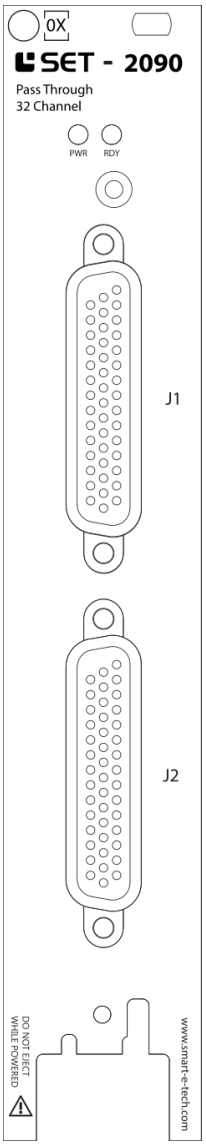
TECHNICAL DESCRIPTION

SET-2090

32 Channels Pass Through



This document 9040TDD0360 is a technical description of the SET-2090.

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-2090. 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.de/slsc

Safety Guidelines

Caution Do not operate the SET-2090 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.

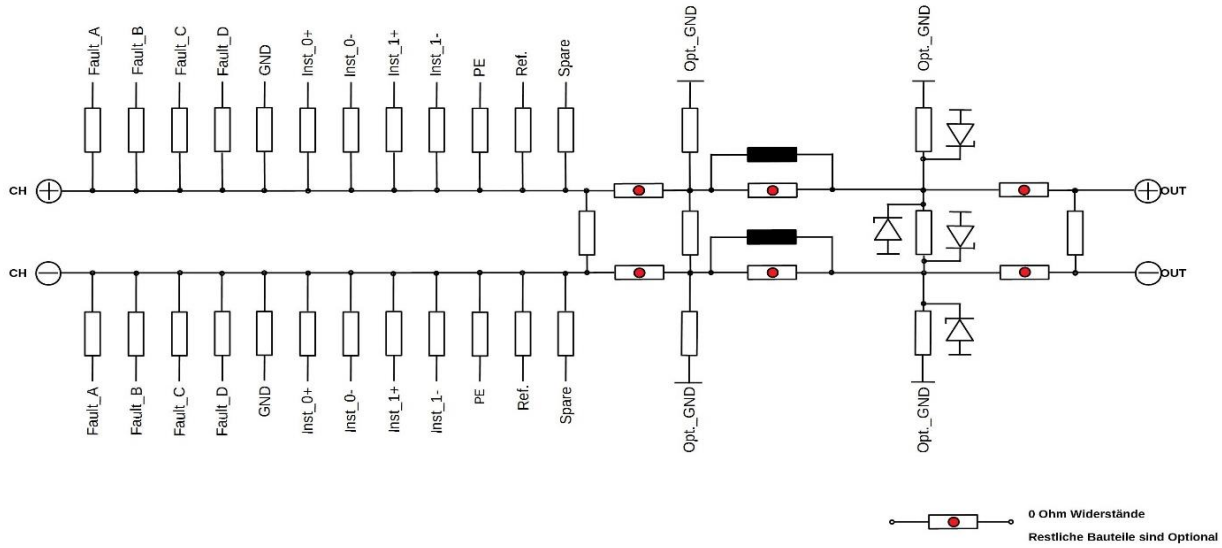
Caution To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

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-2090 device is an experimental card for NI-SLSC and provides 32 differential inputs. The input signals can be configured by customers. Each input channel can be tested, conditioned, or measured in different ways. Various inductors, filters, pull-up, or pull-down resistors can be used for this purpose. In standard configuration, the input signals are transmitted directly to the output.

Circuitry



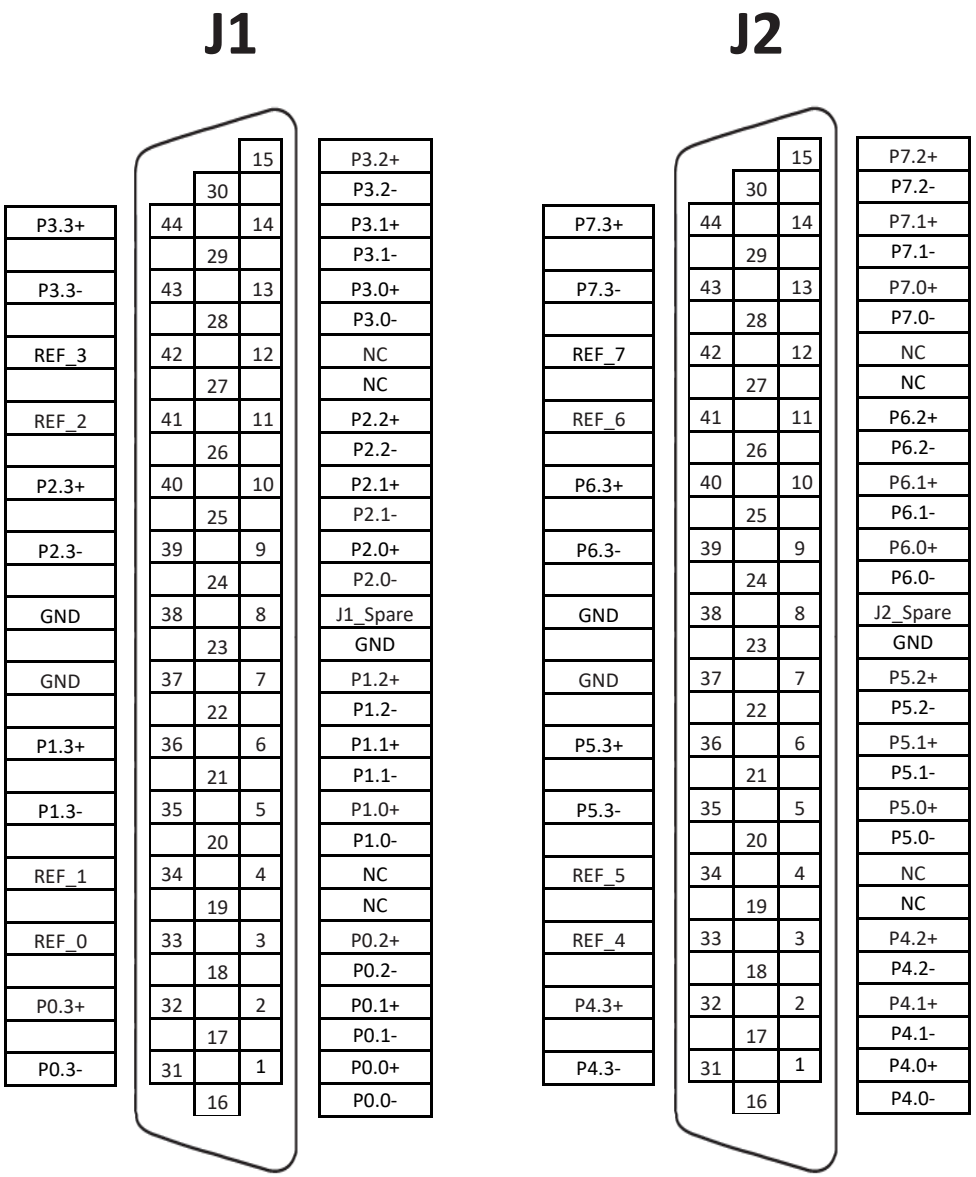
Note Diagram only shows one channel. All components without a labeling, are optional.

The “Ref.” Signal from the block diagram below is each connected to the corresponding Reference Signals on the Front connector. Per connector 4 Reference Signals are available, mapping each to four differential signals.
For example, the “Ref.” from channel “P0.0” is connected to the “Ref_0” signal which is on “J1” and shared for channel “P0.0” to “P0.3”.

Ref_0	Is for channel P0.0-P0.3	Ref_4	Is for channel P4.0-P4.3
Ref_1	Is for channel P1.0-P1.3	Ref_5	Is for channel P5.0-P5.3
Ref_2	Is for channel P2.0-P2.3	Ref_6	Is for channel P6.0-P6.3
Ref_3	Is for channel P3.0-P3.3	Ref_7	Is for channel P7.0-P7.3
J1_Spare	Is for channel P0.0-P3.3	J2_Spare	Is for channel P4.0-P7.3

All voltages are relative to GND unless otherwise noted.

J1, J2 Pinout (Front)



Signal	Description
Px.y	Line y Port x
GND	Ground connection
NC	No connection

J1, J2 Connector Pin Assignments

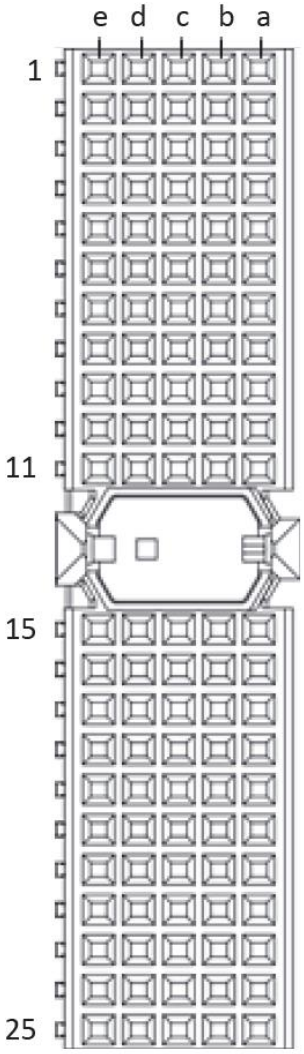
J1, J2 Pinout (Front)

J1	XJ2
P0.0+	I/O_0+
P0.0-	I/O_0-
P0.1+	I/O_1+
P0.1-	I/O_1-
P0.2+	I/O_2+
P0.2-	I/O_2-
P0.3+	I/O_3+
P0.3-	I/O_3-
P1.0+	I/O_4+
P1.0-	I/O_4-
P1.1+	I/O_5+
P1.1-	I/O_5-
P1.2+	I/O_6+
P1.2-	I/O_6-
P1.3+	I/O_7+
P1.3-	I/O_7-
P2.0+	I/O_8+
P2.0-	I/O_8-
P2.1+	I/O_9+
P2.1-	I/O_9-
P2.2+	I/O_10+
P2.2-	I/O_10-
P2.3+	I/O_11+
P2.3-	I/O_11-
P3.0+	I/O_12+
P3.0-	I/O_12-
P3.1+	I/O_13+
P3.1-	I/O_13-
P3.2+	I/O_14+
P3.2-	I/O_14-
P3.3+	I/O_15+
P3.3-	I/O_15-

J2	XJ2
P4.0+	I/O_16+
P4.0-	I/O_16-
P4.1+	I/O_17+
P4.1-	I/O_17-
P4.2+	I/O_18+
P4.2-	I/O_18-
P4.3+	I/O_19+
P4.3-	I/O_19-
P5.0+	I/O_20+
P5.0-	I/O_20-
P5.1+	I/O_21+
P5.1-	I/O_21-
P5.2+	I/O_22+
P5.2-	I/O_22-
P5.3+	I/O_23+
P5.3-	I/O_23-
P5.0+	I/O_24+
P6.0-	I/O_24-
P6.1+	I/O_25+
P6.1-	I/O_25-
P6.2+	I/O_26+
P6.2-	I/O_26-
P6.3+	I/O_27+
P6.3-	I/O_27-
P7.0+	I/O_28+
P7.0-	I/O_28-
P7.1+	I/O_29+
P7.1-	I/O_29-
P7.2+	I/O_30+
P7.2-	I/O_30-
P7.3+	I/O_31+
P7.3-	I/O_31-

Front Panel Signal Descriptions

XJ2 Connector Pinout (Rear)



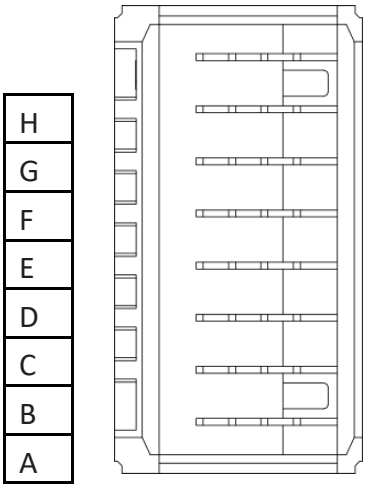
Row	e	d	c	b	a
1	I/O_1-	I/O_1+	NC	I/O_0-	I/O_0+
2	I/O_3-	I/O_3+	NC	I/O_2-	I/O_2+
3	GND	GND	GND	GND	GND
4	I/O_5-	I/O_5+	NC	I/O_4-	I/O_4+
5	I/O_7-	I/O_7+	NC	I/O_6-	I/O_6+
6	GND	GND	GND	GND	GND
7	I/O_9-	I/O_9+	NC	I/O_8-	I/O_8+
8	I/O_11-	I/O_11+	NC	I/O_10-	I/O_10+
9	GND	GND	GND	GND	GND
10	I/O_13-	I/O_13+	NC	I/O_12-	I/O_12+
11	I/O_15-	I/O_15+	NC	I/O_14-	I/O_14+
15	I/O_17-	I/O_17+	NC	I/O_16-	I/O_16+
16	I/O_19-	I/O_19+	NC	I/O_18-	I/O_18+
17	GND	GND	GND	GND	GND
18	I/O_21-	I/O_21+	NC	I/O_20-	I/O_20+
19	I/O_23-	I/O_23+	NC	I/O_22-	I/O_22+
20	GND	GND	GND	GND	GND
21	I/O_25-	I/O_25+	NC	I/O_24-	I/O_24+
22	I/O_27-	I/O_27+	NC	I/O_26-	I/O_26+
23	GND	GND	GND	GND	GND
24	I/O_29-	I/O_29+	NC	I/O_28-	I/O_28+
25	I/O_31-	I/O_31+	NC	I/O_30-	I/O_30+

XJ2 Connector Pin Assignments

Signal	Description
I/O	Input/Output
GND	Ground connection
NC	No connection

XJ2 Connector Signal Descriptions

XJ3 Connector Pinout (Rear)



Pins	Signal
H	Instrument_0+
G	Instrument_0-
F	Instrument_1+
E	Instrument_1-
D	Fault_D
C	Fault_C
B	Fault_B
A	Fault_A

XJ3 Connector Pin Assignments

LED Behavior

LED Name	LED Behavior	Definition of Behavior
PWR	Off	No power present on the board
	Solid green	Power good state
RDY	Off	Module card is unpowered
	Solid green	Card is recognized by the chassis and ready to communicate
	Solid amber	Module card is booting
	Blinking amber	Chassis is communicating with the module card

Error Handling

LED Name	LED Behavior	Actions
PWR	Off	- Checking the power supply of the chassis - Checking the external power supply if used
RDY	Off	- Checking the power supply of the chassis - Checking the external power supply if used
	Solid amber	- Waiting till boot process is finished
	Blinking amber	- Waiting till communication is finished - if communication does not finish, shut down all

Hardware Specifications

Absolute Maximum Ratings			
Property	**Condition**	**Value**	**Comment**
Relative humidity		5% to 95%	Non-condensing
Temperature		0°C – 85°C	
Storage		-40°C-85°C	
Max. Input Voltage	Any Pin	60 Vdc	Limited by connector
Min. Input Voltage	Any Pin	-60 Vdc	Limited by connector
Max. Current rating		1.5 A	2 A transient

Physicals Characteristics			
Property	**Condition**	**Value**	**Comment**
Module dimensions	Excluding ejector	144.32 mm x 30.48 mm x 302 mm (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	For mating connectors and cables, see below
RTI Connector		2 mm 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		2000 m	