



The UniJet Technical Manual

A range of standardised design documents developed to simplify the process of making correct provision for underground car park ventilation and smoke control



UNIJET TECHNICAL MANUAL

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SYSTEM SELECTION & SPECIFICATION

Selection & Specification

Volume

To select the correct unit, simply calculate the volume of the car park you are interested in specifying Unijet for and select the correct model from the table. If you can't find the volume of your car park in the table, round up to the one closest to yours.

Replacement air

Replacement fresh air must be provided from outside the building and this is usually taken from the entrance ramp or external louvres. The minimum free area required is again dependant on the volume of the car park and is illustrated in the table.

System Type	Car Park Volume m ³	Plantroom Model	Quantity of Jet/Impulse Fans	Electrical Supply 400v	Extract Fan Diameter
CPV/750	2,000	A	2	34A	500 Ø
CPV/1000	2,750	A	3	34A	630 Ø
CPV/1250	3,400	B	4	60A	710 Ø
CPV/1500	4,125	B	4	60A	800 Ø
CPV/1750	4,800	B	5	60A	800 Ø
CPV/2000	5,500	C	6	90A	900 Ø
CPV/2250	6,200	C	7	90A	900 Ø
CPV/2500	6,800	C	7	90A	1000 Ø
CPV/2750	7,500	C	8	90A	1000 Ø
CPV/3000	8,200	C	9	90A	1000 Ø
CPV/3250	8,900	D	9	125A	1120 Ø
CPV/3500	9,600	D	10	125A	1120 Ø
CPV/3750	10,300	D	10	125A	1120 Ø

SYSTEM SELECTION & SPECIFICATION

System Budget

This pricing table sets out the basis of the UniJet modular smoke shaft solutions offered for all system codes generated by the selection table.

The budget is a realistic market cost for the specified system based on more than 25 years' experience in the field and 1,000s of successfully completed projects and is intended for use in early stage planning and budgeting. A project specific quotation can be obtained from an approved and certified Group SCS specialist installer or from our specialist contracting division.

System Type	With Car Park Box Plantroom	With Car Park Skid
CPV/750	£ 64,130.00	£ 33220
CPV/1000	£ 69,910.00	£ 39000
CPV/1250	£ 76,775.00	£ 45865
CPV/1500	£ 78,555.00	£ 47645
CPV/1750	£ 85,220.00	£ 54310
CPV/2000	£ 91,240.00	£ 60330
CPV/2250	£ 97,120.00	£ 66210
CPV/2500	£ 99,215.00	£ 68305
CPV/2750	£ 106,920.00	£ 76010
CPV/3000	£ 114,595.00	£ 83685
CPV/3250	£ 123,685.00	£ 83685
CPV/3500	£ 131,480.00	£ 91480
CPV/3750	£ 131,480.00	£ 91480

SYSTEM SELECTION & SPECIFICATION

Budget Summary

This budget should be read in conjunction with the following associated information to ensure the system is correctly implemented:

- **System Specification** - A short form specification.
- **System Scope and Setting Out Guidelines** - These illustrate the most important aspects of equipment locations.
- **Standard technical Submittal** - Includes comprehensive technical details of all components of the system.
- **Design Report** - A detailed explanation of the design parameters, the building configurations within the scope of the product and detailed modelling carried out to verify the performance criteria selected.

Included in the estimate:**Project Design:**

- Supply of project system schematic and layout drawings
- Supply of builder's work drawings
- Supply of project technical submission
- Supply of operation and maintenance instructions

Mechanical Installation:

- Installation of extract plant room incorporating extract fans, attenuators, dampers and controls
- Installation of CO sensors
- Installation of Fireman's override switches where specified
- Installation of 355 diameter Jet fans

Electrical Installation:

- Supply and installation of electrical wiring
- Termination of SCS controls and mechanical equipment

Commissioning of SCS Equipment:

- Electrical testing and certification of smoke ventilation system electrical installation
- Functional testing of all smoke ventilation system components
- Commissioning documentation and system certification including operation and maintenance manuals
- A single system demonstration to the client for each commissioned system

SYSTEM SELECTION & SPECIFICATION

Attendances required

The following attendances are outside of the scope of the smoke control system package and must be provided by others:

- Installation and termination of primary and secondary 3phase car park system power supplies glanded, terminated and tested into SCS supplied ATS control panel c/w manual bypass
- Supply and installation of car park heat / smoke detection system, glanded and terminated into SCS car park main control panel.
- Supply and installation of any ductwork lagging or insulation.
- Penetrations or holes required for cable routing over 50mm or into structural concrete.
- Making good of any penetrations made into building fabric.
- Safe access and supply of access over a working height of 3.0m.
- Vertical lifting hoisting & associated mechanical offloading facilities of SCS equipment.
- Provision of any associated traffic marshals, slingers and banksman where required.

Additional Options

Terms & Conditions

- We are committed to fair contracts and this budget is assumes that any subsequent contract would be formed using the unamended JCT standard form of sub subcontract.
- Supply and installation of communal lobby smoke detection system, glanded and terminated into local SCS interface control panel.
- All and any associated electrical installation to any third-party life safety systems.

OVERVIEW

System Specifications

The smoke control for the car park shall be the UniJet system by SCS Group. UniJet is a packaged car park ventilation system designed to provide smoke clearance and pollution ventilation to covered car parks to comply with current building regulations. UniJet meets the standards set out in BS7346 Part 8 (2013) – specifically ‘impulse ventilation to achieve smoke clearance’.

The UniJet car park ventilation system delivers combined pollution and smoke clearance using Jet or Impulse fans to provide an energy efficient and safe solution whilst requiring the least possible plant space. The system comprises high temperature extract fans that exhaust smoke and pollution to the atmosphere

with strategically positioned jet or impulse fans used to move stale air or smoke to the extract fan positions.

Fully automatic controls monitor carbon monoxide levels and smoke or temperature conditions within the car park and operate the fans at the appropriate level, maintaining safe and comfortable conditions within the car park. The system features a remote self-test facility that can perform system tests at scheduled intervals and issue compliance reports or notify errors to building management to ensure the escape routes remain protected at all times. The system shall be installed and certified by a member of the SCS Group approved supplier network.



System Specifications

[Download](#)

Technical Submittal

[Download](#)

UNIJET

System Cause & Effect

The UniJet Car Park Ventilation System is suitable for all covered car park environments within the criteria below:

- Single level car parks with a maximum volume of 10,000m³
- A single extract point
- Replacement air drawn from the entrance ramp
- Minimum distance between extract point and replacement air source must equal 2/3s the length of longest side of the car park

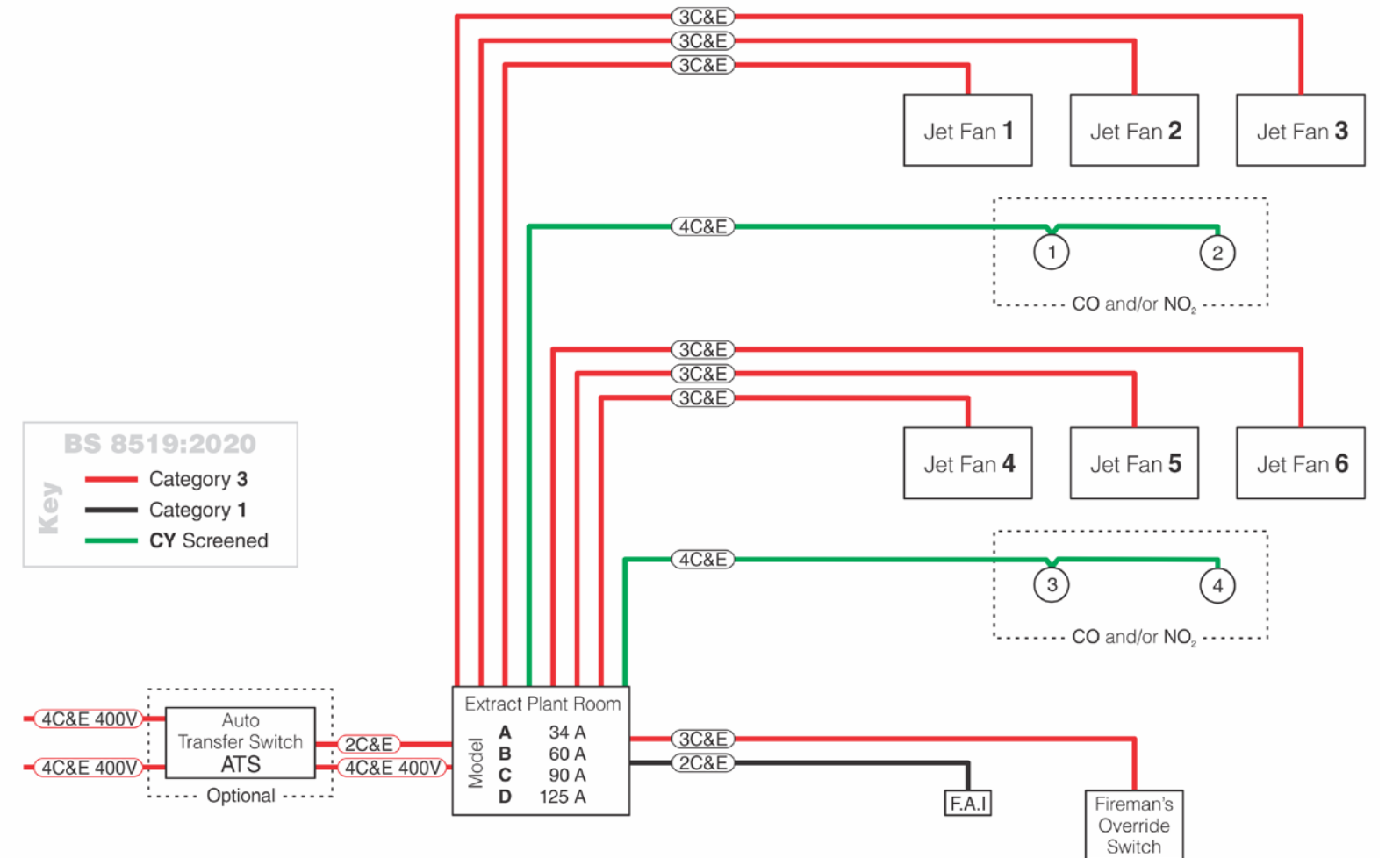
Standard Carpark Cause & Effect	Device / Effect	Required Air Changes (AC/H)	Extract Fans	Extract Fan Damper	Jet Thrust / Impulse Fans	Alarm Active Signal	Gas Level High Signal
Cause	Zone		Carpark	Carpark	Carpark	Panel	Panel
Overrides are active in any condition, last command takes priority							
Firemans Override Off	Carpark		Off	Closed	Off		
Firemans Override Run	Carpark	10 AC/H	100% Firemode	Open	100% Firemode		
The primary fire alarm detected takes priority, secondary alarms are ignored.							
Fire Alarm Detected	Carpark	10 AC/H	100% Firemode	Open	2 min Delayed Start 100% Firemode	On	
When all fire alarms and overrides are reset the system will automatically default to Pollution Mode after a short delay							
Daily ventilation	Switch Input	3 AC/H	30%	Open	Off		
CO Level 0: < 30ppm	Any Sensor		Off	Closed	Off		
CO Level 1: ≥ 30ppm	Any Sensor	3 AC/H	30%	Open	50%		
CO Level 2: ≥ 50ppm	Any Sensor	6 AC/H	60%	Open	50%		On
CO Level 3: ≥ 90ppm	Any Sensor	10 AC/H	100%	Open	100%		On
NO2 Level 0: < 1.5ppm	Any Sensor		Off	Closed	Off		
NO2 Level 1: ≥ 1.5ppm	Any Sensor	3 AC/H	30%	Open	50%		
NO2 Level 2: ≥ 3ppm	Any Sensor	6 AC/H	60%	Open	50%		On
NO2 Level 3: ≥ 5ppm	Any Sensor	10 AC/H	100%	Open	100%		On
General Notes:							
In the event of a power failure or changeover to secondary supply the system will restart in its last known condition.							
Pollution levels will overrun run for a set time before changing to a lower level.							

UNIJET

Electrical Wiring

The electrical wiring for the system shall be provided with a CWZ classification in accordance with BS EN 8519: 2010 and installed in accordance with the Electrical Wiring Regulations.

Power/Controls Wiring	FP200 enhanced or equivalent
Data/HMI Comms	FP200 enhanced or equivalent
Fan Cables	FP600 or equivalent

[Download the wiring diagram](#)


UniJet Single Line Diagram

UNIJET

System Components

The UniJet Car Park Ventilation System is a comprehensive solution for mechanical pollution control and smoke clearance from covered car parks. The system uses standardised configurable components to offer a safe, reliable, consistent approach to fire safety in buildings that reduces waste and risk in the design, specification, installation and commissioning phases of a construction project.

The system complied with the Building Regulations (Approved Document B and Approved Document F) and all relevant standards. Components are independently tested and certified and the system is implemented by trained and competent installers.

The table to the right summarises the applicable standards.

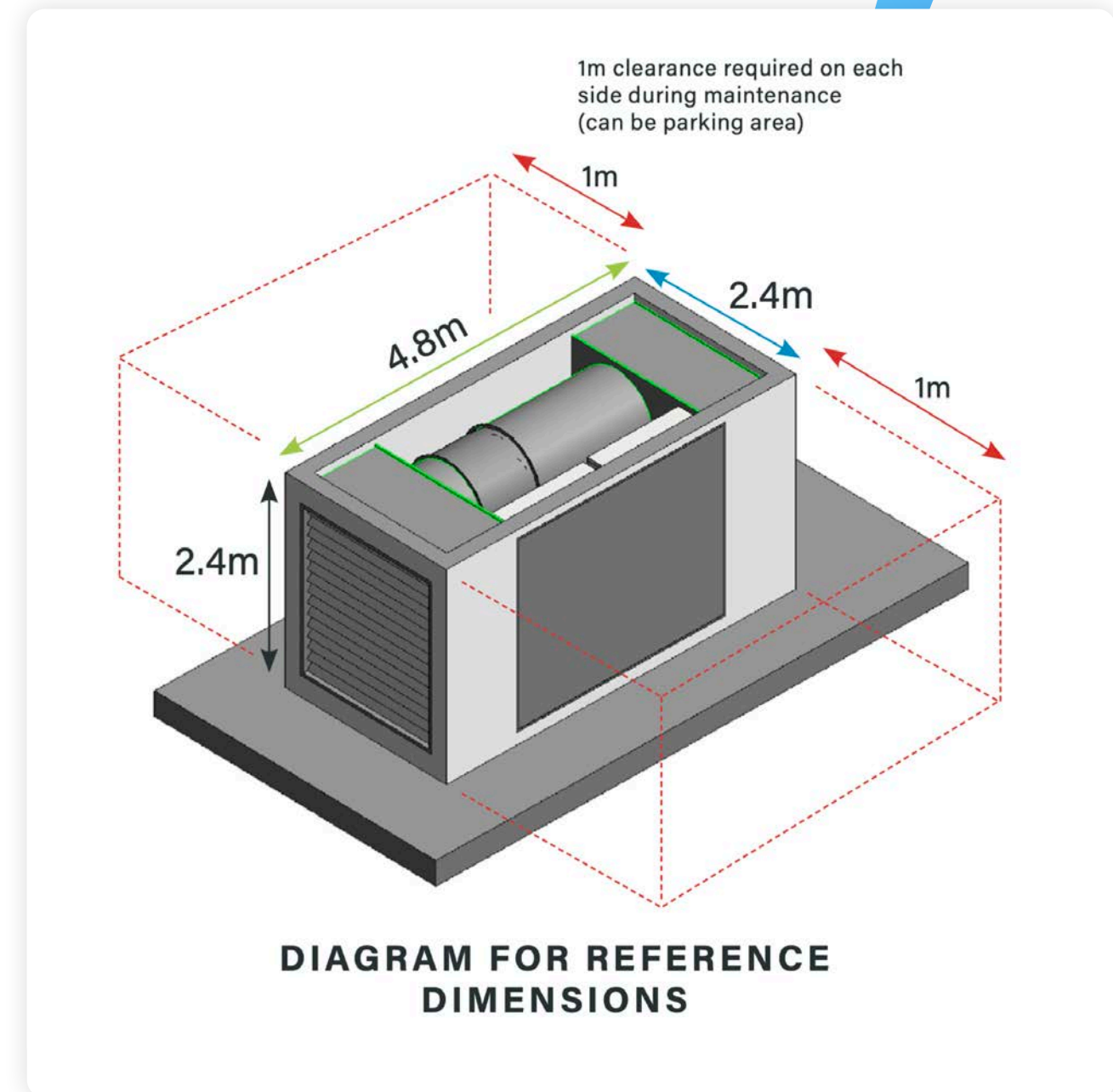
Component	Standard
System	Approved Document B (smoke clearance), Approved Document F (pollution control)
System	BS7346: 7
Extract fans	BS EN 12101:3
Control system	BS EN 12101:10
Automatic transfer switch (optional)	BS8519 with maintenance by-pass
Jet fans	BS EN 12101:3
Electrical wiring	BS8519

SYSTEM COMPONENTS

Main Extract Plant Box

The Box is a complete fire rated plant room constructed from insulated fire rated steel paneling finished in a standard RAL colour. The Plant Room has been designed to fit in a single car parking space and a range of duties are available to suit the building size. It contains the extract fans, dampers, silencers, main control panel, automatic transfer switch, inlet grille and outlet connection. The unit is factory assembled, wired and tested for fast and effective installation on site. The construction is 2-hour fire rated to EN 13501-2.

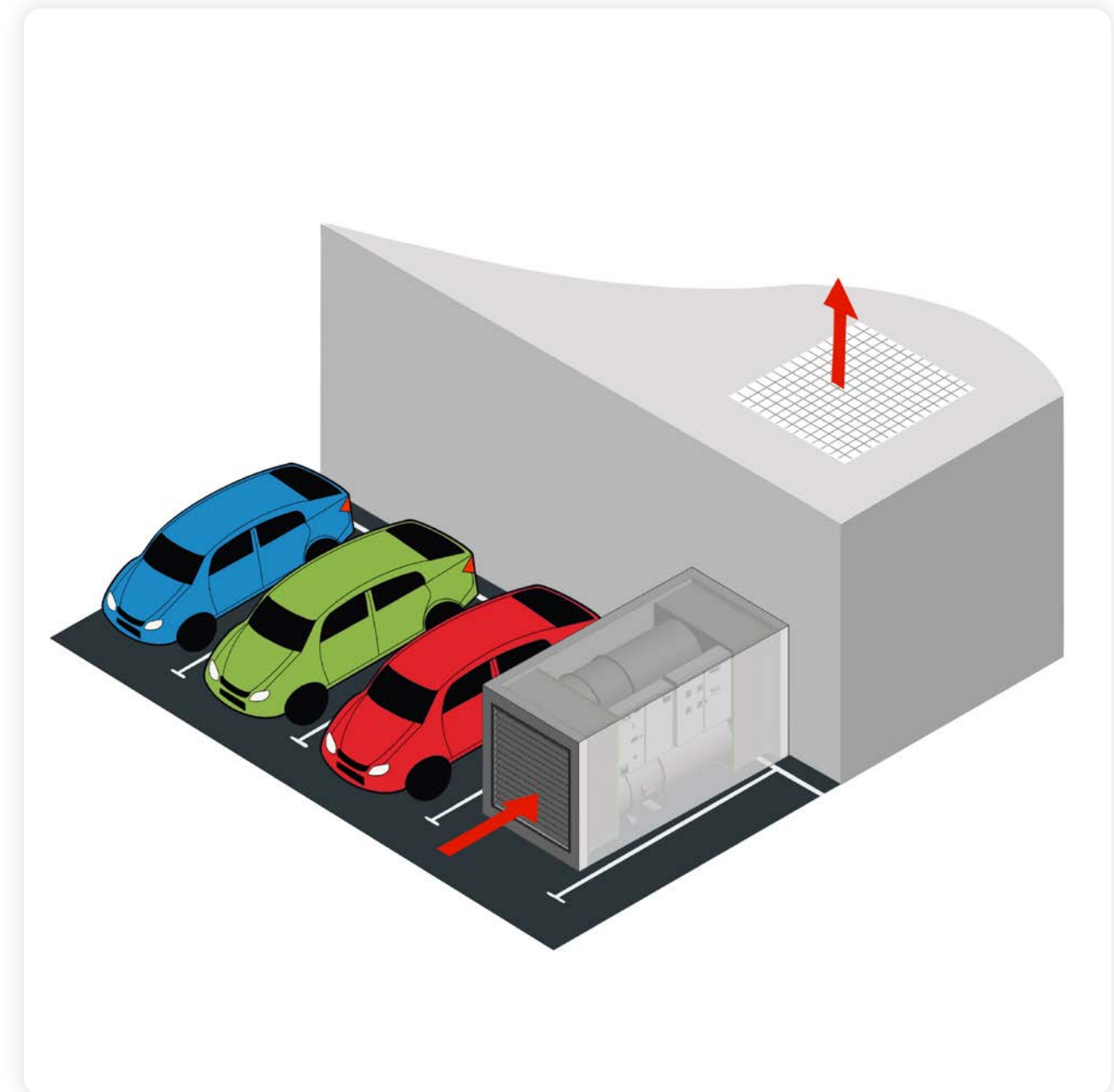
Fire rating	2 hours to EN13501-2
Extract fans	BS EN 12101:3 Class F300
Main control panel	BS EN 12101:10
Dampers	BS EN 12101:8
Automatic transfer switch	BS8519 with maintenance by-pass

[Datasheet](#)


SYSTEM COMPONENTS

Control System

A tried and tested software programme automates the operation. It is fully customisable and can communicate directly with external systems e.g. BEMS and seamlessly link to other SCS Group modular systems like the UniVent smoke shaft and UniDamp damper control system for a holistic approach to building smoke control. The control system features the Eyeball remote monitoring and testing system for continued safe operation of the system post installation.



SYSTEM COMPONENTS (OPTIONAL)

Jet Thrust Fan

High efficiency axial flow fan with adjustable blades located to achieve the required performance. The fan unit is fitted with inlet and outlet silencers to give minimal operational noise levels. Fans are classified F300 (300 degrees C for 2 hours) to BS EN 12101-3 and inverter controlled for pollution control.

Fan diameter	355
Nominal power kW)	1.05/0.14
Full load current (A)	2.4/0.8
Sound pressure level @3m	66/48
Weight	90 Kg

[Datasheet](#)

SYSTEM COMPONENTS

User Interface Panel (HMI)

The master user interface panel is a 7" colour touchscreen with function keys. User facilities will allow the operator to access system configuration, maintenance and testing functions and provide Fireman's override facilities through dedicated push buttons.

Dimensions	240 H x 296 W x 96 D (mm)
Weight	2.0 Kg
Power Supply	Maintained 230V AC supply from Fan Panel
Finish	White gloss acrylic-capped ABS
IP Rating	IP42 (indoor use only)
Conformity	CE Marked to low voltage and EMC Directives

[Datasheet](#)


SYSTEM COMPONENTS

Smoke Detector

Detection within the lobby can be by interfaces with the building fire alarm system or dedicated ceiling mounted smoke detectors. Where provided, smoke detectors will be approved to EN54-7-2000. Signals from the smoke detectors are received at the interface units located on each floor.

Type	Photo-Electric Optical
Voltage	8.5-33 VDC
Alarm Current	40mA
Dimensions	97mm Dia. x 130 mm H
Finish	White Polycarbonate
Conformity	EN54

[Datasheet](#)

SYSTEM COMPONENTS

Fireman's Override Switch

Local fireman's override switches will be break glass tamperproof type where provided.

Dimensions	125 H x 125 W x 35 D (mm)
Finish	Case = ABS, orange Hinged lid = ABS, clear

[Datasheet](#)

SYSTEM COMPONENTS

CO Detector

Addressable carbon monoxide detector designed for car park applications. The unit features include accurate measurement and long service life.

Ip rating	IP32
Voltage input	16V DC to 30VDC
Dimensions	H:95mm x W:80mm x D:51mm
Finish	Powder coated aluminium

[Datasheet](#)

UNIJET TECHNICAL MANUAL

Quick Links

View and download the UniJet System Documentation to support the specification process and include in your Tender documents.

System Specifications

[Download](#)

Single Line Diagram

[Download](#)

Budget Summary

[Download](#)

UniJet Brochure

[Download](#)

System Schematics

[Download](#)

Technical Submittal

[Download](#)

Guide to Car Park Ventilation

[Download](#)

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Use our online Project Submission Tool to send us your project details and relevant documents.

[Send us your project details](#)