

IP65 GSM-R CABINETS

Cannon Technologies S104800 cabinet has been designed to house communications, server, electrical and electronic equipment for use in communications, transportation and rail infrastructure projects including GSMR, SISS, CIS, CCTV, communications, Networking etc.

The IP65 Enclosure has been based on the principals defined in RT/E/PS/00028 Network Rail Product Specification. The main Trackside equipment housing incorporates an equipment chamber and a separate battery chamber independently accessible.

TRACKSIDE EQUIPMENT HOUSING DESIGN

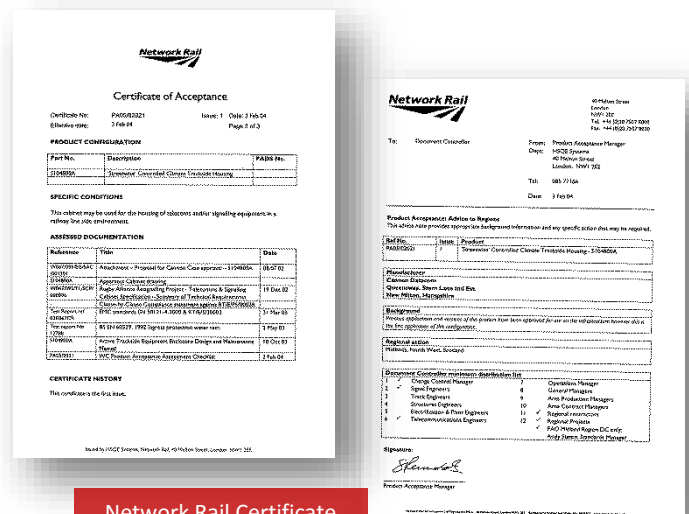
The Trackside Equipment Housing consists of three separate chambers:

- Active electronic equipment chamber, accessed through two abutting front doors
- Battery chamber accessed through a single door on the left-hand front of the Trackside equipment Housing
- Electrical Services chamber accessed through a single door positioned within the left-hand end panel of the Trackside equipment Housing
- The active electronic equipment chamber (referred to as a Thermal Chamber) has:
 - Seals from both environmental and electrical interference (EMC shielding)
 - Air-to-air heat exchanger housed within the pair of front access doors
 - Two dual skinned doors, which enclose and support baffles, fans, etc.
 - Suitable door stays provided for each door
 - Protection from external shock and vibration has been provided to the thermal chamber by it being mounted on heavy-duty rubber shock mounts
- Optional 550-watt 50-Hz fan heater
- The battery chamber has:
 - One dual skinned door which:
 - Encloses and supports a filter
 - Opens 180°, to allow two-man battery access
 - Is fitted with a suitable door stay
- An insulated inner battery compartment containing four telescopic shelves. Each shelf houses 4-off batteries



The Equipment Enclosure design is based on the principals defined in RT/E/PS/00028 Network Rail Product Specification

- An insulated hinged door with lift-off hinge facilities covering and sealing the battery housing
- An IP55 hydrogen gas exhaust vent. This will be positioned at a high point in the rear of battery chamber and vent directly to atmosphere
- An IP55 air inlet vent will be positioned near the bottom of the battery chamber to balance the effect of the gas exhaust vent
- A 48-volt DC Peltier Solid State Chiller / Heater system with fans for maximum air circulation (see section 5.1.2 bullet point 3 for a full description).
- Space above battery compartment for fans required to circulate forced air over the Peltier heat sink.
- Lockable hatch for a generator socket and cable entry located in the bottom left-hand corner of the Electrical Chamber door.



Network Rail Certificate of Acceptance

Electrical Services Chamber layout

This chamber is designed to accommodate the 230-volt AC supply termination, AC consumer unit with standby generator socket inlet, change-over switch and Environmental Control unit (CannonGuard) complete with optional remote door locking modules.

The Trackside Equipment Housing is dual skinned for high heat management incorporating a heat exchanger within the doors to control the equipment housings internal environment.

Door Locks

The pair of doors covering the thermal chamber will be locked by one Cannon lock which can be locally or remotely operated N.B. Only local operator facilities exist on this project. Alternatively the lock can be operated locally by operating the BR221 Yale lock or similar.

Materials

The main body of the cabinet and the battery/electrical services chamber door will be made from 2mm thick Z600 pre-galvanised steel sheet. Z600 denotes a total of 600gm/m² of zinc applied in an oxygen-free atmosphere to the steel substrate. The zinc weight equates to a thickness of 42µm per side, from which a life expectancy of 28 years can be expected without additional treatment. (According to trials conducted by the Galvanisers Association the average consumption of zinc from externally exposed galvanised products in the UK is 1.5µm per year.)

The internal thermal chamber and mounting posts are pre-galvanised steel in a combination of 1.5 and 2.0mm thicknesses.

The thermal chamber sits on a shock mounted pad which is also made from Z600 galvanised steel.

The main pair of doors which enclose the thermal chamber together with internal door fitments, which support the fans and heat exchanger elements, are 2.0mm thick aluminium sheet to BS1470 NS4½H.



An independent 48-volt DC power supply and Environmental monitoring control the fan(s) speed to match exacting requirements against programmable temperature points.

The battery chamber is designed to accommodate the battery cells and includes a device to assist in the providing the maximum battery life available.



The cable clamp consists of a two-piece compression frame into which the different sizes of cable glands are fitted

Finish

Electro-statically powder coating to a minimum thickness of 90µm. Cannon are confident that this painting process, when added to the 28yr protection offered by the Z600 base material, will easily surpass a 30yr life expectancy.

EMC / IP Rating

The shielding effectiveness of the Trakside Equipment Housing thermal chamber will provide additional protection to the active equipment installed in accordance with BS EN 50121 and RT/E/S/30003.

The IP rating of the thermal chamber will be IP65 in accordance with BS EN 60529.

The IP rating of the battery/electrical services chamber will be IP55 in accordance with BS EN 60529. This chamber is IP55, not IP65 for the following technical reasons:

- To allow hydrogen gas to be exhausted
- Air movement for the Peltier devices
- Air movement around the Thermal Chamber

Vibration/ Shock Mounts

The vibration mounts used to support the base and top rear of the thermal chamber are designed to meet the requirements of Specification BR 967 Section 5 Category D.

Vandal-Proofing Measures

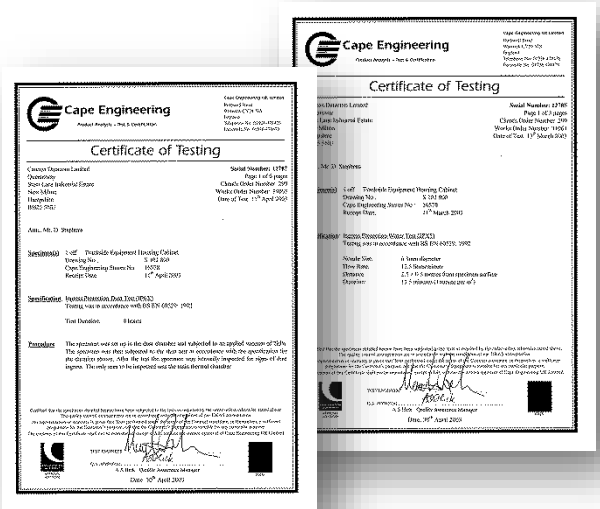
Cannon has included items which will ensure the cabinet will withstand vandal attack. These measures are designed to ensure the cabinet's integrity is not breached and meets the Anti-Vandal Specification (reference LPS 1175 issued by BRE Certification)

Climate Control

The heat management system has been design to meet ETS 300 019-1-3 Class 3.1 in the active equipment Thermal Chamber, when the following factors apply:

- An external ambient temperature range of between -20°C and +35°C plus the effect of Solar Gain assumed to be 600-watt/m² of its effected surface area i.e. face, roof and one end
- The maximum heat dissipation within the equipment chamber is based on deployed equipment, i.e. 1.6 KW under battery re-charge conditions

Please note that heaters are not generally deployed within the cabinet's main thermal chamber configuration; if the equipment is likely to dissipate less than 480-watts of heat a low temperature alarm set at 0°C is likely to occur at around -15°C. (See optional 550-watt fan heater).



Details of our independent certification for IP65 and EMC are available upon request.



Thermal chamber testing provides confidence to meet the most extreme environments. Our internal testing includes heat, cold and humidity.