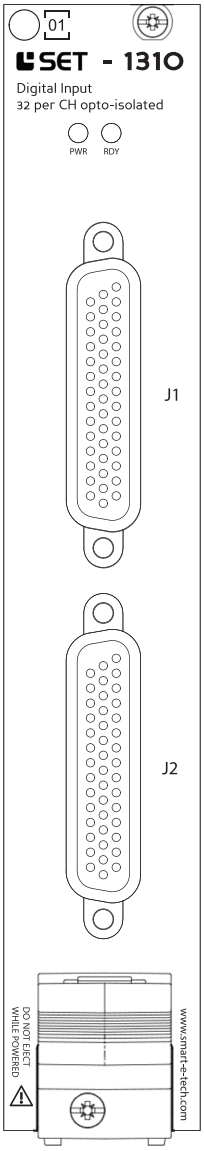
TECHNICAL DESCRIPTION

SET-1310

32 Channel Isolated Digital Input, 3.3V to 60V



This document is a technical description of the SET-1310.

Note Before you begin, complete the software and hardware installation procedures applicable to your application.

Note The guidelines in this document are specific to the SET-1310. The other components in the system might not meet the same safety ratings. Refer to the documentation of each component in the system to determine the safety and EMC ratings for the entire system.

MORE INFORMATION ON OUR WEBSITE:
www.smart-e-tech.com/slsc

Safety Guidelines

Caution Do not operate the SET-1310 in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it for repair.

Electromagnetic Compatibility Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC). These requirements and limits provide reasonable protection against harmful interference when the product is operated in the intended operational electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential or commercial areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by SET GmbH could void your authority to operate it under your local regulatory rules.

Caution To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

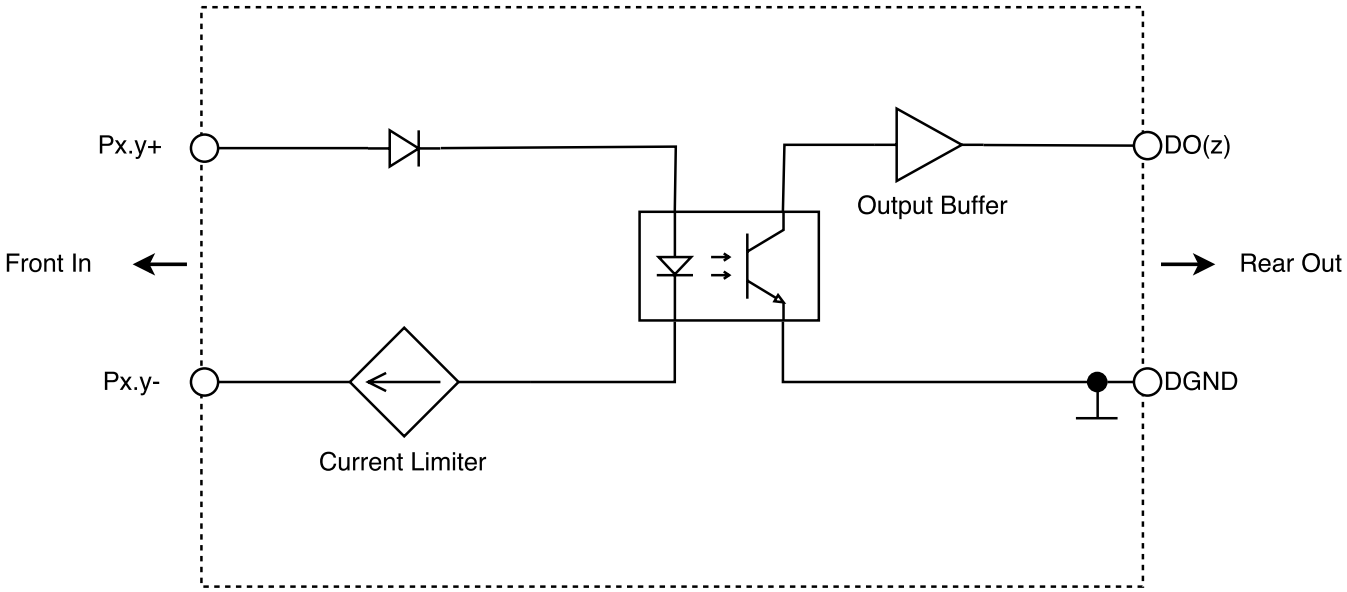
Caution To ensure the specified EMC performance, the length of any cable attached to connectors J1 and J2 must be no longer than 3 m (10 ft.)

Description

The SET-1310 device is an isolated digital input interface for NI-SLSC. This card provides 32 optically isolated digital inputs. SET-1310 combines high-density IO with high isolation voltages and a wide input voltage range. It allows to break ground loops and protect the system from high-voltage spikes, but also to connect high voltage signals to standard logic level acquisition devices. The channel-to-channel isolation allows to connect signals from different DUTs to a single acquisition system.

The digital input card feature a wide supply voltage range and can be used with a variety of signal levels, including 12V and 28V discrete signals.
To protect the optoisolators, each input contains a current limiting circuit which limits the input current to 6mA over the entire input voltage range.
With a maximum voltage channel to channel and channels to chassis of 60Vdc, SET-1310 allows you to connect multiple DUTs operating at most usual logic levels to a single data acquisition system.

Circuitry

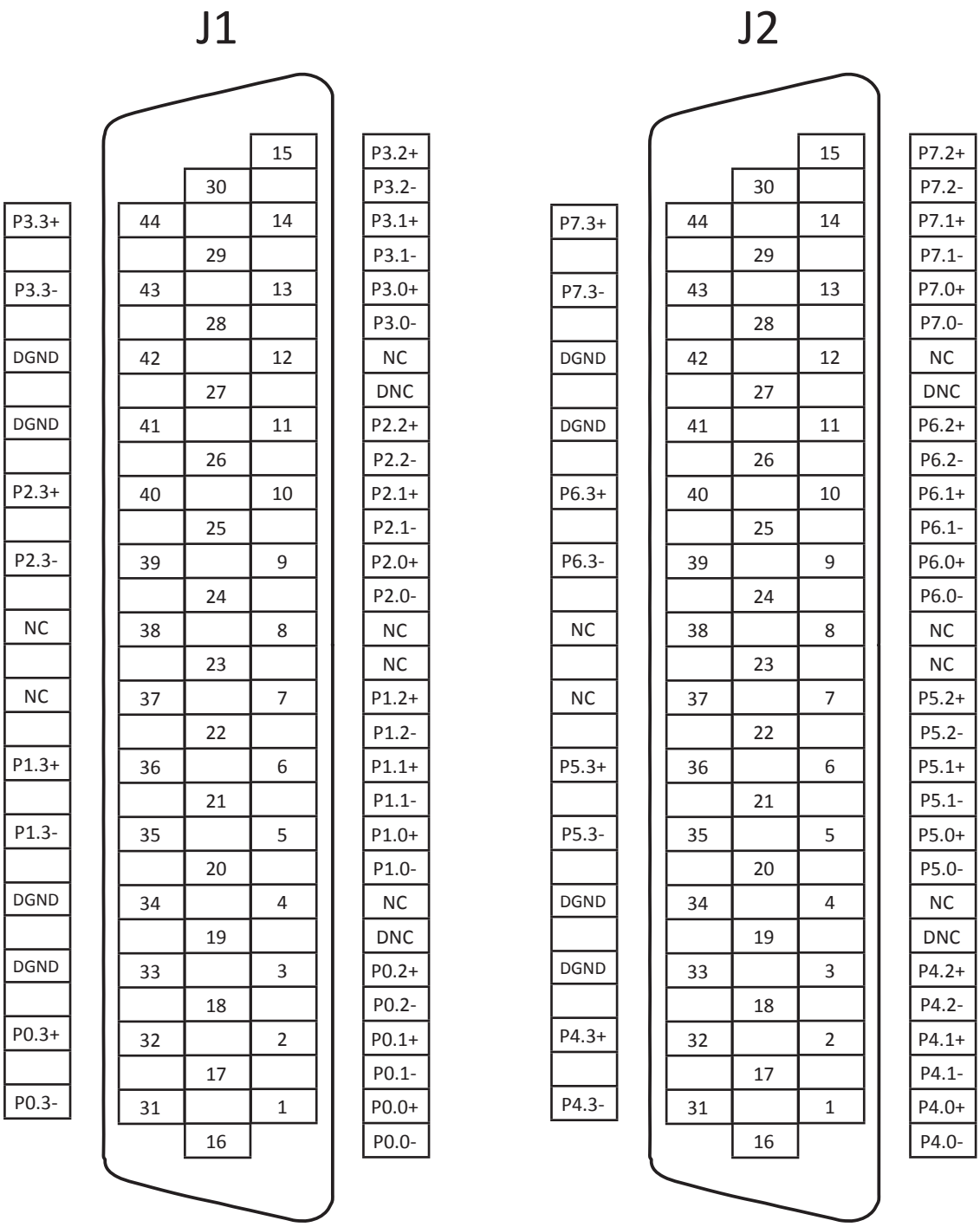


Note Diagram only shows one channel.

All voltages are relative to DGND unless otherwise noted.

Note You can configure the power-on configuration in the software. The factory default power-on configuration sets the front I/O channels to sinking input and rear I/O channels to output.

J1, J2 Pinout (Front)



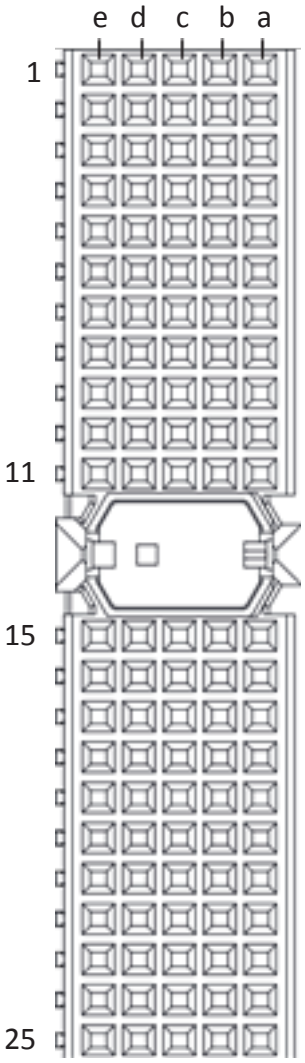
Signal	Description
Px.y	Line y in Port x
DGND	Ground connection
NC	No connection
DNC	Do not connect

JR2 Connector Pin Assignments

J1	XJ1	J2	XJ2
P0.0 +	DO0	P4.0 +	DO16
P0.0 -		P4.0 -	
P0.1+	DO1	P4.1+	DO17
P0.1 -		P4.1 -	
P0.2 +	DO2	P4.2 +	DO18
P0.2 -		P4.2 -	
P0.3 +	DO3	P4.3 +	DO19
P0.3 -		P4.3 -	
P1.0 +	DO4	P5.0 +	DO20
P1.0 -		P5.0 -	
P1.1 +	DO5	P5.1 +	DO21
P1.1 -		P5.1 -	
P1.2 +	DO6	P5.2 +	DO22
P1.2 -		P5.2 -	
P1.3 +	DO7	P5.3 +	DO23
P1.3 -		P5.3 -	
P2.0 +	DO8	P6.0 +	DO24
P2.0 -		P6.0 -	
P2.1 +	DO9	P6.1 +	DO25
P2.1 -		P6.1 -	
P2.2 +	DO10	P6.2 +	DO26
P2.2 -		P6.2 -	
P2.3 +	DO11	P6.3 +	DO27
P2.3 -		P6.3 -	
P3.0 +	DO12	P7.0 +	DO28
P3.0 -		P7.0 -	
P3.1 +	DO13	P7.1 +	DO29
P3.1-		P7.1-	
P3.2+	DO14	P7.2+	DO30
P3.2-		P7.2-	
P3.3+	DO15	P7.3+	DO31
P3.3-		P7.3-	

Front Panel Signal Descriptions

XJ2 Connector Pinout



Row	a	b	c	d	e
1	DO0	DO1	NC	DO2	DO3
2	DO4	DO5	NC	DO6	DO7
3	DGND	DGND	DGND	DGND	DGND
4	DO8	DO9	NC	DO10	DO11
5	DO12	DO13	NC	DO14	DO15
6	DGND	DGND	DGND	DGND	DGND
7	DO16	DO17	NC	DO18	DO19
8	DO20	DO21	NC	DO22	DO23
9	DGND	DGND	DGND	DGND	DGND
10	DO24	DO25	NC	DO26	DO27
11	DO28	DO29	NC	DO30	DO31
15	NC	NC	NC	NC	NC
16	NC	NC	NC	NC	NC
17	DGND	DGND	DGND	DGND	DGND
18	NC	NC	NC	NC	NC
19	NC	NC	NC	NC	NC
20	DGND	DGND	DGND	DGND	DGND
21	NC	NC	NC	NC	NC
22	NC	NC	NC	NC	NC
23	DGND	DGND	DGND	DGND	DGND
24	NC	NC	NC	NC	NC
25	NC	NC	NC	NC	NC

XJ2 Connector Pin Assignments

Signal	Description
DO	Digital output signal connection
DGND	Ground connection
NC	No connection

XJ2 Connector Signal Descriptions

LED Behavior

LED Name	LED Behavior	Defintion of Behavior
PWR	Off	No power on the board
	Solid green	Power good state
RDY	Off	Module card is unpowered or reset active
	Solid green	Card is recognized by the chassis and ready to communicate
	Blinking Amber	Chassis is communicating

Error Handling

LED Name	LED Behavior	Actions
PWR	Off	- Check the power supply of the chassis - Check the external power supply if used
PWR	Blinking Red	- Switch off and switch on the power supply (power cycle) - Please contact the support

Hardware Specifications

Absolute Maximum Ratings			
Property	**Condition**	**Value**	**Comment**
Max. Input Voltage	Any Pin	60Vdc	
Min. Input Voltage	Any Pin	-60Vdc	
Channel to Channel		120Vdc	
Channels to Chassis		60Vdc	

Technical Data			
Property	**Condition**	**Value**	**Comment**
Max. Input Voltage		60V	Overall temp range
Min. High Level Input Voltage		2,3V	
Input Current	VIN > 5V	4mA ± 2mA	
Max. Input Frequency	Square wave, 0V to 10V	40kHz	
Propagation Delay	Any Channel, Rising Edge	Typ: 2.7µs Max: 3.6µs	Overall temp range
	Any Channel, Falling Edge	Typ: 8.4µs Max: 12.5µs	Overall temp range

Hardware Specifications

Physical Characteristics			
Property	**Condition**	**Value**	**Comment**
Module dimensions	Excluding ejector	144.32mm x 30.48mm x 302mm (H x W x D)	Standard SLSC card size
Front Panel Connector		2x female DB -44 high-density D-Sub with 4-40 UNC screw lock	
RTI Connector		2mm hard metric per IEC 61076-101	Any RTI marked

Environmental			
Property	**Condition**	**Value**	**Comment**
Operating humidity	Relative, non-condensing	10%-90%	
Storage humidity	Relative, non-condensing	5%-95%	
Operating temperature	Forced-air cooling from chassis	0°C-85°C	
Storage temperature		-40°C-100°C	
Maximum altitude		2000m	