Introduction

This technical data sheet provides a short overview of the most important characteristics of the ROBICON W120CP (clean power) 18-pulse low harmonics drive from Siemens, developed specifically to meet specifications in the municipal water and waste water market.

A result of the powerful combination of SINAMICS®, the most advanced drives technology platform, and the ROBICON legacy of more than 20 years of quality and expertise in the water and waste water industry, the W120CP makes the best even better.

The compact and quiet ROBICON W120CP utilizes the well proven, simple yet effective, 18-pulse technology to provide clean power to meet the low harmonic requirements of IEEE 519-1992 at the VFD input terminals, combined with a state-of-the-art power module with IGBT power semiconductors. The drive can be operated in either Volts/Hertz or sensorless vector control modes.

Standard features

The standard drive enclosure is a floor standing cabinet, which can be equipped with a wide variety of pre-engineered and custom options. The ROBICON W120CP has the following standard features:

• NEMA 1 enclosure, with blowers (optional NEMA 12 ventilated with air filters)
• Circuit breaker disconnect with flange mount operator handle, mechanically interlocked with the enclosure door
• Short circuit current rating (SCCR) 65 kA at 480 V AC
• Clean power 18-pulse front end with patented phase shifting autotransformer and input line reactor
• Motor side voltage source IGBT inverter with pulse width modulated (PWM) output
• Intelligent operator panel (IOP), door mounted for easy start-up and operation
• UL listing per UL508C
• Windows based STARTER software – common to all models of the SINAMICS family
### Product Specifications

#### Light Overload Specifications

<table>
<thead>
<tr>
<th>HP</th>
<th>A</th>
<th>Output (at 460V, 60 Hz)</th>
<th>Base load current for 110% overload</th>
<th>Base load current for 150% overload</th>
<th>Rated output current</th>
<th>Approx. max. input current</th>
<th>Power module frame size</th>
<th>Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>68</td>
<td>40</td>
<td>60</td>
<td>68</td>
<td>64</td>
<td>E</td>
<td>6SL3710-3BJ27-5AR0</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>80</td>
<td>50</td>
<td>75</td>
<td>80</td>
<td>74</td>
<td>E</td>
<td>6SL3710-3BJ29-0AR0</td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>100</td>
<td>60</td>
<td>90</td>
<td>100</td>
<td>91</td>
<td>F</td>
<td>6SL3710-3BJ31-1AR0</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>130</td>
<td>75</td>
<td>110</td>
<td>130</td>
<td>118</td>
<td>F</td>
<td>6SL3710-3BJ31-5AR0</td>
<td></td>
</tr>
<tr>
<td>125</td>
<td>160</td>
<td>100</td>
<td>145</td>
<td>160</td>
<td>143</td>
<td>F</td>
<td>6SL3710-3BJ31-8AR0</td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>186</td>
<td>125</td>
<td>178</td>
<td>186</td>
<td>170</td>
<td>F</td>
<td>6SL3710-3BJ32-0AR0</td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>240</td>
<td>150</td>
<td>205</td>
<td>240</td>
<td>217</td>
<td>F</td>
<td>6SL3710-3BJ32-5AR0</td>
<td></td>
</tr>
</tbody>
</table>

1) The input current is based on the input current of the power module and includes an allowance of 10 A for auxiliary circuits.

**The standard ROBICON W120CP base enclosed drive includes:**

- NEMA 1 enclosure
- UL508C listing (file no. E319311)
- Short circuit current rating (SCCR) 65 kA at 480 V AC
- Power module PM240 unfiltered
- 18-pulse diode rectifier
- Circuit breaker disconnect with mechanical door interlock
- Patented phase-shifting autotransformer with matched input line reactor for clean power input meeting the requirements of IEEE 519-1992 at the VFD input terminals under all conditions
- Intelligent operator panel (IOP), door mounted and wired
- Integral braking chopper
- Cable entry top or bottom, line and motor side
- Controller CU230P-2 HVAC with:
  - RS485 serial communications port USS / Modbus RTU / BACnet MS/TP
  - 6 digital inputs, 24V 15 mA, optically isolated (group)
  - 3 relay outputs, 2x form C 250 V AC 2 A or 30V DC 5 A, 1x NO 30 V DC 0.5 A
  - 4 analog inputs, 2x differential -10V to +10V or 0/4 to 20mA, 1x 0/4 to 20mA or temperature sensor, 1x temperature sensor input for Ni1000/Pt1000 sensor
  - Input for temperature sensor KTY84, PTC thermistor or thermostat
  - 2 analog outputs, 1x 0 to +10V or 0/4mA to 20mA, 1x 0/4mA to 20mA, non-isolated

**NOTE:** Some of the control unit inputs and/or outputs may be used for options.

#### Standard Options

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M12</td>
<td>NEMA12 filters</td>
</tr>
<tr>
<td>L50</td>
<td>Cabinet light and outlet</td>
</tr>
<tr>
<td>L55</td>
<td>Cabinet space heaters (120 V AC)</td>
</tr>
<tr>
<td>L56</td>
<td>Motor space heater supply</td>
</tr>
<tr>
<td>Y09</td>
<td>Special enclosure paint color [specify color]</td>
</tr>
</tbody>
</table>

#### Option Code Description

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L10</td>
<td>Output dV/dt filter</td>
</tr>
<tr>
<td>L13</td>
<td>Input isolation contactor</td>
</tr>
<tr>
<td>L15</td>
<td>Output sinusoidal filter</td>
</tr>
<tr>
<td>L28</td>
<td>2 contactor manual bypass (output/bypass contactors with oil)</td>
</tr>
<tr>
<td>L29</td>
<td>Reduced voltage soft start (RVSS) manual bypass</td>
</tr>
<tr>
<td>L32</td>
<td>Output isolation contactor</td>
</tr>
<tr>
<td>L63</td>
<td>Braking resistor</td>
</tr>
<tr>
<td>L96</td>
<td>Input surge protective device</td>
</tr>
<tr>
<td>L98</td>
<td>Motor thermal overload relay (already included in L28)</td>
</tr>
<tr>
<td>L99</td>
<td>Motor protection relay (Multilin 369)</td>
</tr>
<tr>
<td>P10</td>
<td>Input voltage monitor (Siemens type 3UG4)</td>
</tr>
</tbody>
</table>

#### Option Code Description

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E86</td>
<td>Isolation Amplifier for one analog input</td>
</tr>
<tr>
<td>E87</td>
<td>Isolation Amplifier for two analog outputs</td>
</tr>
<tr>
<td>K20</td>
<td>Pilot lights (qty. 3), door mounted – Ready, Run, Fault</td>
</tr>
<tr>
<td>K21</td>
<td>Additional local controls (L-R &amp; H-O-A, speed pot, Start/Stop pb)</td>
</tr>
<tr>
<td>K22</td>
<td>Elapsed time (hour) meter, door mounted, non-resettable</td>
</tr>
<tr>
<td>L87</td>
<td>Ground fault monitor for ungrounded supplies</td>
</tr>
<tr>
<td>L97</td>
<td>RTD monitor for 8x Pt100 temperature sensors</td>
</tr>
<tr>
<td>N55</td>
<td>ALL STOP mushroom pushbutton, latching, coast to stop</td>
</tr>
</tbody>
</table>

#### Communication Bus Options

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>G81</td>
<td>PROFIBUS DP communication port</td>
</tr>
<tr>
<td>G82</td>
<td>EtherNet/IP or PROFINET communication port</td>
</tr>
</tbody>
</table>

#### Other Options

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H20</td>
<td>Seismic certification per IBC 2012 (provide specification)</td>
</tr>
</tbody>
</table>

1) These options may require a larger enclosure (add-on options cabinet). Option M12 adds NEMA 12 filters to both the drive and attached add-on enclosures. Option L29 (RVSS bypass) is listed to UL508A (others are included in the UL508C listing of the drive).

**Note:** Please consult factory for additional/custom options.
Note: Dimensions are nominal for enclosure, tolerance 0.5” (12 mm), excluding protruding components. Please refer to drawings for exact details.

### ROBICON W120CP Enclosed drive

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Output (Light Overload) (at 460V, 60 Hz) HP</th>
<th>Noise level $L_{aA}$ (1m) at 60 Hz dB(A)</th>
<th>Cooling air flow demand cfm</th>
<th>Heat loss kW</th>
<th>Weight approx. lb / kg</th>
<th>Drive enclosure Nominal size $W_N \times D_N \times H_N$ inch / mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>6SL3710-3BJ27-5AR0</td>
<td>50</td>
<td>70</td>
<td>591</td>
<td>1.55</td>
<td>930 / 422</td>
<td>30 x 24 x 94 / 762 x 610 x 2377</td>
</tr>
<tr>
<td>6SL3710-3BJ29-0AR0</td>
<td>60</td>
<td>70</td>
<td>591</td>
<td>1.95</td>
<td>930 / 422</td>
<td>30 x 24 x 94 / 762 x 610 x 2377</td>
</tr>
<tr>
<td>6SL3710-3BJ31-1AR0</td>
<td>75</td>
<td>70</td>
<td>866</td>
<td>2.47</td>
<td>1120 / 508</td>
<td>36 x 24 x 94 / 914 x 610 x 2377</td>
</tr>
<tr>
<td>6SL3710-3BJ31-5AR0</td>
<td>100</td>
<td>70</td>
<td>866</td>
<td>3.27</td>
<td>1160 / 526</td>
<td>36 x 24 x 94 / 914 x 610 x 2377</td>
</tr>
<tr>
<td>6SL3710-3BJ31-8AR0</td>
<td>125</td>
<td>70</td>
<td>866</td>
<td>3.91</td>
<td>1260 / 572</td>
<td>36 x 24 x 94 / 914 x 610 x 2377</td>
</tr>
<tr>
<td>6SL3710-3BJ32-0AR0</td>
<td>150</td>
<td>70</td>
<td>866</td>
<td>4.78</td>
<td>1460 / 662</td>
<td>36 x 24 x 94 / 914 x 610 x 2377</td>
</tr>
<tr>
<td>6SL3710-3BJ32-5AR0</td>
<td>200</td>
<td>70</td>
<td>866</td>
<td>5.41</td>
<td>1660 / 753</td>
<td>36 x 24 x 94 / 914 x 610 x 2377</td>
</tr>
</tbody>
</table>

### Add-on options enclosure

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Output (Light Overload) (at 460V, 60 Hz) HP</th>
<th>Enclosure for option L10 Output dV/dt filter Width $W_o$ Inch / mm</th>
<th>Weight lb / kg</th>
<th>Enclosure for option L15 Output sinusoidal filter Width $W_o$ Inch / mm</th>
<th>Weight lb / kg</th>
<th>Enclosure for option L29 RVSS bypass Weight $W_o$ Inch / mm</th>
<th>Weight lb / kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>6SL370-3BJ27-5AR0</td>
<td>50</td>
<td>20 / 508</td>
<td>386 / 175</td>
<td>20 / 508</td>
<td>440 / 200</td>
<td>20 / 508</td>
<td>408 / 185</td>
</tr>
<tr>
<td>6SL370-3BJ29-0AR0</td>
<td>60</td>
<td>20 / 508</td>
<td>386 / 175</td>
<td>20 / 508</td>
<td>440 / 200</td>
<td>20 / 508</td>
<td>408 / 185</td>
</tr>
<tr>
<td>6SL370-3BJ31-1AR0</td>
<td>75</td>
<td>20 / 508</td>
<td>452 / 205</td>
<td>20 / 508</td>
<td>540 / 245</td>
<td>20 / 508</td>
<td>463 / 210</td>
</tr>
<tr>
<td>6SL370-3BJ31-5AR0</td>
<td>100</td>
<td>20 / 508</td>
<td>452 / 205</td>
<td>20 / 508</td>
<td>540 / 245</td>
<td>20 / 508</td>
<td>463 / 210</td>
</tr>
<tr>
<td>6SL370-3BJ31-8AR0</td>
<td>125</td>
<td>20 / 508</td>
<td>452 / 205</td>
<td>24 / 610</td>
<td>660 / 300</td>
<td>20 / 508</td>
<td>463 / 210</td>
</tr>
<tr>
<td>6SL370-3BJ32-0AR0</td>
<td>150</td>
<td>20 / 508</td>
<td>452 / 205</td>
<td>24 / 610</td>
<td>660 / 300</td>
<td>20 / 508</td>
<td>463 / 210</td>
</tr>
<tr>
<td>6SL370-3BJ32-5AR0</td>
<td>200</td>
<td>20 / 508</td>
<td>452 / 205</td>
<td>24 / 610</td>
<td>660 / 300</td>
<td>20 / 508</td>
<td>463 / 210</td>
</tr>
</tbody>
</table>
Technical Data

**Electrical data**

Supply voltages and output ranges: 460 V to 480 V 3 ph AC, ±10%, 50 to 200 HP

Supply systems: Grounded or ungrounded supplies

Line frequency: 47 Hz to 63 Hz

Output frequency: 0 Hz to 266 Hz (650 Hz with derating)

Power factor fundamental approx.: 0.95

Drive efficiency: 94 to 96%

Short circuit current rating: SCCR 65 kA at 480 V AC

Control method: V/Hz control, V/Hz with flux current control (FCC), sensorless vector control (SVC).

Fixed speeds: 16 fixed frequencies

Skipped frequency ranges: 4, programmable

Braking operation: Integral brake chopper for dynamic braking, with CU240 DC and compound braking

**Mechanical data**

Type of enclosure and color: NEMA 1, optionally NEMA 12 (ventilated), ANSI 61 gray

Type of cooling: Forced air ventilation

Noise level: LpA (1 m) 70 dB(A) at 60 Hz line frequency

Environmental protection: Nickel plated busbars, varnish coated electronic boards

**Compliance with standards**

UL listing: Listed to UL508C, file no. E319311, some options listed to UL508A

Ambient conditions:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Storage</th>
<th>Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature</td>
<td>-13°F (-25°C) to 131°F (+55°C)</td>
<td>-13°F (-25°C) to 158°F (+70°C)</td>
</tr>
<tr>
<td>Relative humidity (non-condensing)</td>
<td>5% to 95%</td>
<td>5% to 95%</td>
</tr>
<tr>
<td>Installation altitude</td>
<td>Up to 3,300 ft (1000 m) above sea level without reduction in performance, &gt; 3,300 ft see derating data</td>
<td></td>
</tr>
</tbody>
</table>

The information provided in this brochure contains merely general descriptions or characteristics of performance which in case of actual use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of contract.

All product designs may be trademarks or product names of Siemens AG or supplier companies whose use by third parties for their own purposes could violate the rights of the owners.

---

**Engineering Information**

**Overload ratings**

The ROBICON W120CP drive may be operated with both variable torque and constant torque loads at either light or high overload duties. The criterion for overload is that the drive is operated with its base load current before and after the overload occurs.

Light overload duty is based on 110% base load current for 60 sec or 150% for 3 sec, repeated every 300 sec.

High overload duty is based on 150% base load current for 60 sec or 200% for 3 sec, repeated every 300 sec.

**Motor and drive sizing**

Service Factor must be considered for motors operating at Service Factors beyond 1.0. Please consult factory for assistance sizing the drive.

For motors with ratings larger than the drive, please consult factory as nuisance tripping may occur if drive is not properly sized.

In sensorless vector control, the rated motor current (FLA) must be at least 1/4 of the rated drive output current. With lower motor currents, operation is possible in Volts/Hz control mode only.

**Intelligent operator panel (IOP)**

The SINAMICS IOP makes it easy to operate, commission and diagnose faults on the drive. Up to two process values can be displayed on the screen either graphically or numerically. Process values can be displayed in the appropriate technological units. The user language can be selected.

Due to the large plain text display, menu prompting and application wizards, commissioning of drives is very quick.

Parameters are displayed in plain text, explanatory help texts are provided and there is a parameter filter function. The user is interactively navigated through commissioning of common applications such as pumps, fans, compressors and conveyors using application wizards.

The IOP has a dedicated key to toggle between local (from IOP) and remote control.

Fault diagnosis is in a user-friendly fashion using plain text display of faults and alarms. Explanatory help texts are provided by pressing the INFO key.