk assessment to identify any additional controls (procedures / technology) required to support the application of MRWS.
2. Determine if moving from an engineering control (Authorised Fencing TS14) to an administrative control (MRWS) can be justified on a SFAIRP basis.
3. If considered the safety issues have been adequately addressed, submit a proposal for independent assessment and verification by Safety, Health & Wellbeing. External specialist support should be engaged to confirm safe application or to identify any residual safety concerns.
4. If verified as safe to apply submit a request for approval via the SFAIRP process, approved by Executive Manager, for inclusion in the MRWS Task Matrix to Rules and Standards.

3.4 Approved Task Matrix

Tasks using light non-powered or battery tools / devices only

General	
G1	Warnings when fitting MRWS track sensors
G2	Inspections - Engineering
G3	Inspections - Maintenance Code
G4	Scoping
G5	Warning when undertaking activity on adjacent Impassable Line (no authorised fencing)
G6	Warning when undertaking activity behind authorised fencing – **TS14 6.2 Capability to Foul Adjacent Lines** (adjacent line or trackside).
G7	Vegetation Control
G8	Graffiti Removal
G9	Litter Cleaning
G10	Temporary Speed Restriction signage – erecting / removal.
G11	Station platform work – on platform
G12	Infrastructure Surveys
G13	Establishing Protection
G14	Installing fencing

Track Maintenance	
T1	Tightening fish plates
T2	Fastenings
T3	Points code check
T4	Drainage Clearing
T5	Hand NDT testing
T6	Test pitting
T7	Track lubrication

Signals & Communications	
S1	Location cabinet access
S2	Axle counter inspection / repairs
S3	Bond inspection
S4	Level Crossing Code Checks
S5	Balise Checks

Overhead Line Equipment	
O1	Removing plastic bags from OLE
O2	Bond inspection
O3	Height and stagger inspection
O4	Isolation establishment
O5	Spark Gap Inspection – 1 Year

