



# ACTILINK-SC 6-1

200 W Servo motor fully integrated with ultra-compact servo drive

ACTILINK-SC 6-1 is a 200 W servo motor with an integrated ultra-compact servo drive, designed for applications in automation, transportation and others. Designed for extra-low voltage environments, it offers high output, high power density and superior efficiency in a minimal footprint. It includes an 18-bit feedback system

for accurate position sensing and high-performance motion control. Certified functional safety at SiL3 / PLe is integrated. Optional configurations including a holding brake and an embedded micro PLC. The unit is available with three connector interface options to support flexible system integration.

## TYPE CODES

The following specific ACTILINK-SC variants are covered by this datasheet:

|                | EtherCAT                                                                                                                                         | Ethernet/IP                                                                                                                                      | PROFINET                                                                                                                                         |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| ISO (M8 / M12) | ASC1-061A-0K-025-ECMH-M2G3-STO-01<br>ASC1-061A-BK-025-ECMH-M2G3-STO-01<br>ASC1-061A-0K-025-ECMH-M2G3-STO-04<br>ASC1-061A-BK-025-ECMH-M2G3-STO-04 | ASC1-061A-0K-025-EIMH-M2G3-STO-01<br>ASC1-061A-BK-025-EIMH-M2G3-STO-01<br>ASC1-061A-0K-025-EIMH-M2G3-STO-04<br>ASC1-061A-BK-025-EIMH-M2G3-STO-04 | ASC1-061A-0K-025-EPMH-M2G3-STO-01<br>ASC1-061A-BK-025-EPMH-M2G3-STO-01<br>ASC1-061A-0K-025-EPMH-M2G3-STO-04<br>ASC1-061A-BK-025-EPMH-M2G3-STO-04 |
| I-TEC          | ASC1-061A-0K-025-ECMH-H2G3-STO-01<br>ASC1-061A-BK-025-ECMH-H2G3-STO-01<br>ASC1-061A-0K-025-ECMH-H2G3-STO-04<br>ASC1-061A-BK-025-ECMH-H2G3-STO-04 | ASC1-061A-0K-025-EIMH-H2G3-STO-01<br>ASC1-061A-BK-025-EIMH-H2G3-STO-01<br>ASC1-061A-0K-025-EIMH-H2G3-STO-04<br>ASC1-061A-BK-025-EIMH-H2G3-STO-04 | ASC1-061A-0K-025-EPMH-H2G3-STO-01<br>ASC1-061A-BK-025-EPMH-H2G3-STO-01<br>ASC1-061A-0K-025-EPMH-H2G3-STO-04<br>ASC1-061A-BK-025-EPMH-H2G3-STO-04 |
| Y-TEC          | ASC1-061A-0K-025-ECMH-H4G3-STO-01<br>ASC1-061A-BK-025-ECMH-H4G3-STO-01<br>ASC1-061A-0K-025-ECMH-H4G3-STO-04<br>ASC1-061A-BK-025-ECMH-H4G3-STO-04 | ASC1-061A-0K-025-EIMH-H4G3-STO-01<br>ASC1-061A-BK-025-EIMH-H4G3-STO-01<br>ASC1-061A-0K-025-EIMH-H4G3-STO-04<br>ASC1-061A-BK-025-EIMH-H4G3-STO-04 | ASC1-061A-0K-025-EPMH-H4G3-STO-01<br>ASC1-061A-BK-025-EPMH-H4G3-STO-01<br>ASC1-061A-0K-025-EPMH-H4G3-STO-04<br>ASC1-061A-BK-025-EPMH-H4G3-STO-04 |

Variants ASC1-061A-0... without brake, ASC1-061A-B... with brake

Variants ...-01 standard servo functionality, ...-04 standard servo with micro PLC functionality (available on request)

## PERFORMANCE DATA

### Rated / Continuous Operation

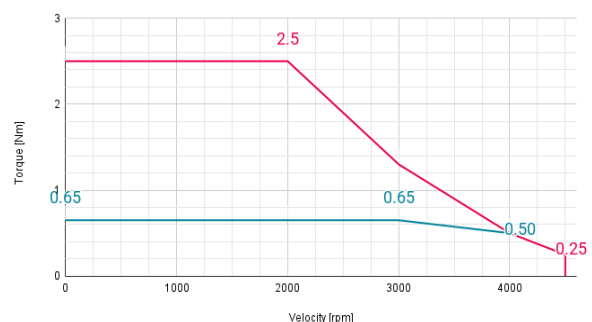
|                           |      |                 |
|---------------------------|------|-----------------|
| Continuous Stall Torque   | 0.65 | Nm              |
| Rated (Continuous) Torque | 0.65 | Nm              |
| Rated Velocity            | 3000 | rpm             |
| Rated Power               | 200  | W               |
| Rated Voltage             | 48   | V               |
| Rated DC current          | 5.2  | A <sub>DC</sub> |
| Rated Overall Efficiency* | 80%  | %               |

\* System level efficiency considering motor plus electronics

### Peak Operation

|                  |      |     |
|------------------|------|-----|
| Peak Torque      | 2.5  | Nm  |
| Peak Power       | 520  | W   |
| Maximum Velocity | 4500 | rpm |
| Peak DC Current  | 24   | A   |

### Motor Curve ACTILINK-SC 6-1



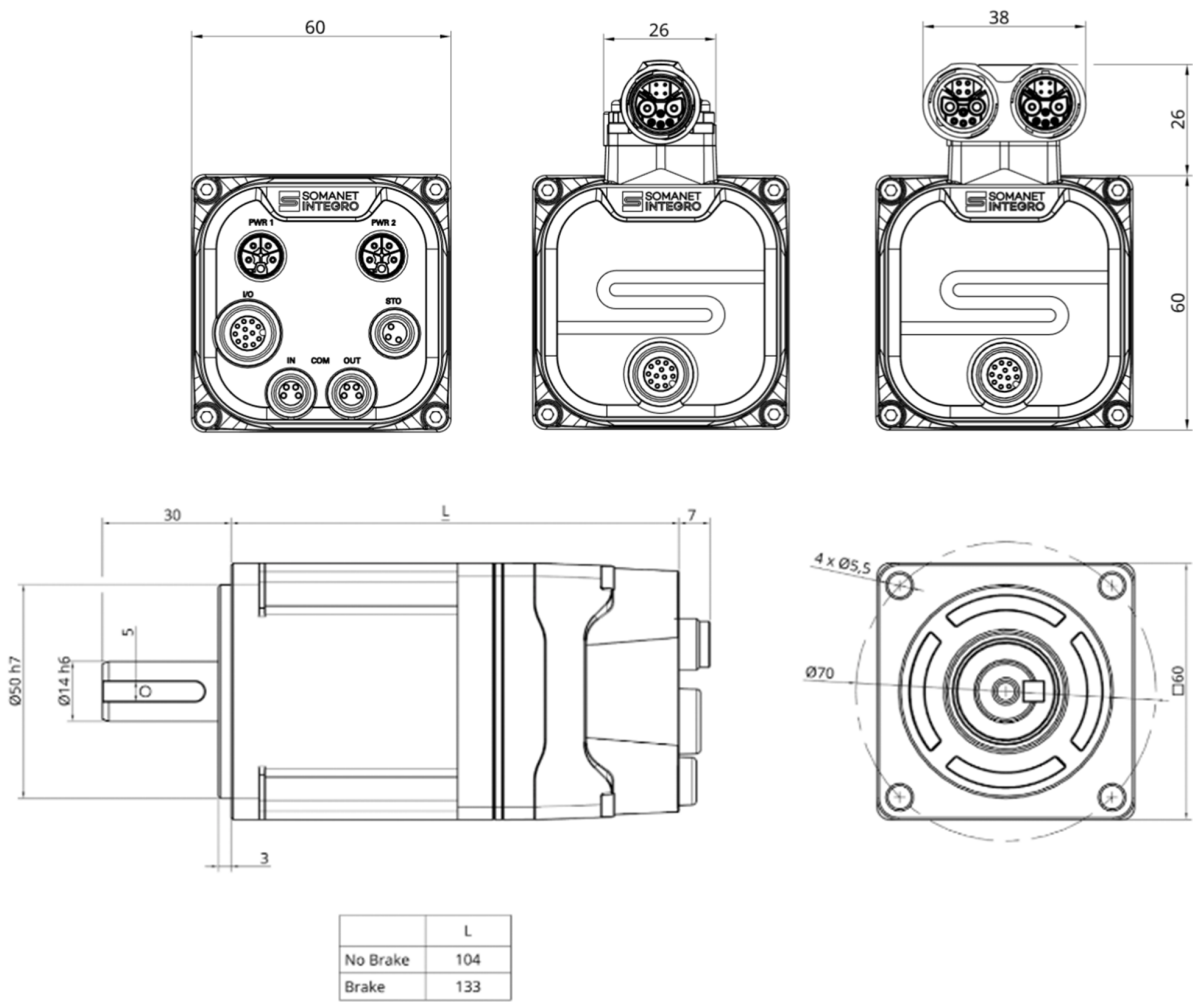
# MECHANICAL AND ENVIRONMENTAL DATA

| Mechanical      |                          |                                   |
|-----------------|--------------------------|-----------------------------------|
| Weight          | 1.1                      | kg (without brake)                |
|                 | 1.5                      | kg (with brake)                   |
| Inertia         | 0.29                     | kgcm <sup>2</sup> (without brake) |
|                 | 0.31                     | kgcm <sup>2</sup> (with brake)    |
| Max radial load | 245*                     | N                                 |
| Max axial load  | 74*                      | N                                 |
| IP rating       | IP 65 (shaft seal: IP64) |                                   |

\* for 20,000 h under rated operating conditions

| Environmental Conditions |                     |                  |
|--------------------------|---------------------|------------------|
| Operating Temperature    | 0 - 40**            | °C               |
| Max operating altitude   | 2000***             | m                |
| Storage Temperature      | -20 - 40            | °C               |
| Relative Humidity        | 20% - 80%           |                  |
| Shock Resistance         | 250                 | m/s <sup>2</sup> |
| Vibration Resistance     | ±10 mm              | @ 5..10 Hz       |
|                          | 40 m/s <sup>2</sup> | @ 10..57 Hz      |
|                          | 50 m/s <sup>2</sup> | @ 57..500 Hz     |

\*\* Possible to operate at higher temperature with derating  
\*\*\* Derating applies above 1000 m



# CONTROL AND ELECTRONICS FEATURES

|                                   |                                                                                      |
|-----------------------------------|--------------------------------------------------------------------------------------|
| DC Bus Voltage                    | 24-60 V                                                                              |
| DC Current Max Continuous*        | M12 Connector: 32 A <sub>DC</sub><br>I-Tec / Y-Tec Connector: 25 A <sub>DC</sub>     |
| Inverter Rated Current            | 20 A RMS                                                                             |
| Inverter Peak Current             | 60 A RMS                                                                             |
| Thermal Management and Protection | Internal temperature sensors for electronics, motor temperature sensor (PT1000), I2t |
| Safety Functions                  | STO, SBC                                                                             |
| Safety Integrity Level            | SIL3, PLe-Cat.3                                                                      |
| Bus Interface                     | EtherCAT, EtherNet/IP, PROFINET                                                      |
| GPIO                              | 2x DIO, 1x DI, 1x AI, 1x ext. encoder (BiSS / SSI / ABI)                             |
| Touch Probe                       | 1 channel, accuracy y 15 µs                                                          |
| Commissioning                     | OBLAC Drives, native apps available for Windows, Linux or OBLAC Box                  |
| Control System Architectures      | With PLC / master controller via field bus, standalone via micro PLC** or combined   |
| Approvals and certificates        | CE, IEC-61800, among others.<br>See Standards and Compliance (below) for details.    |

\* In case of a daisy chain, DC currents provided here apply to max continuous total consumption of the complete daisy-chain. For actual consumption of a single device, see plot in section *POWER SUPPLY*.  
\*\* Available on request

## INTEGRATED FEEDBACK SYSTEM

|                                    |                                                     |             |
|------------------------------------|-----------------------------------------------------|-------------|
| Single turn resolution             | 18                                                  | bits        |
| Accuracy: measurement step         | <5                                                  | arcsec      |
| Accuracy: integrated non linearity | 200                                                 | arcsec      |
| Multi turn range                   | 2 <sup>14</sup> - 2 <sup>32</sup><br>(configurable) | revolutions |
| Battery change interval            | none<br>(battery-free multi-turn)                   |             |

## BRAKE

Variants ASC1-06xx-**B**... only

|                             |                                               |    |
|-----------------------------|-----------------------------------------------|----|
| Brake type                  | Spring-applied holding brake, normally closed |    |
| Static braking torque (min) | 2.0                                           | Nm |
| Brake voltage               | 24 V nominal, internally supplied             |    |
| Brake power                 | 8                                             | W  |
| Release time                | 50                                            | ms |
| Engage Time                 | 20                                            | ms |

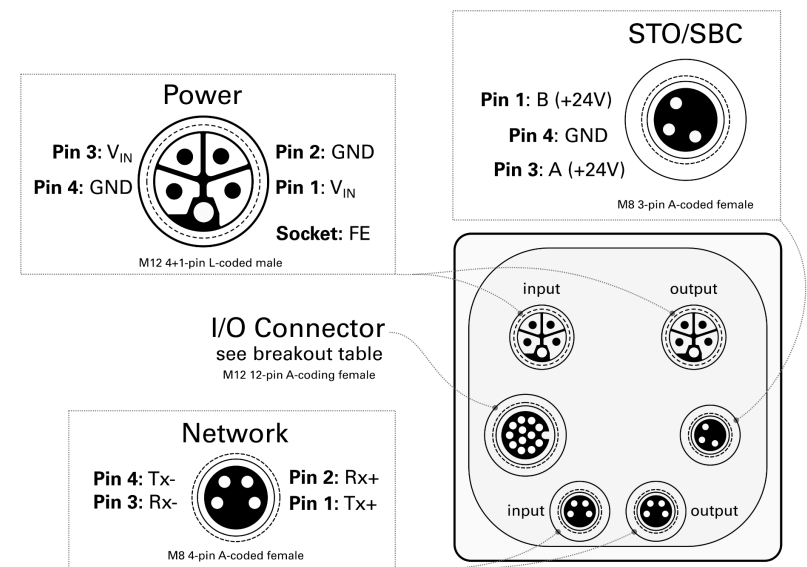
## ELECTRICAL MOTOR DATA

Actilink-S motors integrate a controller (servo drive) which comes pre-configured for the mounted motor. Consequently, the electrical motor data provided here reflects internal properties which will not be exposed to the user. The values are provided for reference only.

|                        |                    |                     |
|------------------------|--------------------|---------------------|
| Number of Pole Pairs   | 5                  |                     |
| Motor Type and Winding | PMSM, star winding |                     |
| Torque Constant        | 0.11               | Nm/A <sub>RMS</sub> |
| Back EMF Constant      | 7                  | V/krpm              |
| Insulation Class       | F                  |                     |

# POWER SUPPLY & WIRING

## PINOUT METRIC VARIANTS (M2G3)

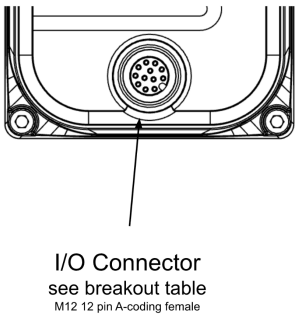
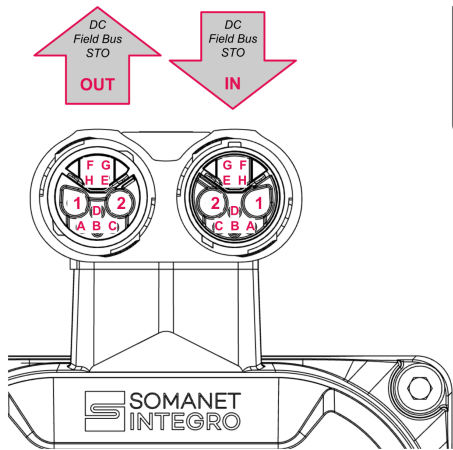


I/O CONNECTOR BREAKOUT TABLE

| Pin | Dedication       | Cable Color |
|-----|------------------|-------------|
| 1   | AI_2_n/Clock-/B- | White       |
| 2   | I-               | Brown       |
| 3   | DI_1/DO_1*       | Green       |
| 4   | DI_2/DO_2*       | Yellow      |
| 5   | DI_3** (Fast DI) | Gray        |
| 6   | DI_COM           | Pink        |
| 7   | AI_1_p/Data1+/A+ | Blue        |
| 8   | AI_1_n/Data1-/A- | Red         |
| 9   | AI_2_p/Clock+/B+ | Black       |
| 10  | GND              | Violet      |
| 11  | I+               | Gray/Pink   |
| 12  | +24V_out*        | Red/Blue    |

## PINOUT SINGLE CABLE TECHNOLOGY (Hxxx)

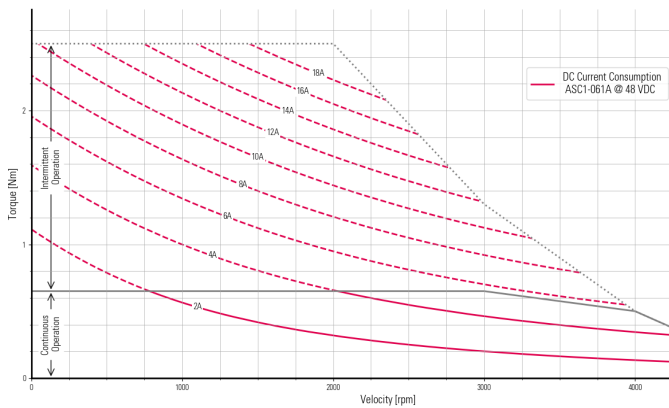
| Pin | Dedication | Cable Color  |
|-----|------------|--------------|
| 1   | GND        | Black        |
| 2   | VCC        | Red          |
| A   | STO B      | Yellow/Gray  |
| B   | STO GND    | Black        |
| C   | STO A      | Yellow/White |
| D   | FE         | Pink         |
| E   | TD+        | Yellow       |
| F   | RD-        | Blue         |
| G   | TD-        | Orange       |
| H   | RD+        | White        |



## POWER SUPPLY

The following main requirements are recommended to be fulfilled supply ACTILINK S

- PELV or SELV power supply or battery
- Recommended voltage 48 V (24 - 60 V possible)
- Continuous and peak DC current as specified in the figure the right
- Consider the need for a braking chopper if regenerative operating points are used
- Recommended models available at [www.synapticon.com](http://www.synapticon.com)



CABLING

Recommended cable configurations available in standard lengths: [ACTILINK Cables in Synapticon Online Shop](#). Other lengths on request.

| Part Number        | Usage                                         | Connector A                                         | Cable                                                               | Connector B                                        |
|--------------------|-----------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------|----------------------------------------------------|
| CMS-PS05-U14N0-xxx | Metric variants, to power source              | M12, 5 pin, L-coding, Female                        | 5x 2.5 mm2, drag chain capable                                      | Open Leads                                         |
| CMS-PD05-U14M0-xxx | Metric variants, power daisy-chain            | M12, 5 pin, L-coding, Female                        | 5x 2.5 mm2, drag chain capable                                      | M12, 5 pin, L-coding, Male                         |
| CMS-ES04-U00F0-xxx | Metric variants, field bus to PLC             | M8, 4 pin, A-coding, Male                           | CAT5 100 Mbps, drag chain capable                                   | RJ45                                               |
| CMS-ED04-U00F0-xxx | Metric variants, field bus daisy-chain        | M8, 4 pin, A-coding, Male                           | CAT5 100 Mbps, drag chain capable                                   | M8, 4 pin, A-coding, Male                          |
| CMS-SS03-U00N0-xxx | Metric variants, STO to source                | M8, 3 pin, A-coding, Male                           | 3x AWG22, drag chain capable                                        | Open Leads                                         |
| CMS-SY03-U00N1-xxx | Metric variants, STO daisy-chain              | M8, 3 pin, A-coding, Male                           | 3x AWG22, drag chain capable                                        | Y-cable: 1x Male + 1x Female (M8, 3 pin, A-coding) |
| CHY-NS10-U14CQ-xxx | Hybrid variants, to source / PLC              | ACTILINK Hybrid Cable Technology - Female Connector | ACTILINK Hybrid cable Technology: 2.5 mm2 DC + Field bus + STO + FE | Open Leads (DC + STO + FE) + RJ45 (Field Bus)      |
| CHY-ND10-U14CQ-xxx | Hybrid variants, daisy chain                  | ACTILINK Hybrid Cable Technology - Female Connector | ACTILINK Hybrid cable Technology: 2.5 mm2 DC + Field bus + STO + FE | ACTILINK Hybrid Cable Technology - Male Connector  |
| CMS-GS12-U00N0-xxx | All variants with IO, IO to sensor / actuator | M12, 12 pin, A-coding, Male                         | 12x AWG26                                                           | Open Leads                                         |

The maximum cable length along the entire daisy chain is 30 m. For long cables and high currents, please consider voltage drop across cable.

STANDARDS & COMPLIANCE

| Category                         | Standards                                                                                                                                                                                                                                                   |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| General Product Safety Directive | 2001/95/EC                                                                                                                                                                                                                                                  |
| Conformity                       |    |
| EMC                              | IEC 61800-3, Emissions: C2<br>Immunity: second environment                                                                                                                                                                                                  |
| Electrical Safety                | IEC 61800-5-1                                                                                                                                                                                                                                               |
| Functional Safety                | IEC 61800-5-2, IEC 61508 parts 1-7,<br>ISO 13849-1, ISO 13849-2<br>Certified by TÜV Süd                                                                                  |
| UL                               | UL 61800-5-1, 2nd edition (pending)                                                                                                                                                                                                                         |
| Shock                            | IEC 60068-2-6                                                                                                                                                                                                                                               |
| Vibration                        | IEC 60068-2-27                                                                                                                                                                                                                                              |

DOWNLOADS & DOCUMENTATION

-  [Technical Documentation](#)
-  [OBLAC Drives Commissioning Software](#)
-  [DC Servo Systems Design Tool](#)
-  [CAD Data](#)
-  [And More...](#)