



Fore**Pay** Installation Manual

P/N: 817427160

Revision A3

TERMS AND CONDITIONS

All products and services provided by Orpak Systems Ltd. without exception are subject to the Orpak Systems Ltd. General Terms and Conditions. Ensure that you read through the General Terms and Conditions completely prior to performing any procedures detailed in this document.

SAFETY CONSIDERATIONS

Carefully read all warnings and instructions, provided to help you install and maintain the equipment safely in the highly flammable environment of a gas station.

Disregarding these warnings and instructions could result in serious injury and property loss or damage.

It is your responsibility to install, operate and maintain the equipment according to the instructions in this manual, and to conform to all applicable codes, regulations and safety measures. Failure to do so could void all warranties associated with this equipment.

Ensure that the installation is performed by experienced personnel, licensed to perform work in gas stations and in flammable environments, according to the local regulations and all relevant standards.

WARNING - EXPLOSION HAZARD

Use a separate conduit for intrinsically safe wiring. Do not run any other wires or cables through this conduit, since it may lead to an explosion hazard.

Use standard test equipment only in the non- hazardous area of the fuel station, and approved test equipment for the hazardous areas.

Installation and service must comply with all applicable requirements of the National Fire Protection Association NFPA-30 "Flammable and Combustible Liquids Code", NFPA-30A "Automotive and Marine Service Station Code", NFPA-70 "National Electric Code", federal, state and local codes and any other applicable safety codes and regulations.

Do not perform metal work in a hazardous area. Sparks generated by drilling, tapping and other metal work operations could ignite fuel vapors and flammable liquids, resulting in death, serious personal injury, property loss and damage to you and other persons.

CAUTION - SHOCK HAZARD

Dangerous AC voltages that could cause death or serious personal injury are used to power the equipment. Always disconnect power before working on the equipment. The equipment may have more than one power supply connection point. Disconnect all power before servicing.

WARNING - PASSING VEHICLES

When working in an open area, block off the work area to protect yourself and other persons. Use safety cones or other signaling devices.

WARNING

Substitutions of components could impair intrinsic safety. Use of unauthorized components or equipment will void all warranties associated with this equipment.

CAUTION

Do not attempt to make any repair on the printed circuit boards that reside in the equipment, as this will void all warranties associated with this equipment.

PROPRIETARY NOTICE

The information contained in this guide is confidential and proprietary to Orpak Systems Ltd. No part of this guide may be disclosed or reproduced in any form without written permission of Orpak Systems Ltd. The information provided in this document is current as of the date of its publication, and it may be changed at any time without notice.

DISCLAIMER

This document is provided for reference only and while every effort has been made to ensure correctness at the time of publication, Orpak Systems Ltd. assumes no responsibility for errors or omissions.

FCC COMPLIANCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B & C digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- » Reorient or relocate the receiving antenna
- » Increase the separation between the equipment and receiver
- » Connect the equipment to an outlet on a circuit different from that to which the receiver is connected
- » Consult an authorized dealer or service representative for help

FCC WARNING

Modifications not expressly approved by the manufacturer could void the user authority to operate the equipment under FCC Rules.

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Israel

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Section 1 Introduction

1.1. General

This manual provides instructions on how to install and configure the TR500, Orpak's flexible and cost-effective outdoor payment and authorization terminal.

1.2. Solution Description

TR500 is part of Orpak's next generation of outdoor authorization tag reader, installed directly onto the dispenser or wall mounted next to it for both attended and unattended activities. The tag reader supports authorization via contactless MiFare cards & tags as well as 125KHz tags.

The TR500 is a compact standalone reader unit for tags intended for vehicle or driver tag identification in gas stations and other applications. The TR500 includes a Security Application Module (SAM) used to handle encrypted tags. The TR500 is installed within easy reach for customers wishing to refuel, and it transmits information to the station automation system over an Ethernet or RS-485 cable.

1.3. Documentation Conventions

This manual uses the following conventions:



Warning notes contain information that, unless strictly observed, could result in injury or loss of life.



Caution notes contain information that, unless strictly observed, could result in damage or destruction of the equipment or long-term health hazards to personnel.



Notes contain helpful comments or references to material not covered in the manual.



Best practice notes contain helpful suggestions.



Example notes contain additional information to illustrate a concept/procedure.

Section 2 System Overview

2.1. General

This section provides a detailed description of the TR500 system, as well as the available configurations, system specifications, and communication standards.

2.2. Specifications

The following details TR500's specifications and external interfaces.

2.2.1. General Specifications

The following table details the general specifications for TR500 (see [Table 2-1](#)):

Table 2-1 - General Specifications

Parameter	Value
PHYSICAL	
Dimensions (HxWxD)	74mm x 116mm x 26mm
Weight	265g
ELECTRICAL	
Input Voltage	12v – 24v DC $\pm 10\%$
Power Consumption	3W
ENVIRONMENTAL	
Operational Temperature	-40 C° – +80 C°
Storage Temperature	-40 C° – +85 C°
Vandalism	IK8
Humidity	95% non-condensing
Vibration	IEC 60945 §8.7
IP Rating	IP66
INTERFACE	
User Interface	Buzzer, 3 LEDs (blue, green, and red)
Card/Tag Reader	<ul style="list-style-type: none"> » MiFare Classic ISO 14443-A » 125k EM4050, EM4102
Communication	
RS485	One RS485 port
Ethernet	Ethernet
SAMs	1
CERTIFICATIONS	
(In progress)	FCC, CE, RoHS, ESD (15kV)

2.3. Layout & Dimensions

The following details TR500's layout and dimensions (see [Figure 2-1](#)):

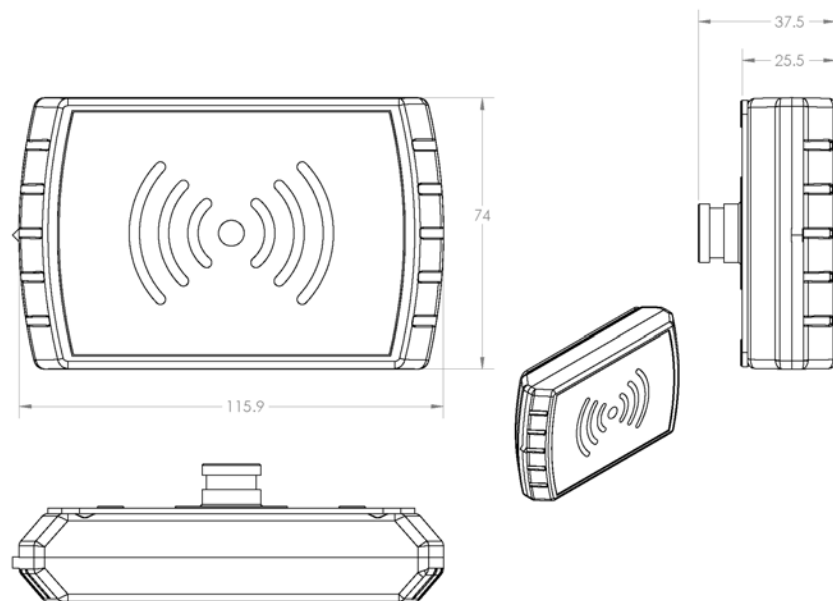


Figure 2-1 - TR500 Layout & Dimensions

2.4. Product Label

The TR500's label is located under the rubber seal at the back of the device (see [Figure 2-2](#)):



Figure 2-2 - TR500 Product Label Location

The follow details TR500's product label (see [Figure 2-3](#)):

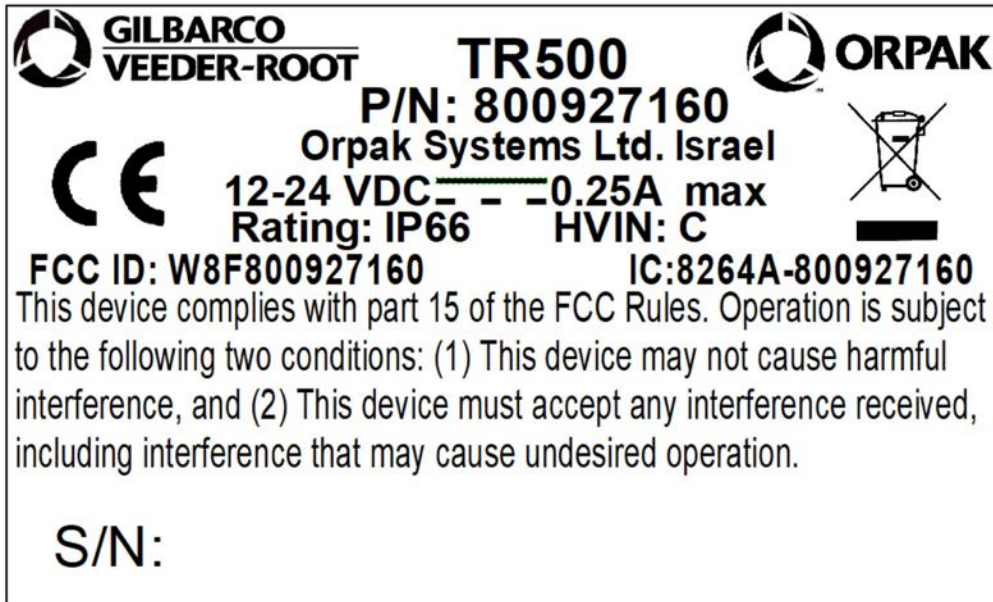


Figure 2-3 - TR500 Product Label

Section 3 Preliminary Guidelines

3.1. General

This section provides preliminary guidelines for the TR500. These include:

- » [Precautions and Safety Information](#)
- » [Preliminary Considerations](#)
- » [Required Tools](#)

3.2. Precautions and Safety Information

This section details the hazards and safety precautions associated with installing, inspecting, maintaining, or servicing this product. Before performing any task on this product, read this safety information and the applicable sections in this manual, where additional hazards and safety precautions for your task will be found. Fire, explosion, or electrical shock could occur and cause death or serious injury if these safe service procedures are not followed.

Preliminary Precautions

You are working in a potentially dangerous environment of flammable fuels, vapors, and high voltage. Only trained or authorized individuals knowledgeable in the related procedures should install, inspect, maintain, or service this equipment.

Emergency Total Electrical Shut-Off

The first and most important information you must know is how to stop all fuel flow to the pump and island. Locate the switch or circuit breakers that shut-off all power to all fueling equipment and dispensing devices.

Total Electrical Shut-Off Before Access

Any procedure requiring access to electrical components or the electronics of a pump / dispenser requires total electrical shut-off of that unit. Know the function and location of this switch or circuit breaker before inspecting, installing, maintaining, or servicing.

Evacuation, Barricading, and Shut-Off

Any procedures requiring accessing a pump / dispenser head requires the following three actions:

- » An evacuation of all unauthorized persons and vehicles
- » Using safety tape or cones as barricades for the effected units
- » A total electrical shut-off of the unit

Read the Manual

Read, understand, and follow this manual and any other labels or related materials supplied with this equipment. If you do not understand a procedure, contact Orpak's Customer Service. It is imperative for your safety, and the safety of others, to understand the procedures before beginning work.

Follow the Regulations

There is applicable information in Occupational Safety and Health regulations, and national, state, and local codes, which must be followed. Failure to install, inspect, maintain, or service this equipment in accordance with these codes, regulations, and standards may lead to legal citations with penalties, or affect the safe use and operation of the equipment.

Replacement Parts

Use only genuine Orpak replacement parts and retrofit kits in your installation. Using parts other than genuine Orpak replacement parts could create a safety hazard and violate local regulations. Repair should only be done by authorized personnel certified by Orpak.

Only Suitably certified and rated SELV and LPS external power supply may be connected to the terminal unit.

Prevent Explosions and Fires

Fuels and their vapors will become explosive if ignited. Spilled or leaking fuels cause vapors. Even filling customer tanks will cause explosive vapors in the vicinity of dispenser or island.



Warning: Do not open the unit when an explosive atmosphere is present.



Caution: Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.



Attention: Danger d'explosion si la batterie n'est pas proprement remplacé. Jetez les batteries usagées conformément aux instructions.

No Open Flames

Open flames from matches, lighters, welding torches, or other sources can ignite fuels and their vapors.

No Sparks - No Smoking

Sparks from starting vehicles, starting or using power tools, burning cigarettes, cigars or pipes can also ignite fuels and their vapors. Static electricity, including an electrostatic charge on your body, can cause a spark sufficient to ignite fuels and their vapors. After getting out of a vehicle, touch the metal of your vehicle to discharge any electrostatic charge before you approach the dispenser island.

Working Alone

It is highly recommended that someone who is capable of rendering first aid be present during servicing. Be familiar with Cardiopulmonary Resuscitation (CPR) methods if you are working with or around high voltages. This information is available from the Red Cross. Always advise the station personnel about where you will be working, and caution them not to activate power while you are working on the equipment. Use the OSH tag out and lock out procedures.

Working With Electricity Safely

Be sure to use safe and established practices in working with electrical devices. Poorly wired devices may cause a fire, explosion, or electrical shock. Be sure grounding connections are properly made. Make sure that sealing devices and compounds are in place. Be sure not to pinch wires when replacing covers. Follow OSHA Lock-Out and Tag-Out requirements. Station employees and service contractors need to understand and comply with this program completely to ensure safety while the equipment is down.

Hazardous Materials

Some materials present inside electronic enclosures may present a health hazard if not handled correctly. Be sure to clean hands after handling equipment. Do not place any equipment in mouth.

Informing Emergency Personnel

Compile the following information for emergency personnel:

- » Location of accident (e.g. address, front / back of building, etc.)
- » Nature of accident (e.g. possible heart attack, run over by car, burns, etc.)
- » Age of victim (e.g. baby, teenager, middle-age, elderly, etc.)
- » Whether or not victim has received first aid (e.g. stopped bleeding by pressure, etc.)
- » Whether or not victim has vomited (e.g. if swallowed or inhaled something, etc.)



Warning: Oxygen may be needed at scene if gasoline has been ingested or inhaled. Seek medical advice immediately.



Note: The maximum available current from the building installation (AC / DC power supply) shall be less than 85A under any single fault condition.

North American Directives

For UL standard for North America, "TYPE 4 Enclosure" must be stated in the instructions.

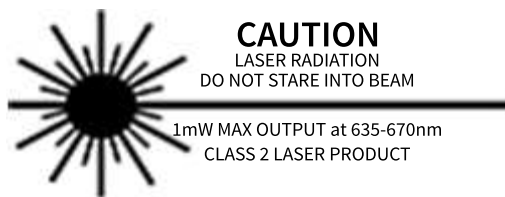
European Directives

The OrPAY1000 complies with the necessary European Directives for the CE mark.



Laser Warning

Some models of the TR500 incorporate a barcode reader. The barcode reader incorporates a laser aiming system. The Laser has a Class 2 output power to IEC 60825-1:2007:



Caution: Do not stare into laser beam.

3.3. Preliminary Considerations

The following factors need to be considered in designing an installation for the TR500:

Physical Dimensions

The following displays the physical dimensions of TR500 (see [Figure 3-1](#)):

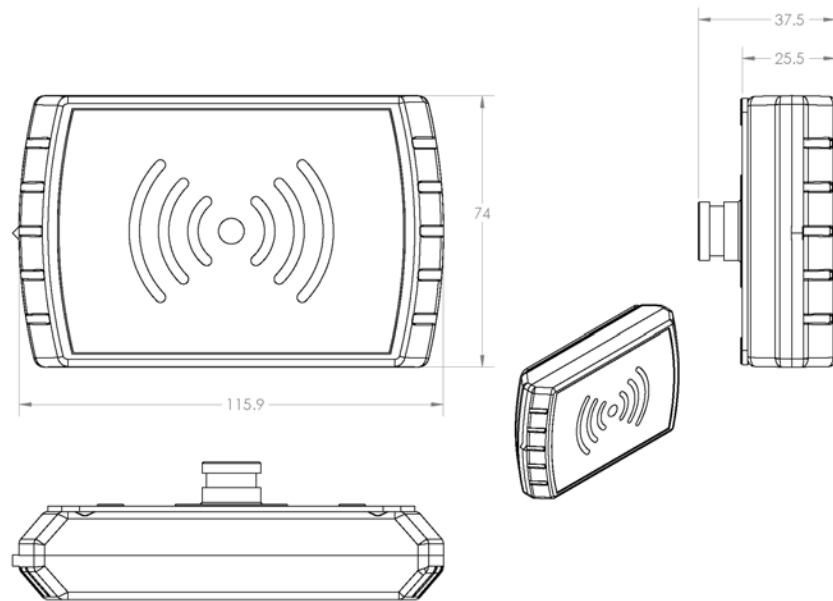


Figure 3-1 - Dimensions

Fire

The enclosure must be designed to meet the requirements of ISO/EN 60950-1 for fire enclosures.

ATEX (Explosive Atmospheres)

ATEX (Explosive Atmospheres): The TR500 has openings that prevent it being gas-tight, and consequently it must be located away from any hazardous zone. Refer to local laws and regulations for hazardous zones to determine a suitable mounting arrangement for the TR500. The enclosure in which the TR500 is mounted should also be designed to prevent a dangerous build-up of explosive gases.

Security

The enclosure must provide sufficient physical security to protect the public from the hazards within, as well as reduce the possibility of tampering with the outdoor payment terminal.

Power & Data

- a. The enclosure must provide mains power with the following requirements:
 - » A permanently-wired connection or a socket
 - » A protective earth connection
- b. The enclosure must provide an Ethernet data connection with the following requirements:
 - » Capable of at least 10Mbps (preferably 100Mbps)

- » The connection must be either a socket into which a standard Ethernet patch cable can be connected, or a cable that is terminated in a standard RJ45 plug suitable for direct connection into the outdoor payment terminal's LAN socket
- » Minimum cable standard should be CAT5e STP (Shielded)
- c. The enclosure may provide an alternative data connection for terminals that have optional communications modules installed. Please consult with Orpak for what options are available

Accessibility

The enclosure must be designed and mounted so that disabled persons are able to operate the outdoor payment terminal.

Materials

The enclosure and all its components must be constructed of durable materials suitable for the intended location.

Water Tightness

The TR500 is rated for IP66. The parts sitting inside the pump / pedestal enclosure are designed to reduce the likelihood of rain drops entering the electronics, but the enclosure must provide good protection from water. The door should have a water seal against the enclosure, and there should also be drainage and / or a system to reduce excessive condensation build-up and dripping.

3.4. Required Tools

The following tools are required to mount the TR500:

- » Torx T20 screw driver
- » Philips #1, or Flat 5 mm screw driver
- » Drill



Warning: Do **NOT** use power tools if working on a fuel station forecourt. Any spark could cause an explosion.

Section 4 Installation

4.1. General

This section provides instructions for installing the TR500. While the guidelines deal primarily with the requirements for mounting onto a fuel pump-head, the steps are applicable to any type of cabinet.

4.2. Installation Procedures

This section provides instructions for installing the TR500 on a new pump or cabinet in three different ways:

- » On the door / front of the pump
- » On top of the pump
- » On the wall near the pump

Strictly observe all the safety instructions detailed in [Precautions and Safety Information](#).

4.2.1. Installation on Door/Front of Pump

4.2.1.1. Drilling Template

When installing on the door/front of a pump, the following drilling template will be provided (see [Figure 4-1](#)):



Figure 4-1 - Drilling Template

Use this template to determine hole places when drilling on the surface where you plan to install the TR500.

4.2.1.2. Installation Procedure

To install the TR500 at any non-hazardous area of the fuel pump, proceed as follows:

1. Shut down any power source at the installation and working area
2. Select a non-hazardous area in the pump where you can install the TR500. The area should be a flat panel with a thin metal panel where you can attach the TR500
3. Identify the prescribed location of the TR500 on the fuel pump housing. Draw a horizontal reference line to allow correct alignment of the lower edge of the drilling template
4. Use the drilling template to mark the five holes on the mounting surface
5. Drill five 4 mm holes in accordance with the template
6. Drill the center hole to a diameter of 20mm
7. Thoroughly clean burrs on the hole edges
8. Inspect the hole and check for correct location according to the template
9. Clean the surface intended for installing the TR500
10. Use four M3 x 20 screws to attach and tighten the TR500 to the surface

4.2.2. Installation with Bracket on Top of Pump

The following table details the installation kit for installing the TR500 on the wall (see [Table 4-1](#)):

Table 4-1 - Top/Wall Mounting Kit - P/N 819027190

P/N	Description	Quantity
814327191	TR500 WALL INST BRACKET	1
815225300	SCREW, M3x10+SPRING& FLAT WASHER	2
815228300	USER MANUAL, TR500	1

The following shows the installation bracket (see [Figure 4-2](#)):



Figure 4-2 - Mounting Bracket

To install the TR500 with a bracket on top of the pump, proceed as follows:

1. Shut down any power source at the installation and working area
2. Locate a non-hazardous area to install TR500
3. Drill a 20mm hole 60mm-80mm behind the intended location for the TR500 to pass cables through to the inside of the pump
4. Clean the surface intended for installing the TR500
5. Use a drill to install the mounting bracket on top of the pump (FIGURE TBD)
6. Use the two M3 x 10 screws provided to attach and tighten the TR500 to the mounting bracket (FIGURE TBD)

4.2.3. Installation with Bracket on Top of Pump

The following table details the installation kit for installing TR500 on top of the pump (see [Table 4-2](#)):

Table 4-2 - Top/Wall Mounting Kit - P/N 819027190

P/N	Description	Quantity
814327191	TR500 WALL INST BRACKET	1
815225300	SCREW, M3x10+SPRING& FLAT WASHER	2
815228300	USER MANUAL, TR500	1

To install the TR500 with a bracket at any non-hazardous area on a wall near the pump, proceed as follows:

1. Shut down any power source at the installation and working area
2. Locate a non-hazardous area to install TR500
3. Clean the surface intended for installing the TR500

4. Use the two M3 x 10 screws provided to attach and tighten the TR500 to the mounting bracket (FIGURE TBD)
5. Use a drill to install the mounting bracket on the wall (FIGURE TBD)
6. Use a cable protector to cover the cable leading to the pump



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