

Siemens 6DD1642-0BC0

Analog Output Module / Control signal to plant terminals

Siemens 6DD1642-0BC0 is the EA12 analog output module for the SIMADYN D L-bus system. Its bipolar voltage outputs connect to plant signals through the SC12 cable and SU11 terminal interface, with front-panel test sockets for commissioning.

Module designation	EA12
System bus	SIMADYN D L bus
Analog output channels	8
Output voltage	-10 to +10 V
Maximum output current per channel	+/-10 mA
Recommended current at +/-10 V	+/-5 mA for noise suppression

CONFIGURED SIGNAL

The SIMADYN D software drives the EA12 channels.

EA12 / X5

The output signal and its ground form an assigned pair.

SC12 / SU11

The cable and direct terminal interface connect the plant wiring.

Important Notice: EA12 outputs are not defined while system supply voltages rise. Keep the machine in a safe state during energization, and do not remove or insert the module under voltage.

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Analog Output Module / Output limits and supply domains

Simultaneous channel load	8 outputs, each 10 mA
Output resolution	13 bits plus sign; approximately 1 mV
Output accuracy	14 bits; approximately 1 mV
Absolute linearity error	+/-0.6 mV
Differential linearity error	+/-1 mV
Monotonicity	14 bits; approximately 1 mV
Temperature dependency	Maximum 240 microV/C
Short-circuit protection to ground	56 ohm resistor
Permitted short-circuit duration	120 s

+5 V supply range	+4.75 to +5.25 V
+5 V typical current drain	600 mA
+15 V supply range	+14.4 to +15.6 V
+15 V typical current drain	200 mA
-15 V supply range	-15.6 to -14.4 V
-15 V typical current drain	200 mA
Front-panel measurement points	8 test-socket pairs
Terminal interface	SU11
Interface cable	SC12
Subrack slots occupied	1

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Analog Output Module / Channel map and wiring discipline

Channel 1	X5 pins 1 / 2; SU11 1 / 2; test X11
Channel 2	X5 pins 3 / 4; SU11 3 / 4; test X12
Channel 3	X5 pins 5 / 6; SU11 5 / 6; test X13
Channel 4	X5 pins 7 / 8; SU11 7 / 8; test X14
Channel 5	X5 pins 9 / 10; SU11 9 / 10; test X15
Channel 6	X5 pins 11 / 12; SU11 11 / 12; test X16
Channel 7	X5 pins 13 / 14; SU11 13 / 14; test X17
Channel 8	X5 pins 15 / 16; SU11 15 / 16; test X18

Analog command distribution

Carries the configured SIMADYN D voltage commands from the L-bus system to the connected plant interface.

Terminal-based signal wiring

Uses SC12 and SU11 to bring the module signals to screw/plug-in terminal connections without an additional SU11 signal conversion.

Channel commissioning

Allows measurement of the individual output signals at their corresponding front-panel test sockets during start-up.

Output calibration service

Supports checking and readjusting offset and gain for each output after the module reaches operating temperature.

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Analog Output Module / Warm-up and calibration decisions

Stabilize	Operate approximately 2 min before adjustment.
Offset first	Configured output 0.0; measure 0 V at the channel.
Gain second	Configured output 2.0; check 10 V using the separate gain adjustment.
Direction	Clockwise offset adjustment increases the output voltage.
Adjustment warm-up	Approximately 2 min
Cooling	Operation without fan possible
System air-intake temperature	0 to +55 C
System storage temperature	-25 to +70 C

1 / X11	R49 / R46
2 / X12	R55 / R52
3 / X13	R61 / R58
4 / X14	R67 / R64
5 / X15	R73 / R70
6 / X16	R79 / R76
7 / X17	R85 / R82
8 / X18	R91 / R88

INDEPENDENT ADJUSTMENTS

Use the offset and gain potentiometers listed for the same channel. Retain the warm-up sequence rather than compensating temperature effects on a cold module.

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Analog Output Module / Engineering questions and safe service

01 / EA12 SERVICE

Isolate the SIMADYN D supply before inserting or removing the EA12 module.

02 / EA12 SERVICE

Keep the machine safe while power rises; analog output states are initially undefined.

03 / EA12 SERVICE

Handle the board with grounded ESD protection and use conductive storage surfaces.

04 / EA12 SERVICE

Secure the module tightly to the subrack before commissioning its outputs.

05 / EA12 SERVICE

Check each X5 signal/ground pair against the assigned SU11 terminals.

06 / EA12 SERVICE

Connect screened plant cables over a broad area to the cabinet screen rail.

07 / EA12 SERVICE

Respect the channel load limit and the two-minute short-circuit duration.

08 / EA12 SERVICE

Warm the module for about two minutes, check offset first, then check gain and the restored channel response.

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Analog Output Module / Model-specific engineering answers

Why can an EA12 output be noisy even when its load is below 10 mA?

The maximum channel load is not the preferred noise-suppression operating point. At +/-10 V, the recommended output current is +/-5 mA; switch-mode supply spikes on the ground cable can also require smoothing at the load input and a low-ohmic load.

Does the EA12 ground-fault protection permit a permanent short circuit?

No. The output-to-ground protection uses a 56 ohm resistor and the permitted short-circuit duration is 120 seconds. Remove the fault rather than leaving the output shorted indefinitely.

When should offset be checked relative to gain?

Allow approximately two minutes for the board to reach operating temperature. Check offset first with the configured output at 0.0 and measure 0 V; the subsequent gain check uses a configured value of 2.0 and a 10 V measurement. Use the channel's separate offset and gain potentiometers.

Which measurements belong to channel 8 at X5?

Channel 8 uses X5 pin 15 for its output and pin 16 for ground. The matching front-panel test socket is X18 and the configuration designation is X5H; SU11 terminals 15 and 16 carry the same pair.

Does SU11 convert the EA12 voltage signals?

SU11 provides direct terminal access without signal conversion. Connect it through SC12; this interface arrangement is distinct from terminal modules that adapt or convert other signal types.

Why is tightening the subrack mounting important for analog signal quality?

Noise-immune EA12 operation requires the module to be tightly screwed into the subrack. Screen the plant-side signals and connect the screen over the largest practical surface area to the cabinet screen rail; front-panel contact alone does not replace that arrangement.

Can output drift be ignored after a large cabinet-temperature change?

Offset and gain are adjusted near 20 C, and the output temperature dependency is specified as a maximum of approximately 240 microV per C. Check the channel at its actual operating temperature before deciding whether readjustment is needed.

Are configured output values guaranteed during supply ramp-up?

No. SIMADYN D output states are undefined while the supply voltages rise. The machine design and commissioning sequence must prevent those start-up states from creating a hazardous condition.

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Analog Output Module / Evidence and related portfolio

SOURCE LEDGER

SIMADYN D Hardware

A5E01114837-02, cover edition 04.2011; general data chapter 08.2005; EA12 chapter 12.2004, original pages 94-98.

OUTPUT INTEGRATION

EA12 connects X5 to SU11 through SC12; the output pins alternate with their associated grounds, while test sockets X11 to X18 correspond to channels 1 to 8. The screened plant wiring terminates at the cabinet screen rail rather than relying on the front panel alone.

Important Notice: EA12 outputs are not defined while system supply voltages rise. Keep the machine in a safe state during energization, and do not remove or insert the module under voltage.

SIMADYN D SERIES CATALOG

Related family browsing; these links do not establish substitution or a complete compatible assembly.

[View Siemens 6DD1611-0AG0 page](#)

[View Siemens 6DD1662-0AB0 page](#)

[View Siemens 6DD1682-0CC0 page](#)

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The technical reference covers EA12 output limits, channel wiring and calibration decisions. The manufacturer excerpt retains 28 unchanged original pages covering source identity, installation/EMC guidelines, system conditions and the complete EA12 section; it is not the full manual.