

ABB DSQC652 3HAC025917-001

01 Product architecture

Product role

ABB DSQC652 3HAC025917-001 provides sixteen 24 V DC digital inputs and sixteen digital outputs for an IRC5 DeviceNet I/O arrangement. Each output is rated for 500 mA.

Operating context

Sixteen digital inputs and sixteen digital outputs are divided into four connector banks. Optical isolation and output protection support the field interface, while DeviceNet transports the configured I/O data. The input and output connector layouts are deliberately different at pin 10 and must not be wired by visual symmetry.

Function map

01	Field inputs X3/X4
02	DSQC652 DeviceNet
03	Robot I/O mapping
04	Field outputs X1/X2

Key capabilities

Capability 1

Provides optically isolated input and output connections.

Capability 2

Limits output current and protects against thermal overload.

Capability 3

Automatically detects the DeviceNet baud rate.

Capability 4

Supports polled, change-of-state and cyclic I/O connections.

System integration

Outputs are split between X1 and X2, while inputs are split between X3 and X4. The DeviceNet connector X5 also carries the node-address connections, so wiring and address setup must be treated as separate parts of commissioning.

Channel architecture questions

How are the channels divided among connectors on ABB DSQC652 3HAC025917-001?

X1 carries outputs 1-8, X2 outputs 9-16, X3 inputs 1-8 and X4 inputs 9-16.

What input levels does ABB DSQC652 3HAC025917-001 recognize as ON and OFF?

The ON range is 15-35 V and the OFF range is -35 to +5 V; a value between these ranges should not be treated as a guaranteed logic state.



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02 Technical data and interfaces

Principal technical data

Parameter	Value
Digital inputs	16
Digital outputs	16
Rated I/O voltage	24 V DC
Input ON range	15-35 V
Input OFF range	-35 to +5 V
Input delay	4-6 ms; 5 ms typical with default filtering
Output current	500 mA/channel
Output voltage drop	0.5 V maximum at 500 mA
Output leakage	0.1 mA maximum
Output delay	0.5 ms maximum
External output supply	19-35 V DC
Network	DeviceNet; automatic baud detection

Additional engineering data

Item	Value or condition
X1 pins 1-8	Outputs 1-8
X2 pins 1-8	Outputs 9-16
X1 / X2 pin 9	Output 0 V
X1 / X2 pin 10	Output 24 V
X3 pins 1-8	Inputs 1-8
X4 pins 1-8	Inputs 9-16
X3 / X4 pin 9	Input 0 V
X3 / X4 pin 10	Unused
Device configuration	dsqc652.eds

How to apply these data

The guaranteed input ON band is 15-35 V; the OFF band is -35 to +5 V. Default input filtering gives a 4-6 ms delay, typically 5 ms. Outputs have a maximum 0.5 ms delay, 0.5 V maximum drop at 500 mA and 0.1 mA maximum leakage. These are separate electrical and timing properties, not a single controller scan-time specification.



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03 Integration and application

Interface map

Interface	Purpose	Engineering note
X1 / X2	Two eight-channel output banks.	Observe separate 0 V and 24 V pins on each bank.
X3 / X4	Two eight-channel input banks.	Pin 10 is unused; it is not a mirror of the output connector supply pin.
X5	DeviceNet and address-bit connections.	Set the unique hardware node address with power removed.
Controller configuration	EDS data and I/O signal mapping.	Input mapping, output mapping and connection type need independent checks.

Application contexts

Fixture signals Connect clamp and position switches to discrete robot I/O.	Machine handshaking Exchange ready, busy and cycle-permission signals with external machinery.
Peripheral outputs Operate suitable 24 V DC loads within the per-channel output rating.	Distributed cell I/O Place the unit in the controller or an external I/O module using DeviceNet.

Integration constraint

Keep input mapping, output mapping and node addressing separate during commissioning. A healthy network connection does not prove the field-channel assignments are correct.

Commissioning record

Retain the node address, EDS reference, I/O connection type and the bank/pin-to-signal map. Include output load currents and supply conditions in the electrical test record. If an input bridge supervises the output supply, retain the corresponding RAPID behavior and its test result.



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04 Engineering decisions

Diagnostic decisions

Input between 5 V and 15 V

Treat the state as outside guaranteed OFF/ON ranges. Measure at the actual input terminal and correct the field circuit.

Output fails under load

Check the 500 mA channel limit and external supply. Include output voltage drop in the load assessment.

Device online, signal wrong

Compare bank, pin, channel and robot signal mapping. Network health does not establish field-channel identity.

Master baud rate changed

Start the master before reconnecting device power. Confirm automatic baud detection and restored I/O exchange.

Product precautions

01

Isolate field and network supplies before rewiring the unit.

02

Assign a unique DeviceNet node address with power removed.

03

Connect output channels 1-8 to X1 and 9-16 to X2.

04

Connect input channels 1-8 to X3 and 9-16 to X4.

05

Keep each connected output load within the 500 mA rating.

06

Supply external outputs within the 19-35 V DC range and verify polarity.

07

After a master baud-rate change, reconnect device power only after the master is running.

08

Verify the input/output mapping and every affected cell handshake before automatic operation.

Important notice

Apply input and output test states independently so that a mapping error cannot be mistaken for a communication fault.



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05 Questions and functional acceptance

Product-specific engineering questions

How much current can one ABB DSQC652 3HAC025917-001 output supply?

The rated current is 500 mA per output, with a maximum voltage drop of 0.5 V at that load.

Why may ABB DSQC652 3HAC025917-001 need a power cycle after the master baud rate changes?

The unit detects baud rate automatically; after a change, device power is reconnected once the master is running so a new connection can be established.

Product-specific engineering questions (continued)

Can ABB DSQC652 3HAC025917-001 monitor its output supply using an input?

A bridge to an optional digital input can provide supply-voltage supervision when the corresponding supervision logic is implemented in the RAPID program.

Where can the configuration file for ABB DSQC652 3HAC025917-001 be found?

The DeviceNet configuration uses dsqc652.eds, obtainable from the PC or the IRC5 controller file environment.

Product-specific engineering questions (continued)

Can a node address be changed while ABB DSQC652 3HAC025917-001 is powered?

No. The DeviceNet address must be set with power removed, and it must be unique on the network.

Which fault protections are built into ABB DSQC652 3HAC025917-001 outputs?

The outputs include current limitation, thermal overload protection and protection against the specified output miswiring conditions.

Related catalogue pages

[ABB DSQC662 3HAC026254-001](#)

[ABB DSQC639 3HAC025097-001](#)

[ABB DSQC201 YB560103-AB](#)

Technical basis

ABB 3HAC050992-001 Rev. G, DSQC652 section, pages 87-92

