CANNON
TECHNOLOGIES

INTEGRATED OUTDOOR SOLUTIONS

TECHNOLOGY FOR THE COMMUNICATIONS & TRANSPORTATION MARKET

Cannon Technologies is a world-leading provider of energy-efficient, modular data center infrastructure solutions, outdoor enclosures & cabinets, professional services and technical support.

Cannon's success lies in its team of skilled professionals whose depth of experience is unmatched, technology that sets the standard for the industry, and an unwavering commitment to providing excellent support for its customers.

Cannon Technologies has been manufacturing cabinets for Indoor and Outdoor applications for over four decades. Cannon has a long history of product development both for military and civilian applications. This broad based experience has been fundamental to the development of a wide range of integrated outdoor railway/trackside enclosure systems. In addition to the cabinets shown Cannon offers thermal and diagnostic systems.

Among these are:

- **Conventional cooling:** using natural ambient air cooling
- **FanCell:** forced air cooling
- **CoolCell:** compact forced air high efficient heat exchangers
- **ChillCell:** Solid State chilling unit
- **FreezeCell:** compact air conditioning unit
- **CannonGuard:** a fully integrated life support system for the control and monitoring of all critical functions. Remote and attended diagnostic facility offering 40 or more discreet alarms.

Product Range

Cannon has an extensive range of outdoor roadside & trackside enclosure systems for the transportation and communications markets, these include:

- FTTx – Copper/Fibre Optic Cabinets
- SISS/CIS Cabinets for security & info
- MK2 Telecommunications Cabinets
- StreetWise Active Cabinets
- Termination Boxes
- Type C Cabinets (For copper cables)
- CatWalk Pedestal Cabinets
- Apparatus/Location Cases (NR approved)

Products can also be manufactured to meet clients precise requirements.

Cabinets | Enclosures | Cabins

Overview

Cannon is at the forefront in the development of secure, high dependability and innovative designs of outdoor cabinets & enclosures. Our close collaboration with major communication providers has resulted in products providing security and environmental protection for sensitive electronics.

These cabinets can vary in size, from relatively small street-side cabinets to large walk-in cabins located trackside, on train platforms, green field sites, street-side etc.

The Cannon outdoor cabinet range provides single or multi-chamber, temperature controlled secure environment for valuable sensitive communications, electronic & electrical equipment, in a cost effective and space saving manner.

Cabinets are sealed up-to IP65 and are tailor made to suit customers' specific equipment, including copper and fibre management, EMC shielding where applicable with core material life expectancy exceeding 25 years.

Additional essential features protect against the dangers of dust, humidity, rain, moisture and physical attack.

Ultra-quiet radial fans combined with air reservoirs contained in large cabinets produce low noise and high volume air flow providing maximum cooling without the need or expense of air conditioning or refrigeration techniques.

Protection is provided from the suns heat using double wall technology, thermal chamber and high performance insulation to minimise the effects of solar heat gain and the transference of heat/cold. Reducing these threats can eliminate hot spots and condensation decreasing the failure of sensitive communications or other electronic equipment.

HIGH PERFORMANCE COOLING

The pre-engineered advantages are combined with highly efficient & dynamic cooling systems that maintain critical electronic and communications equipment within optimum operational conditions. This maximises uptime and ensures the reliability of equipment and services, reducing the costs associated with the servicing or replacement of prematurely failed components and equipment.

A range of cooling capacities are available, including high performance systems which are rated to cope with very low or very high ambient temperatures. Specially engineered cooling systems for coastal deployments, offer marinised protection against the effects of salt corrosion.

This universal design draws on forty years of global experience in supporting critical infrastructure projects in challenging deployments, environments and extreme conditions.

INTEGRATED SYSTEMS

WALK-IN CABINS

RAIN CANOPY SOLUTION

1

HIGH SECURITY STAINLESS STEEL LOCKS

In the modern world mission critical assets must clearly be protected with high security locking systems to protect against casual opportunistic break in or against more sinister penetration. Cannon has developed and installs unique marine grade Stainless Steel locks to all outdoor cabinets & enclosures. These high security mechanisms substantially resist persistent attack and will accept a wide range of high security lock cylinders. The high grade Stainless Steel also resists environmental or chemical attack. A sealed cup behind the lock cylinder prevents the spraying of liquid e.g. acid into the enclosure.
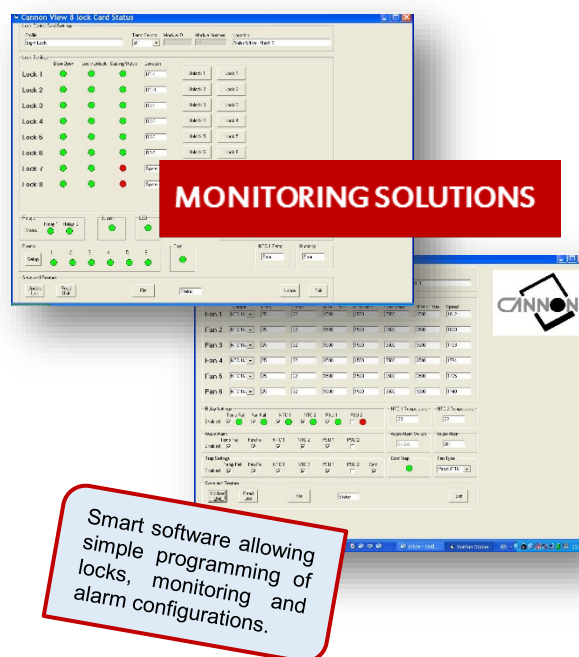
CANNON GUARD, REMOTE ACCESS CONTROL and SECURITY

The Cannon High Security Stainless Steel lock is also designed to accept the Cannon upgrade pack which will convert the installation to a remote controlled locking system. This system is remotely controlled by our "Cannon-Guard" security system enabling remote lock activation from anywhere around the world. Video surveillance systems are also available for positive monitoring together with two way audio which assists with on the spot engineering guidance. Full alarm capability and an audit trail capability increases positive security and records of alarm or intrusion activation.

INFORMED CONTROL

Options include remote keyless access control, alarms for security breaches or out of tolerance conditions providing mission critical infrastructure with positive monitoring and superior system management.

Monitoring & alarm warning for critical issues include temperature, humidity, flood, shock, security, smoke and fire can be combined with early warning of system failure that enables timely intervention to maintain service, security and safety.

SECURITY

Protecting the Olympic Park

MONITORING SOLUTIONS

Smart software allowing simple programming of locks, monitoring and alarm configurations.

Cannon Guard comprises hardware and software plus;
- Electronic Remote Access Locks
- Electronic Key Pads / RFID / Bio-Metrics
- Audio / Video Camera monitoring
- Sensors (Thermal, humidity, alarms etc.) and Displays

2

IEC 60529 Specification for degrees of protection provided by enclosures (IP Code) replaces BS 5490 : 1977.

This standard describes a uniform system for classifying the degrees of protection provided by the enclosures of electronic/electrical equipment with a rated voltage not exceeding 72.5 kV.

It gives definitions for degrees of protection of persons against access to hazardous parts inside the enclosure, and protection of equipment inside the enclosure against ingress of solid foreign objects and water.

The degree of protection provided by an enclosure is indicated by the International Protection or IP Code (e.g. IP23), and the standard defines the precise meaning of each characteristic numeral, as summarised in the table below

IP 1ST DIGIT = PROTECTION FROM SOLID OBJECTS		IP 2ND DIGIT = PROTECTION FROM MOISTURE	
0	No protection	0	No protection
1	Protection against solid bodies above 50 mm	1	Protection against vertically dripping water drops
2	Protection against solid bodies above 12 mm	2	Protection against water drops falling with up to 15° incline
3	Protection against solid bodies above 2.5 mm DIA	3	Protection against water spraying with up to 60° incline
4	Protection against solid bodies above 1 mm DIA	4	Protection against water splashes from all directions
5	Protection against dust (no harmful deposits)	5	Protection against jets of water from all directions
6	Total tightness to dust	6	Protection against water splashes similar to sea waves
		7	Protection against the effects of immersion
		8	Protection against submersion

The dimensions shown in the table are preferred dimensions only, selected from IEC 61969-2-1, IEC 61969-2-2 and ETS / EN 301 169-2. The roof dimensions (W2 and D2) may exceed the enclosure by max 25 mm on each side. The dimensions of the plinths are not considered as part of the enclosure and may increase by n x 25 mm. Missing or additional dimensions: see referenced standards

H	H1	W	W1	D	D1
600	400	700	535		
1000	800	900	735	400	300
1200	1000	1300	1135	700	600
1400	1200	1900	1735		
1800	1600				

All dimensions in mm.

Front view, cross section

Side view, cross section
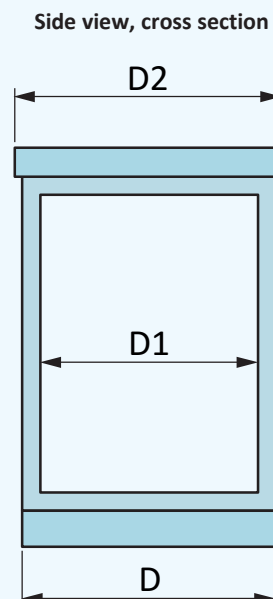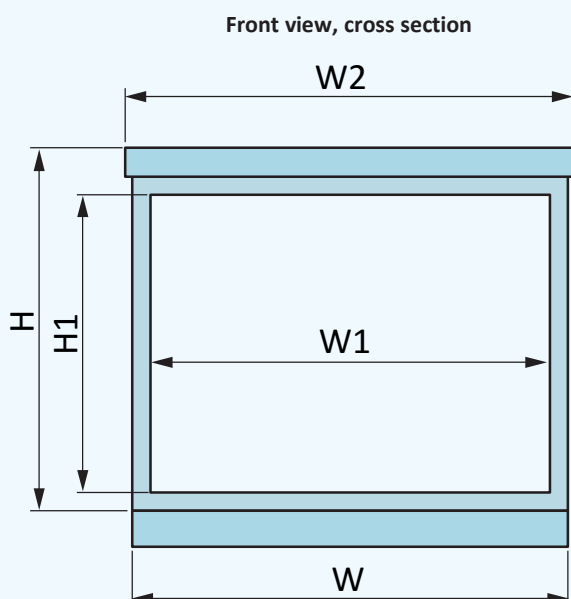
Top view cross section with examples of installed equipment
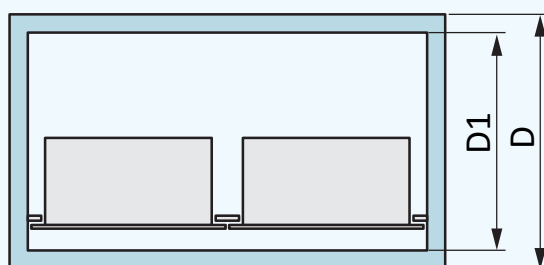
Cases and cabinets for the standards series IEC 61969-2-1, IEC 61969-2-2 and ETS/ EN 301 169-2.

4

Electronics/electrical installations in outdoor environment need specific design measures especially if the place of installation is located in public areas. With this focus IEC 61969-3 specifies the requirements and tests, in addition to the contents of IEC 61587-1. Climatic test: The values of cold and heat, as well as protection against wind driven rain are chosen in order to simulate harsh environment conditions, e. g. icing. This test concerns mainly handles, locks, doors and gaskets. The design of those parts shall provide access for maintenance under severe conditions without degradation of the protection levels. Vandalism resistance shall be considered and designed by using heavy latching, locking and hinge parts. For details see IEC 61969-1.
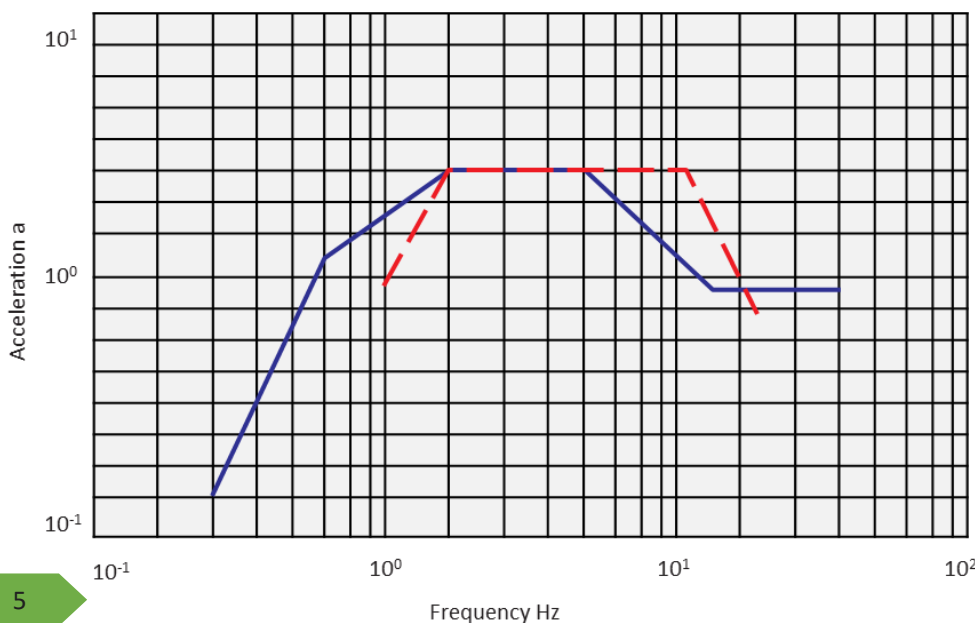
Seismic tests in accordance to IEC 61587-2

The object of the seismic test is to prove physical integrity represented by a typical set-up, similar to the figure given under IEC 601587-1

There are two severity levels indicating the requirements of different geographic regions: Japan and North America.

The tests are passed if no deformation or damage can be detected affecting fit, form and function.

Japan — — —

North America ————

Acceleration a / Frequency Hz

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Did you know?

- All cabinets are designed, manufactured and assembled in the UK by Cannon. Technologies Ltd.

- Cannon provide design, project management, manufacturing, integration, test and installation services.

- Outdoor cabinets are supplied with unique Anti-Vandal Cannon Swing Handle Locks.

- Cannon Outdoor trackside cabinets and enclosures have a life expectancy of up to 25 years.

Cannon have supplied outdoor cabinets across UK, Europe, Middle East & US for many applications and to many organisations, including;

- Telefonica O2
- British Telecom
- Atkins
- GE Transportation
- Honeywell
- Invensys
- Jarvis Rail
- London Underground
- Network Rail
- QHi Rail
- Siemens
- Telent
- Military

Mechanical Testing:

At Cannon we test our cabinets to destruction or to recognised standards, either at our Head Office in Hampshire or appointed independent test houses. Mechanical testing including: shock, vibration, panel rigidity, impact and door and lock bust.

Environmental Testing:

The wide range of tests we carry out include dust and water protection to IP65 BS EN60529, paint adhesion, damp heat cycle testing, EMC shielding, and thermal management tests including 'solar gain'.

MOBILE CELL SOLUTIONS
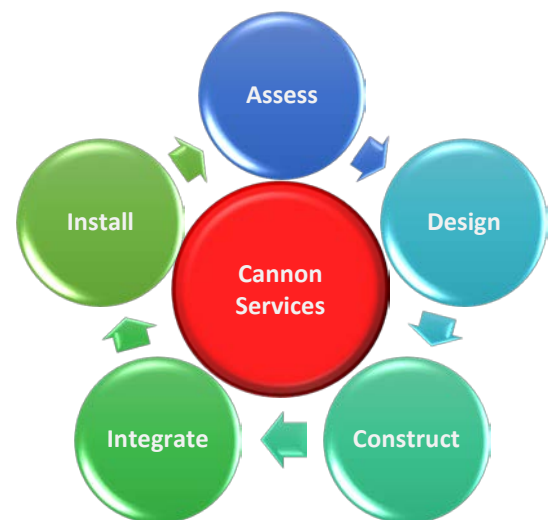
TRANSPORT ATION SOLUTIONS

COOLING SOLUTIONS

Assess

Design

Construct

Integrate

Install

Cannon Services

6

High grade maximum compression door seals provide up-to IP65 rating and are easily serviced should they incur damage during operation.

Low noise fans provide high pressure air flow for cooling within equipment bay(s) and temperature monitoring along with intelligent fan speed control ensure equipment reliability, minimum acoustic noise, reduction of condensation and high performance thermal management.

Long Life, low maintenance filters provide a high degree of IP rating along with high efficiency.

Door stays are designed to withstand the necessary forces associated with the site location.

Our stainless steel multi-point locking system with stainless steel lever handle lock and hinges provides a high degree of security. Optional remote keyless locks provide NOC/ROC to restrict access and monitor intrusion.

Optional cooling technologies including air conditioning, thermo-electric chiller(s) provide optimum temperature control for extreme and harsh environments.

The addition of multi-layer thermal barriers/insulation can provide additional protection from solar heat gain as well as reducing the need for heater operation during cold periods.

Multiple gland options are available, these provide flexibility, a high degree of IP sealing and potential changes to cable configuration.

Additional accessories can be provided e.g.:
- 19", ETSI, wooden/metallic backboard or customer specific mounting system.
- 13-amp dual RCB socket for use during customer configuration and site testing/set-up.
- Consumer unit power distribution including RCCB, MCB, Surge protection etc.
- Krone frame and fibre optic cable management.
- Earth bar(s), internal lighting, door contact switches for alarm/light control.

Cabinets may be fixed on a concrete PAD via plinth or be root or transformer root mounted. Other options include wall-mounting or with the installation of a Network Rail approve pre-cast concrete root.

7
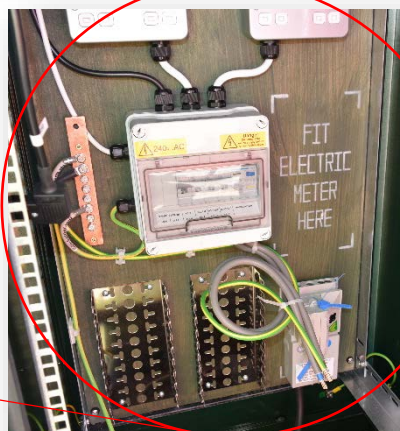
Type B Dual Bay Design

Optional DC power for communications equipment.

Design allows indoor communications, radio, server and electronic equipment to be housed outdoors in an environmentally, temperature controlled cabinet providing the customer with considerable cost savings

A smart integrated enclosure manufactured specifically for housing Mobile Telephone Operators Equipment for Road Side Cell Site; Incorporating Cannons FANCELL cooling system.

Enclosure

- Dual skin construction for the management of high thermal loads
- Multi Point Locking Mechanism
- Lock fitted with dust cover
- Locks fitted with customer selected Dead Lock
- Equipped with many Anti-vandal proof features
- Constructed from High Grade Pre-galvanised Sheet Coated in virgin pure polyester powder
- Design, material and construction all contribute to the predicted 25-year life expectance
- Multi chamber design for segregation of services providing better thermal management
- Torsion Bar root assembly for easier root installation
- Detachable lifting lugs

IP Rating (Ingress Protection)

- IP 55 to BS EN 60529:1992

Environmental Services

- Free air cooling via Cannons FANCELL solution
- DC environmental management system using variable speed fans   for increased MTBF
- Cannons patented Smart-Com Environmental Management System
- Low energy consumption provided by the DC environmental management system

8

Alarms

- Provision for remote monitoring via the CannonGuard
- Door alarm contacts for monitoring door/lock status
- Temperature monitoring
- Fan and thermistor fail alarms
- Blocked filter alarm

Maintenance

- Kept to a minimum through replacement filters
- Locking mechanism manufactured in stainless steel giving exceptional durability

Documentation

- Certificate of Conformity
- Certified to latest BS 7671
- O + M Manual
- Schematic wiring diagrams

Physical dimensions (mm)

- Enclosure: 1650 x 1898 x 798 (H x W x D)
- Enclosure weight: 341 kilos ex-works
- Root weight: 41 kilos

Electrical Installation

- Electrical services pre-wired
- Meter tails 63 amp single phase
- For use with DC radio equipment

Utilities

- Space for REC's metering
- Space for BT Communications equipment
- Provision for on-going power
- Antenna cable entry from under ground

Mobile Operators Equipment

- Pre-fit of radio kit offered at Works
- Secure segregated area

Site delivery & installation

Paintwork Options

- Standard
- Special: to customer specification
- Anti-graffiti paint finish

Design Assistance Services

Site Surveys carried out upon request

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Type G Multi Bay Design

Complete with DC Power for communication equipment.

A Smart Integrated Enclosure designed and manufactured specifically for housing FTTx Communications equipment for road side site locations; Incorporating Cannons FANCELL cooling system.

Enclosure

- Dual skin construction for the management of high thermal loads

- Multi Point Locking Mechanism

- Lock fitted with dust cover

- Locks fitted with customer selected Dead Lock

- Equipped with many anti-vandal proof features

- Constructed from high grade pre-galvanised sheet coated in virgin pure polyester powder

- Design, material and construction all contribute to the predicted 25-year life expectance

- Multi chamber design for segregation of services providing better thermal management

- Torsion bar root assembly for easier root installation

- Detachable lifting lugs

IP Rating (Ingress Protection)

- IP 55 to BS EN 60529:1992

Environmental Services

- Free air cooling via Cannons FANCELL solution

- DC environmental management system using variable speed fans   for increased MTBF

- Cannons patented Smart-Com Environmental Management System

- Low energy consumption provided by the DC environmental management system

Alarms

- Provision for remote monitoring via the CannonGuard
- Door alarm contacts for monitoring door/lock status
- Temperature monitoring
- Fan and thermistor fail alarms
- Blocked filter alarm

End chamber system with 19" bay rotated to minimise cabinet depth in street side applications
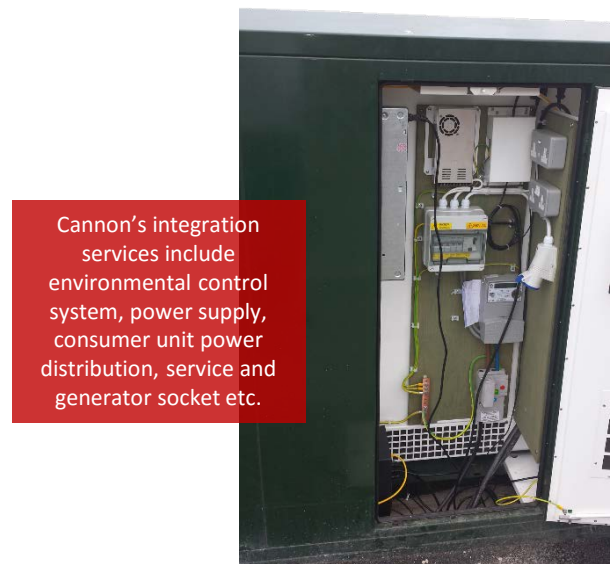
Cannon's integration services include environmental control system, power supply, consumer unit power distribution, service and generator socket etc.

10

Maintenance

- Kept to a minimum through replacement filters
- Locking mechanism manufactured in stainless steel proving exceptional durability

Documentation

- Certificate of Conformity
- Certified to latest BS 7671
- O + M Manual
- Schematic wiring diagrams

Physical dimensions (mm)

- Enclosure: 1500 x 1500 x 400 (H x W x D)
- Enclosure weight: 298 kilos ex-works
- Root weight: 37 kilos

Electrical Installation

- Electrical services pre-wired
- Meter tails 63 amp single phase
- For use with AC & DC equipment

Utilities

- Space for REC's metering
- Space for BT, Virgin etc. communications equipment
- Provision for on-going power
- Cable entry from under ground

Site delivery & installation

Paintwork Options

- Standard
- Special: to customer specification
- Anti-graffiti paint finish

**Design Assistance Services**

Site Surveys carried out on request

Cannon also provide design, project management, integration, test and installation services

Product Features

- Up-to IP65 Environmental sealing
- Can be totally sealed with no ventilation or change of air between outside ambient and internally circulating air
- Fully climate controlled using radial fans, air-conditioning, thermo-electric or air to air heat exchangers
- Climate control systems available in either AC or DC power
- Modular design and manufacturing techniques allow for customer specific features.
- Manufactured in various sizes and customer specifications
- Internal fixtures/mounting available to customer request
- Heat load management from 500W to 7Kw with higher heat load cooling achieved with additional external resources.
- Facility for temperature controlled and fully insulated battery accommodation
- Separate fully insulated thermal chamber option for equipment operating at different ranges of functional temperature
- Optional thermal chamber attached via thermal barrier supports to outer body shell
- Approvals for EMC & Seismic directives available
- Doors seal integrity provided by using a dual seal technology
- Cabinet can be configured with both AC and DC power requirements
- Customised cable entry gland system offered
- Doors secured with a Stainless steel multi-point dead locking system
- Painted to customers precise colour requirements
- Full multi-stage cleaning and pre-treatment prior to the application of an 90 micron powder coating
- Manufactured from "Heavy gauge" galvanized material, stainless steel or aluminium providing a 25-year life expectancy
- Can be installed using "Transformer Root", "In-Ground-Root" mounting system or secured to either a plinth, platform or concrete pad.
- Various designs are Network Rail approved
- Includes many anti-vandal resistant features within the construction
- Optional in-built weather shields or separate awnings/canopies
- Remotely activated electronic locks available
- Detachable lifting/transport lugs

MULTI-CHAMBER OPTIONS

TYPE 1

TYPE 2

TYPE 3

TYPE 4

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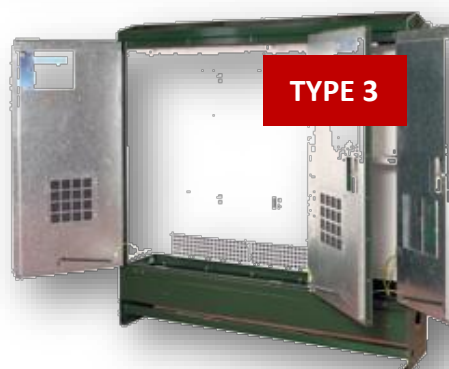
ACTIVE APPARATUS CABINETS

Cannon Technologies S143800F cabinet has been designed to house sensitive electronic equipment for use in communications, transportation and rail infrastructure projects including SISS, CIS, CCTV, communications, Networking etc.

The cabinet is configured with fully locking doors to both front and rear faces allowing for access from both sides of the electrical equipment being integrated. The construction of the cabinet consists of a dual skinned, thermally insulated chamber for maximum protection against the effects of both solar gain and long wave radiation.

Cooled using "Forced Fan Ventilation" and giving a Δt (delta t) of between +5°C and +7°C depending on the surrounding ambient air temperature. This is achieved by using two radial blowers, each fitted with finger guards for operator protection during periodic servicing requirements. Fans are positioned within the hinged roof void giving an N+1 solution. The roof is also supported in the open position by a bonnet type stay bar.

The "Forced Fan Ventilated" system works by drawing fresh ambient air into the cabinet through replaceable filters incorporated within the doors which also have in-built bug screens. The filters have a large dust holding capacity so cleaning/replacement can be accommodated within the normal equipment maintenance routines.

The fans are powered via an independent 48-volt DC power supply, and is controlled by the Environmental Monitoring and Control system, a programmable up-to 6 fan controller card. This can also be monitored via an optional Cannon Guard system which is housed in a 19" rack mounted 1-U chassis providing alarm output over IP via SNMP (Cannon Guard 405E-N3SP-2A), details of the unit are available upon request.

The Environmental Monitoring and Control system controls the fan speed measured against internal temperature and provides a OPEX cost saving by reducing the fans speed & therefore power usage during low temperature conditions. It also provides alarm contacts required, typically, temperature out of limits, door open, fan failure etc.

Internally mounted within the thermal chamber and positioned to the underside of the internal roof panel is a low power AC LED strip light, this is switched on during the door being opened.

Cannon also provide integration of a small 6-way consumer unit complete with a double pole 63-amp RCCB incomer and 6-off 20-amp single pole MCB's all mounted on a 5-U high mounting bracket which also carried a 13-amp dual RCB socket for use during customer configuration and site testing/set-up.

Configured with fully locking doors to both front and rear faces allowing for access from both sides of the electrical equipment being integrated.

Fans are powered via an independent 48-volt DC power supply, and is controlled by the Environmental Monitoring and Control system, a programmable up-to 6 fan controller card.

The base of the cabinets are pre-configured to match Network Rail pre-cast concrete blocks Nos.: BRS-SC 31 & 32 or they may be fixed to concrete PAD, Plinth or Root as required.

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

ACTIVE APPARATUS CABINETS

The Active Apparatus Cabinet, is rated at IP55 (design can be uprated to IP65) and is available in two sizes: full width 1064mm and half width 650mm.

The larger (full width) cabinet has a pair of full height lockable doors front and rear whereas the smaller (half width) version has a single full height lockable door front and rear.

Locking is achieved by fitting a customer supplied padlock or lock barrel to the heavy duty lever swing handle located on the door.

The cabinet interior is ventilated by active roof fan forced air convection, with air being drawn through high capacity air filters in the front and rear doors.

The base includes gland plate arrangements for customer cable I/O and can be punched to suit customer's specific requirements.

The base of the cabinets are pre-configured to match Network Rail pre-cast concrete blocks Nos.: BRS-SC 31 & 32 or they may be fixed to concrete PAD, Plinth or Root as required.

Integration of a small 6-way consumer unit complete with a double pole 63-amp RCCB incomer and 6-off 20-amp single pole MCB's all mounted on a 5-U high mounting bracket .

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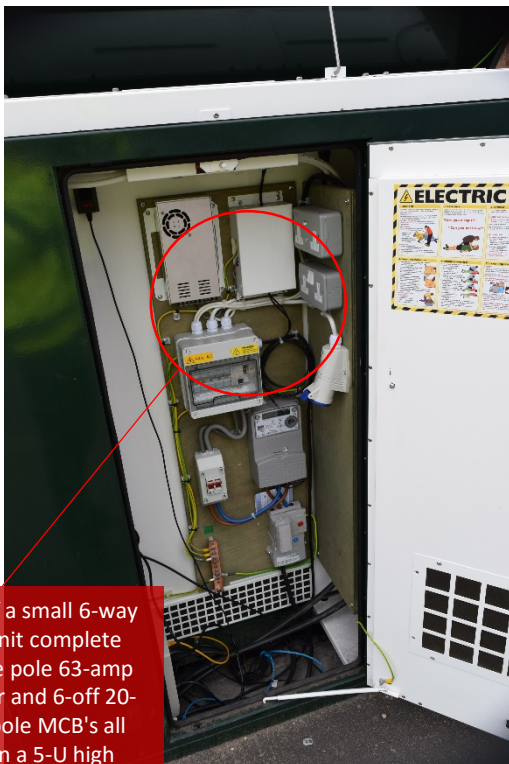
A heater provides protection during start-up, cold temperatures and against humidity

Environmental Monitoring and Control system control the fan(s) speed to match exacting requirements against programmable temperature points.

A 13-amp dual RCB socket for use during customer configuration and site testing/set-up

Integration of a small 6-way consumer unit complete with a double pole 63-amp RCCB incomer and 6-off 20-amp single pole MCB's all mounted on a 5-U high mounting bracket .

PRODUCT FEATURES

- Manufactured from 3mm thick Z600 Galvanised steel

- Treated with a state-of-the-art eco-friendly 90 micron thick powder paint process which provides significant maintenance savings during the expected 30-year life span.

- Based on the design principles of our Apparatus/Location case range which carries network rail certificate numbers PA05/674, PA05/01919, PA05/01975 and link-up certificate number 73595.

- Fully designed in accordance with BRS-SM 431 and 440.

- Adjustable 19" panels mounting included for signalling, SISS, CIS or other equipment, other mounting options are available for both full and half widths.

BENEFITS

- Low maintenance options reducing service costs

- Proven design protecting key network infrastructure

- Can be modified to suit customer specific sizes or manufactured from other materials i.e. Stainless Steel

- Optional monitoring an control system providing remoted alarm and door access.

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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 180º, 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
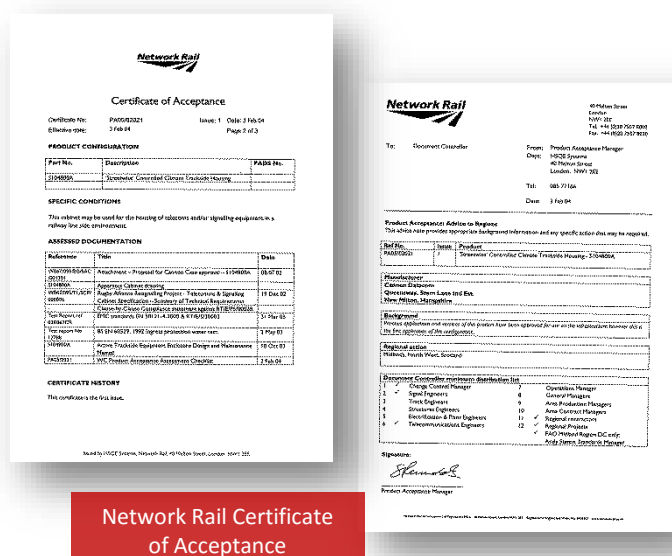
Electrical Services Chamber layout

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 Trackside 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.

PASSIVE APPARATUS CABINETS

Cannon Technologies OD cabinet has been designed to house low power, electrical and electronic equipment.

The cabinet is configured with a multi-point locking door allowing access to the equipment chamber. The single skin construction can also be thermally insulated with optional high performance material, this additional material provides additional protection against the effects of solar gain and low temperatures.

Cooled using "Natural Heat Dissipation" via the surrounding ambient air temperature. This can also be upgraded to filtered air cooling or forced fan/filter active cooling, each of which is fitted with finger guards for operator protection during periodic servicing requirements. Fans are positioned within the roof void giving an N+1 solution.

The "Forced Fan/Filter Ventilated" system works by drawing fresh ambient air into the cabinet through replaceable filters incorporated within the door which also have built-in bug screens. The filters have a large dust holding capacity so cleaning/replacement can be accommodated within the normal equipment maintenance routines.

The fans can be powered either by mains voltage or via an independent 48-volt DC power supply, and can be controlled by the Environmental Control system. Remote monitoring is also possible via an optional Cannon Guard system, 19" rack mounted, 1-U chassis providing alarm output(s) over IP via SNMP (Cannon Guard 405E-N3SP-2A), details of the unit are available upon request.

The Environmental Monitoring and Control system controls the fan speed measured against internal temperature and provides a OPEX cost saving by reducing the fans speed & therefore reduced power usage and fan noise during low temperature conditions. It also provides alarm contacts typically, temperature out of limits, door open, fan failure etc.

Optional is also an internally mounted low power AC LED strip light, this is switched on during the door being opened.

Cannon can also provide integration of:
- A consumer unit complete with a double pole RCCB incomer, single pole MCB's as required and mounted on a 5-U high mounting bracket.
- 13-amp single or dual RCB socket for use during customer configuration and site testing/set-up.
- Commando socket with optional 3 way change-over switch for optional generator backup.
- Heater including thermostat, humidity stat and pressure relief filter valve.
- AC and DC distribution options including battery back-up.

Our low cost single skin solution offers passive cooling and anti-vandalism features.

Upgrades are available when active equipment is required. These include passive and active fans, heater and humidity devices.

FANCELL CABINETS

Cannon Technologies FANCELL cabinet, S075800A, has been designed to cool equipment using Forced fan convection.

The cabinet is manufactured from 2-mm thick galvanised sheet to BS EN10 142 Fe Po 2 ZZ600 NAO. The zinc deposit of 600-grams/m^2 equates to a thickness of 43-microns. With the known erosion rate of zinc given as 1.5-microns per year for the UK, the protection offered before the application of the powder coating is over 28-years. It is for this reason that Cannon can give a true life expectancy of 30-years for the cabinet. Heavy gauge mild steel is used to manufacture the root and is of a welded construction. After welding it is shot blasted and hot dip galvanised to BS 729.
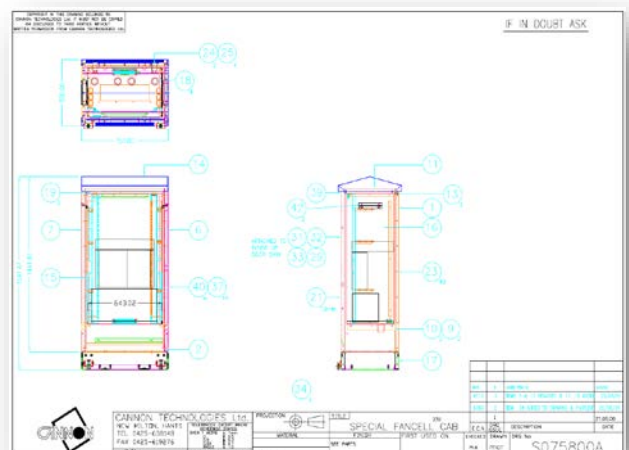
Each component undergoes a five stage pre-treatment before the application of an 80-micron thick pure polyester powder coating, before assembly. The cabinets are painted to the customer's specified colour but Cannon Datacom Ltd would offer a selection of preferred stock colours. The finish would be scratch resistance and of an anti-graffiti formula.

The materials used in the construction of the cabinet will withstand and not be affected by long-term exposure to UV or weathering. It must be pointed out that in the removal of the graffiti, most solvents would not affect the powder coatings used, but strong solvents containing Methylene Chloride must be avoided. This material is basically a paint stripper and it would render the surface useless. Acetone should also be avoided, although an application would not be so dramatic, it could dissolve the finish making it very soft and malleable if used copiously.

The cabinet is of a dual skin construction, using air as an insulator between the outer and inner skins. As mentioned above the cabinet is cooled by using forced fan convection, the air is drawn through slots formed in the base of the door.

The air is pulled between the two skins forming the door, entering the internal cabinet via a replaceable filter element. The filter will trap particles down to 15/20-microns in size. The element will require periodical replacement and the time factor is dependant on location.

The air is drawn through the equipment housed internally by the fan tray positioned in the top panel of the equipment chamber. The warm air is expelled through the fans into the roof void where it is exhausted back into the atmosphere via slots formed in the undersides of the rear and front roof overhangs.

The fans can be powered either by mains voltage or via an independent 48-volt DC power supply, and can be controlled by the Environmental Control system. Remote monitoring is also possible via an optional Cannon Guard system, 19" rack mounted, 1-U chassis providing alarm output(s) over IP via SNMP (Cannon Guard 405E-N3SP-2A), details of the unit are available upon request.

The Environmental Monitoring and Control system controls the fan speed measured against internal temperature and provides a OPEX cost saving by reducing the fans speed & therefore reduced power usage and fan noise during low temperature conditions. It also provides alarm contacts typically, temperature out of limits, door open, fan failure etc.

The cabinet is configured with a multi-point locking door allowing access to the equipment chamber and the dead locking cam is designed to accommodate most manufacturers designed cylinders using a standard 19-mm diameter barrel.. For added security the cylinder need not be fitted until after the installation and hand over of the cabinet, this eliminates the need to release the high security cylinder keys to the contractor. By using a combination of internally fitted locking rods and guides, the system seals and secures the doors in one action, therefore eliminating the need for a multiplicity of locks.

The doors are hung on high security stainless steel lift off hinges, which would allow the doors to open through 180°. Door stays are also fitted to allow the door to be held open at varying angles, typically 90° and 120° as standard.

The cabinet is designed to fit onto a standard railway specified pre-cast concrete base. This arrangement can also be designed to suit a roadside application of either a direct bury or transformer type.

Optional is also an internally mounted low power AC LED strip light, this is switched on during the door being opened.

Cannon can also provide integration of:
- A consumer unit complete with a double pole RCCB incomer, single pole MCB's as required and mounted on a 5-U high mounting bracket.
- 13-amp single or dual RCB socket for use during customer configuration and site testing/set-up.
- Commando socket with optional 3 way change-over switch for optional generator backup.
- Heater including thermostat, humidity stat and pressure relief filter valve.
- AC and DC distribution options including battery back-up.

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

A 13-amp dual RCB socket for use during customer configuration and site testing/set-up

A heater can provide protection during start-up, cold temperatures and against humidity.

Integration of a small 6-way consumer unit complete with a double pole 63-amp RCCB incomer and 6-off 20-amp single pole MCB's all mounted on a 5-U high mounting bracket .

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TECHNICAL FEATURES

Enclosure manufactured from sheet steel, supplied with cable entry and blank reversible door, complete with 2 rack profiles mounted towards the front.

Enclosure suitable for the assembly of both 2 additional rack profiles on the back and a mounting plate. Rack profiles manufactured from galvanized sheet steel. Rain canopy manufactured from sheet steel.

PAINT FINISH

- Double layer of special powder coating: epoxy polyester resin primer and second polyester layer with anticorrosion pigments.
- Colour: RAL 7035 smooth finish.

SUPPLY

- Enclosure
- Door provided with locking system with Viro key and zinc passivated rails
- Cable entry plate with sealing gasket
- 2 rack profiles
- Rain canopy
- Screws for earth connection and mounting accessories.

PROTECTION RATING

- IP66 complying with EN60529
- NEMA 4 (single door) NEMA 12 (double door) complying with NEMA 250
- protection degree guaranteed by the two component foam seal
- Impact resistance IK10 complying with EN62262.

CODE	U	DIMENSIONS (MM)		
		WIDTH	HEIGHT	DEPTH
BOX ABACUS PRO - OUTDOOR APPLICATION WITH BLANK DOOR				
APRO6540BO	10	600	500	400
APRO6550BO	10	600	500	500
APRO6560BO	10	600	500	600
APRO6640BO	13	600	600	400
APRO6650BO	13	600	600	500
APRO6660BO	13	600	600	600
APRO6840BO	17	600	800	400
APRO6850BO	17	600	800	500
APRO6860BO	17	600	800	600

Note: Further dimensions available on request.
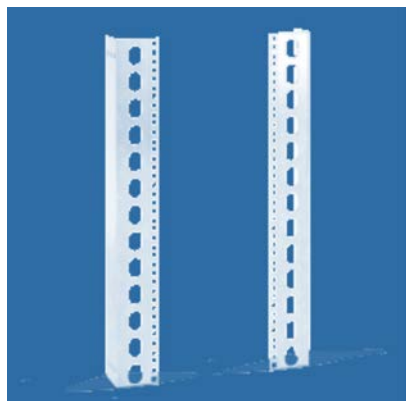
19" RACK PROFILES	
CODE	HEIGHT (U)
AEP0270	500 (10)
AEP0271	600 (13)
AEP0272	800 (17)
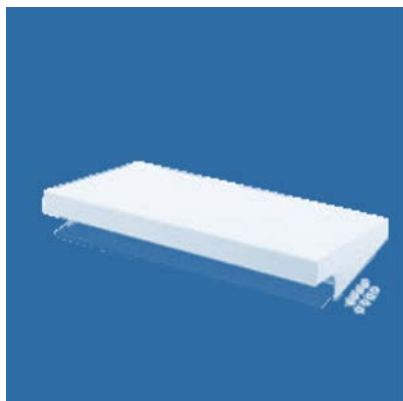
RAIN CANOPY		
CODE	WIDTH	DEPTH
AEP0300	600	400
AEP0301	600	500
AEP0302	600	600

POLE MOUNTING KIT

CODE: FPST-001

To fix the box to a pole with round or rectangular section. Rail manufactured from galvanized sheet steel and clamp collar.

SUPPLY:

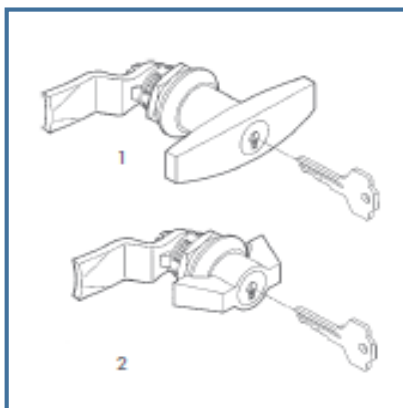Nr. 2 rails and nr. 2 clamps with mounting accessories.

MOUNTING PLATE

Manufactured from galvanised steel 2.5mm

WALL-MOUNTING BRACKETS
CODE: SDWC-010
Manufactured from zinc passivated steel 2.5 mm. Supply include nr. 4 pieces.

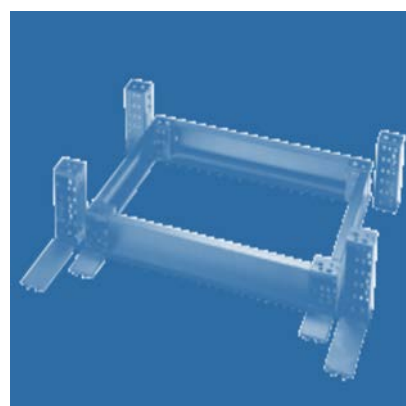| HANDLES	
CODE	DESCRIPTION
AEP0270	VIRO INSERT WITH KEY
AEP0271	T-HANDLE WITH KEYLOCK
AEP0272	WING HANDLE WITH KEYLOCK

MOUNTING PLATE		
CODE	WIDTH	DEPTH
WPAZ-ST65	600	500
WPAZ-ST66	600	600
WPAZ-ST68	600	800

MODULAR PLINTH		
CODE	DESCRIPTION	DIMS (mm)
APZE-A100	CORNER PIECE (4)	100
APZE-A200	CORNER PIECE (4)	200
APZE-T0600	FRONT CROSS PIECE (2)	600
APZE-T0400B	SIDE CROSS PIECE (2)	400
APZE-T0500B	SIDE CROSS PIECE (2)	500
APZE-T0600B	SIDE CROSS PIECE (2)	600

Note: To order the plinth H=200, please add D to the front/side cross piece CODE (i.e. APZE-T0600D).
To order the plinth in the ventilated version add S to the front cross piece CODE (i.e. APZE-T0600S).

MODULAR PLINTH consisting corner and front / side supports. Powder coated RAL 9011 textured finish.

APPARATUS CABINETS

The Apparatus Cabinet, also known as a Location Case is rated at IP55 and is available in two sizes: full width (1064mm - as shown here) and half width (628mm). The larger (full width) cabinet has a pair of full height lockable doors front and rear whereas the smaller (half width) version has a single full height lockable door front and rear. Locking is achieved by fitting a customer supplied padlock to the heavy duty lever hasp/swing handle located centrally on the door.

The cabinet interior is ventilated by convection from the open base through slots positioned above the front and rear doors. The base is normally closed on site by the use expanding foam in the cable ducts plus the addition of horticultural water absorbing beads which assist in the extraction and drainage of condensation from inside the cabinet. These beads are considerably lighter to carry than pea shingle, if it is necessary to man-handle over any distance, e.g. along railway tracks.

The base of the cabinet is designed to match NR pre-cast concrete blocks Nos.: BRS-SC 31 & 32.

PRODUCT FEATURES

- Manufactured from 3mm thick Z600 Galvanised steel
- Treated with a state-of-the-art eco-friendly 90 micron thick powder paint process which provides significant maintenance savings during the expected 30-year life span.
- The Apparatus/Location case range carries network rail certificate numbers PA05/674, PA05/01919, PA05/01975 and link-up certificate number 73595.
- Fully approved and designed in accordance with BRS-SM 431 and 440.
- An internal heavy duty stainless steel framework for mounting signalling or other equipment is optional and available for both full and half widths.

BENEFITS

- Network Rail Approved
- Low maintenance options reducing service costs.
- Proven design protecting key network infrastructure.
- Can be modified to suit active electronic devices.
- Optional cooling control system, extending life of components, saving replacement and service costs.

PART NUMBER	DIMENSIONS (mm)			NOTES
	WIDTH	HEIGHT	DEPTH*	
C073800A	1064	1870	555	Side panel with or without BT socket**
C078800A	628	1870	555	Side panel with or without BT socket**

Notes: *Depth including roof = 590 deep
**Please specify side panel with or without BT socket at the time of order placement, otherwise supplied without. Further dimensions available on request.

Drawings, IP55 and PADS acceptance certificate are available upon request.
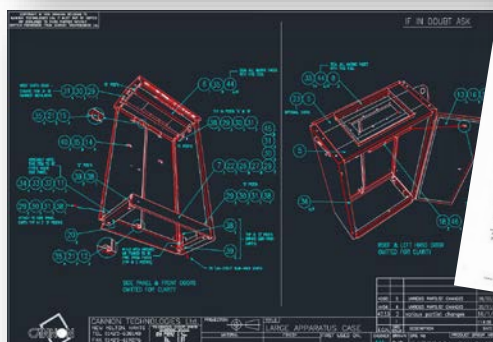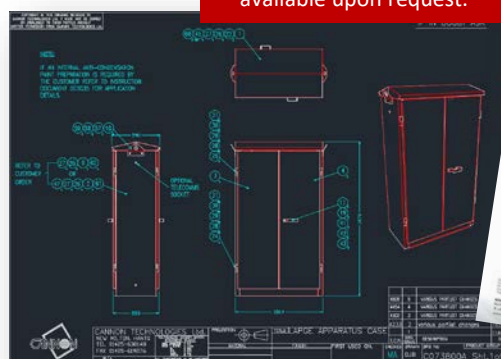
Overview

The Cannon Type 'OC' Cabinets are totally sealed to IP65, which makes them suitable only for passive equipment not requiring cooling. Available in one size: 1350mm high x 1250mm wide x 500mm deep. The base of the cabinet has a transformer root enabling it to be fitted directly to a standard Network Rail Location Case pre-cast concrete block No BRS-SC 31.

MULTI LAYERED PROTECTION

Designed primarily for copper and/or fibre cable termination, the star-punching of the metal backboard allows the cabinet to be fitted out with a variety of termination equipment/ connectors to customers' requirements.

The insulated main cabinet is fitted with an independently isolated removable inner insulated thermal chamber to eliminate condensation, this is a genuine and proven IP65 design with NAMAS test house approvals and being manufactured from Cannon specified high quality materials shows significant savings on true life costs.
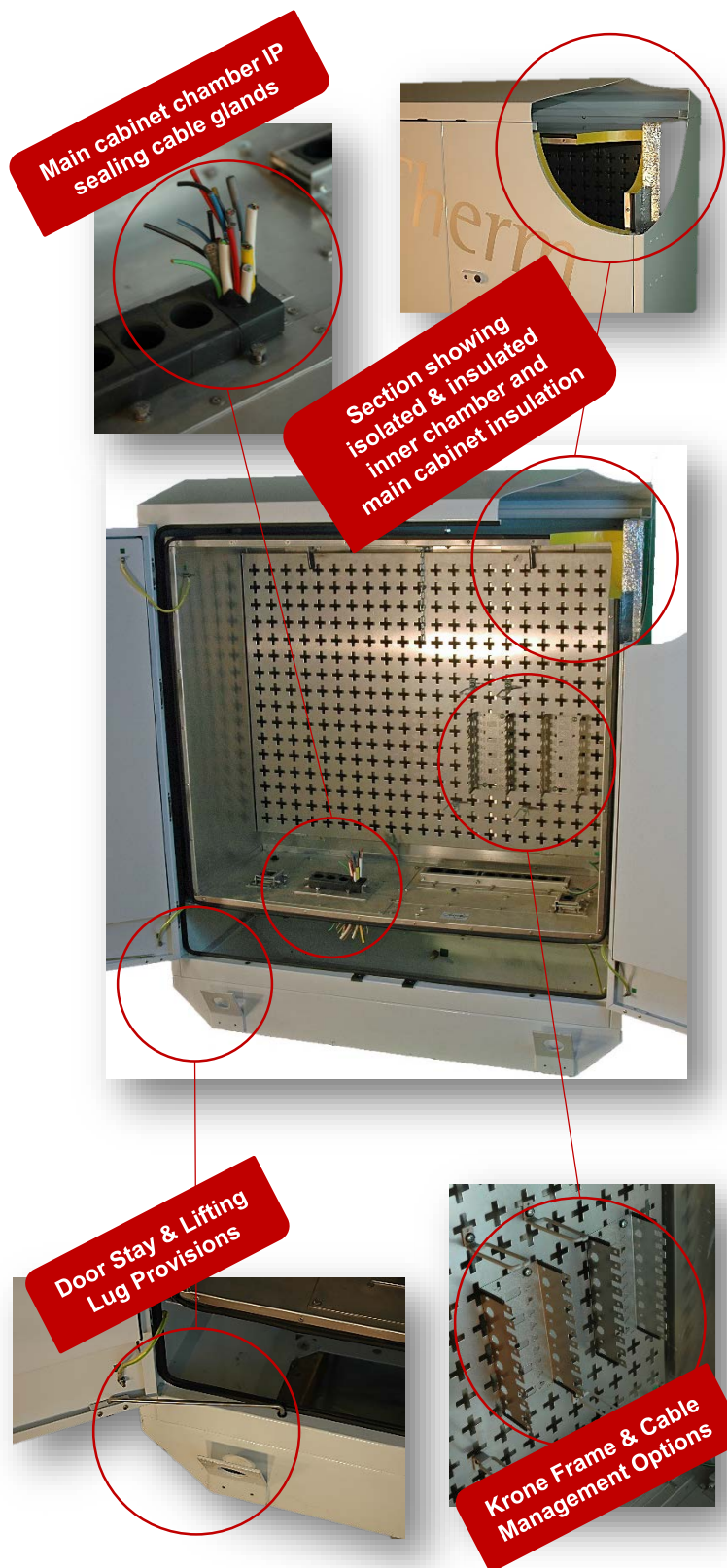
TESTING TIMES

Also known as the Cannon DriTherm Cabinet, this cabinet has undergone cyclic climatic and rapid change of temperature tests at the MOD's climatic laboratories of the Defence Test and Evaluation Organisation, as well as dust and water protection, vibration (as encountered trackside), EMC shielding effectiveness, impact resistance, panel rigidity and rigorous paint adhesion testing.

Cannon Type 'OC' Cabinets are fully approved by Network Rail to 97/U/C/024 and registered with PADS No 86/009967.

INFORMED CONTROL

Options include remote keyless access control, alarms for security breaches or out of tolerance conditions providing mission critical infrastructure with positive monitoring and superior system management.

Monitoring & alarm warning for critical issues include temperature, humidity, flood, shock, security, smoke and fire can be combined with early warning of system failure that enables timely intervention to maintain service, security and safety.

Main cabinet chamber IP sealing cable glands

Section showing isolated & insulated inner chamber and main cabinet insulation

Door Stay & Lifting Lug Provisions

Krone Frame & Cable Management Options

OVERVIEW

The Cannon Type 'C' Cabinets are totally sealed to IP65, which makes them suitable only for passive equipment not requiring cooling. They are manufactured in two heights of 1000 and 1200mm and a footprint of 600mm wide x 315mm deep. The base of the cabinet has a transformer root enabling it to be fitted directly to a standard half-width Network Rail Location Case pre-cast concrete block No BRS-SC 32.

Traditionally, the Type 'C' cabinet has been Cannon's biggest selling outdoor product line with many thousands installed throughout the UK rail network. Designed primarily for copper cable termination, the wooden or metal backboards allow it to be fitted with a variety of termination equipment/connectors to customers' requirements.

Fitted with an inner thermal chamber to eliminate condensation, this is a genuine and proven IP65 design with NAMAS test house approval and manufactured from Cannon specified high quality materials shows significant savings on true life costs.

Cannon Type 'C' Cabinets are fully approved by Network Rail to 97/U/C/024, Certificate No PA05/1128 and registered with PADS No 86/009967.

Example of product supplied with optional galvanised backboard, Krone frames and cable entry glands.

CHAMBER PROTECTION RATING

- IP65 complying with EN60529
- Protection degree guaranteed by the dual seal technology
- Totally sealed with no ventilation or change of air between outside ambient and internal air
- Impact resistance IK10 complying with EN62262.

PART NUMBER	DIMENSIONS (mm)			
	WIDTH	HEIGHT*	DEPTH**	BASIC CONFIGURATION INFO***
C051800A	600	1000	315	TREATED PLYWOOD BACKBOARD
C051800B	600	1000	315	GALVANISED BACKBOARD, (2) 10 WAY KRONE FRAMES
C051800C	600	1000	315	GALVANISED BACKBOARD, (2) 20 WAY KRONE FRAMES
C051800D	600	1000	315	GALVANISED BACKBOARD, (1) 20 WAY KRONE FRAME
C051800E	600	1000	315	GALVANISED BACKBOARD, (1) 20 WAY KRONE FRAME
C051800F	600	1000	315	GALVANISED BACKBOARD, (1) 20 WAY KRONE FRAME
C051800G	600	1000	315	GALVANISED BACKBOARD
C051800H	600	1000	315	GALVANISED BACKBOARD, DIN RAIL, CABLE MANAGEMENT & EARTH BAR
C051800J	600	1200	315	GALVANISED BACKBOARD & EARTH BAR
C051800K	600	1000	315	GALVANISED BACKBOARD, DIN RAIL, CABLE MANAGEMENT & EARTH BAR
C051800L	600	1000	315	GALVANISED BACKBOARD, DIN RAIL, CABLE MANAGEMENT & EARTH BAR
C051800M	600	1350	315	GALVANISED BACKBOARD, DIN RAIL, ID & CABLE MANAGEMENT
C051800P	600	1000	315	GALVANISED BACKBOARD, (2) 10 WAY KRONE FRAMES & DIN RAIL
C051800R	600	1000	315	GALVANISED BACKBOARD, (2) 10 WAY KRONE FRAMES

Notes: *Height dimension excludes 100mm plinth.
**Depth excludes root or plinth, plinth = 448 deep
***Details of gland configuration available upon request
Further dimensions available on request.

PRODUCT FEATURES

- IP 65 rated - Sealed with no ventilation or change of air between outside ambient and internal air.

- Manufactured in two heights of: 1000mm and 1200mm x 600mm wide x 315mm deep chamber.

- Cabinet is designed for passive, non-heat generating equipment making it unsuitable for active equipment.

- Fitted with a single thermally insulated door. Door sealed using a dual seal technology. Doors secured with a stainless steel multi-point dead locking system. Optional YALE 221 lock barrel.

- Fitted with a separate fully insulated, removable thermal chamber. Thermal chamber attached to outer body shell via supports fitted with thermal barriers. Chamber fitted with a cable entry glands.

- Internal fixings to customers requirements.

- The Thermal Transmittance Coefficient (U-Value) of the cabinet is 1.6-W/m².

- Cabinet tested to BS 2011 part 2·1 Db Damp Heat, Cyclic.

- Cabinet tested to BS 2011 part 2·1 Nb Rapid Change of Temperature.

- Cabinet can be fitted with various copper optional termination modules.

- Modular building techniques allow for customer design contribution and modifications.

- Standard colour is Light Aircraft Grey but can be painted to customer's specific colour/finish.

Example of product supplied with optional galvanised backboard, 10 way Krone frames and cable entry glands.

- Full multi-stage cleaning and pre-treatment prior to the application of an 90-micron powder coating

- Manufactured from "Heavy gauge" galvanized material giving a 25-year life expectancy

- Installed using "Direct Bury" in-ground root system using Network Rail item BRS-SC 32

- Approved to Network Rail No. 97/U/C/024. PADs No. 86/009967

- Includes many anti-vandal features within the construction

- Used in Rail side applications for both fibre and copper termination and cable jointing.
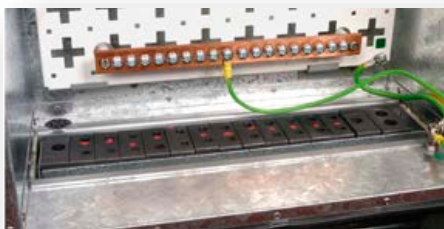
Cannon offer various cable gland options to assist in maintaining the IP65 sealing requirements.

PADS Approval certificate available upon request.

Independent IP65 lab test available upon request.

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PRODUCT FEATURES

This cabinet is a traditional, proven design that continues to be a product of choice in a buoyant renewals market. It is manufactured from hot dip galvanised steel and treated with state-of-the-art, 5 application paint process that includes a graffiti-resistant, 90 micron thick polyester powder paint system. It can give a life expectancy of up to 25 years.

The Cannon Mark-2 Telephone Stump Box is normally used for terminating/connecting telecommunication cables fed to it through ducts in the concrete pad to which it is bolted.

It can be supplied fitted with a Krone A100 or A200 copper termination box, together with a galvanised steel support framework and associated cable management brackets, or it can be customised to accept other equipment.
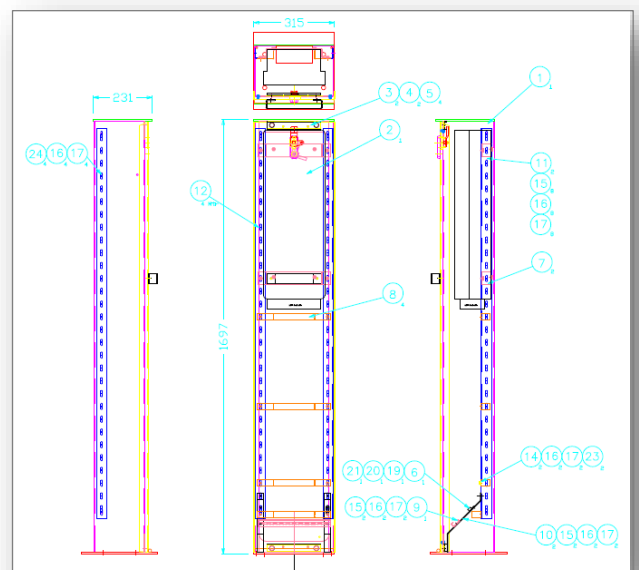
The cabinet is of extremely rugged welded design, with the central body being made from powder coated 3mm thick galvanised steel. Standard locking for railway use utilises a Yale lock with a 221 key for deadlocking the cast stainless steel Cannon swing handle. Other deadlocks can be fitted to customer requirements.

PRODUCT FEATURES

- IP 45 rating.
- IP rating can be increased to IP55 by incorporating Krone A100 or A200 copper termination boxes.
- Natural ventilation for internal cooling.
- Single fully removable lift-off front cover.
- Internal fitments to customers' requirements.
- Modular building techniques allow for customer design contribution
- Cover secured with stainless steel dead locking system.
- Standard colour is Light Aircraft Grey but can be painted to customers specific colour requirement.
- Multi-stage cleaning and pre-treatment prior to the application of a 90 micron powder coating.
- Manufactured from heavy gauge galvanized material giving a 25-year life expectancy.
- Can be supplied with various mounting system.
- Installed using a pre-cast concrete "Direct Bury" in-ground root systems.
- Includes many anti-vandal features within the construction.
- As an optional extra the inside can be insulated to prevent the formation of condensation.
- Used in Rail side applications for copper termination and cable jointing

Example of product supplied with optional A100/A200 termination box. Note: Centre image does not show framework/associated cable management brackets. Front panel removed for clarity

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AN OUTDOOR ECO SYSTEM FOR THE MOST EXTREME EXTERNAL CLIMATES PROVIDING STATE OF THE ART AND OPERATIONAL RELIABILITY IN MANY OF THE WORLDS MOST AGGRESSIVE ENVIRONMENTS…… *KEEPING THE WORLD CONNECTED, SECURE & SAFE*

Overview

The CANNON XTREME is a ruggerdised and environmentally protected life support system which enables sensitive electronics & communication equipment to survive and perform in challenging outdoor climatic conditions, harsh environments and wide ranging physical dangers in civil and military scenarios .

MULTI LAYERED PROTECTION

Using Aerospace technology, Cannon have developed a matrix of techniques to equip the Cannon XTREME with highly effective heat reduction and additional protective characteristics. This capability resists extreme solar gain from hot sun rays and reduces heat absorption from high temperature ambient air.

A carefully balanced combination of sun shielding panels, double thermal air gaps and highly efficient insulation layers create a uniquely effective heat resisting barrier.

Additional essential features protect against the dangers of dust, humidity, rain, moisture and physical attack.

INFORMED CONTROL

Options include remote keyless access control, alarms for security breaches or out of tolerance conditions providing mission critical infrastructure with positive monitoring and superior system management.

Monitoring & alarm warning for critical issues include temperature, humidity, flood, shock, security, smoke and fire can be combined with early warning of system failure that enables timely intervention to maintain service, security and safety.

SHOCK PROTECTION UPGRADES

Seismic resilience and shock attenuation upgrades are available to protect electronic equipment, servers and communication equipment when deployed in earth quake zones or where ground borne shock waves may be generated from mining or other vibration producing activities.

XTREME OUTDOOR

SECURITY

Protecting the Olympic Park

FEATURES

- Ruggerdised for harsh environments
- Electronic Key Pads / RFID / Bio-Metrics
- Solar shield panels for heat transfer protection
- Seismic protection up to Zone level 4
- High EMC and IP double seal protection
- Up to IP65 Protection against dust and water ingress

BENEFITS

- Low PUE providing energy & OPEX saving
- Low maintenance options reducing service costs
- Remote monitoring reducing site visit costs
- Proven design protecting key network infrastructure
- Cooling control system, extending life of components, saving replacement and service costs

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HIGH PERFORMANCE COOLING

The pre-engineered advantages are combined with highly efficient & dynamic cooling systems that maintain critical electronic and communications equipment within optimum operational conditions. This maximises uptime and ensures the reliability of equipment and services, reducing the costs associated with the servicing or replacement of prematurely failed components and equipment.

A range of cooling capacities are available, including high performance systems which are rated to cope with very low or very high ambient temperatures. Specially engineered cooling systems for coastal deployments, offer marinised protection against the effects of salt corrosion.

This holistic design draws on forty years of global experience in supporting critical infrastructure projects in challenging Middle East deployments, recent theatres of war and various other extreme conditions.

HIGH SECURITY STAINLESS STEEL LOCKS

In the modern world Mission critical assets must clearly be protected with high security locking systems to protect against casual opportunistic break in or against more sinister penetration. Cannon has developed and installs unique Stainless Steel locks to all Cannon XTREME enclosures. These high security mechanisms substantially resist persistent attack and will accept a wide range of high security lock cylinders. The high grade Stainless Steel also resists environmental or chemical attack .

CANNON GUARD, REMOTE ACCESS CONTROL and SECURITY

The Cannon High Security Stainless Steel lock is designed to accept the Cannon upgrade pack which will convert the installation to a remote controlled locking system.

This system is remotely controlled by our "Cannon-Guard" security system enabling remote lock activation from any where around the world. Video surveillance systems are also available for positive monitoring together with two way audio which assists with on the spot engineering guidance. Full alarm capability and an audit trail capability increases positive security and records of alarm or intrusion activation.

RUGGED LONG LIFE ENCLOSURE

Drawing on extensive experience Cannon builds highly reliable enclosure systems utilising high strength materials which are multi walled construction that is further protected with advanced surface treatments. These attributes resist unauthorised penetration and extend the operational life, supporting critical missions.
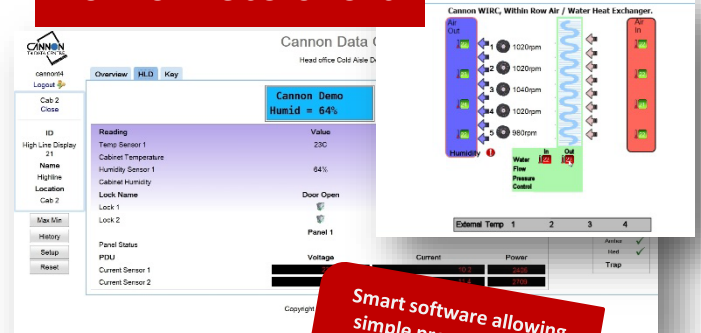
IP and NEMA rated solutions are also provided.

COOLING SOLUTIONS
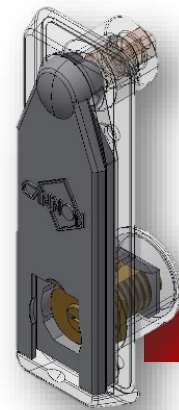
SECURE SOLUTIONS

MONITORING SOLUTIONS

Smart software allowing simple programming of locks, monitoring and alarm configurations.

- Cannon DCIM comprises hardware and software including;
  - Electronic Remote Access Locks
  - Electronic Key Pads / RFID / Bio-Metrics
  - Audio / Video Camera monitoring
  - Sensors (Thermal, humidity, alarms etc.)
  - Asset Management, Power/Integrated cooling systems Monitoring & Control

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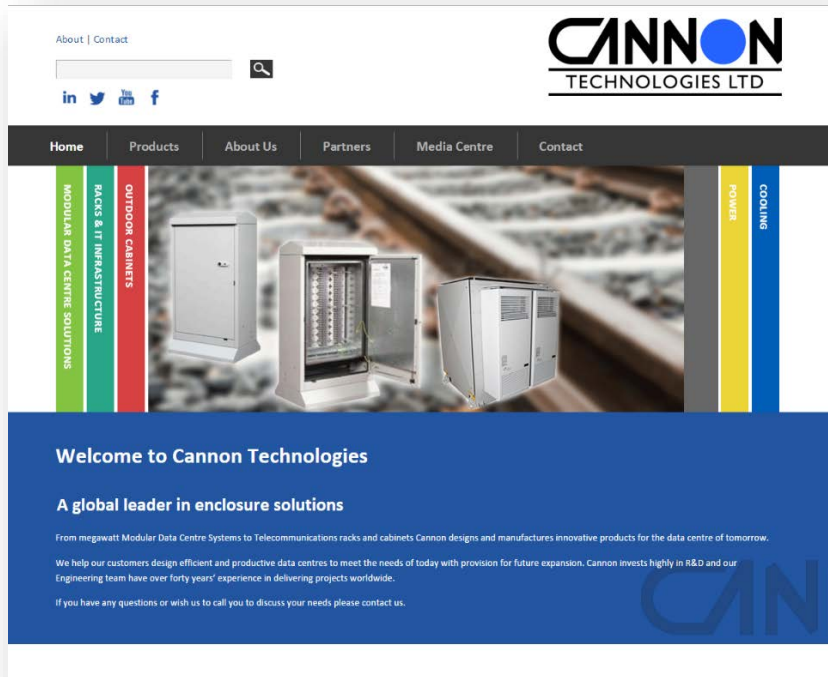
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- News & Case Studies
- Technical White Papers
- Company information
- Downloads
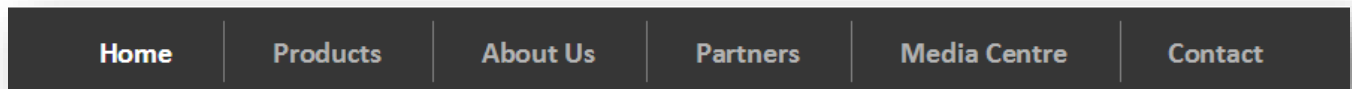
INFORMED

The easiest way to find up-to-the-minute information on cabinets, enclosures and data centre solutions is to visit **www.cannontech.co.uk**. Here you will find the resources, contacts, data and product information that make specifying your requirements more simple.

At Cannon's website you will find breaking news and information on the latest product developments, as well as comprehensive support for our entire product lines.

PRODUCTS

Visit Cannon's *Products* section for the latest models for Cabinets, Enclosures and Data Centre applications, as well as our expanding selection of accessories.

Download PDF versions of our current brochures as well as simple to use tools for cabinet configuration and room/building design.

CUSTOMER SERVICE

Cannon's website is also the first place you turn when you need customer service, whether you need to quickly find a local partner or to submit enquiries to Cannon Technologies.
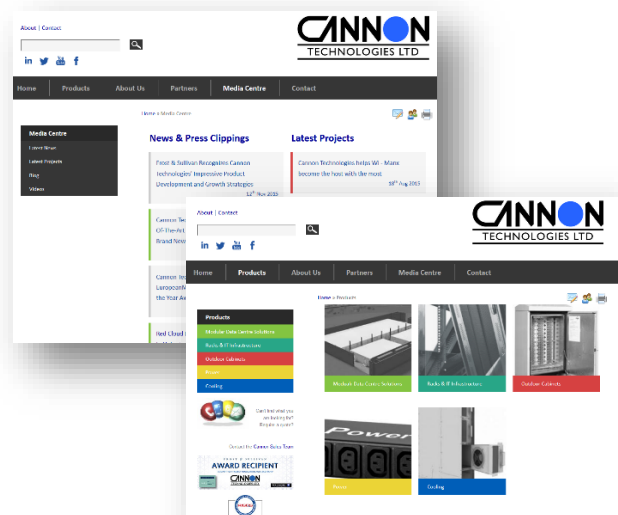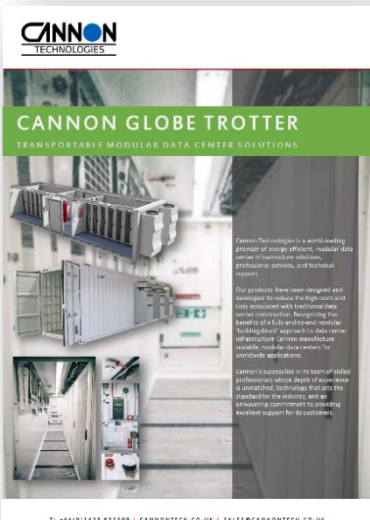
CANNON MINI/MICRO DATA CENTRES:

Where there is a requirement for standalone computing and communications, or highly resilient, multi mirroring of critical IT systems our 'All In One' cabinet provides a life support package for your IT equipment.

Download a PDF copy from our website: **www.cannontech.co.uk** or request your copy today.

CANNON GLOBE TROTTER:

"Cannon GLOBE TROTTER" comprises the small capacity, transportable Modular Data Centre range which is complimentary to "Cannon Data Campus" multi-megawatt modular facilities.

Download a PDF copy from our website: **www.cannontech.co.uk** or request your copy today.
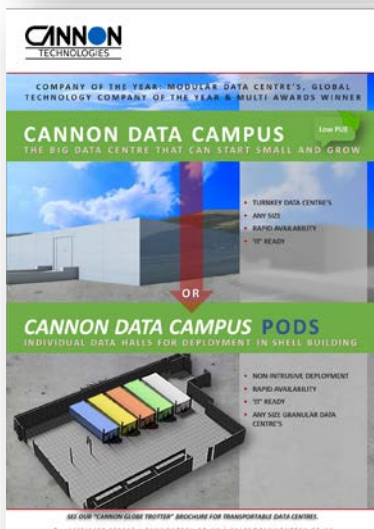
CANNON DATACAMPUS & PODS:

'Cannon Data Campus' is a high performance low PUE, resilient data centre, built using modern technology to provide an expandable facility, comprising individual modules, each with a dedicated purpose, maximising efficiency.

The Modular Cannon Data Campus range offers two major advantages :-

- Exceptional financial advantages for investors.
- Greatly improved facility performance across all critical operational metrics.

Download a PDF copy from our website: **www.cannontech.co.uk** or request your copy today.

CANNON
TECHNOLOGIES

INTEGRATED OUTDOOR SOLUTIONS

TECHNOLOGY FOR THE COMMUNICATIONS & TRANSPORTATION MARKET

Cannon Technologies is a world-leading provider of energy-efficient, modular data center infrastructure solutions, outdoor enclosures & cabinets, professional services and technical support.

Cannon's success lies in its team of skilled professionals whose depth of experience is unmatched, technology that sets the standard for the industry, and an unwavering commitment to providing excellent support for its customers.

Additional Products available from Cannon Technologies Group :

- Modular Data Centres
  - Cannon Data Campus
  - Cannon GLOBE TROTTER
  - Cannon GMDC
  - Cannon Mini/Micro DC
  - Ruggedized DC Cases
- IT Infrastructure
  - 19" Server Cabinets
  - Patch Frames
  - Free Form Containment
  - Cold/Hot Aisle Containment
  - Air Management
  - UPS & Power
- Techni-Cabins
- Mobile-Cell & Mast Stations
- Outdoor Cabinets & Enclosures

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