Siemens 6DD1607-0CA1

01 Archive the FM signal map

1 Archive the FM signal map
2 Inspect interface modules and cables
3 Verify analog scaling by group
4 Exercise encoder and binary paths
5 Accept timing and loop response

Work sequence

Record the FM project, analog-output groups, binary assignments and encoder types. Identify which control functions depend on fast signal timing and establish the required maintenance state.

Acceptance condition

The retained map links each field function to its intended interface and channel.

Analog outputs 1–4	4; ±10 V, 16 bit
Analog outputs 5–8	4; ±10 V, 12 bit

Output-group distinction: Four outputs use 16-bit conversion and four use 12-bit conversion. Retain group assignment and scaling.

Record the observed condition, test method and result for this stage. Resolve any difference before moving to inspect interface modules and cables.

Siemens 6DD1607-0CA1

02 Inspect interface modules and cables

1 Archive the FM signal map

2 **Inspect interface modules and cables**

3 Verify analog scaling by group

4 Exercise encoder and binary paths

5 Accept timing and loop response

Work sequence

Match the approved interface hardware and plug-in cable arrangement. Inspect connectors and signal references and avoid connecting field wiring directly to the expansion connector.

Acceptance condition

The restored physical interface matches the engineered field boundary.

Conversion, outputs 1–4	2 µs typical per channel
Conversion, outputs 5–8	4 µs typical per channel

Field-connection boundary: Use the specified interface modules and cables; non-isolated channels require the intended signal-reference design.

Record the observed condition, test method and result for this stage. Resolve any difference before moving to verify analog scaling by group.

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03 Verify analog scaling by group

1 Archive the FM signal map

2 Inspect interface modules and cables

3 **Verify analog scaling by group**

4 Exercise encoder and binary paths

5 Accept timing and loop response

Work sequence

Test the high-resolution and standard-resolution output groups separately. Compare commanded values with the actual field voltage and load response, and check differential analog inputs with suitable test signals.

Acceptance condition

Each analog function uses the correct group, range and destination scaling.

Analog input resistance	20 kohm
Binary inputs / outputs	16 / 8

Replacement compatibility: Do not substitute EXM 438-1 for EXM 438 without engineering review of the FM hardware and project.

Record the observed condition, test method and result for this stage. Resolve any difference before moving to exercise encoder and binary paths.

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04 Exercise encoder and binary paths

1 Archive the FM signal map

2 Inspect interface modules and cables

3 Verify analog scaling by group

4 **Exercise encoder and binary paths**

5 Accept timing and loop response

Work sequence

Confirm encoder protocol, level, direction and pulse format. Test binary input mapping and externally supplied output behavior within the permitted load envelope.

Acceptance condition

Motion and binary states reach the intended FM functions without format or mapping errors.

Incremental encoder inputs	8
Absolute encoder inputs	4; SSI or EnDat

Output-group distinction: Four outputs use 16-bit conversion and four use 12-bit conversion. Retain group assignment and scaling.

Record the observed condition, test method and result for this stage. Resolve any difference before moving to accept timing and loop response.

Siemens 6DD1607-0CA1

05 Accept timing and loop response

1. Archive the FM signal map
2. Inspect interface modules and cables
3. Verify analog scaling by group
4. Exercise encoder and binary paths
5. **Accept timing and loop response**

Work sequence

Review acquisition, FM processing and output timing as one control path. Remove test conditions only after the physical response, interlocks and diagnostics are accepted.

Acceptance condition

The complete fast-control arrangement is returned to normal operation with final settings retained.

Analog input conversion	Approximately 10 µs maximum per channel; 100 ksps
Analog input filter	34 kHz

Siemens 6ES7223-1PL32-0XB0

Siemens 6ES7414-2XL07-0AB0

Siemens 6ES7134-6JD00-0CA1

Related products require separate compatibility assessment. Retain the final configuration and signed test outcome.