EXACT-MODEL ENGINEERING SUMMARY

Yokogawa AAR181-S50-S2

RTD Input Module

Yokogawa AAR181-S50-S2 is a 12-channel isolated RTD input module for three-wire Pt100 and JPt100 field measurements. The -S50 ordering segment denotes standard construction, no explosion protection and basic type.

SYSTEM CONTEXT CENTUM VP field I/O

Verified highlights

- Twelve isolated RTD input channels
- Three-wire Pt100 measurement with JPt100 support
- One-second data update period
- Pressure-clamp terminal field connection

Functional signal path

FIELD / SYSTEM INPUT

Each of the twelve channels is assigned to an RTD measurement point.

EXACT-MODEL INTERFACE

The documented field sensor connection is a three-wire circuit.

INTERNAL PROCESSING

Resistance of the paired signal conductors should be matched.

CONTROL-SYSTEM RESULT

The pressure-clamp terminal forms the field termination interface.

Verified technical matrix

Product function	Isolated resistance-temperature-detector input module
Input channels	12 isolated channels
Primary sensor	Pt100, three-wire type
Additional sensor	JPt100
RTD standard	JIS C1604:1997 and IEC 751:1995
Allowable input voltage	+/-5 V
Withstand voltage	1500 V AC / 1 min, input-to-system
RTD accuracy	+/-120 mOhm

Measurement current	1 mA
Wiring resistance	<=40 Ohm per wire
Data update period	1 second
External connection	Pressure-clamp terminal
Suffix -S	Standard type
Suffix 5	No explosion protection
Suffix 0	Basic type

Engineering boundary

Only the values shown in the exact-model source set are stated. Final settings, wiring, firmware, companion devices and safety functions must be matched to the installed system before energization.

Interfaces and system relationships

INTERFACE 1

Each of the twelve channels is assigned to an RTD measurement point.

INTERFACE 2

The documented field sensor connection is a three-wire circuit.

INTERFACE 3

Resistance of the paired signal conductors should be matched.

INTERFACE 4

The pressure-clamp terminal forms the field termination interface.

INTERFACE 5

Input circuits are isolated from the system side.

INTERFACE 6

The module supplies 1 mA measurement current to the RTD circuit.

INTERFACE 7

Channel data is refreshed at the documented one-second period.

INTERFACE 8

System configuration must preserve the complete AAR181-S50-S2 identity.

Where the module is used

Process temperature acquisition

Collects twelve Pt100 or JPt100 resistance-temperature measurements for the control system.

Multi-point equipment monitoring

Brings several three-wire RTD points from vessels, piping or rotating-equipment auxiliaries into one isolated module.

Control-system maintenance

Supports exact-model replacement where the installed terminal arrangement and suffix code must be retained.

Loop fault investigation

Provides a defined channel structure for checking sensor, conductor and termination faults before module replacement.

Engineering checks and diagnostic decisions

1. If one channel is implausible, verify sensor type and three-wire conductor order.
2. If a channel reads open, inspect the RTD, field cable and clamp continuity.
3. If several channels shift together, check configuration and node-side conditions before replacing the module.
4. If the module is not recognized, verify slot assignment and complete suffix identity.
5. Compare resistance at the terminal with the control-system value to separate field and module faults.
6. Check paired conductor resistance when a stable offset remains.
7. Do not substitute a nearby AAR or AAT model to troubleshoot suffix-specific behavior.
8. Document the reference used and the measured result for every channel accepted.

Evidence ledger

SOURCE 1	Yokogawa General Specification GS 33K50F60-50E, Analog I/O Modules, AAR181 table and ordering information.
SOURCE 2	Yokogawa CENTUM VP system documentation identifying AAR181 lifecycle and supported hardware context.

Engineering FAQ

Q1 What signal type does Yokogawa AAR181-S50-S2 accept?

It accepts three-wire Pt100 and JPt100 RTD signals.

Q2 How many channels are available on Yokogawa AAR181-S50-S2?

It provides twelve isolated RTD input channels.

Q3 What update period applies to Yokogawa AAR181-S50-S2?

The data update period is one second.

Related products

Verified related products on ApterPower

Yokogawa SB401-51 S1
Bus interface slave module
View Yokogawa SB401-51 S1

Yokogawa AAI143-H03 S1
Isolated analog input module
View Yokogawa AAI143-H03 S1

Yokogawa AAI135-S50 S3
Isolated analog input module
View Yokogawa AAI135-S50 S3

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Share the exact AAR181-S50-S2 nameplate, application and required quantity for a model-specific quotation.