Product Specification Guide

Technical information, installation requirements and guidance on industry legislation
Whilst our roots are firmly in the UK, we are a truly international business.

SE Controls Asia Pacific (SECAP)
Hong Kong (Established 2007)

SE Controls Africa (SECAF)
Durban (Established 2009)

SE Controls India (SECIN)
Chennai (Established 2011)

SE Controls Middle East (SECME)
United Arab Emirates (Established 2012)
Who We Are & What We Offer

SE Controls is a leading specialist in the design and delivery of smoke ventilation and environmental ventilation systems using façade automation as an integral part of the building envelope.

Since 1981 SE Controls has been developing innovative control systems that harness sustainable natural elements to create a safer and healthier indoor environment. This family owned business has grown from a humble start into an international business delivering products and projects across several continents.

Our customers benefit from qualified advice and technical support that is at the leading edge of international regulations and product development. Our products are designed and tested to international standards keeping our customers at the forefront of technology.

Knowledge and Accreditation

SE Controls works closely with all significant industry bodies and leading roof light and vent manufacturers in testing our products as a combined fully compliant system to the required standards, such as EN 12101-2.

Profile specific ‘Standard details’ available on request.
All Partners are upskilled at our dedicated in house training facility to ensure that all their engineers have the correct knowledge base to understand and specify SE Controls’ products.

- Controls
- Actuators
- Standards & Legislation
- Product selection
- Installation
- Commissioning

All Partners are fully trained on site to ensure professional and accurate installation and commissioning of SE Controls’ products.

- On site guidance
- Supported by fully qualified SE Controls’ engineers
- Validation of initial installation

All Partner’s installations will be subject to on going on site appraisals to ensure continued and consistent quality of installation.

- Carried out by experienced SE Controls’ engineers
- Additional training and support offered if required
- Feedback from appraisal available on request
Remote access functionality available to SE Controls Partners using Sceptre Programmer to enable immediate analysis and trouble-shooting of all on site queries.

- Full remote commissioning of site available via WiFi
- Enables direct and immediate support via SE Controls Technical Support Team
- Ideal for long distance installation support (including overseas)

With a wealth of industry knowledge gained over many years of both manufacturing and contract installation, SE Controls has the ability to support its Partners in all aspects of design and installation.

- Technical Support Team
- Technical Support Engineers
- SE Controls Knowledge Hub
  - Online customer support system
  - Information library
  - FAQs
  - Out of hours support

All Partners are recognised through the SE Controls Recommended Partner certification scheme.

- Certificate to confirm Recommended Partner status
- Partners are supported through continued training and development
- Partner status reviewed regularly
The Sceptre Programmer is SE Controls’ custom programming software tool which enables parameters to be set and adjusted to meet the requirements of individual installations.

- Remote access technical support for speedy resolution to on site complications
- Skilled and experienced engineers on hand for one to one support
- Downloadable controls history and data logging functionality (Excel)
- Enables onsite customisation of controller settings
- Service and diagnostic ability
- Ability to record and print event logs

Screenshot Of Live Monitor Page
Screenshot Of Parameters Page

Screenshot Of Events Page
The OS2 SHEVTEC Controller is an intelligent 24V dc control system designed to drive 2-wire 24V dc actuators in a smoke control and/or environmental ventilation system.

Operating from a 230V ac 5A supply, the OS2 SHEVTEC controller can deliver up to 8A to drive 24V motorised actuators and magnetic catches. Battery backup is provided for continued operation after a mains supply failure. Each controller can be mounted locally to the devices or in a centralised location. Each controller can operate independently or be linked to others to produce a networked control system. The networked control system can operate standalone or be linked to a Building Management System (BMS).

**Networked Control System**

230v required for each Networked Controller

**Centralised Control System**

230v required for Central Control Point

**Applications**
- Environmental Ventilation
- Smoke Ventilation

**Accreditations**
- CE Certified Compliant to applicable regulations

**Finish**
- Unit comes in a standard GREY Powder coated enclosure

**Key**
- OS2 SHEVTEC Controller
- Optical Smoke Detector
- Manual Control Point
OSLoop Coordinator

OSLoop is a modular smoke control product that consists of a centralised coordination module and can control between 1 and 15 remotely mounted manual control points (MCPs). Larger systems can be constructed by linking together multiple coordinators, allowing the control of up to 64 MCPs.

The coordinator controls power and data to the networked system, fully monitoring primary (mains) and secondary (battery) power supplies. The OSLoop system intelligently monitors current requirements of the system and determines how and when the MCPs require power to activate the AOVs.

Each MCP contains actuator switching circuitry which also monitors the actuator cabling and circuitry for faults. If a fault is detected, then the MCP raises a local alarm and also signals the coordinator so the remote alarms can be triggered. The MCP also provides support for one or more smoke detectors and monitors the detectors and cabling, checking for faults. In addition the MCP can be configured as master/slave device to other MCPs in the same system.

- System power is delivered via the Manual Control Point reducing the power supply and cable requirements
- 40% less cable costs than a conventional system
- 50% less devices compared to conventional systems
- Reduced system installation time
- prEN 12101-9 and EN 12101-10
- EMC tested to EN61000-6-2 and EN61000-6-3
- LVD tested to EN60335-1 as amended by EN60335-2-103.

Applications
- Smoke Ventilation

Accreditations
- CE Certified Compliant to applicable regulations

Finish
- Unit comes in a standard GREY Powder coated enclosure

Key
- OSLoop Coordinator
- Optical Smoke Detector
- Manual Control Point
OS2 SHEVTEC® System Wiring

A: 2 Core + Earth x 2.5mm²/PVC 200 Gold by others
B: 5 Core x 1.5mm²/PVC 200 Gold by others
C: 3 Core + Earth x 1.5mm²/PF 200 Gold by others
D: 2 Core + Screen x 1.5mm²/PF 200 Gold by others
E: 4 Core + Screen x 1.5mm²/PF 200 Gold by others
F: Not Used
G: 2 Core + Earth x 1.5mm²/PVC cable by others
H: 3 Core + Earth x 1.5mm²/PVC cable by others

230V AC 5 AMP UNSWITCHED FUSED SPUR

Ground Floor

1st Floor

2nd Floor

3rd Floor

4th Floor
OSLoop System Wiring

5th Floor

4th Floor

3rd Floor

2nd Floor

1st Floor

Ground Floor

A 2 Core + Earth x 2.5mm² FP 200 Gold by others
B 4 Core + Screen x 2.5mm² FP 200 Gold by others
C 2 Core + Earth x 1.5mm² FP 200 Gold by others
D 4 Core + Screen x 1.5mm² FP 200 Gold by others

230V AC 5 AMP UNSWITCHED FUSED SPUR
SE Controls can provide a mechanical smoke ventilation system designed as an alternative solution to ADB and BRE smoke shafts.

Mechanical solutions can offer reduced smoke shaft sizes (typical 0.6m² versus 1.5m² or 3m²) increasing the lettable areas in a development. In addition, a mechanical system in conjunction with CFD modelled fire engineered solutions, offer increased escape travel distances reducing the need to include additional stair cores.

This type of system has been designed for both means of escape and fire fighting operation with occupants and fire & rescue service safety to the fore.

**Location Of Products In Typical Building**

- SHEVTEC® Duty & Standby Powered Extract Fans
- SHEVTEC® Smoke Control Damper
- SHEVTEC® Smoke Shaft Door & Actuator
- OSDiap Control System
- SHEVTEC® Smoke Detector
- SHEVTEC® Tamperproof (MCP)
- SHEVTEC® Fan Control (MCP)
- SHEVTEC® Repeater Panel
Regardless of the structure and constraints of the available building space, SE Controls offers a range of solutions that can be tailored to meet all specifications. This includes mechanical extraction systems which can facilitate the need for smaller openings and a narrower shaft space, releasing valuable rentable floor space.
NVLogiQ™ Indoor Air Quality

How it works: NVLogiQ constantly monitors indoor air quality, temperature and humidity in individual rooms or zones.

By then applying innovative control algorithms, it automatically manages the operation of windows, louvres, rooflights and other powered vents in conjunction with heating & cooling systems to optimise indoor air quality and thermal comfort, while optimising energy efficiency.
Example Air Flow Building Solutions

- Cross Ventilation
- Single Sided Ventilation
- Night or Passive Cooling Ventilation

Power Supply Unit

Automated Control Units

Obstruction Sensors
Rain Sensors
Temperature / Wind Sensor

Warning: isolate from mains before removing cover.
Independent research has demonstrated that moderate levels of CO\textsubscript{2} have a negative impact on the cognitive functions of the inhabitants of a given environment.

**Effect Of Not Having Automated Control**

![Graph showing CO\textsubscript{2} concentration over time](image)
NVLogiQ™ Room Controller

NVLogiQ allows remote monitoring of the installation and can be used to demonstrate the current room conditions over a period to several month to help justify the need for an automated system.

Once installed, the system can be used to monitor the current air quality and can be downloaded as an easy to read graph which shows a range of readings including CO₂, temperature and vent position.

Remote Monitoring Areas

Effect Of Having Automated Controls

![Graph showing CO₂ concentration and temperature over time. Key: CO₂ ppm, 1000 ppm, 1500 ppm, 5000 ppm.]
Manual Winding Gear

Simple, inexpensive solution for environmental ventilation.

The ‘Clearline’ (Originally Teleflex) system is designed for out of reach windows in all buildings/markets: commercial, education, healthcare, residential and domestic.

The system entails a chain opener operated via a winding handle linked together by conduit and cable. Winding handles can be positioned to allow easy opening of hard to reach locations, while operating multiple vents via a single winding handle with a maximum cable run of up to 18 metres. This surface mounted application offers greater flexibility and compatibility with almost all window systems.

Details

<table>
<thead>
<tr>
<th>Window Orientation</th>
<th>Max Control Device</th>
<th>Window Size One Push Point</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHOO</td>
<td>18m</td>
<td>Mini, long</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midi, Midi, Maxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1100mm Wide, Min 250mm deep</td>
</tr>
<tr>
<td>THOO</td>
<td>18m</td>
<td>Mini, long</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midi, Midi, Maxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1100mm Wide, Min 250mm deep</td>
</tr>
<tr>
<td>Centre Pivot</td>
<td>18m</td>
<td>Mini, long</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midi, Midi, Maxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1100mm Wide, Min 250mm deep</td>
</tr>
<tr>
<td>Side Hung</td>
<td>18m</td>
<td>Mini, long</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midi, Midi, Maxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1100mm Wide, Min 250mm deep</td>
</tr>
<tr>
<td>BIHO</td>
<td>18m</td>
<td>Mini, long</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midi, Midi, Maxi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up to Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1100mm Wide, Min 250mm deep</td>
</tr>
</tbody>
</table>

Colour Options

<table>
<thead>
<tr>
<th>Colour</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHITE</td>
<td>9010</td>
</tr>
<tr>
<td>BLACK</td>
<td>9005</td>
</tr>
<tr>
<td>BROWN</td>
<td>8017</td>
</tr>
<tr>
<td>GREY</td>
<td>9006</td>
</tr>
</tbody>
</table>

Key Features

- Quality Engineered Stainless Steel Chain Openers.
- Up to 18m operation from Winding Handle to Chain Opener.
- Range of handle options to suit differing weight loads
- Low maintenance hard wearing system.
- Range of colours
- Product Manufactured in the UK.

Configuration Options

[Diagram of configurations]
Fixing Plate 004 Wood/PVC
- Black: EBT00020002
- Brown: EBT00020004
- Grey: EBT00020003
- White: EBT00020001

Open Inward Bracket
- Black: EBT00030002
- Brown: EBT00030004
- Grey: EBT00030003
- White: EBT00030001

Screw Jack Opener

Chain Opener
- 250mm
  - Black: BUNK0100BL
  - Brown: BUNK0100BR
  - Grey: BUNK0100GR
  - White: BUNK0100WH

- 380mm
  - Black: BUNK0100BL
  - Brown: BUNK0100BR
  - Grey: BUNK0100GR
  - White: BUNK0100WH

Operating Handles
- Long Midi Operator
  - Black: EMB0100BL
  - Brown: EMB0100BR
  - Grey: EMB0100GR
  - White: EMB0100WH

- Midi Operator
  - Black: EMB0100BL
  - Brown: EMB0100BR
  - Grey: EMB0100GR
  - White: EMB0100WH

- Maxi Operator
  - Black: EMB0100BL
  - Brown: EMB0100BR
  - Grey: EMB0100GR
  - White: EMB0100WH

- Mini Operator
  - Black: EMB0100BL
  - Brown: EMB0100BR
  - Grey: EMB0100GR
  - White: EMB0100WH

- 100mm Handle
  - Black: EMB0101BL
  - Brown: EMB0101BR
  - Grey: EMB0101GR
  - White: EMB0101WH

Connectors
- Core
  - 3 x Roll: EMB01013SC

- Fixing Plate 002 Metal
  - Black: EBT00010002
  - Brown: EBT00010004
  - Grey: EBT00010003
  - White: EBT00010001

- Fixing Plate 004 Wood/PVC
  - Black: EBT00020002
  - Brown: EBT00020004
  - Grey: EBT00020003
  - White: EBT00020001

- Open Inward Bracket
  - Black: EBT00030002
  - Brown: EBT00030004
  - Grey: EBT00030003
  - White: EBT00030001

- Conduit (3m lengths)
  - Black: EMB01012BL
  - Brown: EMB01012BR
  - Grey: EMB01012GR
  - White: EMB01012WH

- Saddle Packer
  - Black: EMB01016BL
  - Brown: EMB01016BR
  - Grey: EMB01016GR
  - White: EMB01016WH

- Saddle Clip
  - Black: EMB01015BL
  - Brown: EMB01015BR
  - Grey: EMB01015GR
  - White: EMB01015WH

- Saddle Base
  - White: EMB01014SC

- 100mm Handle
OS2 SHEVTEC® Controller

Power
- Supply: 230V ac 50/60 Hz from a 5A fused unswitched spur
- Output: nominal 24V dc; 2-Channels combined output not to exceed 8A
- Backup battery: 2 x 12 V dc; 7.0Ah sealed lead-acid batteries
- Battery standby time: 72 hours with maximum 40mA standby drain on PER permanent *
- Expected battery life: 3+ years @ 25°C
- Real time clock battery life: 10 years

Environment
- IP 30
- Humidity range: 10 to 90% Non-condensing
- Storage: -20 to +50°C
- Operating temperature for Control Panel (not including batteries): -5 to 40°C**

Miscellaneous
- Dimensions: 364.5 x 337.8 x 128.4mm
- Mass: approx 13kg
- Cable entry: via 15 x 20mm end mounted cable glands and/or one rear entry slot for concealed connection
- Internal temperature sensor installed to provide optimal battery charging compensation as the ambient temperature changes.

*Standby drain current comprises of enabled fire inputs, communication cards, and other loads connected to PER.
**Operation at elevated temperatures may reduce battery life.

Product Codes
OS2 SHEVTEC Controller FCS12250000

Technical Drawing

Applications
- Environmental Ventilation
- Smoke Ventilation

Accreditations
- CE Certified Compliant to applicable regulations
OS2 SHEVTEC® 30A PSU

Power
- Supply: 230V ac 50/60 Hz from a 13A supply
- Output: Nominal 24V dc 4-channels output not to exceed 8A per channel
- Back up battery: 2 x 12V dc 22.0Ah sealed lead-acid batteries
- Battery standby time: 72 hours with maximum 100mA standby drain on PER permanent*
- Expected battery life: 3 years @ 25°C
- Real time clock battery life: 10 years
- 110/230V input

Environment
- IP 30
- Humidity rating: 10-90% Non-condensing
- Storage: -20 to +50°C
- Operating temperature for control panel (not inc. batteries): -5 to +40°C**

Miscellaneous
- Dimensions: 600x400x250mm
- Mass: Approx with batteries 33.4kg, without batteries 20.2kg
- Cable entry: Via 32x20mm top mounted cable glands
- Internal temperature sensor installed to provide optimal battery charging compensation as the ambient temperature changes
- *Standby drain current comprises of enabled fire inputs, communication cards and other loads connected to PER
- **Operation at elevated temperatures may reduce battery life

Product codes
- 30A PANEL with battery backup
  Part Number: FCS12001030
- Without battery backup
  Part Number: FCS12000031

Technical Drawing

Applications
- Environmental Ventilation
- Smoke Ventilation

Accreditations
- CE Certified Compliant to applicable regulations
Features

- **40%** less cable costs than a conventional system
- **50%** less devices compared to conventional systems
- Reduced system installation time
- **prEN 12101-9** and fully **EN 12101-10 compliant**
- **LVD tested to EN60335-1** as amended by **EN60335-2-103**
- **EMC tested to EN61000-6-2 and EN61000-6-3**
- **50%** less devices compared to conventional systems
- **40%** less cable costs than a conventional system

### Coordinator Specification

**Part number** FC50000010

**Dimensions** 310 x 380 x 130mm (W x h x D Approx.)

**Mass** Approx. 4.1kg

**Supply** 230V AC, 50/60Hz @ 4A

**Output**
- 2x12VDC 12.0Ah Sealed Lead-Acid Batteries. Vb batteries
- 27.6VDC @7A continuous, 10A for 60 seconds
- 25.5VDC @7A continuous, 9A for 60 seconds

**Humidity**
- **IP Rating** IP20
- 10 to 90% Non-Condensing

**Temperatures**
- 0 to +40°C (operating)
- 20 to + 75°C (storage)

### Manual Control Point (MCP) Specification

**Standard MCP Part numbers** FC50000007 (Complete unit)

**Tamperproof MCP Part numbers** PP51564900 (Surfaced mounted pattress box)

**Dimensions**
- 87 x 87 x 50mm (H x W x D Approx.)

**Mass** Approx. 0.1kg

**Supply** 20V-29V DC @ 4A

**Output**
- 20V-29V @6A Max
- 20V-29V @6A Max

**Humidity**
- 10 to 90% Non-Condensing

**Temperatures**
- 0 to +75°C (passage)
- 0 to +50°C (operating)

### Smoke Detector Specification

**Part numbers**
- **HEAD** PART NO. ada.55063118
- **OS-Loop BASE PART NO. ada.456683100**

**Key Features**
- FasTest takes just 4 seconds to test and confirm detectors are functioning correctly
- Responds well to slow burning, smouldering fires
- **Good performance in both black and white smoke**

**Applications**
- Smoke Ventilation

**Accreditations**
- CE Certified Compliant to applicable regulations
Smoke Detector

Detector operating principles

Principle of detection: Photoelectric detection of light scattered by smoke particles over a wide range of angles. The optical arrangement comprises an infrared emitter with a prism and a photo-diode at 90° to the light beam with a wide field of view.

Details

- Flashing LED: The integral LED flashes when the detector is in a quiescent state.
- Supply Voltage: 9 to 33V DC
- Ripple Voltage: 2V peak to peak max at 0.1Hz to 100kHz
- Power-up Time: < 20 seconds
- Alarm Current: 40mA
- Material: Detector and base moulded in white polycarbonate
- Terminals: Nickel plated stainless steel
- Dimensions: Detector 100 x 42mm, Detector in Base 100 x 50mm
- Weight: Detector 99g, Detector in base 150g
- Temperature: Operating temperature –20°C to +60°C (no condensation or icing)
- Humidity: 0% to 95% relative humidity (no condensation)
- Atmospheric Pressure: Insensitive to pressure
- Wind Speed: Insensitive to wind
- IP 23

Part Numbers

- HEAD PART NO. ADA 55000318
- OS2 BASE PART NO. ADA 45681245
- OSLoop BASE PART NO. ADA 45681200

Applications

- Smoke Ventilation

Accreditations

- CE Certified Compliant to applicable regulations
Tamper Proof Manual Control Point (MCP)

Details

- prEN 12101-9
- Provided in orange (RAL 2011) as required as part of prEN 12101-9
- The device has the capabilities to provide audible signals and faults along with having a silence button out of view
- The device continuously monitors actuators and connections to smoke detectors (As required as part of prEN 12101-9)
- Event logging to provide historical user information
- Maintenance indication (Statutory requirement of the Regulatory Reform Order (Fire Safety))
- Activation via access key fob
- Reset via access key fob
- Reset push button
- Activated LED
- Power/Healthy LED
- Fault LED

For use with 24V OSLoop and OS2 control panels

- 87 x 87 x 22mm (h x w x d) - Flush mount
- 87 x 87 x 54mm (h x w x d) - Surface mount

MCP part numbers

<table>
<thead>
<tr>
<th>OSLoop MCP part number</th>
<th>Complete Unit</th>
<th>FC500300028</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS2 MCP part numbers</td>
<td>MCP Module</td>
<td>FC502000081</td>
</tr>
<tr>
<td></td>
<td>Dumb Reset Key</td>
<td>FC500200024</td>
</tr>
<tr>
<td></td>
<td>MCP Activation Key</td>
<td>FC502000033</td>
</tr>
<tr>
<td></td>
<td>Surface Mount Box</td>
<td>FYS15040061</td>
</tr>
</tbody>
</table>

Applications

- Smoke Ventilation

Accreditations

- CE Certified Compliant to applicable regulations
Manual Control Point (MCP)

Details
- prEN 12101-9
- Provided in orange (RAL 2011) as required as part of prEN 12101-9
- The device has the capability to provide audible signals and faults along with having a silence button out of view
- The MCP (OSLoop version) continuously monitors actuators and connections to smoke detectors (As required as part of prEN 12101-9)
- Event logging to provide historical user information
- Maintenance indication (Statutory requirement of the Regulatory Reform Order (Fire Safety))
- Cover reset push button via access key fob
- Reset push button
- Activated LED
- Power/Healthy LED
- Fault LED
- Single action activation cover (replaces glass frangible element)

For use with 24V OSLoop and OS2 control panels
- 87 x 87 x 22mm (h x w x d) - Flush mount
- 87 x 87 x 54mm (h x w x d) - Surface mount

MCP part numbers
- OSLoop MCP Complete Unit: FCS00300027
- OSLoop MCP MCP Module: FCS00200080
- OSLoop MCP Dumb Reset Key: FCS00200024
- OSLoop MCP Surface Mount Box: PSY15040061
- OSLoop MCP MCP Finger Plate: FCS00200055

OSLoop Control System

Technical Drawing

OS2 Control System

Key
- OSLoop Coordinator / OS2 SHEVTEC Controller
- Optical Smoke Detector
- Manual Control Point

Accreditations
- CE Certified Compliant to applicable regulations
NVLogiQ™ Room Controller

Features
The NVLogiQ™ Room Controller has been designed to offer an effective, efficient and user friendly solution for adaptive environmental ventilation applications that is easily integrated into a new or refurbished building.

The NVLogiQ™ Room Controller can be used as a standalone system or networked to give individual room control with global common signals such as wind, rain and security closing.

All within a small wall-mounted enclosure, the NVLogiQ™ Room Controller has integrated sensors, switches and a backlit LCD display that offers the following facilities without the need for separate sensors within the room:

• CO₂ monitoring and level display
• Temperature monitoring and level display
• Humidity monitoring and level display
• User control via inbuilt switches with ten increments of operation
• Output signal for external devices such as central heating control etc
• Locked out function to prevent misuse
• Time clock for strategy and security closing
• Vent position/open output signal
• Fresh air ‘morning start’ setting
• Intuitive menu for setpoint adjustment via a security dongle
• Continuous data logging for performance analysis

The NVLogiQ™ Room Controller is supplied with a pre-programmed natural ventilation control algorithm developed in partnership with Loughborough University’s Building Energy Research Group.

The strategy was formulated by modelling hundreds of comparable scenarios in both education and commercial buildings in conjunction with industry recognised methods and data collected from environmental ventilation projects installed over several years by SE Controls.

Requirements for regulations such as BB101 (internal environment for schools) and CIBSE Guides A have heavily influenced the design of the algorithms.

Dynamic Thermal Simulation models (DTS) and Computational Fluid Dynamics (CFD) were used to analyse the effectiveness and efficiency of the algorithm.

The system controls room CO₂ levels to a variable profile ensuring that Indoor Air Quality (IAQ) is optimised. The temperature control strategy increases the ventilation rate before internal temperature escalates and becomes uncontrollable. There are multiple temperature control strategies based on internal temperature, and occupancy, which provide appropriate temperature control throughout the year.

A night purge strategy cools the building for a fresh start and can provide prolonged daytime cooling in buildings with sufficient thermal mass.

All settings are adjustable from standard or after the initial ‘learning’ period of occupancy.

Data logging is essential for pre or post occupancy performance analysis; the controller is capable of 3 month’s recording of sensor readings and operation signals, and is downloadable using a dongle.

Applications

Environmental Ventilation

Accreditations

CE Certified Compliant to applicable regulations

Power

• Class III
• Supply: Input: 24v DC
• Output: 0-10v and OSLink
• Real time clock battery average life 10 years

Environmental

• Rating: IP20
• Humidity Range: 10 to 90% non-condensing
• Storage: -20 to +50°C
• Operating temp: -10 to +50°C

Miscellaneous

• Dimensions: 160 x 105 x 37 mm. Dia. 20mm top entry with cap and 58mm x 36mm rear entry

Part Numbers

• NVLogiQ™ with CO₂, Part Number: NC500028001
• NVLogiQ™ without CO₂, Part Number: NC500020002
NVLogiQ™ PSU

Technical Data

Power

- Class 1
- Supply: 230V ac 50/60 Hz from a fused un-switched spur
- Input: 100-120VAC 3.5A / 200-240VAC 2.0A
- Note: For 115VAC operation, the mains input voltage selection switch must be set on the internal power supply.
- Output: 4.8A max actuator run current
- Note: Start up peak current needs to be considered and can vary depending on actuator type. Derate linearly to 70% load from +50 to +70°C.
- Real time clock battery average life 10 years

Environment

- IP20
- Humidity Range: 10 to 90% Non-Condensing
- Storage: -20 to +75 °C
- Operating temp: -10 to +50 °C

Miscellaneous

- Dimensions: 251.15 (excluding glands) x 191.2 x 56.3mm
- Cable entry: via five 20mm end mounted cable glands
- 0-10 Volts signals must remain stable and ‘spike’ free for a period of 2 seconds before the controller will respond to them. In 10% step mode, the controller only responds to 0-10V signals in steps of whole volts 250mV. In 5% step mode, each step is half a volt
- Derate linearly to 70% load at high temperatures.

Part Numbers

- NVLogiQ PSU CONTROL PANEL 6A
  Part Number: NPS00010002

Applications

- Environmental Ventilation

Accreditations

- CE Certified Compliant to applicable regulations
3A Transformer

Details
The SE Controls 230V 3A Transformer is a reverse polarity transformer designed to drive 2-wire 24V dc actuators in a environmental ventilation system.

Switched
This touch sensitive capacitive switch is a cost effective control mechanism that fits neatly into a standard double gang aperture.

Unswitched
The unswitched version is a cost effective control mechanism that fits neatly into a standard double gang aperture.

Technical Data
Voltage
230V dc / 50/60Hz (+/- 10%)

Power Consumption
Max 350mA

Fuses
1Amp

Voltage Output
24V +/-10%

Output Current
Max. 3Amp

Duty Cycle
1 min on/ 4 min off

Ingress Protection
IP50 din 40050

Housing
plastic, white for surface mounting approx. 146 x 86 x 40mm (w x h x d)

Dimensions
0-40°C

Ambient Temperature
230V max. 1.5mm²

Connecting Terminal
24V max. 1.5mm²

Application
Environmental Ventilation

Part Numbers
Product | Part No
--- | ---
3A Transformer - Fascia switched | FRS00010032
3A Transformer - Unswitched | FRS00010031

Applications
- Environmental Ventilation

Accreditations
- CE Certified Compliant to applicable regulations

*The product is to be fitted into a compatible MK manufactured double pattress box, with minimum depth of 47mm.
**SECO Ni 24 40**

**Technical Data**

- **Actuator**: SECO Ni 24 40
- **Actuator Type**: 24V dc Chain Opener
- **Voltage (All +/- 5%)**: 24V dc
- **Current Draw (Amp)**: 0-600mm = 1.0A
  601-900mm = 1.2A
- **Stroke**: 0-600mm (configurable)
  601-900mm (configurable)*
- **Operating Speed**: 15mm/sec
  min. 5mm/sec (configurable)
- **Ambient Operating Temp**: -5°C to +60°C
- **Thrust Force**: 400N
- **Close Force**: 400N
- **Soft Close**: Yes
- **Switching**: Electronic
- **Standard Finish**: Powder coated
  Grey (RAL 9006)
- **Seal Relief**: Programmable up to 20mm
- **Clamping Force**: 4000N
- **Colour Option**: Other RAL colours available on request
- **Flex Length**: 2m
- **Flex Colour**: Grey
- **Product Warranty**: 15,000 cycles
- **Duty Cycle**: 22% (2 mins on, 7 mins off)
- **Protection Degree**: IP20
- **Bracket**: STT fixing/open inward/face fix bracket
- **Synchronisation**: Optional
- **Application**: Smoke and Environmental Ventilation

**Dimensions**

- **DIM X (mm)**
  - 635
  - 785
- **STROKE (mm)**
  - up to 600
  - 601-900

**Technical Drawing**

**Product Codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Operating Voltage</th>
<th>Force</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASI4060020S</td>
<td>24V</td>
<td>400N</td>
<td>600mm</td>
</tr>
<tr>
<td>AASI4090020S</td>
<td>24V</td>
<td>400N</td>
<td>900mm</td>
</tr>
</tbody>
</table>

**Bracket Product Codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Type</th>
<th>Height (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASI60000001</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>AASI61500001</td>
<td>50</td>
<td>50</td>
</tr>
</tbody>
</table>

**Applications**

- Environmental Ventilation
- Smoke Ventilation

**Accreditations**

CE Certified Compliant to applicable regulations
# Twin SECO Ni 24 40

## Technical Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuator</td>
<td>Twin SECO Ni 24 40</td>
</tr>
<tr>
<td>Actuator Type</td>
<td>24V dc Chain Opener</td>
</tr>
<tr>
<td>Voltage (All +/-5%)</td>
<td>24V dc</td>
</tr>
<tr>
<td>Amp Draw Current (With Load)</td>
<td>0-600mm= 2.0A, 601-900mm= 2.4A</td>
</tr>
<tr>
<td>Stroke</td>
<td>0-600mm (configurable), 601-900mm (configurable)</td>
</tr>
<tr>
<td>Operating Speed</td>
<td>15mm/sec, min. 5mm/sec (configurable)</td>
</tr>
<tr>
<td>Ambient Operating Temp</td>
<td>-5°C to +60°C</td>
</tr>
<tr>
<td>Thrust Force</td>
<td>2 x 400N</td>
</tr>
<tr>
<td>Close Force</td>
<td>2 x 400N</td>
</tr>
<tr>
<td>Soft Close</td>
<td>Yes</td>
</tr>
<tr>
<td>Switching</td>
<td>Electronic</td>
</tr>
<tr>
<td>Standard Finish</td>
<td>Powder coated Grey (RAL 9006)</td>
</tr>
<tr>
<td>Seal Relief</td>
<td>Programmable up to 20mm</td>
</tr>
<tr>
<td>Clamping Force</td>
<td>4000N</td>
</tr>
<tr>
<td>Colour Option</td>
<td>Other RAL colours available on request</td>
</tr>
<tr>
<td>Flex Length</td>
<td>2m</td>
</tr>
<tr>
<td>Flex Type</td>
<td>2 core/0.75mm silicone, 4 core (soft free contact) as option</td>
</tr>
<tr>
<td>Flex Colour</td>
<td>Grey</td>
</tr>
<tr>
<td>Product Warranty</td>
<td>15,000 cycles</td>
</tr>
<tr>
<td>Duty Cycle</td>
<td>22% (approx. 2 mins on, 7 mins off)</td>
</tr>
<tr>
<td>Protection Degree</td>
<td>IP20</td>
</tr>
<tr>
<td>Bracket</td>
<td>Sill fixing/open inward/face fix bracket</td>
</tr>
<tr>
<td>Synchronisation</td>
<td>Optional</td>
</tr>
<tr>
<td>Application</td>
<td>Smoke and Environmental Ventilation</td>
</tr>
</tbody>
</table>

## Technical Drawing

![Technical Drawing](image)

## Product Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Operating Voltage</th>
<th>Force</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>AASTI40600S</td>
<td>24V</td>
<td>2 x 400N</td>
<td>600mm</td>
</tr>
<tr>
<td>AASTI40900S</td>
<td>24V</td>
<td>2 x 400N</td>
<td>900mm</td>
</tr>
</tbody>
</table>

## Bracket Product Codes

<table>
<thead>
<tr>
<th>Height (mm)</th>
<th>Code</th>
<th>Code</th>
<th>Code</th>
<th>Code</th>
<th>Code</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>AS61000001</td>
<td>AS6100001</td>
<td>AS6100002</td>
<td>AS6100003</td>
<td>AS6100004</td>
<td>N/A</td>
</tr>
<tr>
<td>40</td>
<td>AS6100005</td>
<td>AS6100006</td>
<td>AS6100007</td>
<td>AS6100008</td>
<td>AS6100009</td>
<td>N/A</td>
</tr>
<tr>
<td>50</td>
<td>AS6100010</td>
<td>AS6100011</td>
<td>AS6100012</td>
<td>AS6100013</td>
<td>AS6100014</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## Applications

- Environmental Ventilation
- Smoke Ventilation

## Accreditations

- CE Certified Compliant to applicable regulations
Technical Data

Actuator: SECO N 24 25
Actuator Type: 24V dc Chain Opener
Voltage (All +/-5%) : 24V dc
Current Draw (Amp): <0.5A
Stroke: 250mm, 350mm (configurable)
Operating Speed: 5mm/sec (configurable)
3mm/sec (option single application only)
Ambient Operating Temp: -5°C to +60°C
Thrust Force: 250N
Close Force: 250N
Soft Close: Yes
Switching: Electronic
Standard Finish: Powder coated Grey (RAL 9006)
Seal Relief: Programmable up to 20mm
Clamping Force: 4000N
Colour Option: Other RAL colours available on request
Flex Length: 2m
Flex Type: 2 core PVC 4 core (volt free contact)* as option
Flex Colour: Grey
Product Warranty: 15,000 cycles
Duty Cycle: 22% (approx. 2 mins on, 7 mins off)
Protection Degree: IP20
Bracket: Sill fixing/ face fix/ thru body sill
Synchronisation: Optional
Application: Environmental Ventilation

Product Codes

- Silver Grey (RAL 9006)
- Operating Voltage Force Stroke
  - AAS0250250S 24V 250N 250mm
  - AAS0250350S 24V 250N 350mm

Bracket Product Codes

| Height (mm) | Offset (mm) | AAS02500001 | AAS02500002 | AAS02500003 | AAS02500004 | AAS02500005 | AAS02500006 | AAS02500007 | AAS02500008 | AAS02500009 | AAS02500010 | AAS02500011 | AAS02500012 | AAS02500013 | AAS02500014 | AAS02500015 | AAS02500016 | AAS02500017 | AAS02500018 | AAS02500019 | AAS02500020 |
|------------|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 25         |            | AAS02505001  |               | AAS02505002  |               | AAS02505003  |               | AAS02505004  |               | AAS02505005  |               | AAS02505006  |               | AAS02505007  |               | AAS02505008  |               | AAS02505009  |               | AAS02505010  |               |
| 40         |            | AAS02505002  |               | AAS02505003  |               | AAS02505004  |               | AAS02505005  |               | AAS02505006  |               | AAS02505007  |               | AAS02505008  |               | AAS02505009  |               | AAS02505010  |               | AAS02505011  |               |
| 50         |            | AAS02505003  |               | AAS02505004  |               | AAS02505005  |               | AAS02505006  |               | AAS02505007  |               | AAS02505008  |               | AAS02505009  |               | AAS02505010  |               | AAS02505011  |               | AAS02505012  |               |

Applications

- Environmental Ventilation

Accreditations

- CE Certified
- Compliant to applicable regulations
**Technical data**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actuator</td>
<td>Twin SECO N 24 25</td>
</tr>
<tr>
<td>Actuator Type</td>
<td>24V dc Chain Opener</td>
</tr>
<tr>
<td>Voltage (All +/-5%)</td>
<td>24V dc</td>
</tr>
<tr>
<td>Amp Draw Current</td>
<td>&lt;1.0A</td>
</tr>
<tr>
<td>Stroke</td>
<td>350mm other strokes are available*</td>
</tr>
<tr>
<td>Operating Speed</td>
<td>min. 5mm/sec (configurable)</td>
</tr>
<tr>
<td>Ambient Operating Temp</td>
<td>-5°C to +60°C</td>
</tr>
<tr>
<td>Thrust Force</td>
<td>2 x 250N</td>
</tr>
<tr>
<td>Close Force</td>
<td>2 x 250N</td>
</tr>
<tr>
<td>Soft Close</td>
<td>Yes (via adjustable zero point setting)</td>
</tr>
<tr>
<td>Switching</td>
<td>Electronic</td>
</tr>
<tr>
<td>Standard Finish</td>
<td>Powder coated Grey (RAL 9006)</td>
</tr>
<tr>
<td>Seal Relief</td>
<td>Programmable up to 20mm</td>
</tr>
<tr>
<td>Clamping Force</td>
<td>2 x 4000N</td>
</tr>
<tr>
<td>Colour Option</td>
<td>Other RAL colours available on request</td>
</tr>
<tr>
<td>Flex Length</td>
<td>2m</td>
</tr>
<tr>
<td>Flex Type</td>
<td>2 core PVC</td>
</tr>
<tr>
<td></td>
<td>4 core (volt free contact)* as option</td>
</tr>
<tr>
<td>Flex Colour</td>
<td>Grey</td>
</tr>
<tr>
<td>Product Warranty</td>
<td>15,000 cycles</td>
</tr>
<tr>
<td>Duty Cycle</td>
<td>22% (approx. 2 mins on, 7 mins off)</td>
</tr>
<tr>
<td>Protection Degree</td>
<td>IP20</td>
</tr>
<tr>
<td>Bracket</td>
<td>Sill fixing/ face fix/ thru body sill</td>
</tr>
<tr>
<td>Synchronisation</td>
<td>Optional</td>
</tr>
<tr>
<td>Application</td>
<td>Environmental Ventilation</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Dimension (mm)</th>
<th>Stroke (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1131</td>
<td>Max. 350</td>
</tr>
<tr>
<td>1309</td>
<td>Max. 350</td>
</tr>
<tr>
<td>1359</td>
<td>Max. 350</td>
</tr>
</tbody>
</table>

**Product Codes**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AAS1250350S</td>
<td>24V</td>
<td>250N</td>
<td>350mm</td>
<td>1131mm</td>
<td>1150mm</td>
<td></td>
</tr>
<tr>
<td>AAS1251350S</td>
<td>24V</td>
<td>250N</td>
<td>350mm</td>
<td>1309mm</td>
<td>1350mm</td>
<td></td>
</tr>
<tr>
<td>AAS1252350S</td>
<td>24V</td>
<td>250N</td>
<td>350mm</td>
<td>1359mm</td>
<td>1450mm</td>
<td></td>
</tr>
</tbody>
</table>

**Bracket Product Codes**

<table>
<thead>
<tr>
<th>Offset (mm)</th>
<th>5</th>
<th>10</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>35</td>
<td>AAS18000001</td>
<td>AAS18000002</td>
<td>AAS18000003</td>
<td>AAS18000004</td>
</tr>
<tr>
<td>40</td>
<td>AAS18000005</td>
<td>AAS18000006</td>
<td>AAS18000007</td>
<td>AAS18000008</td>
</tr>
<tr>
<td>50</td>
<td>AAS18000009</td>
<td>AAS18000010</td>
<td>AAS18000011</td>
<td>AAS18000012</td>
</tr>
</tbody>
</table>

**Applications**

- Environmental Ventilation

**Accreditations**

- CE Certified Compliant to applicable regulations
### Series 40 Brackets
Face Fix Brackets For The SECO Ni 40 Actuator Range

<table>
<thead>
<tr>
<th>Offset (mm)</th>
<th>Height (mm)</th>
<th>AKS16000001</th>
<th>AKS16050001</th>
<th>AKS16080001</th>
<th>AKS16100001</th>
<th>AKS16150001</th>
<th>AKS16200001</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>35</td>
<td>AKS16000001</td>
<td>AKS16050001</td>
<td>AKS16080001</td>
<td>AKS16100001</td>
<td>AKS16150001</td>
<td>N/A</td>
</tr>
<tr>
<td>0</td>
<td>40</td>
<td>AKS16000001</td>
<td>AKS16050001</td>
<td>AKS16080001</td>
<td>AKS16100001</td>
<td>AKS16150001</td>
<td>N/A</td>
</tr>
<tr>
<td>0</td>
<td>50</td>
<td>AKS16000001</td>
<td>AKS16050001</td>
<td>AKS16080001</td>
<td>AKS16100001</td>
<td>AKS16150001</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Series 25 Brackets
Face Fix Brackets For The SECO N 25 Actuator Range

<table>
<thead>
<tr>
<th>Offset (mm)</th>
<th>Height (mm)</th>
<th>AKS18000001</th>
<th>AKS18050001</th>
<th>AKS18080001</th>
<th>AKS18100001</th>
<th>AKS18150001</th>
<th>AKS18200001</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>35</td>
<td>AKS18000001</td>
<td>AKS18050001</td>
<td>AKS18080001</td>
<td>AKS18100001</td>
<td>AKS18150001</td>
<td>N/A</td>
</tr>
<tr>
<td>0</td>
<td>40</td>
<td>AKS18000001</td>
<td>AKS18050001</td>
<td>AKS18080001</td>
<td>AKS18100001</td>
<td>AKS18150001</td>
<td>N/A</td>
</tr>
<tr>
<td>0</td>
<td>50</td>
<td>AKS18000001</td>
<td>AKS18050001</td>
<td>AKS18080001</td>
<td>AKS18100001</td>
<td>AKS18150001</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Open/Close Switches

Surface Mounted
- Steel enclosure (80w x 80h x 51d mm) designed to be used with either a key switch or a paddle switch fitting.
- For either switch fitting, a range of switch position options are available:
  - 3 positions
  - Spring return
  - Fixed position
  - 2 position spring
- Designed for smoke ventilation applications. Instructional text is etched into the plate's surface for improved durability.

**Product codes**
- Open/Close Key Switch: ATSASSYOC01
- Open/Close Smoke Vent Key Switch: ATSASSYSV01
- Open/Close Window Control Key Switch: ATSASSYW01
- Open/Close Paddle Switch: ATSASSYOC02
- Open/Close Smoke Vent Paddle Switch: ATSASSYSV02
- Open/Close Window Control Paddle Switch: ATSASSYW02
- Open/Close Rocker Switch: ATSASSYRV02

Flush Mounted
- Brushed stainless steel face plate (86w x 86h x 2d mm) designed to be used with either a key switch or a paddle switch fitting.
- For either switch fitting, a range of switch position options are available:
  - 3 positions
  - Spring return
  - Fixed position
  - 2 position spring
- Designed for smoke ventilation applications. Instructional text is etched into the plates surface for improved durability.

**Product Codes**
- Open/Close Key Switch: ATSASSYOC04
- Open/Close Smoke Vent Key Switch: ATSASSYSV04
- Open/Close Window Control Key Switch: ATSASSYW04
- Open/Close Paddle Switch: ATSASSYOC05
- Open/Close Smoke Vent Paddle Switch: ATSASSYSV05
- Open/Close Window Control Paddle Switch: ATSASSYW05
- Open/Close Rocker Switch: ATSASSYRV05

Applications
- Environmental Ventilation
- Smoke Ventilation

Accreditations
- CE Certified Compliant to applicable regulations
**Smoke Shaft Door Actuator & Door opener**

### Door opener

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Actuator</td>
</tr>
<tr>
<td>Usage</td>
<td>Smoke Ventilation</td>
</tr>
<tr>
<td>Voltage</td>
<td>24V dc</td>
</tr>
<tr>
<td>Current</td>
<td>0.5A</td>
</tr>
<tr>
<td>Max Force</td>
<td>2000N</td>
</tr>
<tr>
<td>Speed with Nominal Load</td>
<td>Door to open to 90° within 60 seconds</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>In line with EN 12101-2:2003 Annex G</td>
</tr>
<tr>
<td>Life Cycle</td>
<td>5000</td>
</tr>
<tr>
<td>Flex</td>
<td>2 core silicone</td>
</tr>
<tr>
<td>Switching</td>
<td>Electronic</td>
</tr>
<tr>
<td>Type of Switch</td>
<td>Positional Limiting</td>
</tr>
<tr>
<td>Fixing options</td>
<td>Door or frame</td>
</tr>
<tr>
<td>IP rating</td>
<td>IP20</td>
</tr>
<tr>
<td>Intumescent seal within actuator</td>
<td>Situated around mounting bracket</td>
</tr>
</tbody>
</table>

### Fire Rated Smoke Door

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Door</td>
</tr>
<tr>
<td>Usage</td>
<td>Smoke Ventilation</td>
</tr>
<tr>
<td>Fire Rating</td>
<td>FD30</td>
</tr>
<tr>
<td>Intumescent seal around door</td>
<td>Head and joints of frame reveal</td>
</tr>
<tr>
<td>Smoke/Intumescent seal</td>
<td>Acoustic Smoke Seal &amp; Intumescent Seal comes as standard</td>
</tr>
</tbody>
</table>

### Product / Solution Compliance

- SHEVTEC® Door: In accordance to BS 476- part 21: section 3.3.

### Applications

- Smoke Ventilation

### Accreditations

- CE Certified Compliant to applicable regulations.
Linear Actuator/ 24V dc/ 1000N

Cost effective and strong rack and motor drive mainly used for sloping smoke vent and rooflight applications.

Two actuators are used in tandem (fully synchronised), providing two push points on the same vent removing the need for a separate synchronisation unit.

Tested to EN 12101-2 smoke vent standard with specific incline system profiles. Contact SE Controls for selection advice.

NB: 24V actuators require control from a compatible low voltage unit such as an OS2 SHEVTEC Controller or NVLogIQ® PSU and permanent power should not be applied.

**Technical Data**

<table>
<thead>
<tr>
<th>ACTUATOR</th>
<th>SELA T 24 100 SYNCHRO</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACTUATOR TYPE</td>
<td>24V dc Rack &amp; Pinion Linear Actuator</td>
</tr>
<tr>
<td>VOLTAGE (all +/- 5%)</td>
<td>24V dc</td>
</tr>
<tr>
<td>CURRENT DRAW (Amp)</td>
<td>2 x 1.5A</td>
</tr>
<tr>
<td>STROKE</td>
<td>350, 550, 750, 1000*mm</td>
</tr>
<tr>
<td>OPERATING SPEED</td>
<td>12.5mm/s</td>
</tr>
<tr>
<td>AMBIENT OPERATING TEMP</td>
<td>-10°C to +40°C</td>
</tr>
<tr>
<td>THRUST FORCE</td>
<td>1000N</td>
</tr>
<tr>
<td>CLOSE FORCE</td>
<td>1000N</td>
</tr>
<tr>
<td>SWITCHING</td>
<td>Electronic</td>
</tr>
<tr>
<td>STANDARD FINISH</td>
<td>Silver anodised</td>
</tr>
<tr>
<td>COLOUR OPTION</td>
<td>N/A</td>
</tr>
<tr>
<td>FLEX LENGTH</td>
<td>1.5m</td>
</tr>
<tr>
<td>PRODUCT WARRANTY</td>
<td>10,000 cycles</td>
</tr>
<tr>
<td>DUTY CYCLE</td>
<td>25%</td>
</tr>
<tr>
<td>IP RATING</td>
<td>IP65</td>
</tr>
<tr>
<td>BRACKET</td>
<td>End and Sliding Bracket</td>
</tr>
<tr>
<td>SYNCHRONISATION</td>
<td>Yes</td>
</tr>
<tr>
<td>APPLICATION</td>
<td>Smoke and Environmental Ventilation</td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Stroke Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>350mm</td>
</tr>
<tr>
<td>550mm</td>
</tr>
<tr>
<td>750mm</td>
</tr>
<tr>
<td>1000mm</td>
</tr>
</tbody>
</table>

**Technical Drawing**

**Product Codes**

<table>
<thead>
<tr>
<th>Silver Anodised</th>
<th>Operating Voltage</th>
<th>Force</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANL10100350</td>
<td>24V</td>
<td>1000N</td>
<td>350mm</td>
</tr>
<tr>
<td>ANL10100550</td>
<td>24V</td>
<td>1000N</td>
<td>550mm</td>
</tr>
<tr>
<td>ANL10100750</td>
<td>24V</td>
<td>1000N</td>
<td>750mm</td>
</tr>
<tr>
<td>ANL10101000</td>
<td>24V</td>
<td>1000N</td>
<td>1000mm*</td>
</tr>
</tbody>
</table>

**Product Codes - Auxiliary Actuator**

<table>
<thead>
<tr>
<th>Silver Anodised</th>
<th>Operating Voltage</th>
<th>Force</th>
<th>Stroke</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANA10100351</td>
<td>24V</td>
<td>1000N</td>
<td>350mm</td>
</tr>
<tr>
<td>ANA10100551</td>
<td>24V</td>
<td>1000N</td>
<td>550mm</td>
</tr>
<tr>
<td>ANA10100751</td>
<td>24V</td>
<td>1000N</td>
<td>750mm</td>
</tr>
<tr>
<td>ANA10101001</td>
<td>24V</td>
<td>1000N</td>
<td>1000mm*</td>
</tr>
</tbody>
</table>

**Applications**

- Environmental Ventilation
- Smoke Ventilation

**Accreditations**

CE Certified Compliant to applicable regulations

*Not sub-60 seconds
We can also supply a full range of Linear Actuators with a selection of stroke lengths and performance capabilities.
General Principles of Airflow

The direction of airflow or smoke flow is an important factor when selecting a suitable vent type.

Basic principles of airflow relative to external and internal temperatures and pressures will determine the optimum solution. As well as design guidance and best practice, regulations dictate the hinge arrangements.
1. Construction Products Regulation

From 1st July 2013 the Construction Product Directive (CPD) was replaced with the Construction Products Regulation (CPR) and became mandatory, and therefore a legal requirement for manufacturers to draw up a Declaration of Performance and apply CE marking to any construction products which is covered by a harmonised European standard.

This is a major change, as affixing the CE marking under the provisions of the CPD was previously voluntary in the UK.

All hENs under the CPR include an Annex (termed Annex ZA) which lists the regulated requirements according to a mandate issued to CEN or CENELEC by the European Commission and the clauses in the standard in which they are addressed. Annex ZA.1 in the hEN becomes a checklist for CE marking for which the manufacturer can see all the mandatory requirements for the product and how it can be met.

2. Building Regulations

Building regulations are minimum standards for design, construction and alterations to virtually every building. They are developed by the Government and approved by Parliament.

3. Approved Documents

Approved documents provide guidance on ways to meet the building regulations and contain practical examples plus solutions on how to achieve compliance and should be read in conjunction with the regulations to provide clarity.

4. Design Guides

Design guides offer additional assistance in achieving regulatory requirements. Often produced by professional trade groups or associations within specialist field.
Environmental Ventilation

Regulations and Design Guides:

<table>
<thead>
<tr>
<th>Document</th>
<th>Content</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Regulations 2010</td>
<td>Building regulations are minimum standards for design, construction and alterations to virtually every building. They are developed by the government and approved by Parliament.</td>
<td>2010</td>
</tr>
<tr>
<td>Approved Document F</td>
<td>Building regulation in England for the ventilation requirements to maintain indoor air quality.</td>
<td>2010 incorporating 2013 amends</td>
</tr>
<tr>
<td>Approved Document K</td>
<td>Building regulation in England covering the buildings users protection from falling, collision and impact in and around the building.</td>
<td>2013</td>
</tr>
<tr>
<td>Building Bulletin 101</td>
<td>Guidelines on ventilation, thermal comfort and indoor air quality in schools</td>
<td>2016</td>
</tr>
<tr>
<td>BS EN 60335-2-103:2015</td>
<td>Safety, Particular requirements for drives for gates, doors and windows</td>
<td>2015</td>
</tr>
<tr>
<td>CIBSE Guide AM10</td>
<td>Natural Ventilation in non-domestic buildings</td>
<td>2005</td>
</tr>
<tr>
<td>CIBSE TMS2 Guide</td>
<td>The Limits of Thermal Comfort: Avoiding Overheating in European Buildings</td>
<td>2013</td>
</tr>
<tr>
<td>BS EN 15251</td>
<td>Indoor environmental input parameters for design and assessment of energy performance of buildings addressing indoor air quality, thermal environment, lighting and acoustics</td>
<td>2008</td>
</tr>
</tbody>
</table>
### Regulations and Design Guides:

<table>
<thead>
<tr>
<th>Document</th>
<th>Content</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Regulations 2010</td>
<td>Building regulations are minimum standards for design, construction and alterations to virtually every building. They are developed by the government and approved by Parliament</td>
<td>2010</td>
</tr>
<tr>
<td>Construction Products Regulation</td>
<td>Application of CE mark to any construction product covered by a harmonised European standard</td>
<td>2013</td>
</tr>
<tr>
<td>BS 7346-8:2013</td>
<td>Components for smoke control systems. Code of practice for planning, design, installation, commissioning and maintenance</td>
<td>2013</td>
</tr>
<tr>
<td>BS EN 9999: 2017</td>
<td>Code of practice for fire safety in the design, management and use of buildings</td>
<td>2017</td>
</tr>
<tr>
<td>BS EN 12101-2:2003</td>
<td>Smoke and heat control systems. Natural smoke and heat exhaust ventilators</td>
<td>2003</td>
</tr>
<tr>
<td>Regulatory Reform (Fire Safety) Order 2005</td>
<td>Statutory law covering general fire safety in England and Wales</td>
<td>2005</td>
</tr>
<tr>
<td>Smoke Control Association</td>
<td>Guidance on Smoke Control to Common Escape Routes in Apartment Buildings (Flats &amp; Maisonettes) Rev 2</td>
<td>2016</td>
</tr>
</tbody>
</table>
To meet the requirements of both Approved Document Q and SBD the vent must be tested to PAS 24 and be resistant to an external force of 3000N. The SECO N actuator has successfully passed this test, providing 4000N per locking point. An audited process is required to certify the vent to PAS 24, whereby the locking point location must be replicated in every different vent width, relative to its position in the test. In accordance with the requirements for SBD within schools, the SECO N range of actuators can also give a signal to advise that a vent is open.
**Design Guidance Selection Process**

**Is the application for Smoke or Environmental Ventilation?**

**Smoke**
- **Building:** High Rise Residential
- **Typical Free Area Methodology:**
  - Approved Document B
  - BS9991
  - SCA Guidance Document

**Environmental**
- **Building:** Non-Residential
- **Typical Free Area Methodology:**
  - BS9999
  - (Incorporating all previous BS5588 Series)

**Building:**
- **Schools**
- **Effective Area:**
  - Building Bulletin 101
  - Priority Schools Building Programme

**Building:**
- **Other**
- **Effective Area:**
  - Approved Document F
  - CIBSE Guide AM10

There are generally three methods to measure free area through a vent which are applied relative to the building type and the application (smoke or environmental ventilation).

In all applications, be aware of obstructions such as reveals, recesses, side walls etc., and of course other vents. All calculations should be submitted for approval by the Design Team.
Aerodynamic Free Area Calculation

The internal throat area $a \times b$ ($Av$) is multiplied by the efficiency factor or co-efficient of discharge ($Cv$) of the vent which is determined by the opening angle.

The opening angle of the vent dictates the efficiency factors achieved, generally 0.3-0.6.

Internal Throat Area:

$a \times b = \text{maximum geometric area (Av)}$

$x \ \text{co-efficient value of vent (Cv)}.$

The internal throat is the inner most clear dimensions of the vent.
Aerodynamic Free Area calculations are often used for non-residential life safety means of escape applications such as atria intake and extract.

It can also be used as an alternative to Geometric Free Area in High Rise Residential applications as stated in Approved Document B.

Typical Example of Aerodynamic Free Area Co-efficient

This information is only available if an aerodynamic test is carried out. Generally 30-60% efficiency factors are achieved dependent upon the opening angle. Assumed Co-efficient values must not be used or transferred from one system to another.

The different results are relative to the aspect ratio of the vent width / height.

**An example of how the aerodynamic calculation works:**

Divide the vent width / height to ascertain the correct aspect ratio. Measure the internal throat area of the vent to confirm the maximum geometric free area (AV). Choose the required stroke length for the actuator and establish the opening angle. In accordance with the table, confirm the co-efficient value at that degree of opening. Multiply the maximum geometric area by the coefficient value (Cv) to give the Aerodynamic value (Aa).

\[ A_a = A_v \times C_v \]

Contact SE Controls Senior Key Account Manager (SKAM) for project specific free area calculations.
The measurement of the free area of a vent is defined in Appendix C to Approved Document B (ADB) 2013.

The total unobstructed cross sectional area, measured in plane where the area is at a minimum and at right angles to the direction of air flow (as shown in the diagram below).

Generally 1.0m² geometric free area is required for head of stair and 1.5m² for end of corridor however each project will have its own design. Aerodynamic free area calculation is also allowed under approved document B.

The above images show how Approved Document B describes how you measure free area, but they do not illustrate how this is interpreted for a window.

The image to the right shows a window interpretation of Approved Document B Diagram C7 as a bottom hung or side hung smoke vent.

There are documents in existence produced by the Smoke Control Association that seek to give clarity on how this is measured which typically results in a double stacked bottom hung open out or side hung solution, however the ultimate regulation is ADB.

Free area calculations should be submitted for approval to an approved inspector to be assessed for ADB compliance.
Similar to aerodynamic area, this is the effectiveness of the vent rather than physical geometric area.

This method is used for non-residential environmental ventilation applications. The physical area produced by opening the window: $A + 2B \times$ efficiency factor, as detailed in CIBSE Guide AM10. This area cannot exceed the maximum geometric area of the vent $a \times b$.

Please note that neighbouring vents, obstructions and reveals will impact air flow.

**Effective Area Calculation**

Efficiency Factor (which is application/project specific, please refer to SE Controls).

The internal throat is the inner most clear dimensions of the vent.
Whilst the use of CE marking has been commonly applied to a wide variety of products for a number of years, the need to CE mark products sold into the UK Construction market became mandatory in July 2013 when the Construction Product Directive became the Construction Products Regulation (CPR).

The CPR mandates that where a European harmonised standard exists for a product, a manufacturer must draw up a declaration of performance and apply CE marking to this product. Any product that has a harmonised European standard that is placed upon the construction market must be CE marked against that standard.

The risks of non compliance are refusal of payment, LAD’s due to delays in handover and criminal prosecution for failing to meet mandatory life safety standards.
CE Marking Process Under CPR

**STAGE 1 Product**
Identify if it has an applicable Harmonised European Norm (hEN) EU directive.

**STAGE 2 Assess**
Review the essential characteristics and establish the route to conformity.

**STAGE 3 Test**
Test the product against the standard at an independent accredited facility - Certify (CCP).

**STAGE 4 Certify**
Submit a Declaration of Performance (DoP) and affix the CE marking to the product or document. Only with this document can compliance be claimed.

**STAGE 5 Process**
Ensure that you have sufficient Factory Production Control (FPC) processes and qualifications to manufacture the product. For life safety systems, a System 1 FPC process is required (audited by an external notified body).
INTRODUCTION TO EN 12101

EN 12101 family of standards detail the mandatory requirements for life safety products and systems.

The three standards pertinent to this document are parts 2, 9 and 10, which encompass smoke ventilators (SHEVs) and their controls.

PART 1
Specification for smoke barriers.

PART 2
Natural Smoke And Heat Exhaust Ventilators (SHEVs).

PART 3
Specification for powered SHEVs.

PART 4
Installed SHEVs systems for smoke and heat ventilation.

PART 5
Guidelines on functional recommendations and calculation methods for SHEVs.

PART 6
Specification for pressure differential systems.

PART 7
Smoke control sections.

PART 8
Smoke control dampers.

PART 9
Control panels (pr EN).

PART 10
Power supplies.
EN 12101-2 dictates that an opening smoke vent is in itself a unique product which can only be CE marked if it meets certain criteria. The vent profile and actuator need to be tested together to comply to EN 12101-2 at an accredited testing facility.

The installation onsite must be identical to the test. Therefore an audited certified Factory Production Control (FPC) process must be followed, with accompanying documentation. As this is a life safety product, the CPR does not allow alternative products to be utilised, other than the prescriptive products used in the test.

**STAGE 1 Consult**
Consult SE Controls to ensure parameters are met and select appropriate tested actuator.

**STAGE 2 Fabricate**
Fabricate as per the tested solution preparation details under System 1 FPC to EN 12101-2.

**STAGE 3 Install**
Installation must be taken under System 1 FPC.

**STAGE 4 Certify**
SE Controls produce a Declaration of Performance (DoP) declaring ALL essential characteristics and CE Mark.

**Note:**
The CE Mark does not solely satisfy the requirements of the CPR, it is only a part of it. The ultimate document to prove compliance is the DoP which is signed by a director of the company placing the product onto the market. The DoP must contain references to the tests, notified body and declare performance against all essential characteristics required by the standard.

EN 12101-2:2017 has been blocked from citation in the OJEU by the European Commission. This means that it is not yet possible to CE mark products according to this standard. CE marking is only possible after the ‘Date of applicability of the standard as a harmonised standard’, which is part of the citation in the OJEU. Until the new standard is cited, CE marking of products in scope must follow EN 12101-2:2003.

Harmonised Standards for Controls

Certified life safety smoke vents must be operated by suitably certified controls systems. SE Controls manufacture, install, commission and maintain such systems.

BS 7346-8 states the compliance requirements for all smoke ventilation components. In addition to the smoke vent itself (part 2) there are 2 European norms for the controls that operate the vents Parts 9 and 10.

prEN 12101-9
This part of EN 12101 specifies the product performance requirements, classifications and test methods for control systems designed for use in smoke and heat control systems in buildings.
This standard is expected to be harmonised in 2017-18.

EN 12101-10
This part of EN 12101 specifies requirements and gives test methods for primary and secondary electrical and pneumatic power supply equipment, designed for use in smoke and heat control systems in buildings.
The standard requires that the product is tested as a whole. Certification of individual components does not substantiate compliance.
Building Information Modelling (BIM)

Building Information Modelling (BIM) is the generation and management of digital representations, or BIM Objects, of physical and functional characteristics of products to ensure data of the built environment is carried from design, through construction to the maintenance and operation of the building.


SE Controls has NBS Clauses and BIM Objects available on NBS Plus and BIM Object and at www.secontrols.com/bim

Generic Bottom Hung Window with SECO Ni 2440

Unique ref: SECBIM0012
Brand: SE Controls
Product Family: Windows
Product Group: Façade
Date of Publishing: 2016-05-26
Edition No. 1
Type: Assembly (multiple objects)