Siemens 6SL3320-1TE33-1AA3

01 Shared-bus motor conversion

Siemens 6SL3320-1TE33-1AA3 is an internally air-cooled SINAMICS S120 chassis power stage that converts shared DC-link energy into a controlled three-phase motor supply. A connected Control Unit provides the drive-control functions through DRIVE-CLiQ.

Line Module / DC bus — **GX Motor Module** — **Configured motor axis** — **Control Unit / feedback**

Common-bus drive architecture

The Motor Module takes power from the DC link rather than directly from a three-phase AC feeder. A Line Module supplies the common bus, and a CU320-2 or suitable SIMOTION D controller executes the drive functions through DRIVE-CLiQ. Both synchronous and induction motors can be operated when the motor data, feedback and control mode are correctly configured; the power stage alone does not establish a complete drive.

GX cooling and duty coordination

The GX assembly uses internal forced-air cooling and a fan transformer whose tapping must match the actual fan-supply voltage. Incorrect tapping can reduce cooling or operate the fan fuses even when the electronics appear ready. Cabinet airflow, ambient temperature, switching frequency and the selected overload duty therefore belong to the same thermal assessment.

Feedback and stored-energy boundaries

The control interface separates motor-temperature sensing, pulse-enable functions, auxiliary supply and brake-adapter connections. Sensor insulation and polarity must suit the connected motor circuit, while Safety Integrated functions require the appropriate configuration and acceptance. An extinguished DC-link indicator is not evidence that stored energy has dissipated; isolation and voltage verification remain separate from ordinary status checks.

Why does increasing the pulse frequency of 6SL3320-1TE33-1AA3 require a new current assessment?

Higher switching frequency raises power-stage losses and reduces available output current. Apply the appropriate derating and reassess cabinet heat removal rather than retaining the full base-frequency current rating.

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02 Duty selection and electrical limits

Drive topology	Single Motor Module; shared DC-link input
Rated output current	310 A
Low-overload base current IL	302 A
High-overload base current IH	277 A
S6 intermittent current	340 A at 40% duty
Maximum output current	453 A; duty limits apply
Low-overload power reference	160 kW at 400 V / 50 Hz
High-overload power reference	132 kW at 400 V / 50 Hz
Low / high-overload power at 460 V	250 / 200 hp, 60 Hz
DC-link range, GH3 technical table	510–750 V DC, including stated overshoot
Motor-output voltage	0 to 0.72 × DC-link voltage, three-phase AC
Electronics supply	24 V DC; 20.4–28.8 V
Electronics current, exact-model table	0.9 A
Rated DC input, Basic/Smart Line Module	372 A
Rated DC input, Active Line Module	335 A
Low-overload DC input, Basic/Smart / Active	362 / 326 A

Thermal load is an installation quantity

The power-stage loss and required airflow are cabinet-design inputs. Inspect inlet restrictions, recirculation and fan supply before interpreting a recurring thermal trip as a failed module.

Current labels are not interchangeable

Rated, IL, IH, S6 and maximum current describe different operating conditions. Retain the actual duty calculation and Line Module selection when comparing a replacement.

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03 Cooling and connection boundaries

High-overload DC input, Basic/Smart / Active	331 / 298 A
Rated pulse frequency	2 kHz
Maximum pulse frequency	8 kHz with derating
DC-link capacitance	6300 µF
Fan supply reference	2 AC 400 V; transformer tap matched to feeder
Fan current at 50 / 60 Hz	1.8 / 2.7 A
Power loss at 400 V / 50 Hz	2.96 kW, rated-duty reference
Power loss at 460 V / 60 Hz	3.1 kW, rated-duty reference
Cooling-air demand	0.36 m³/s
Un-derated / derated ambient ceiling	40 / 55 °C
Motor cable length, shielded / unshielded	300 / 450 m maximum
DC-link / motor / PE connection	M10; 25 N·m with specified cable lugs
Power connection capacity	2 × 240 mm² maximum
Temperature-sensor inputs	KTY84-1C130 / PTC / PT100
DRIVE-CLiQ connections	X400, X401, X402
Enclosure protection	IP20; GX frame

Feedback insulation boundary

Motor-temperature leads may carry hazardous potential if the sensor lacks the required separation. Check the motor sensor construction before connecting directly to the control-interface terminals.

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04 Cabinet integration and supervision

Common-bus multi-axis drives

Connect a compatible motor axis to a coordinated DC link, allowing energy exchange between simultaneously motoring and regenerating axes.

High-demand motor duties

Select the appropriate overload basis and assess acceleration, process loading and recovery intervals against the drive duty.

Integrated drive supervision

Use the Control Unit, DRIVE-CLiQ status and configured thermal feedback to supervise the motor power path.

Chassis cabinet integration

Coordinate the GX fan supply, airflow, protective conductors and fitted output options within the complete cabinet design.

Fan-supply routing

On GX hardware the fan supply connects directly to fuse holders -F10 and -F11. The X9 L1/L2 fan connection shown for larger HX/JX frames must not be transferred to GX.

Auxiliary output boundary

X42 supports designated Control Unit, Sensor Module and Terminal Module loads. It is not a general-purpose 24 V cabinet distribution source.

Stored-energy indication

DC LINK and POWER OK indications describe component state, not a verified isolation condition. Check all supply paths and measure the bus after the prescribed discharge interval.

Can the EP terminals of 6SL3320-1TE33-1AA3 be assumed to provide pulse inhibition without a configuration check?

No. Their pulse-inhibit function depends on enabled Safety Integrated Basic Functions. Confirm the actual safety configuration, wiring and acceptance results; a terminal connection by itself does not establish a validated safety function.

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05 Replacement and controlled acceptance

Lifecycle and replacement scope

The current manufacturing and support phase of 6SL3320-1TE33-1AA3 is unconfirmed. Assess service and replacement options against the installed S120 chassis configuration. Match the GX power stage, Control Unit and DRIVE-CLiQ configuration, motor duty and fitted options. A change of current class, cooling arrangement or hardware state requires a system review.

Why can the fan fuses of 6SL3320-1TE33-1AA3 operate even when the drive-control electronics start normally?

The fan transformer is a separate supply path. Compare the actual feeder with the selected -T10 tap and inspect the fan circuit; incorrect tapping can cause fuse operation or inadequate cooling without preventing electronics startup.

Can a dark DC LINK indicator on 6SL3320-1TE33-1AA3 be used as the release condition for maintenance?

No. Hazardous voltage may remain irrespective of that LED. Isolate every supply, wait at least five minutes and measure the DC-link voltage before work; the isolation procedure must also account for other modules connected to the shared bus.

Acceptance from topology to motion

First reconcile power and DRIVE-CLiQ topology, then test feedback and diagnostics. Release controlled motion only after motor data, direction, limits and configured protective responses have been verified.

Technical basis

Siemens SINAMICS S120 Chassis Power Units, GH3 01/2013, 6SL3097-4AE00-0BP3. Electrical ratings refer to the 6SL3320-1TE33-1AA3 column and its GX frame. Low-overload, high-overload and intermittent currents have different duty conditions. Interface procedures refer to the applicable S120 chassis hardware and configured drive functions.

Other Siemens product references

Siemens 6AV2124-0GC01-0AX0

Siemens 6EP1336-3BA00

Siemens 6ES7155-6BU00-0CN0

Separate product references; no substitution or compatibility is implied.