

Migrating to a 1769sc-IF8U

Sometimes customers have an application designed using one or more 1769 Analog Input modules, and then discover:

- The mix of voltage, current, thermocouple or RTD/resistance requires several input card types, and there is a high channel spare rate which increases the cost.
- The design has changed and a few more of a mix of input types need to be added, and there are not enough spare Analog Input channels of all required types in the existing configuration, so more cards need to be purchased.
- Running a signal through a 4-20mA transmitter adds inaccuracy and calibration headaches, and it would be better to run the signal directly into an Analog Input.

These customers should consider using the Spectrum Controls 1769sc-IF8u instead, which provides full universal analog capability in one I/O module and can replace analog input, thermocouple, and RTD modules without compromising performance or price.

- Use any combination of input types at one time.
- Accuracy is comparable with dedicated analog modules.
- Each channel is individually programmable for input type, user scaling and alarm settings.

The 1769sc-IF8u is a **Universal** Analog Input module. Rather than only having input types of voltage/current or only input types of TC/RTD/Resistance, the 1769sc-IF8u has available all 5 of these input types selectable on a channel by channel basis.

The 1769sc-IF8u has **25** input types available in 5 categories:

- 9 Thermocouple types (J, K, T, E, R, S, B, N, C)
- 5 RTD types (PT385/3916, Ni618/672, Cu426)
- 3 Resistance selections (0-150, 0-1000, 0-3000 ohms)
- 2 Current selections (0-20 mA, 4-20 mA)
- 6 Voltage selections (± 50 mV, ± 150 mV, 0-5 V, 1-5 V, 0-10 V, ± 10 V)

Here are some wiring and programming considerations when designing the 1769sc-IF8u into a new system or to replace a previous design using other 1769 Analog Input modules.

For wiring:

- Keep in mind that the 1769sc-IF8u inputs are Single-Ended only.
- Review the Installing And Wiring section (Chapter 2) in the [IF8u manual](#).
- Analog cable signal integrity requirements are identical to any other 1769 Analog Input module. Refer to Rockwell publication 1770-in041 Industrial Automation Wiring and Grounding Guidelines.

For programming:

- RPI/RTS selection is identical to any other 1769 Analog Input module.
- The 1769sc-IF8u has 5 types of input ranges, with 2 to 9 selections within each input range. For comparison, the 1769-IF8 has 2 types of input ranges with 1 or 3 selections within each input range. All input range selections included in the IF8 are available with the IF8u.
- Analog signal scaling and Alarm configuration is similar to any other 1769 Analog Input module.
- The 1769sc-IF8u modules convert signal data into an INT data type in the Controller tags.

Major 1769sc-IF8U specifications to note:

- The 1769sc-IF8u does not do differential voltage or current.
- Acceptable terminal blocks: 1769-RTBN18 (18 position)
- Calibration: auto-calibrates at channel enable or at a 5 minute interval during run mode
- Input Overvoltage Protection: ± 30 VDC continuous
- Input Overcurrent Protection: 28 mA continuous
- Isolation: 707 VDC continuous between inputs and chassis ground & backplane.
- Recommended Cable:
 - for thermocouple inputs: Shielded twisted pair thermocouple extension wire
 - for mV, V or mA inputs: Belden #8761 (2C+Shld) or equivalent
 - for RTD inputs: Belden #9533 (3C+Shld), #83503 (4C+Shld) or equivalent
- Available Input Ranges:
 - Thermocouple: J, K, T, B, E, R, S, N, C, CJC (0°C to 85°C/ 32°F to 185°F)
 - RTD:
 - Platinum (385): 100 Ω , 200 Ω , 500 Ω , 1000 Ω
 - Platinum (3916): 100 Ω , 200 Ω , 500 Ω , 1000 Ω
 - Copper (426): 10 Ω
 - Nickel (618): 120 Ω
 - Nickel (672): 120 Ω
 - Nickel/Iron (518): 604 Ω
 - Voltage Input Ranges: ± 50 mV, ± 150 mV, 0-5 V, 1-5 V, 0-10 V, ± 10 V
 - Current Input Ranges: 0-20 mA, 4-20 mA
 - Resistance Input Ranges: 0-150 Ω , 0-1000 Ω , 0-3000 Ω
- Resolution: 16 to 21 bits (filter dependent)
- There are 5 filter settings for each channel: 50/60Hz, 10, 100, 250 & 1000Hz
- Input Impedance:
 - >10M Ω ; thermocouple, voltage, RTD
 - <250 Ω , current
- Thermal Dissipation: 1.83 Watts, maximum

- Certifications: UL/cUL Listed ANSI ISA 12.12.01 (Class I, Div 2, Groups ABCD), CE

Spectrum Controls publications:

- 0300198-04 manual 1769sc-IF8u

Rockwell KB about the 1769sc-IF8U:

- ID: QA9537 1769sc-IF8U Calibration
- ID: QA33384 1769sc-IF8u CJC specifications
- ID: QA18921 Excitation current for 1769sc-IF8U
- ID: QA20445 1769sc-IF8U OK LED Blink Status
- ID: QA19930 1769sc-IF8u Power Supply Distance Rating
- ID: QA50314 1769sc-IF8u, open connection temperature reading
- ID: QA28411 1769sc-IF8U Channel Configuration in RSLogix 500
- ID: QA5709 1769SC-IF8U: Generic Profiles and Module Profiles
- ID: QA4236 Open Circuit Detection on Spectrum Controls 1769sc-IF8u
- ID: QA10440 1769sc-IF8u: Open-Circuit Detection issues
- ID: QA12122 Jumper locations for the 1769sc-IF8u configuration were changed
- ID: QA27660 1769SC-IF8U Compatible in CompactLogix Version 20 or higher
- ID: QA21947 Number of thermocouples that can be attached simultaneously on the 1769sc-IF8u
- ID: QA26391 Spectrum Controls 1769SC-IF8U module: using with a Thermocouple or RTD and Open Circuit Response is not working.
- ID: IN22154 Is there a bit that can be monitored in the input data file/tag to determine if the 1769sc-IF8u has Cyclic Calibration enabled or disabled?
- ID: QA49894 Spectrum Controls 1769 Compact I/O: EDS files, Module Profiles and User Manual
- ID: QA6199 Replacement CJC and Terminal Boards for 1769 modules that read thermocouple inputs
- ID: QA58144 RSLogix5000 Module Profiles installed by default
- ID: QA36024 Isolation of Spectrum universal modules vs. Allen Bradley

Rockwell Logix Publications:

- 1769-TD006 1769 Compact I/O Modules Specifications
- 1769-UM002 Compact I/O Analog Modules User Manual
- 1770-4.1 Industrial Automation Wiring and Grounding Guidelines