

### MULTI - OPTIONS

#### INTRODUCTION

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

Cooling may be by normal air cooling if available (with standard mesh doors front and rear).

If the ambient room or exterior air temperature is not suitable then Water or DX gas cooled heat exchangers may be employed to remove the heat from sealed cabinets – also ensuring the security of the IT equipment within.

The solution is easy to transport and rapid to deploy.

“Security safes in different versions provide physical protection for one or more server racks. A broad spectrum of additional equipment permits expansion of the safe into a fully-featured micro data centre.”

#### KEY BENEFITS:

High Performance Infrastructure providing;

- Reduced PUE
- Low CAPEX and OPEX
- Scalable platform modules
- Turn-key and IT ready options
- Pay-as-You-Grow modular design
- Rapidly Deployed
- Can incorporate 3<sup>rd</sup> party systems
- Future Proof advantages
- Extreme Power & Cooling

Examples of indoor and outdoor Micro Data Centres providing 'All in One' IT Equipment protection, monitoring and security.



## INTERNAL COOLING SYSTEMS:

Cooling Module function:

The Cooling units draw in the hot exhaust air at the rear of the enclosure, moving the air through a large air to fluid heat exchanger coil. As the fluid circulating within is cooler than the exhaust air the heat dissipates into the coils many cooling fins.

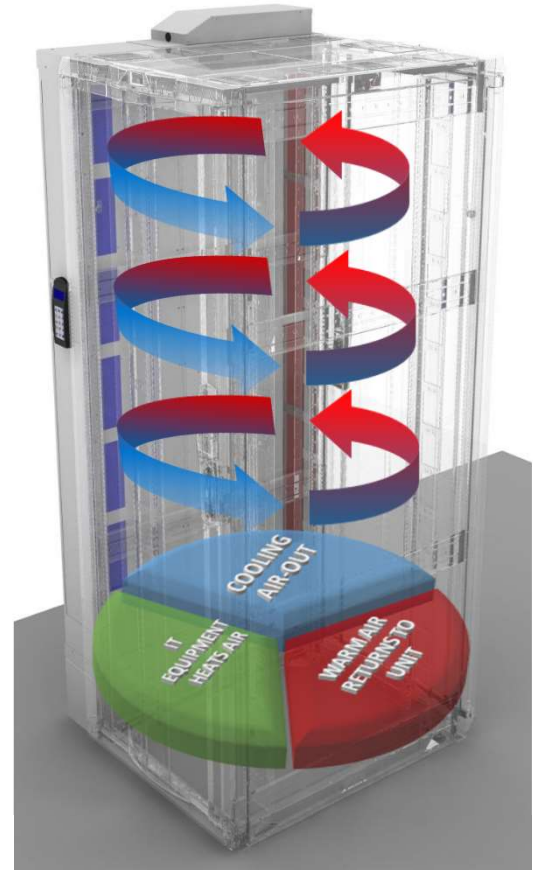
The cooled air is fan recirculated to the front of the enclosure where the whole cycle starts again.

The heat removed by the fluid (DX or Water) is then re-cooled by an external pumped system and returned. (With DX this must be less than 70 meters away).

Due to the sealing of the cabinet very little dust can enter and the air humidity within remains constant once the system has settled.

The Cannon system has multiple low noise hot swappable fan blowers with infinite ramped step less speed control. Temperatures are monitored 24/7.

'Eco mode' cooling can result in a PUE of less than 1.05



## FEATURES AND BENEFITS

- A full data center in a single rack or single row
- Chilled water or DX cooled versions
  - Up to 30kW as standard
  - Up to 60kW optional
- Side mount or rear door mounted cooling options
- Closed or open loop
- Cannon Power: UPS and PDU (Smart versions)
- Cannon Guard: Local and remote locking / security system
- In rack fire detection & suppression.
- Cannon Data Centre Manager (DCM) software for local and remote monitoring

Integrated In-Row cooling to the front plenum which spans the front of the rack row - Energy efficiency and cost saving



Cooling units may be fitted to most of Cannons large range of indoor and outdoor cabinets.



### COOLING SYSTEM TYPE COMPARISON

#### *Water Cooling:*

Water / Glycol fluid is pumped at 14°C to the cabinet which has an air to water cooling coil, the heat in the cabinet is then exchanged into the water and returned warm to the external Chiller. Water based cooling is both efficient and easily controlled, it is suitable for low < 5kw to very high cooling requirements >60kw and dynamic changes in heat load. Water Chillers may use high COP systems and adiabatic cooling to reduce power consumption. Chilled water is often available on site and is easily provisioned if not. Cooling units may be mounted on any face of the cabinet. Near silent <60db.

#### *DX Split system: (Direct Exchange to Gas) 8 to 40kw.*

In a DX split system, an external condenser / compressor pumps a gas to convert into a liquid, this is piped to the evaporator coil in or beside the cabinet and when the liquid passes through the coil it removes heat from the cabinet. The gas then flows back to the compressor / condenser and the cycle repeats. DX systems require a specific minimum heat load for operation and DX split system cost less than a comparable chilled water system, although they cost more to run. Near silent <60db operation.

**DX Packaged:** A single unit as above, compact, highly cost effective systems. Available in sizes of 1 to 10kw they exchange the interior heat to the air outside the cabinet (heats the room). 62-72db average noise levels (ambient temperature dependent)

**Mounting types:-** Side/With In row/Inside cabinet, Rear & Front door, Roof, Ducted.

**Capacity:-**Cooling systems of up to 60kw per cabinet in N, N+1, 2N and 2N+1 redundancy possible.

**Deployment:-** Indoor, Outdoor, Track & Street side, Marine & Seismic, EMC & MIL spec available.

Cooling units may be fitted to most of Cannons large range of indoor and outdoor cabinets.



### COOLING SYSTEM FORCED AMBIENT AIR AND DX PACKAGED:

A single unit as above, compact, highly cost effective system. Available in sizes of 1 to 10kw they exchange the interior heat to the air outside the cabinet (heats the room). 62-72db average noise levels (ambient temperature dependent).

DX cooling units can include external duct system which directs the warm air created by the operation of the DX compressor. This air is expelled to an external environment.

**Mounting types:-** Side, Rear & Front door, Roof, Ducted.

**Capacity:-** Cooling systems of up to 10kw per cabinet in N; N+1, 2N and 2N+1 redundancy possible.

**Deployment:-** Indoor; Outdoor variant available, contact Cannon for further details.

HEIGHT U	WIDTH / DEPTH	ORDER CODE	COOLING MEDIUM	COMMENTS
24	850 (600 + 250)	MIDC2468BK15DXRH1171	1.5kW ACU	Solo Unit
33	1050 (800 + 250) / 1200	DXSM33801200	4kW ACU	Solo Unit with Remote Monitoring via CannonGuard, INRAK Fire Suppressant, PDU's
42	1050 (800 + 250) / 1000	DXSM428099394900	1.6kW ACU	Solo Unit
42	1050 (800 + 250) / 1200	DXSM42801200	4.0kW ACU	Solo Unit
42	1050 (800 + 250) / 1200	DXSM42801203	4.0kW ACU	Solo Unit with Remote Monitoring via CannonGuard
45	1050 (800 + 250)	DXSM458099BT01	4kW ACU	Solo Unit with Remote Monitoring via CannonGuard
45	1050 (800 + 250)	DXSM458099BT02	4kW ACU	Solo Unit

## SINGULAR & ROW BASED COOLING:

Where cabinets are to be arranged in rows, as in a single row data centre or network core, the Cannon Cool units maybe mounted between them. This allows the system to share the cooling along the row without the need for an aisle containment system.

The cabinets must be 42U or taller and be at least 1200mm deep for an in-row cooling solution.

300mm mid row (200mm end row) cooling units have a maximum capacity of 30kw with water coils and 25kw with DX units. (optional 600mm 50-90 kW water cooled version). Additional side mount cooling units may also be installed on the row ends to increase both capacity and resilience.

The layout examples below have a total capacity of 60kw across the four cabinets, with two off WIRC 30kw water cooled units giving a total load of up-to 25kw in each cabinet. (50kw sensible)

Two off end of row units could be added, then 120kw of cooling is available, giving 30kw\* per cabinet, or 22.5kw\* with n+1 redundancy.

\*These are total cooling values.



**WIRC cooling air from the Cannon Cool Singular & Multi-cab\* mid row air handling units is shared along a common front air chamber (plenum).**

MIDC42121450KWDX

HEIGHT U	WIDTH/DEPTH	ORDER CODE	COOLING MEDIUM	COMMENTS
42	800 (600 + 200) / 1200	MIDC42601230KWLH	30kW Water	600W Cab with WIRC to Left Hand
42	1000 (800 + 200) / 1200	MIDC42801230KWLH	30kW Water	800W Cab with WIRC to Left Hand
42	1000 (800+200) / 1200	MIDC42801225KWDX	25kW DX	800W Cab with WIRC to Left Hand
42	1000 (800 + 200) / 1200	MIDC42201230KW	30kW Water	Solo WIRC Unit Only – Add Cab below*
42	1000 (800 + 200) / 1200	MIDC42201225KWDX	25kW DX	Solo WIRC Unit – Add Cab below*
42	1100 (800 + 300) / 1200	MIDC42301230KW	30kW Water	Multi-cab possible*
42	1100 (800 + 300) / 1200	MIDC42301230KWDX	25kW DX	Multi-cab possible*
42	800 / 1200	MIDC428012000101	-	Additional cab only for above*
42	800 / 1200	MIDC428012302101	-	Additional cab only for above* including split (wardrobe)front door
42	600 / 1200	MIDC426012	-	Additional cab only for above*
42	1200 / 1400	MIDC42121450KWDX	50kW DX	**800W Cab with WIRC to LH & RH sides
42	800 / 1400	MIDC428014000101	-	Additional cab only for above**

## FEATURES:

- Rows may be extended easily by adding more cooling units and cabinets as and when required.
- These data centre ‘PODS’ may be used within any space or inside a traditional data centre, if required, with no impact upon the existing cabinets or cooling infrastructure. Quick to deploy and simple to configure.
- As ‘Stand Alone’ units they offer huge amounts of processing or networking in a small footprint.
- Particularly suitable for SAN, CCTV, Card Services, Network cores and High Density computing.
- Also available in external weatherproof cabinets for CCTV, Broadcast, Traffic, Rail, Telecoms/Cellular etc.
- Extreme security versions available

### ALL IN ONE OPTIONS

Mini / Micro Data Centres are available with multiple options including:

- 'Entry level': A cabinet with sound deadening and air control glands, Configured with a suitable cooling system ready for customer IT fit out.
- 'IT ready': As above but complete with a UPS, PDU Strips and FM200 or Novec Fire Protection system inbuilt.
- Just fit your own servers & network switch.
- 'Turnkey': As above plus your required servers and switches may be installed and preconfigured by our Cisco certified Engineers.
- 'Retrofit': Existing cabinets may be converted to actively cooled micro data centre units with the addition of internal, side, roof or rear door mounted cooling units.

### TURNKEY FOR TOTAL PROJECT DELIVERY

Cannon is able to provide two levels of Turnkey delivery

'IT Ready' Turnkey or 'Full IT' Turnkey

'IT' Ready Turnkey provides an operational facility which is powered, cooled, tested and commissioned ready for the client to install and commission their IT infrastructure within.

'Full IT' Turnkey is provided when the client requires a fully operational Data Centre complete with fully functional IT infrastructure ,ready to fulfil the end mission.

**INTEGRATED IT SYSTEMS**

**FIRE SUPPRESSION**

**UPS**

**Pre-configured at Cannons' facilities prior to shipment.**