**AAR145-SM□ RTD/POT Input Module (16-channel, Isolated channels)
(For RIO System Upgrade AMM32T/AMM32TJ)**

**AAR145-SK□ RTD/POT Input Module (16-channel, Isolated channels)
(For RIO System Upgrade AMM32C/AMM32CJ)**

Item	Specifications	
Model	AAR145-SM□	AAR145-SK□
Input signal (*1)	RTD (3-wire type) • JIS C 1604, IEC 60751 (ITS-90) Pt100 • JIS C 1604: 1989, IEC 751: 1986 (IPTS-68) Pt100 • JIS C 1604: 1989 (IPTS-68) JPt100	
Number of inputs	16	
Allowable input voltage	±5 V	

Signal isolation	16-channnel, Isolated channels
	• Insulation between input channels
	  Withstanding voltage: 200 V AC for 1 minute
	• Isolation between field and the system
	  Withstanding voltage: 1500 V AC for 1 minute (*2)	

Data update period	1 s	
Accuracy rating	±0.15 Ω	
Disconnection detection time	60 s	
Allowable wiring Resistance	150 Ω or lower (per wire) (*3)	
Measuring current	1 mA	
Burnout detection	Select from UP, DOWN, or OFF	
Signal connection	AMT16R (*4)	KS8 cable or AKB335 cable
Drift due to ambient temperature change	±0.3 Ω or lower / 10 °C	
Current consumption	120 mA (24 V DC)	
Operating temperature range	0 to 50 °C	
Weight	Approx. 1.2 kg	Approx. 0.50 kg

*1:   AAR145's POT input function is disabled in the RIO System Upgrade.
*2:   The withstanding voltage is 500 V AC (between field and the system) when using AAR145-SK□ with KS8 cable.
*3:   Wiring resistance of IN□A and IN□B signal cables must be identical.
*4:   AMT16R terminal block of the existing AMM32T or AMM32TJ can also be used. The status display lamp of AMT16R is disabled. Terminal block disconnection detecting function equipped with AMM32T and AMM32TJ is not available for AAR145-SM□.

AAI143-HM□ Analog Input Module
(4 to 20 mA, 16-channel, Isolated) (For RIO upgrading System for AMM42T)

Item	Specifications
Model	**AAI143-HM□ (*1)**
Input signal	2-wire transmitter input 4 to 20 mA DC (*2)
Number of inputs	16
Allowable input current	24 mA or lower
Transmitter power supply	19.0 V or higher (at 20 mA), 25.5 V or lower (at 0 mA) (Output current limit: 25 mA) (* 3)
Input resistance	At power-up: 270 Ω (20 mA) to 350 Ω (4 mA) (*4) At power-down: 500 kΩ or higher
Signal isolation	16-channel isolated • No insulation between channels • Isolation between field and the system Withstanding voltage: 1500 V AC for 1 minute
Data update period	10 ms
Accuracy rating	±16 µA
Signal connection	AMT16M (*5)
Drift due to ambient temperature change	±16 µA / 10 °C
Power consumption	600 mA (24 V DC)
HART communication function	HART 5 is supported
Operating temperature range	0 to 50 °C
Weight	Approx. 1.0 kg

*1:   A zener barrier cannot be connected with this module. Use an isolation barrier when the module is used in an intrinsically safe application.
*2:   AAI143-HM□ is dedicated for use with 2-wire transmitter input. Switching between 2-wire and 4-wire is not applicable.
*3:   This voltage is generated between the connecting terminals for 2-wire transmitters of this module. When calculating the minimum operating voltage of transmitters, consider allowing margins for voltage drop in external wiring.
*4:   The module input resistance viewed from the terminals depends on the current strength as calculated as below:
       250 Ω+ (Voltage drop in the input protection circuit / Current value)
*5:   AMT16M terminal block of the existing AMM42T can be also used. The status display lamp of AMT16M is disabled.
       Terminal block disconnection detecting function equipped with AMM42T is not available for AAI143-HM□.

AAI543-HM□ Analog Output Module
(4 to 20 mA, 16-channel, Isolated) (For RIO System Upgrade AMM52T)

Item	Specification
Model	**AAI543-HM□**
Output signal	4 to 20 mA DC
Allowable load resistance	0 to 750 Ω
Output range	1.0 to 23 mA DC
Output open detection	0.65 mA or lower
Signal isolation	16-channel isolated • No insulation between channels • Isolation between field and the system Withstanding voltage: 1500 V AC for 1 minute
Data update period	10 ms
Accuracy rating	± 48 µA
Signal connection	AMT16M (*1)
Drift due to ambient temperature change	±16 µA / 10°C
Power consumption	680 mA (24 V DC)
HART communication function	HART 5 is supported
Operating temperature range	0 to 50°C
Weight	Approx. 1.1 kg

*1:   AMT16M terminal block of the existing AMM52T can also be used. The status display lamp of the AMT16M is disabled.
       Terminal block disconnection detecting function equipped with AMM52T is not available for AAI543-HM□.

3.3.1.2 Model and suffix codes

Analog I/O Module (1 to 5 V input, 4 to 20 mA output, 8-channel input/8-channel output, Non-Isolated)

		Description
Model	AAB841	Analog I/O Module (1 to 5 V input, 4 to 20 mA output, 8-channel input/8-channel output, Non-Isolated)
Suffix Codes	-S	Standard type
	K	RIO System Upgrade for AMC80 (KS Cable connection type) (*1)
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option

*1:   The operating temperature range for suffix code "-SK3" is 0 to 50 °C.

Analog Input Module (-10 to +10 V, 16-channel, Isolated)

		Description
Model	AAV144	Analog Input Module (-10 to +10 V, 16-channel, Isolated)
Suffix Codes	-S	Standard type
	K	RIO System Upgrade for AMM12C (KS Cable connection type) (*1)
	M	RIO System Upgrade for AMM12T (M4 Screw Terminal connection type) (*2)
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option

*1:   The operating temperature range for suffix code "-SK3" is 0 to 50 °C.
*2:   The operating temperature range for suffix code "-SM3" is 0 to 50 °C.

TC/mV Input Module (16-channel, Isolated channels)

		Description
Model	AAT145	TC/mV Input Module (16-channel, Isolated channels)
Suffix Codes	-S	Standard type
	K	RIO System Upgrade for AMM22C/AMM25C (KS Cable connection type) (*1)
	M	RIO System Upgrade for AMM22M/AMM22T/AMM22TJ (M4 Screw Terminal connection type) (*2)
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option

*1:   The operating temperature range for suffix code "-SK3" is 0 to 50 °C.
*2:   The operating temperature range for suffix code "-SM3" is 0 to 50 °C.

RTD/POT Input Module (16-channel, Isolated channels)

		Description
Model	AAR145	RTD/POT Input Module (16-channel, Isolated channels) (*1)
Suffix Codes	-S	Standard type
	K	RIO System Upgrade for AMM32C/AMM32CJ (KS Cable connection type) (*2)
	M	RIO System Upgrade for AMM32T/AMM32TJ (M4 Screw Terminal connection type) (*3)
	0	Basic type
	3	With ISA Standard G3 option and temperature (-20 to 70 °C) option

*1:   AAR145's POT input function is disabled in the RIO System Upgrade.
*2:   The operating temperature range for suffix code "-SK3" is 0 to 50 °C.
*3:   The operating temperature range for suffix code "-SM3" is 0 to 50 °C.