Allen-Bradley 2094-BSP2

Engineering Installation, Diagnostic and Acceptance Guide

Kinetix power-rail shunt module for dissipating regenerated drive energy through an internal or approved external resistor path.

01 Work package

Complete model	2094-BSP2
Product type	Kinetix 6000 shunt module
Manufacturer	Allen-Bradley
Technical source	Rockwell Automation Kinetix 6000 Shunt Module Installation Instructions, 2094-IN004E-EN-P

Field decisions

1 Establish identity

Capture the full marking, installed companion components and baseline before disconnection.

2 Inspect interfaces

Verify mounting, cable, connector, armor, approval and environmental boundaries.

3 Fit the exact chain

Preserve the documented probe-cable-Proximitor or sensor-monitor relationship.

4 Prove response

Use the approved stopped-machine and operating acceptance procedure.

5 Record as left

Save markings, configuration, test values and operating observations.

Pre-work evidence

Installed drawing	Record the approved cabinet, rail, slot, terminal, cable and system references that govern 2094-BSP2.
Complete marking	Capture the complete order identity and every revision or approval marking on the delivered item.
Mechanical reference	Record mounting position, fasteners, connector orientation, access clearance and support points.
Electrical interfaces	Confirm supply, signal, bus, terminal and protective-conductor assignments against the installed drawing.
Configuration state	Record jumpers, switches, addresses, firmware or project settings that apply to this hardware.

Selected order-code snapshot

Energy path	Absorbs regenerated DC-bus energy when the drive's internal shunt capacity is exceeded.
Rail integration	Installs on a Bulletin 2094 power rail with a single shunt module allowed per rail.
Wiring boundary	RC and TS connections govern external resistor and thermal-switch use.

Evidence boundary

The listed values apply to 2094-BSP2 in the Rockwell Automation installation instructions. System braking capacity still depends on the complete drive, rail and motion profile.

Initial quality controls

Traceability	Each value is tied to 2094-BSP2, the asset location, test state, instrument and date.
Repeatability	The same approved method and comparable operating state are used for before-and-after readings.
Resolution	Recorded precision does not exceed the capability of the instrument or source document.
Reference state	Stopped, energized, loaded and process-running observations are clearly distinguished.

02 Interface and configuration map

Module function	Regenerative-energy shunt module
Internal shunt capacity	200 W
Compatible drive classes	230 V and 460 V Kinetix 6000 systems
Mounting system	Bulletin 2094 power rail
Rail allocation	One shunt module per power rail
External resistor connector	RC connector
Thermal switch connector	TS connector
Internal resistor selection	Enabled with the default RC jumper
Mounting screw torque	2.26 N m (20 lb in)
Rail placement	Right of IAM and AM modules; left of slot fillers

Application checks

Regenerative deceleration

Dissipate returned energy where the installed motion profile exceeds the IAM or AM internal shunt duty.

Multi-axis power rail

Provide a shared shunting point on a Bulletin 2094 rail after the installed axis modules.

External resistor interface

Use the RC and TS connectors only with the documented external-resistor and thermal-switch circuit.

Installed-base service

Preserve rail width, slot order, jumpers and drive-voltage class when replacing the module.

Interpretation boundaries

Product boundary	Apply the listed facts to 2094-BSP2 and the documented Kinetix 6000 / 6200 / 6500 drive platform context only.
Interface boundary	Connector, terminal, bus, cable and companion-device assignments must match the installed drawing.
Electrical boundary	Use exact-model values only; system-level ratings remain conditional on the complete installed configuration.
Configuration boundary	Switches, jumpers, addresses, firmware and project settings must be reconciled before energization.
Diagnostic boundary	Interpret indicators and fault states together with measured inputs, outputs and host-system status.
Acceptance rule	Use the approved system baseline and maintenance procedure for the final as-left decision.

System verification controls

Traceability	Each value is tied to 2094-BSP2, the asset location, test state, instrument and date.
Repeatability	The same approved method and comparable operating state are used for before-and-after readings.
Resolution	Recorded precision does not exceed the capability of the instrument or source document.
Reference state	Stopped, energized, loaded and process-running observations are clearly distinguished.

Technical notes

Rail relationship	Use only within the documented Bulletin 2094 rail order and voltage class.
Shunt selection	The installed duty cycle and regenerated energy determine whether the internal or approved external resistor path is used.
Commissioning focus	Record jumper state, mounting torque, bus response and thermal status during the approved stop test.

03 Installation workflow

Discharge the DC bus

Verify the drive's stored-energy wait and measure the bus before touching rail or shunt connections.

Keep one module per rail

Do not install a second 2094-BSP2 on the same Bulletin 2094 power rail.

Preserve rail order

Install after the IAM and axis modules and before slot-filler modules.

Verify RC jumper state

Match the jumper or external-resistor wiring to the approved drive schematic.

Verify TS protection

Confirm the external thermal-switch circuit whenever an external resistor is used.

Prove a controlled stop

Monitor the bus and shunt status under an approved deceleration test before release.

Controlled sequence

01 Isolate	Place the monitored machine and channel in the approved maintenance state; prove the required isolation.
02 Photograph	Capture 2094-BSP2, the installed datum, connector, route and companion-component markings.
03 Measure	Record mechanical position and the applicable stopped-machine electrical reading before removal.
04 Compare	Check delivered identity, interfaces and evidence against the approved drawing and spare-parts record.
05 Install	Fit without twisting the lead; preserve thread engagement, target clearance, bend radius and strain relief.
06 Set point	Establish the operating gap or datum only with the approved stopped-machine procedure.
07 Prove	Compare local reading, monitor indication and controlled operating response with the accepted baseline.
08 Handover	Record as-left values, photographs, deviations, responsible technician and release approval.

Release review

Rail relationship	Use only within the documented Bulletin 2094 rail order and voltage class.
Shunt selection	The installed duty cycle and regenerated energy determine whether the internal or approved external resistor path is used.
Commissioning focus	Record jumper state, mounting torque, bus response and thermal status during the approved stop test.

Installation evidence package

Nameplate evidence	Overall and close photographs showing 2094-BSP2, revision, approval and serial details where present.
Installation evidence	Views of the rack position, mechanical datum, terminal assignment, cable route and strain relief.
Configuration evidence	Export or screenshots identifying the approved hardware assignment and parameters without exposing credentials.
Baseline evidence	As-found readings with units, test conditions, machine state and the instrument used.
Inspection evidence	Connector, contact, insulation, fastener, contamination and heat-condition observations.
Functional evidence	As-left readings and the controlled input, output or channel response used for acceptance.
Change evidence	Any wiring, setting, firmware or mechanical change linked to its approved work reference.
Release evidence	Technician, reviewer, date, asset reference and the maintenance-record location for traceability.

04 Diagnostic decision table

Where is 2094-BSP2 positioned on a Bulletin 2094 power rail?	Install it to the right of the IAM and axis modules and to the left of any slot fillers, following the published rail-order diagram.
How many 2094-BSP2 modules may be installed on one power rail?	The installation instructions allow one shunt module per Bulletin 2094 power rail.
What does the default RC jumper do on 2094-BSP2?	It enables the module's internal 200 W resistor; remove or reconfigure it only for the documented external-resistor circuit.
When is the TS connector required for 2094-BSP2?	Use the TS path when the approved external shunt resistor requires thermal-switch supervision.
Which drive-voltage classes accept 2094-BSP2?	The module is documented for both 230 V and 460 V Kinetix 6000 drive systems.
What mounting torque applies to 2094-BSP2?	Tighten the mounting screw to 2.26 N m (20 lb in) after the module is fully seated on the rail connector.
What should be recorded before replacing 2094-BSP2?	Record rail order, drive-voltage class, RC/TS wiring, jumper state, connected resistor identity and the bus-fault history.
How should 2094-BSP2 be functionally accepted?	Use an approved controlled deceleration and confirm stable bus behavior, shunt status and thermal protection without faults.

Escalation triggers

Identity conflict	Stop if the complete marking, suffix, revision or approval identity differs from the approved record.
Host mismatch	Escalate if the rack, carrier, backplane, terminal unit or controller assignment is not documented for 2094-BSP2.
Interface damage	Do not energize with bent contacts, damaged insulation, loose retainers, contamination or heat discoloration.
Environmental breach	Review any exposure beyond the documented temperature, vibration, humidity, contamination or enclosure boundary.
Unapproved substitution	Do not transfer ratings or compatibility from an adjacent order code without manufacturer evidence.
Configuration conflict	Stop if hardware settings, firmware, channel assignment or project configuration disagree with the installed record.
Unstable measurement	Investigate noise, drift, intermittent status or inconsistent readings before replacing another component.
Failed functional proof	Keep the asset in the approved maintenance state until the complete acceptance sequence is passed and recorded.

Evidence quality controls

Traceability	Each value is tied to 2094-BSP2, the asset location, test state, instrument and date.
Repeatability	The same approved method and comparable operating state are used for before-and-after readings.
Resolution	Recorded precision does not exceed the capability of the instrument or source document.
Reference state	Stopped, energized, loaded and process-running observations are clearly distinguished.
Change control	Every changed setting, connection or mechanical datum has an approved reason and reviewer.
Retention	Evidence remains accessible with the maintenance record for future troubleshooting and replacement review.

05 Acceptance, handover and support

Release the channel only after the exact marking, installed-chain identities, mechanical datum, electrical baseline and controlled operating proof have all been recorded.

As-left verification worksheet

Exact delivered marking	2094-BSP2; photograph and record any additional label detail.
Installed asset reference	Machine, bearing, train, channel and drawing identifiers.
Mechanical as found	Reach, lock position, gap reference, cable route and connector support.
Static reading as found	Gap, bias, continuity or channel value appropriate to the installed system.
Companion identities	Extension cable, Proximitor or conditioner and monitor channel markings.
Mechanical as left	Final reach, lock position, target clearance and route protection.
Static reading as left	Final gap, bias, continuity or channel value with test conditions.
Operating proof	Monitor response and machine observation accepted by the responsible authority.
Deviation record	Any difference from drawing or baseline, disposition and approval reference.
Release signatures	Technician, reviewer, operations owner and date.

Lifecycle status

Published lifecycle	Rockwell Automation lists 2094-BSP2 as discontinued effective 31 December 2025.
Installed platform	The module remains tied to Kinetix 6000 / 6200 / 6500 Bulletin 2094 power-rail architecture.
Replacement review	No planned direct replacement is listed; rail, voltage, bus energy and braking design require engineering review.

Available unit details

Offered hardware	One 2094-BSP2 shunt module for a Bulletin 2094 power rail.
Included function	Internal 200 W shunt path with RC and TS interface points.
Separate scope	Power rail, IAM/AM modules, external resistor and field wiring are separate unless itemized.

Verified related product references

Related product	Allen-Bradley 2711-T9C1X
Related product	Allen-Bradley 2711-T10C8X
Related product	Allen-Bradley 1746-NIO4I
Related product	Allen-Bradley 1734-EP24DC

Engineering contact

Discuss the exact marking and installed application with Apter Power.
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