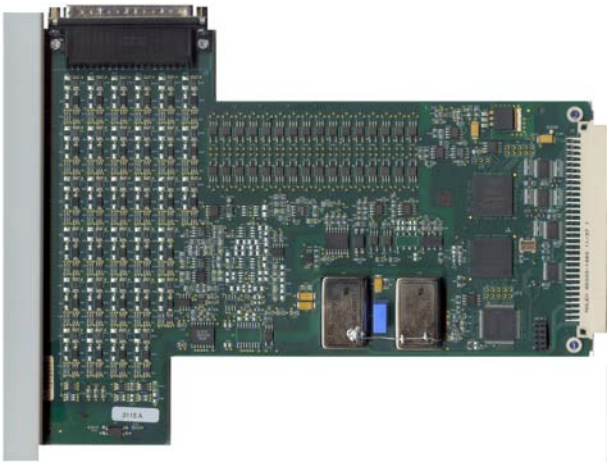
SIL-3 32-Channel Single Ended Analog /Digital Input Card

3115/ 3126

PRODUCT HIGHLIGHTS

- **32 Single Ended Channels for Safety and Critical Control Applications**
- **Current, Voltage, or Digital Input Options**
- **Configurable Redundancy**
  Single, Dual, Triple, Quad
- **1 ms Analog and Digital SOE**
- **Optimized Versatility of Spares**
- **Hart Compatible**



3126 32-Ch Analog/Digital Input Card

Product Overview

The 32-Channel Single Ended Analog/Digital Input Card is designed for use in RTP3000 TAS safety and critical control applications. It can provide high accuracy, high-level analog measurements or digital inputs depending upon your needs. When connected to its associated field termination module, the 3115 or 3126 card can be used for current or voltage inputs as well as 12 different digital input options. The digital input options include line supervision and various voltage signal sinking or sourcing options.

Analog to Digital conversion is performed by a 16 bit switched capacitor successive approximation A/D converter. The A/D converter calibration is continually checked by monitoring two internal fixed (high and Low) voltages. No field adjustments are necessary after initial factory calibration.

The configurable redundancy of the 32-Channel Single Ended Analog/Digital Input Card reduces costs as the redundant inputs are configured to the availability, integrity and system cost requirements. The flexible architecture allows redundant inputs to be on the same card or different cards. Those cards may be placed in the same chassis or in different chassis.

In order to assist in the performance of root cause analysis, the 3115 and 3126 card is capable of 1millisecond time stamping of analog or digital input signals depending on the card configuration. The change of any input channel state initiates the logging of a time stamped sequence-of-events (SOE) record. This provides the highest resolution for process analysis as inputs are scanned 1000 times a second.

I/O bus checking diagnostics, card address tests and configuration tests are performed each time the chassis processor accesses the cards.

All data and control transfers are performed twice, once using the actual data and then using inverted data. Both versions of the data are compared to verify that all I/O bus data bits are functioning properly on the backplane. I/O Bus slot address and control signal contention tests are also performed.

Since the 3115 and 3126 card can be used in 14 different signal input options, you can reduce your spare inventory costs using this card. The field termination module connected to the card determines which type of input signal the card can support.

RTP is the Best Technology for Your Investment,
Here's why:
The 3000 TAS is a multi-processor architecture that delivers exceptional Performance and Comprehensive Diagnostics. The results speak for themselves: A reaction time of 12 msec, true 1 msec SOE (Analog and Digital), an MBTF of greater than 50000 years an MTTFS of greater than 60000 years, and a PFDavg of $5x10^{-5}$. ***Compare these numbers to any other system.***
Built-in proof test diagnostics means it will never be necessary to shut down at the proof test interval. Unlimited online downloads of logic and configuration changes do not require a periodic shut down like other systems. ***Compare this functionality to any other system.***
NetSuite Software: One-time price includes unlimited use of Logic Development, Alarm Manager, Data Archive and Historian and HMI without hardware or software keys. ***Compare this functionality and price to all other systems.***
Finally, a Safety Instrumented System (SIS) should always take the process it protects to a safe state when it is required to do so, and it should never interfere with the operation of the process at the time. ***The 3000 TAS does this better than any other system.***

RTP Corp. – 2832 Center Port Circle – Pompano Beach, FL 33064
Phone (954) 597-5333 – Internet www.rtpcorp.com – E-Mail rtpinfo@rtpcorp.com

In a simplex configuration, the 3115 32-Channel Single Ended Analog/Digital Input Card is TUV approved for SIL-2 applications. When in a redundant configuration, the 3115 Card is TUV approved for SIL-3 applications. The 3126 32-Channel Single Ended Analog/Digital Input Card is a compact version of a dual redundant 3115 Card and is TUV approved for SIL-3 applications. If your SIL-3 application is limited in space, installing a single 3126 Card will meet the requirement.

The 3115 and 3126 Card can be used with HART enabled devices to improve process efficiency, reduce maintenance requirements and enhance overall productivity. This can be accomplished through the use of Cornerstone™, FieldVue™, RTP's Multiplexer software, or other well known software packages along with RTP's HART Communications Card (3018).

Hart protocol commands are thus provided for process variables, range information, and device status as part of the control strategy. This added capability allows the user to improve process efficiency, reduce maintenance requirements and enhance overall productivity of the process.

SPECIFICATIONS

3115 – 32 Channel Analog/Digital Input Card

Safety Integrity Level	SIL 2 (SIL 3 when configured redundant)
Number of Channels	32
Digital Input Signals	VDC Input: 24, 48, 120 VAC Input: 115, 230
Analog Input Signals	Voltage Input: 0-10VDC, ±10VDC Current Input: 0-20 mA, 4-20 mA
Full Scale Value	Voltage Input: 10 VDC Current Input: 20 mA
Multiplexer Type	Two sets of 35 individual analog switches
Input Signal Guard Band	1%
Input Impedance	> 2 Mega Ohm
Max Input Source Impedance	Voltage Input: 1K to meet Spec
Analog input error (maximum error at 25 ºC)	+/-0.055% of full scale value (Voltage Mode) [5.5 mV]
Analog input error (temperature coefficient)	+/-0.002% of full scale value/ºC (Voltage Mode) [0.2mV/ºC]
Maximum error over full temperature range	+/-0.115% of full scale value (Voltage Mode) [11.5mV]
Analog input error (maximum error at 25 ºC)	+/-0.075% of full scale value (Current Mode) [15µA]
Analog input error (temperature coefficient)	+/-0.004% of full scale value/ºC (Current Mode) [0.8 µA/ºC]
Maximum error over full temperature range	+/-0.195% of full scale value (Current Mode) [39 µA]
Digital Resolution	16 bits
Type of Input	Single Ended
Scan Rate	1000 sample sets per second
Input Protection	15 volt TVS
Isolation	500V Channel to RTP BUS
Common points between channels	All channels share a single common
Crosstalk between channels at d.c., a.c. 50 Hz and a.c. 60 Hz	-84 dB
Hardware Watchdog timer	0.68 to 1.4 seconds
Backplane Power	5V @ 400mA 24V @ 100mA

3126 – 32 Channel Analog/Digital Input Card

Safety Integrity Level	SIL 3
Number of Channels	32
Digital Input Signals	VDC Input: 24, 48, 120 VAC Input: 115, 230
Analog Input Signals	Voltage Input: 0-10VDC, ±10VDC Current Input: 0-20 mA, 4-20 mA
Full Scale Value	Voltage Input: 10 VDC Current Input: 20 mA
Multiplexer Type	Two sets of 35 individual analog switches
Input Signal Guard Band	1%
Input Impedance	> 1 Mega Ohm
Max Input Source Impedance	Voltage Input: 1K to meet Spec
Analog input error (maximum error at 25 ºC)	+/-0.055% of full scale value (Voltage Mode) [5.5 mV]
Analog input error (temperature coefficient)	+/-0.002% of full scale value/ºC (Voltage Mode) [0.2mV/ºC]
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Environmental Specification

Operating Temperature Range	–20ºC to +60ºC
Storage Temperature Range	–25ºC to +85ºC
Relative Humidity Range	10% to 95%, non-condensing

Termination Module

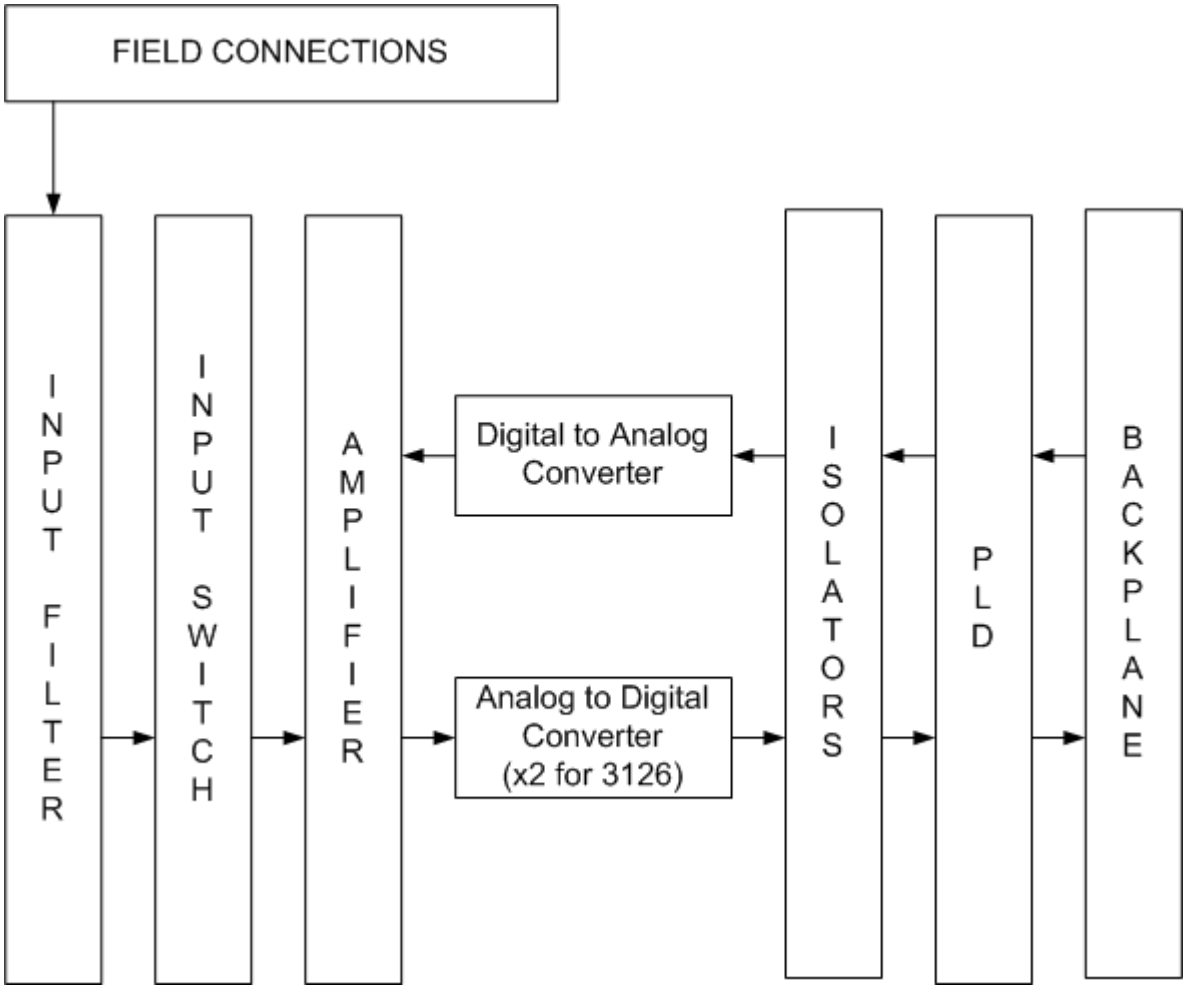
Analog Input

3099/21-102	Single Termination Module – 32 channel voltage iniput
3099/21-107	Single Termination Module – 32 channel current input, supplies power from 100 mA resettable fuses
3099/21-207	Single Termination Module – 32 channel current input, supplies power from 300 mA resettable fuses
3099/21-002	Triple Redundant Termination Module – 32 channel voltage iniput
3099/21-007	Triple Redundant Termination Module – 32 channel current input, supplies power from 100 mA resettable fuses
3099/21-007	Triple Redundant Termination Module – 32 channel current input, supplies power from 300 mA resettable fuses

Digital Input

3099/21-101	Single Termination Module – 32 channel supervised digital input, 24 VDC
3099/21-103	Single Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 24 VDC
3099/21-104	Single Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 48 VDC
3099/21-105	Single Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 115 VAC
3099/21-106	Single Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 240 VAC
3099/21-108	Single Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 120 VDC
3099/21-109	Single Termination Module – 32 channel isolated digital input, 120 VAC
3099/21-019	Single Termination Module - 32 channel isolated sinking/sourcing digital input, 24 VDC
3099/21-001	Triple Redundant Termination Module – 32 channel supervised digital input, 24 VDC
3099/21-003	Triple Redundant Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 24 VDC
3099/21-004	Triple Redundant Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 48 VDC
3099/21-005	Triple Redundant Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 115 VAC
3099/21-006	Triple Redundant Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 240 VAC
3099/21-008	Triple Redundant Termination Module – 32 channel sinking (close to positive) digital input, resettable fuses, 120 VDC

3099/21-113	Single Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 24 VDC
3099/21-114	Single Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 48 VDC
3099/21-115	Single Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 115 VAC
3099/21-116	Single Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 240 VAC
3099/21-118	Single Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 120 VDC
3099/21-013	Triple Redundant Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 24 VDC
3099/21-014	Triple Redundant Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 48 VDC
3099/21-015	Triple Redundant Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 115 VAC
3099/21-016	Triple Redundant Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 240 VAC
3099/21-018	Triple Redundant Termination Module – 32 channel sourcing (close to ground) digital input, resettable fuses, 120 VDC



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