



**SOLERO**  
TECHNOLOGIES



**Clear Vision. Safer Driving.**

Precision Valves for  
Camera and Sensor Cleaning

Rain. Mud. Insects. Even the smallest contamination can compromise sensor performance – and with it, safety. Autonomous systems are only as reliable as what they can see.

**DIRT IS THE ENEMY  
OF AUTONOMY.**



# WE KEEP SENSORS FOCUSED.

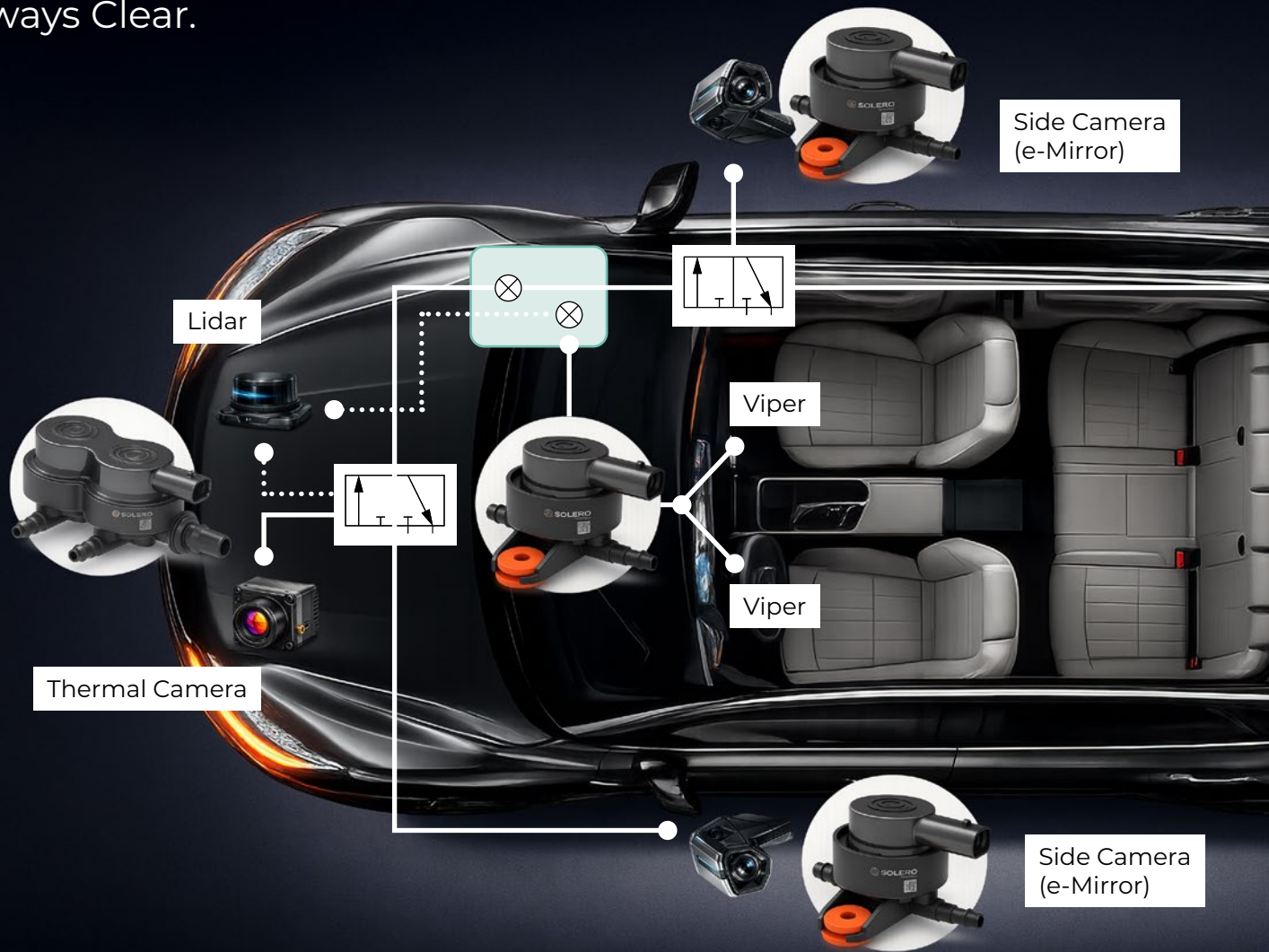
Our smart valve solutions ensure precise, efficient cleaning – exactly where it's needed.

**Less complexity.**

**Lower consumption.**

**Maximum reliability.**

Every critical sensor.  
Always Clear.



**ONE SYSTEM.  
TOTAL VISIBILITY.**



We support the future of autonomous driving with innovative solutions for the intelligent cleaning of cameras, sensors, and LiDAR systems. Our electromagnetic valves ensure that cleaning fluids are efficiently distributed to the required nozzles – whether it's the rear window, backup camera, headlights, or LiDAR sensors. Additionally, we also offer tailored OEM and system designer solutions for pressure-loaded sensor cleaning systems to ensure even more precise and high-performance cleaning.

The reliable operation of ADAS (Advanced Driver Assistance Systems) is heavily dependent on the cleanliness and functionality of their sensors. Solero Technologies offers a Sensor Cleaning Valve Family, specifically designed to meet these requirements. Our solutions include both 3/2-way valves and a modular 2/2-way valve solution platform based.

**BUILT TO FIT.  
READY TO SCALE.**

# Smart Sensor Cleaning Valves for Precise Autonomous Driving



Voltage Controlled Valves  
| SCV32



Voltage Controlled Valves  
| SPV22



Voltage Controlled Valves  
| SPV22-2



Current Controlled Valves  
| SCV22-1 Single Valve



Current Controlled Valves  
| SCV22-3 1 to 3 Valves  
per Block



Current Controlled Valves  
| iSCV22-3 3 Valves Block

Solero's electromagnetic 3/2-way valves provide reliable performance in Advanced Driver Assistance Systems (ADAS). They help keep cameras, and windows, clean and reliable. The valves distribute cleaning media (air, water, cleaning fluid) to the cleaning system's nozzle with the right pressure and flowrate. Fluid usage is efficient, while medium consumption is kept to a minimum.

Solero's sensor cleaning valves help optimize the cleaning process, maintain sensor reliability, and enhance overall ADAS performance – an essential factor for improving the safety and efficiency of modern vehicles.

**ROBUST PERFORMANCE FOR DEMANDING ENVIRONMENTS.**

# Voltage Controlled Valves

## SCV32

### Benefits at a glance

- | Max. pressure: up to 7 bar
- | 9 – 16 V
- | Voltage control
- | Flexible positioning, reducing the number of hoses needed
- | Suitable for multiple media (air, water, ethanol)
- | Customizable fixation & connector
- | Automotive-certified
- | Cost-efficient



### Technical data

Valve type:

**3/2 solenoid valve**

Working pressure:

**6.2 bar ±0.2 bar**

Burst pressure:

**> 9 bar**

Flow:

**1.5 l/min @  $\Delta p = 0.5$  bar @ 20°C**

Leakage:

**0.5 ml in 24 h with 1 m water column**

Voltage range:

**9.0 V – 16.0 V | Nominal: 12.0 V**

Current/DC by customer:

**Max. 2.5 A**

Noise component:

**≤52 dB(A) filled with water**

Resistance:

**8.9 Ω**

Response time on/off:

**≤ 50 ms (worst case)**

Temperature range:

**-40°C to +80°C**

Operating fluid:

**Water/ethanol e.g. 1:1**

Durability:

**switching cycles = 80'000**

Protection class:

**IP6K4**

Dimensions:

**approx. L 99 mm / W 44 mm /  
D 33 mm (without connector)**

Weight:

**component ≈ 160 g**

**copper ≈ 35 g**

Our SPV22 is a compact, voltage-controlled 2/2 pilot-operated valve specifically designed for sensor-cleaning applications in ADAS and automated driving systems. Its pilot-based architecture enables high functional performance while maintaining very low component mass, a minimal acoustic profile, and an extremely small installation footprint.

The platform is designed to be scalable and supports flexible integration scenarios at both OEM and Tier-1 system levels – ideal for modular ADAS architectures and future vehicle platforms.

**MINIMAL SPACE.  
MAXIMUM EFFICIENCY.**

# Voltage Controlled Valves

## SPV22 | SPV22-2

### Benefits at a glance

- | Ultra-Lightweight Design
- | Exceptionally Quiet Operation
- | Minimal Installation Space
- | Scalable Platform Architecture
- | Impressive Flow Performance
- | Switching Under Pressure
- | Electromagnetic Compatibility (EMC)



### Technical data

Valve type:

**Normally open (NO) and normally close (NC)**

Max. working pressure:

**6.2 bar ± 0.2 bar**

Burst pressure:

**10 bar**

Flow:

**1.5 l/min @  $\Delta p \leq 0.5$  bar @ 20 °C (water)**

**210 NI/min @ pin 4 bar (air)**

Leakage:

**≤ 3 ccm / 24 h for water**

Voltage controlled:

**8 – 16 V**

Current / DC:

**$I_{\min} = 0.23$  A,**

**$I_{\max} = 0.5$  A (16 V) / DC 100 % tbd**

Noise component:

**≤ 40 dB(A) filled with water, 40 cm distance to microphone**

Resistance:

**~35  $\Omega$**

Responsetime on/off:

**On-time: 35 ms**

**Off-time ≤ 100 ms** (linked to outlet restriction)

Temperature range:

**-40 °C to +85 °C**

Operating fluid:

**Water / Ethanol e.g. 1:1**

**Air**

Durability:

**Switching cycles = tbd**

Protection class:

**≥ IP65**

Dimension:

**≈  $\varnothing$  40 mm × 36 mm**

Weight:

**Component: ≈ 70 g** (target for series design)

**Sample: ≤ 83 g, Copper: ≤ 11 g**

Modularity:

**Planned**

Our electromagnetic 2/2-way valve platform is a smart, stackable sensor cleaning solution designed for autonomous vehicles at Level 2+, 3, 4, and 5. This advanced system supports up to four valves on a single manifold, ensuring precise and efficient cleaning processes for both air and water systems. With the ability to switch pressures up to 6.4 bar, it enhances cleaning efficiency while minimizing power consumption. Its ultra-compact and lightweight design allows for easy integration into space-constrained environments, making it an essential component for ADAS and autonomous driving applications.

**MODULAR DESIGN  
FOR FLEXIBLE SYSTEM  
ARCHITECTURES.**

# Current Controlled Valves

## SCV22-1 Single Valve

## SCV22-3 1 to 3 Valves per Block

### Benefits at a glance

- | Off-the-Shelf Solution
- | Flexible & Adaptable
- | Validated for Performance & Reliability
- | Ultra-Compact & Lightweight
- | Optimized for Autonomous Vehicles
- | Supports Fluid & Air Systems
- | Wide Voltage Range (9.0 V – 24 V)
- | Current Control
- | High Pressure Handling



Our platform valve is designed with a modular and scalable structure, allowing for seamless integration. The stackable configuration enables flexible expansion, adapting to different vehicle requirements. Meanwhile, our 2/2-way valve features customizable options, allowing for tailored features to meet specific requirements:

- | Connector Coding: Customized coding through different inserts, available in Type A, B, and C
- | Flexible Mounting: Customized mounting clips allow for adaptable installation across different system designs
- | Poka-Yoke Marking: Ensures fail-safe assembly, reducing the risk of incorrect installations.

### Technical data without ECU

Valve type:

**normally closed (NC)**

Medium:

**water/ethanol 1:1 / air**

Flow rate/pressure drop:

**1.5 l/min @  $\Delta p = 0.5 \text{ bar}$  @ 20°C (water/ethanol 1:1)**

**110 NI/min @  $\Delta p 0.75 \text{ bar}$  4.7 bar abs. 0°C (air)**

Medium pressure:

**0 bar to 6.2 bar  $\pm 0.2 \text{ bar}$**

Burst pressure:

**> 9 bar**

Max. Operation pressure:

**6.4 bar**

Voltage Range:

**9.0 V – 24.0 V**

Control:

**Current control  $\rightarrow$  Peak / Hold  $\rightarrow$  2.5 A (50 ms) / 1.5 A**

Operation temperature range:

**-40°C to +85°C**

Duty Cycle:

**Min. 30%**

Response time:

**$\leq 50 \text{ ms}$**

Protection class:

**> IP65**

Max. leakage:

**3 cm<sup>3</sup> / 24h (water)**

Durability:

**10'000'000 switching cycles**

Max. switching noise:

**52 dB (A) (depending to test conditions t.b.d.)**

Dimensions single valve:

**without connector: approx. H 37.5 mm / W 30.2 mm / D 30.4 mm**

**overall: approx. H 74.4 mm / W 30.2 mm / D 30.4 mm**

**pitch distance: approx. 32 mm**

Weight (single valve):

**< 95 g**

Modularity:

**stackable (valve by valve, up to 4)**

## Current Controlled Valves

### iSCV22-3 3 Valves Block

Solero Technologies also offers a smart sensor cleaning valve version with ECU for intelligent diagnostics.

### Benefits at a glance

- I Sensorless Temperature Control**  
measures temperature efficiently without external sensors
- I Peak-Hold Functionality**  
optimizes power consumption for reliable performance
- I Anti-Blocking Function**  
prevents valve blockage and extends lifetime



### Technical data with ECU

Valve type:

**normally closed (NC)**

Medium:

**water/ethanol 1:1 / air**

Flow rate/pressure drop:

**1.5 l/min @  $\Delta p = 0.5 \text{ bar}$  @ 20°C (water/ethanol 1:1)**

**110 NI/min @  $\Delta p 0.75 \text{ bar}$  4.7 bar abs. 0 C° (air)**

Medium pressure:

**0 bar to 6.2 bar  $\pm 0.2 \text{ bar}$**

Burst pressure:

**> 9 bar**

Max. Operation pressure:

**6.4 bar**

Voltage Range:

**9.0 V – 16.0 V**

Control:

**Current control  $\rightarrow$  Peak / Hold  $\rightarrow$  2.5 A (50 ms) / 1.5 A**

Operation temperature range:

**-40°C to +85°C**

Duty Cycle:

**Min. 30%**

Response time:

**$\leq 50 \text{ ms}$**

Protection class:

**> IP6K5**

Max. leakage:

**3 cm<sup>3</sup> / 24h (water)**

Durability:

**10'000'000 switching cycles**

Max. switching noise:

**52 dB (A) (depending to test conditions t.b.d.)**

Dimensions single valve:

**approx. H 37 mm / W 30 mm / D 65 mm**

pitch distance:

**27.5 mm (without connector)**

Weight (single valve):

**110 g**

Modularity:

**from single valve up to 6-fold valve-block**

Communication:

**LIN or Private CAN protocol**

Driver:

**Embedded power driver**

# Integrated engineering, validation, and manufacturing

Solero Technologies combines over 100 years of automotive expertise with advanced engineering capabilities. We support our customers from initial concept to validated, production-ready solutions.

## Engineering

Advanced simulation and system design ensure optimal performance from the earliest concept phase.

## Prototyping

In-house manufacturing and rapid prototyping enable fast development cycles and high flexibility.


## Testing & Validation


Comprehensive testing guarantees reliability under real-world automotive conditions.


**FROM  
CONCEPT  
TO PROVEN  
PERFORMANCE**



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