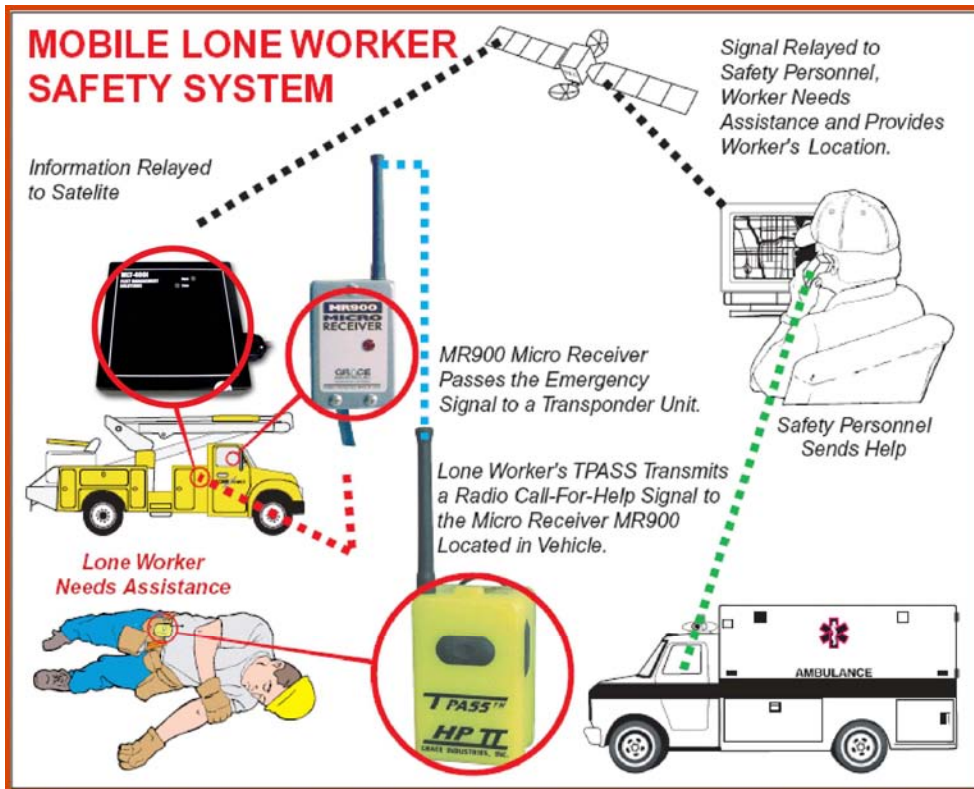


Implementing a Man Down System



Overview

This application note focuses on using the Grace Industries "Man Down-System" consisting of a Model MR900 Micro RF Receiver and TPII Personal Safety Transmitter, with the FMS MLT-400i Satellite Modem. Covered below are some system features, system power approaches and an example test configuration.

System Features

Man down systems continuously monitor users working alone or part of a team in hazardous environments. A worker wears a TPII RF transmitter that can be activated manually or automatically if the person is disabled. An RF receiver connected to the FMS Iridium Satellite Modem transmits in the event of an emergency. Several system features are listed below:

- » **Man Down notifications from anywhere in the world**
- » **Up to ½ mile range from worker to vehicle**
- » **Spread Spectrum 902-928 MHz license free ISM band**
- » **Supports multiple TPII users via on one RF receiver**
- » **TPII alarm indicators: flashing lights, audible (95 db), and RF output to receiver.**

System Power Approaches

There are two approaches to powering the MR900 RF Receiver (Red: +12VDC, 30mA max.; Black: Ground):

1. Use the same power that supplies the MLT-400i or pull power from the MLT's MDT-PRO Molex power connector. The disadvantage to this method is that it will only work on 12V systems. 24V would exceed the 20V maximum specified by the MR900.

Using this method, the digital output will not need to be configured in Fleet Central. Using this method draws approximately 30mA in addition to the MLT-400i.

1. Using a digital output has some advantages. The output is regulated to 12V and will therefore allow the MR900 to work in 24V vehicles. The receiver can be turned off under control of the MLT to save power and therefore disabling man down functionality. All connections will be to I/O lines at the MLT. The disadvantage is that power consumption in snooze and sleep modes will be about 7mA greater if the MR900 is turned on for a total of 37mA in addition to the MLT-400i.

Using this method, the digital output should be configured with the following or similar labels: Name – MR900 Power, State 0 – Off, State 1 – On. The Default State should be set to State 1.

Example Test Configuration

The MR900's relay output (this option must be ordered) will be used to signal the MLT of an alarm condition. The relay common (Orange) should also be connected to the MR900's power source (Red). The normally open contact (Blue) should be connected to an MLT's digital input. Please refer to the Wiring Table provided below.

Fleet Central Configuration

The digital input and output must be configured from Fleet Central (Modem Admin | Configure Sensors | Digital). Using the first approach above for powering the MR900, the following or similar labels could be used: Name: MR900 Alarm, State 0 Label: Alarm, State 1 Label: Standby. The input must also be Enabled.

| Digital Inputs/Outputs | | | | | |
|------------------------|-------------|---------------|---------------|--|-------------------------------------|
| In/Out | Name | State 0 Label | State 1 Label | Default State | Enabled |
| 0 In Out | MR900 Alarm | Alarm | Standby | <input type="radio"/> State 0 <input type="radio"/> State 1 | <input checked="" type="checkbox"/> |
| 1 In Out | MR900 Power | Off | On | <input type="radio"/> State 0 <input type="radio"/> State 1 | <input type="checkbox"/> |
| 2 In Out | Output | State0 | State1 | <input type="radio"/> State 0 <input type="radio"/> State 1 | <input type="checkbox"/> |



Typical operation would leave the MR900 Power on at all times. Some fleet managers will want to configure an alert to be sent automatically to an email address in the event the MR900 Alarm input is activated. To configure the Alert in Fleet Central (Modem Admin | Event Alert | Add/Edit Event Alert) use:

The screenshot shows the 'Event Alerts' configuration page. At the top, there are three dropdown menus: 'Owner', 'Assets', and 'Event Alerts'. The 'Event Alerts' dropdown has a 'New' link next to it. Below these is the 'Alert' section, which includes an 'Event Type' dropdown set to 'Digital Message', a 'Sensor Number' dropdown set to '0', and a 'Sensor State' dropdown set to '0'. There is an 'Email:' label followed by a text input field and an 'Add' button. Below the 'Email' field is another dropdown menu with an 'Add' link. At the bottom of the form is a 'Current Emails' section with 'Submit' and 'Delete' buttons.

Fleet Central Alert Configuration

Select desired asset from 'Assets' drop down list. To configure the asset's new event alert, click 'New' link. To edit the event alert, select Digital Message alert from 'Event Alerts' drop down list. Select Sensor Number 0 for the MR900 and Sensor State 0 to generate the alert.

There are two ways to enter the email address(s) where the alert should be sent to:

- » Enter a new email address and click 'Add' link. The address you entered will show up under 'Current Emails' section.
- » Select an address from the 'Email' drop down list. The list displays available email contacts of the administrator. The list will also contain all the email addresses you ever used for event alerts in the past.



To add additional addresses, repeat the process. To remove the email address, click 'Remove'.

Wiring Table

| MLT-400i | | MR900 | |
|----------------|--------|--------|--------------|
| Digital OUT #1 | Yellow | Red | Power |
| | | Orange | Relay Common |
| Digital IN #0 | Blue | Blue | Relay N.O. |
| Signal Ground | Purple | Black | Ground |

Equipment List

| Manufacturer | Part Number | Description | Notes |
|----------------------------|-------------|--|---|
| Fleet Management Solutions | MLT-400i | Mobile Location Tracking System | http://www.fmsgps.com/frontend/mlt300i.aspx |
| Grace Industries | TPII-M-Man | Transmitting Personal Alert Safety System T Pass II set for 120 seconds, Manual On, without heat detector | www.graceindustries.com |
| Grace Industries | MR900 | RF receiver Dry Contact output set for 30 seconds | www.graceindustries.com |

About FMS

Fleet Management Solutions, Inc. provides mobile asset management and GPS vehicle tracking systems to Energy, Government, Military, Logistics, Construction and Mining clients. FMS combines GPS technology with two-way satellite communications to provide global coverage and near real-time location data, status and alerts for fleets operating in locations where cellular solutions are not feasible. FMS customers achieve rapid ROI from fuel savings, better asset utilization, employee behavior improvement, safety and security, while reducing the risks associated with worker injury, asset theft and unauthorized use.