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**HANDBOOK**  
**FOR THE**  
**ST700 TfL CONTROLLER**  
**(SMALL)**

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## WARNING

**These (this) controller(s) require specific configuration to enable them (it) to function correctly when installed.**

**The configuration process is a complex activity should only be carried out by persons who are adequately trained, have a full understanding of the needs of the county or region where the controller is to be used and are experienced in the tasks to be undertaken.**

## *SAFETY WARNING*

In the interests of Health and Safety, when using or servicing this equipment, the following instructions must be noted and adhered to:

- i) Only skilled or instructed personnel with relevant technical knowledge and experience, who are also familiar with the safety procedures required when dealing with modern electrical / electronic equipment are to be allowed to use and / or work on the equipment. All work shall be performed in accordance with the Electricity at Work Regulations 1989.
- ii) Such personnel must take heed of all relevant notes, cautions and warnings in this handbook and any other document or handbook associated with the ST700 Traffic Controller.
  - a) The equipment must be correctly connected to the specified incoming power supply.
  - b) The equipment must be disconnected / isolated from any incoming power supply before removing any protective covers, or working on any part from which protective covers have been removed.
  - c) The Integral Facilities PCB contains a Lithium Battery that should be disposed of in a safe manner. For further details, refer to Siemens Code of Practice CP526.
- (iii) In the event of any person working elsewhere on the junction, the mains supply to the controller should be switched off and the Master Switch locked in the OFF position using the Master Switch Lock kit.

### **WARNING:**

**Removal of the electricity board fuse or switching off the controller switch or manual panel signals ON/OFF switch does not guarantee isolation of the equipment.**

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## 1. INTRODUCTION

The ST700 TfL controller is an ST700 controller mounted in a TCUG Small Case.

This document provides information relating to the differences between the ST700 TfL and the standard ST700 controllers. It will also show where the relevant common details may be found.

### 1.1 Glossary of terms

TCUG	Traffic Controller User Group
ST700 TfL	ST700 Controller in small User Outercase

### 1.2 Related documentation

667/HB/27880/000	ST700 Controller General Handbook
667/HH/27000/000	ST700/800 Controller Handset Handbook
667/LP/27880/000	ST700 Controller Illustrated Parts List
667/HB/25300/000	User Guide for TCUG Standard Cases
667/PM/27880/000	TAMP Document for ST700 Controllers
667/DZ/27880/501	ST700 TfL Controller Family Tree

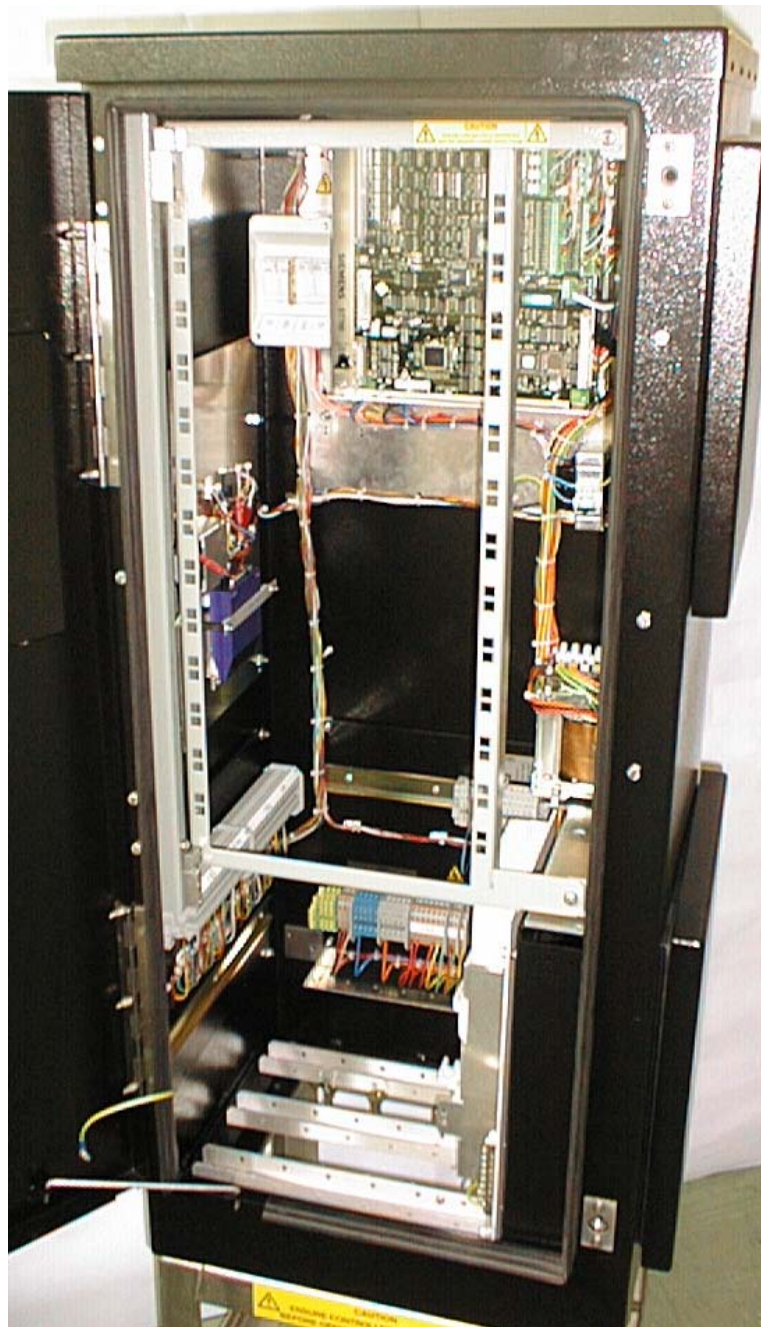
## 2. SPECIFICATIONS AND OUTERCASE

See also the ST700 General Handbook, 667/HB/27880/000. The differences will be outlined in this section.

### 2.1 ST700 General Layout

The controller utilises a single sided access cabinet, with a swinging frame for mounting any additional equipment. This frame has a stay connected to the rack to hold it open by looping it onto the door lock.

**Figure 1 - General Layout**



Note that the 6U chassis that holds the PCBs, Controller Switch etc., is positioned in the top of the controller.

The part numbers of the various items that make up the Controller may be found in the Family Tree (see section 1.2 for information).

## 2.2 Controller Dimensions

	(mm)
Height (above ground)	1220
Width	500
Depth	406
Weight (Outercase + Master switch panel)	50kg
Weight (Assembled)	58kg

## 2.3 Standards

The controller has been designed to meet the relevant sections of the following standards and regulations:

- TR 0141C
- BS 505
- TR 2130
- BS 7671 (IEE Regulations)
- Health and Safety at Work Act
- Electricity at Work Regulations 1989

## 2.4 Telephone line terminations

The telephone companies can obtain access to their terminations via the lower short door on the side of the case, using a triangular key (see section 2.6.3).

A pair of wooden boards is provided in the compartment. The space provided is approximately:

300mm high x 285mm wide x 115mm deep

Support and earthing is provided for the telephone cable.

The arrangement allows the option of using external posts for terminating communication lines to be adopted if required.

## 2.5 Electricity supplies

The ST700 TfL is manufactured with the following items:

- a) A master fuse holder to IEC 269 capable of holding fuses rated from 10A to 45A. To allow for the requirements of individual sites, the fuse is not



supplied with the case and is to be fitted when the case is customised for the site.

b) A double 13A socket outlet protected by a 30ma RCD and fused at 5A.

All other switches and fuses are to be provided as part of the controller.

There is no provision for mounting the electricity supplier's termination equipment in the case. This version of the case relies on the termination equipment being housed in an external mains termination pillar.

**Note** Space is also provided for a 300mA RCD.

## 2.5.1 Fuses and Fuse Carrier

Position	FUSE (IEC 269)	STCL Part Number
Master Switch fuse	Fuse Carrier	516/4/97054/001
	16A	518/4/90637/007
Controller fuse	16A	518/4/97056/012
Signal fuse	10A	518/4/90301/013

## 2.6 Doors and Locks

### 2.6.1 Main Door

The single main door is fitted with:

- Two locks operated by a single 'T' key, located at the top and bottom of the door.
- One Yale 27C lock, located centrally between the top and bottom of the door.
- A door stay.
- An A4 size document pocket fitted to the inside of the main door.

**Note:** To open the door, first open the Yale lock and then open the T key operated locks.  
To close the door, first close the T key operated locks and then close the Yale lock.

### 2.6.2 Manual Panel

This lock is a Yale Type 900.

### 2.6.3 Access Door to Telephone Company compartment

The key for this lock is a triangular screw lock (STCL Part No. 667/2/25320/024).

## 2.7 Case

The case provides a total of 14U space into which 11 inch equipment may be mounted.

The controller is mounted on the rear face of the case but takes up the top 6U of the swinging frame (see Figure 1). The remaining 8U is available for fitting additional equipment in any configuration; for example, a detector rack (3U) and/or a free standing OTU (5U) etc.

## 2.8 Earthing

### 2.8.1 Earth blocks

Earthing blocks are provided on the DIN rail.

### 2.8.2 Case Earth

The case earthing, including all doors or flaps, is done with insulated conductors bonded to conductive areas of metal.

## 2.9 DFM lens

The case is not fitted with a DFM lens

## 2.10 Street Cables

The ST700 TfL can support 25 cables using CET-002 cable earthing glands.

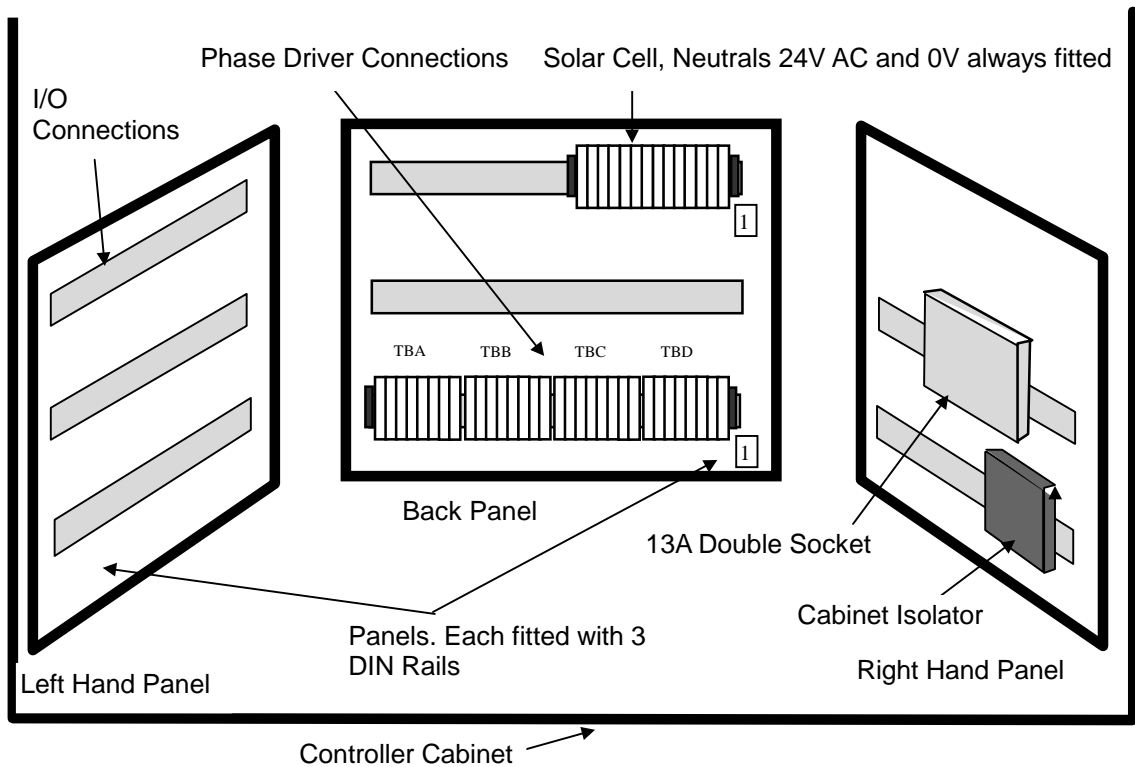
Note: Thirty-six mounting holes are provided but it is unlikely that all of these positions will be available for use, depending on street cable layout in the cabinet.

## 2.11 DIN Rail mounted Terminations

Connection to the controller is made by screw fit terminals for signal heads and screw terminals for ELV connections. These are all mounted on the DIN rails.

The ST700 TfL caters for 300 terminations.

**Figure 2 - Terminations**



**Note 1:** The terminal Block designations are as per the standard ST700. So, for the ST700 TfL, TBA to TBD are phase connections going in order Red, Amber, Green from terminal 1 (TBA is always fitted). The 24V AC is wired to TBE and the Solar Cell / Reg Signs is on TBF.

**Note 2:** The middle rail on the back panel is generally for additional terminations, e.g. Patching phase cables, extra earth and / or neutral connections.

Refer to the controller EM Specification for the connection details of an individual controller.

### 3. INSTALLATION DETAILS

The general principles are as per the standard ST700 range of controllers (see 667/HB/27880/000). Note, however, that the dimensions are modified and the stool is fitted with a baffle plate.

Note the orientation of the baffle to the outercase and ensure that the stool is installed so that the outercase main door is in the required position. See Figure 3 for clarification.

#### 3.1 Preparation

All standard practices should be observed, e.g. distances from kerbs, no doors opening over carriageway, no obstruction of footpaths, good view of intersection, reasonable clearance over the ground etc.

#### 3.2 Installation of the Stool

The stool and outercase can be installed as a complete assembly or fit the stool first for later mounting of the controller.

A hole should be dug and a flagstone approximately 600mm x 600mm should be embedded securely at the bottom of the hole. Refer to Figure 3 for general method of installation and dimensions. Ensure that enough clearance is left around the stool to enable the coach bolts to be inserted.

If the controller is being installed on a slope, allowance must be made for the opening of the door adjacent to the uphill side.

The controller and/or stool are placed in the centre of the flagstone. Adjustment may be required to ensure that the outercase sides are vertical; this should be checked using a spirit level.

Mix up a stiff mixture of concrete (mix: 1 cement, 3 sand, 4 coarse aggregate (20mm) with no excess water) and cover the stool and flagstone to a height approximately 100mm above the bottom of the stool. The concrete must be sloped to provide a run up for the cables. Any cables already entering the pit must be held away from the wet concrete. Where there is a risk of freezing, then a suitable antifreeze additive shall be incorporated in the concrete mix to ensure proper curing.

If the mounting stool is installed separately to the controller outercase then the threads of the fixing studs on the stool should be protected from possible damage.

##### 3.2.1 Installation to Existing or Separately Installed Stool

If the controller outercase was not installed with the mounting stool then proceed as follows:

The controller outercase is installed on to the stool by lowering it onto the four threaded locating studs that protrude from the stool. Fit the plain washers and retaining nuts and tighten fully.

When fitting the outercase onto the stool, care should be taken to ensure that all cables are in the correct position with regard to the CET bar, so as to avoid possible damage or extra effort being required when moving the cables to their correct position once the outercase has been secured.

**Note:** As it is difficult to locate the outercase onto the stool it is recommended that three persons undertake the task, two to hold the outercase in position and one to locate on to the bolts.

### 3.2.2 Sealing the Controller base

To prevent condensation in the Controller the outercase base **must** be sealed as soon as possible after the Controller outercase has been installed. The telephone company compartment may be infilled and sealed independently of the main cabinet.

A concrete fillet around the outside of the outercase may be completed before or after the epoxy sealing to suit site conditions. See Figure 3 for details.

If any of the cables were replaced or moved during the installation of the controller then the sand infilling must be made good before the sealing compound is introduced.

**Note:** *The infilling must be brought to ground level or above and compacted.*

The sealant should be poured all around the cables and to a height which when the sealant is set will give a total covering not less than 6.5mm thick over the base of the controller and is level with the top of the base seal angles ensuring that any gaps between the outercase and angles are also filled. This is to prevent the ingress of moisture.

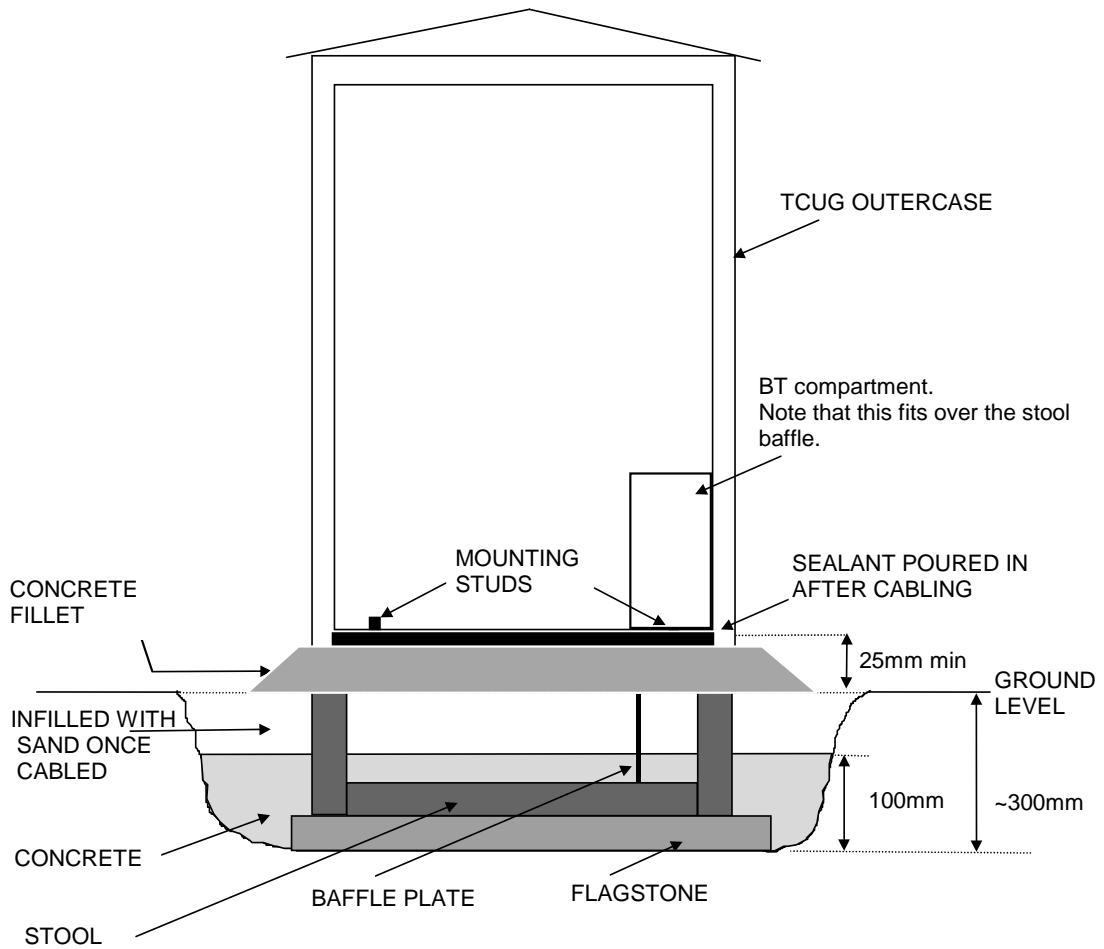
Approx. 2.0Kg of Robnorganic PX212ZF or similar base seal epoxy should be adequate.

Refer to Figure 3 for general method of infill and sealing, etc.

### 3.3 Water Baffle

The stool is fitted with a baffle plate to enable the back-filling of the Electricity Board / telephone company cables independently from the main street cables or vice versa.

**Figure 3 – Installing the Outercase**



Note that the top of the concrete fillet may be at ground level if required.

### 3.4 Cable Routing - General

Wiring runs should be made neatly and routed to allow enough spare cables for possible changes/additions at a later date.

Spare cores should be insulated in bundles and fixed securely away from mains. If required, spare cores can be terminated in DIN rail earth blocks.

Signal and Detector terminations to the controller should be as per the Works Specification, leaving sufficient spare wire to enable joints to be remade when necessary. The 'Pair' cable used for connection from the loops should be terminated using the appropriate kit. This block can be situated in any convenient position and the twisted pairs connected to the Detector Backplane.

In general cables with Mains voltages should be routed on the right hand side of the cabinet (toward the cabinet isolator). Cables with ELV only will normally be routed on the left-hand side.

**End of Document**