TR - Remote Start Electronic Time Delay Unit

Installation Instructions

Fortress Interlocks

General
The TR unit is a robust, solenoid controlled key release interlock. It utilises an industrial, electronic Safety Timer Relay to release the key after a programmable time delay, 24V dc units have settings between 60 and 600 seconds. 110V ac and 230V ac units have settings from 30 to 300 seconds. This is particularly useful when a pre-determined machine run down period is required. The TR unit internal time delay is initiated by way of a remote signal. The access key is compatible with Fortress' mGard range of trapped key interlocks. These provide an efficient and flexible range of products to suite diverse applications. When properly installed, the TR unit provides safe access and control of a variety of machinery.

IMPORTANT
ALL supplies must be isolated before the TR unit is opened This product is designed to meet the requirements of the following standards, EN 60947-5 and EN 954

IF YOU HAVE ANY QUESTIONS OR QUERIES OF ANY NATURE WHATSOEVER PLEASE CONTACT THE SUPPLIER WHO WILL BE PLEASED TO ADVISE AND ASSIST.

Functioning
When the remote signal is applied, an electronic Safety Timer Relay is initiated and the blue "Timer Active" indicator lamp will illuminate.

After the user programmable time period has expired, the blue lamp will extinguish and the green "Energise Solenoid" push button will illuminate. At this point, it is still possible to cancel the timer request by removing the remote signal.

While the green "Energise Solenoid" push button is depressed, the access key becomes free to rotate and remove from the unit.

The green lamp remains illuminated to signal the access key has been removed. Once the access key is re inserted the green energised solenoid push button remians illuminated until the units remote signal is removed. This allows the key to be removed again while the machine remains shut down.

Mounting
This unit would normally be installed on a vertical surface, such as a wall or the machine cabinet. Other orientations are possible as long as access to the illuminated push buttons and key is ergonomic for the application. The surface must be suitably robust, flat and non-movable.

Protection Against Environmental Influences
A lasting and correct safety function requires that the unit be protected against the ingress of foreign bodies such as swarf, sand, blasting shot, etc. The unit is to be mounted away from the machine, or by the use of anti-vibration mountings, in order to avoid the effects of vibration, shock and bump.

1. Determine the location of the TR unit so that operation of the illuminated push button and key is possible.
2. Determine the best position for fixing holes in box and drill accordingly. Ensure no damage to any internal components or wiring. The use of four fixings is required, one per corner
3. Mount the unit using suitable fixings and in a manner to achieve IP67 sealing.

NB Ensure that any screws that protrude through any mounting surface are covered and do not interfere with any other wiring or equipment.

All fixing screws must be permanently prevented from removal, either by vibration or by personnel using standard tools.

4. Determine the best position for the cable entries and drill the box for them, ensuring no damage to any internal components or wiring. All wiring must use cable glands that are suitable for the application.
5. Fix the cable glands in place and feed in the electrical wiring, taking care not to interfere with the internal TR wiring.
6. Make the electrical connections as detailed below.

Electrical Connection

1. Check that the operating voltage of the unit to be installed is of the same electrical type and voltage rating as the machine control circuits. This information can be found on the laser mark on the front of the TR unit. Note that all units are designed to operate at +/-10% of the nominal supply voltage. The use of an incorrect voltage can seriously damage the unit. AC units are suitable for 50/60 Hz.
2. Double check that the electrical supply is isolated and attach suitable conduit(s) via the previously fitted cable gland(s). Correct size cable glands/blanking plugs must be used to achieve IP67 sealing.
3. Bond the enclosure to Earth potential via terminal 1. The earth wire used must be multi-stranded Yellow and Green PVC sheathed and approved to BS 6231 with conductor cross-sectional area of 2.5mm². The Earth lead must be fitted such that it will be the last to be broken if the wiring loom is pulled from the product.
4. Make the electrical connections, referring to the information below.

The TR unit incorporates fuse protection for the unit supply. The unit supply fuse is rated at 1A, 250V slow blow to IEC 127. The fuse is 20mm x 5mm diameter.

User connections are as follows:

Terminal 1. Earth

Terminal 2. (Permanent Supply/Remote) Supply to initiate timer. This terminal incorporates the internal fuse. The iniation of the timer must be in sync with the shut down of the machine likewise the supply to the timer must be removed when the machine is re-started. A supply **MUST NOT** be given to the timer if the machine is in use.

Terminal 3: Safety Circuit 1 Feed

Terminal 4: Safety Circuit 2 Feed

Terminal 5: Safety Circuit 1 Return

Terminal 6: Safety Circuit 2 Return

Terminal 7: (Supply Common Return)
For DC installations, connect this terminal to 0V of the machine control system. For AC installations, this will be Neutral.

Setup

Mechanical Function Test (Unpowered)
1. If required, depress the solenoid plunger to allow the removal of the key from the unit.
2. Replace the lid of the TR unit.
3. Ensure that the key that is to be inserted into the TR unit operates the mechanical interlocking system in place. The key must only be available when all other protected guards are in place.
4. Insert the key into the lock. It must lock in position.

Electrical Function Test

N.B The Safety Timer Relay delay period is programmable and may need to be adjusted to suit the machine run down period as determined by a risk assessment.

The time delay is adjusted by rotating a red rotary switch on the Safety Timer Relay with a small electrical screw driver, the Safety Time Relay is located inside the TR unit.

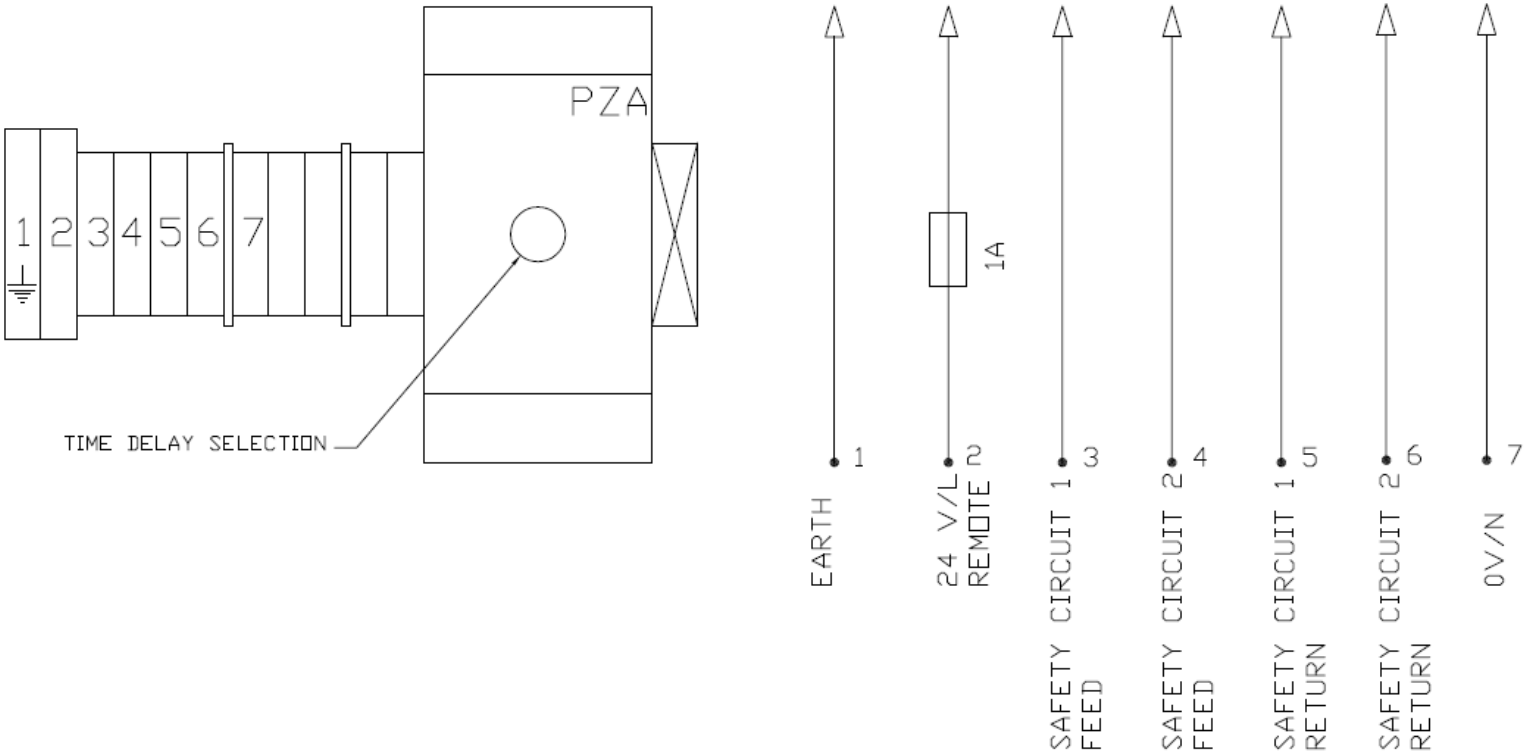
NEVER OPEN THE UNIT FOR ANY REASON, INCLUDING ADJUSTMENT WITHOUT ISOLATING THE MACHINE.

1. Supply power / remote signal to the TR unit and ensure the access key is trapped. The blue "Timer Active" lamp should be illuminated.
2. After the pre-programmed time period, observe the blue "Timer Active" lamp extinguish and the green "Energise Solenoid" lamp illuminate.
3. Depress the "Energise Solenoid" button and ensure it is possible to release the access key.
4. Re-insert and turn the access key, ensuring it becomes trapped.
5. When the machine is restarted ensure all lamps are extinguished and it is not possible to remove the key.

mGard

Fortress Interlocks

Terminal Diagram



Service and Inspection

Regular weekly inspection of the following is necessary to ensure trouble-free, lasting operation:

- Correct switching function
- Secure mounting of components
- Debris and wear
- Sealing of cable entry
- Loose cable terminals or plug connectors

The Lock Assembly should be lubricated with WD40 lubricant, every 10,000 operations.

There are no user serviceable parts in the TR unit. If damage or wear is found with an assembly, please contact your local Fortress stockist. The complete interlock must be replaced after 1 million switching operations.

Disposal

This interlock does not contain any certified hazardous materials so should be disposed of as industrial waste.

Liability coverage is voided under the following conditions:

- if these instructions are not followed
- non-compliance with safety regulations
- installation and electrical connection not performed by authorised personnel
- non-implementation of functional checks.

The manufacturer reserves the right to modify the design at any time and without notice.

This guide should be retained for future reference.