ABB SDCS-IOB-22 3BSE005177R1

01 Digital Input and Relay Output Interface Board

ABB SDCS-IOB-22 3BSE005177R1 adapts field command and status circuits to the drive control board. Input thresholds, channel filtering and output technology differ, so each circuit must be matched to its assigned function rather than treated as a generic digital point.

1. **115 V AC field inputs**
2. **Optocouplers + filters**
3. **Drive software mapping**
4. **Relay / open-collector loads**

Physical and functional arrangement

The 115 V AC input execution is electrically different from the related 24–48 V DC and 230 V AC boards. Verify the full board identity and actual signal voltage before reconnecting field commands. Input functions remain software-selected within the compatible drive configuration.

Signal path and configuration

The last two input channels have a shorter filter time constant than the first six. Preserve the assigned channel when timing matters, because moving the same external signal to another terminal can alter its effective response. Status LEDs assist investigation but do not prove the control function has been accepted by the drive.

Application boundary

The output group combines six relay contacts with two optically isolated open-collector circuits. Relay and transistor loads require different supply, current and protection checks. Mount and connect the board as the specified external I/O arrangement, preserving the control-board connection and field wiring.

SDCS-IOB-22 is the 115 V AC input execution, part 3BSE005177R1. Digital I/O values are scoped to this board; adjacent analog-board specifications are excluded.

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02 Technical data and engineering limits

Digital inputs	8, optocoupled
Nominal input voltage	115 V AC
Input resistance	22 kohm
Logic 0 input range	0–20 V
Logic 1 input range	60–130 V
Input filter, channels 1–6	10 ms time constant
Input filter, channels 7–8	2 ms time constant
Relay outputs	6 normally open
Open-collector outputs	2; 24 V DC external, 50 mA maximum
Relay AC rating	250 V AC / 3 A maximum
Relay DC rating	24 V / 3 A or 115/230 V / 0.3 A maximum
Digital terminal capacity	Up to 4 mm²

Additional interface data

Input assignment	Drive-software selectable
Output assignment	Drive-software selectable
Relay protection	VDR component
Open-collector protection	Zener diode
Input auxiliary voltage	+48 V DC, 50 mA maximum, short-circuit protected
Input/output indication	Signal-state LEDs

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03 Application map and integration boundaries

01 AC command interfacing

Bring compatible 115 V AC field commands into the drive control arrangement.

02 Drive status switching

Operate suitable external status circuits through the assigned relay contacts.

03 Low-current DC signaling

Use the open-collector outputs with correctly supplied DC circuits.

04 Existing DC-drive maintenance

Restore the original I/O function mapping and field connections.

Voltage-version boundary

The IOB-22 input voltage and impedance must not be replaced by values belonging to IOB-21 or IOB-23.

Filter timing

Channel assignment affects input filtering. Review a moved signal against the 10 ms and 2 ms groups.

Output technology

Separate relay-contact circuits from open-collector circuits during load selection and testing.

Configuration scope: Preserve the 115 V AC IOB-22 execution, compatible control board and assigned field functions. Adjacent IOB variants are not voltage-equivalent.

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04 Technical questions that affect operation

Why must the input-voltage execution of SDCS-IOB-22 3BSE005177R1 be checked before reconnection?

The related IOB-21 and IOB-23 boards use different voltage levels and input impedances. Matching the board family or connector alone is insufficient.

Can a timing-sensitive input be moved freely between channels of SDCS-IOB-22 3BSE005177R1?

No. Channels 7 and 8 have a shorter filter time constant than channels 1–6. Preserve the channel assignment or review the resulting timing.

How should a voltage between the stated logic bands of SDCS-IOB-22 3BSE005177R1 be treated?

It is not a defined acceptance point for a stable zero or one. Investigate the source circuit and voltage drop rather than relying on an occasional LED state.

What distinguishes the two open-collector outputs on SDCS-IOB-22 3BSE005177R1 from its relay outputs?

They need the appropriate external DC circuit and have a much lower current limit. Do not connect a relay-contact load to an open-collector terminal without redesign.

Why can an input LED on SDCS-IOB-22 3BSE005177R1 be correct while the drive command is wrong?

The software function assigned to that input may differ from the expected command. Check both the electrical state and drive parameter assignment.

How should relay DC switching duty be assessed for SDCS-IOB-22 3BSE005177R1?

Use the rating for the actual DC voltage; the allowable current at higher DC voltage is lower than the 24 V rating.

Does output protection on SDCS-IOB-22 3BSE005177R1 remove the need to review the external load?

No. Protection components do not make every load compatible. Evaluate supply, current, inductive behavior and required field protection.

What must be tested after the control-board connection to SDCS-IOB-22 3BSE005177R1 is restored?

Verify each assigned input and output through the drive software and physical field response, including permissives and required shutdown states.

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05 Selection, service planning and related equipment

Match the installed arrangement

Match the complete ABB SDCS-IOB-22 3BSE005177R1 marking and installed configuration. Confirm SDCS-IOB-22, 3BSE005177R1 and the field terminal assignments.

Support and migration

The current production and manufacturer-support stage for this exact execution is unconfirmed. Preserve the 115 V AC IOB-22 execution, compatible control board and assigned field functions. Adjacent IOB variants are not voltage-equivalent.

Equipment boundary

Confirm the interface board and any mounting, terminal or control cable explicitly itemized. Companion hardware and accessories are included only when itemized; the function of the complete installed arrangement depends on the correct combination.

Engineering review before intervention

Separate field voltage classes	Identify the actual input supply and distinguish relay loads from open-collector loads. Record the software function of each point before isolating the drive and external circuits.
Inspect external board installation	Check mounting, control-board cable and field-terminal engagement. Preserve the intended external I/O architecture and avoid transferring analog-board wiring to the digital interface.

Related equipment navigation

ABB PM511V16-3BSE011181R1

ABB SDCS-CON-4 3ADT313900R1501

ABB SDCS-CON-2B

Related references support separate application assessment and do not imply replacement compatibility. Technical basis: ABB DCS600 System Description, 3ADW000072R0601; DCS500B/DCS600 Service Manual, 3ADW000093R0801.