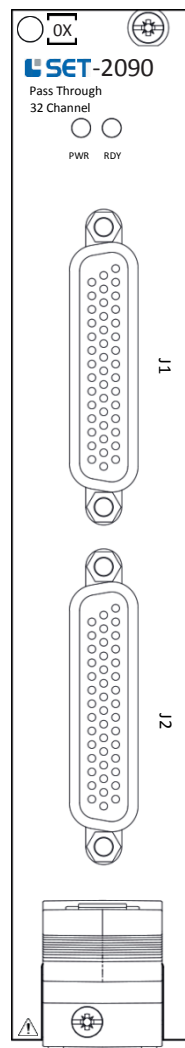TECHNICAL DESCRIPTION
SET-2090
32CH Pass Through

This document 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.com/slsc

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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.)

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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

0 Ohm Widerstände
Restliche Bauteile sind Optional
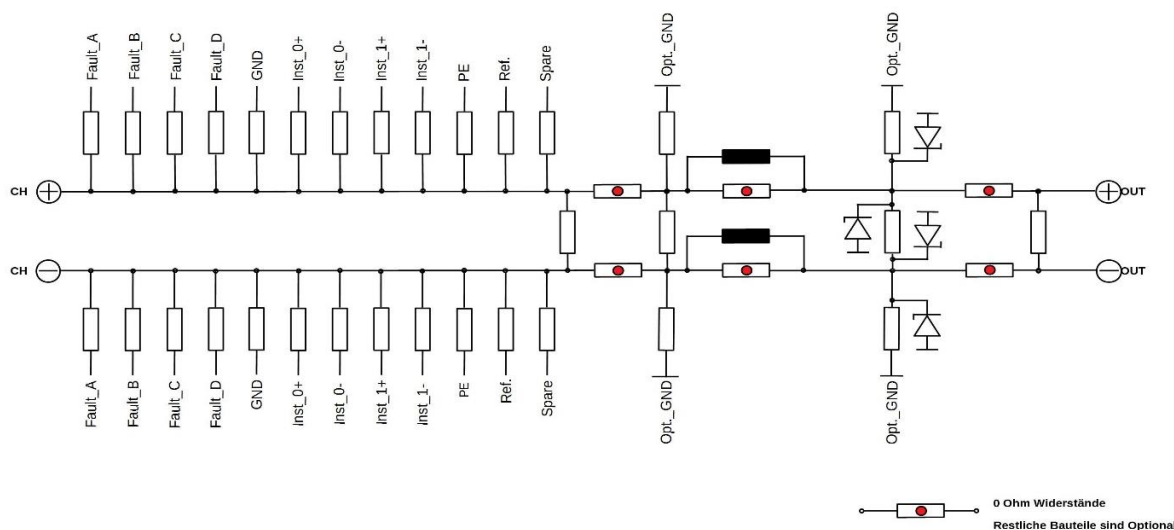
Note   Diagram only shows one channel. All components without a labeling, are optional.

The „Ref." Signal form 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.

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SET-2090 Pinout

J1

| Left Signal	Pin	Pin	Right Signal
		15	P3.2+
	30		P3.2-
P3.3+	44	14	P3.1+
	29		P3.1-
P3.3-	43	13	P3.0+
	28		P3.0-
REF_3	42	12	NC
	27		NC
REF_2	41	11	P2.2+
	26		P2.2-
P2.3+	40	10	P2.1+
	25		P2.1-
P2.3-	39	9	P2.0+
	24		P2.0-
GND	38	8	J1_Spare
	23		GND
GND	37	7	P1.2+
	22		P1.2-
P1.3+	36	6	P1.1+
	21		P1.1-
P1.3-	35	5	P1.0+
	20		P1.0-
REF_1	34	4	NC
	19		NC
REF_0	33	3	P0.2+
	18		P0.2-
P0.3+	32	2	P0.1+
	17		P0.1-
P0.3-	31	1	P0.0+
	16		P0.0-

J2

Left Signal	Pin	Pin	Right Signal
		15	P7.2+
	30		P7.2-
P7.3+	44	14	P7.1+
	29		P7.1-
P7.3-	43	13	P7.0+
	28		P7.0-
REF_7	42	12	NC
	27		NC
REF_6	41	11	P6.2+
	26		P6.2-
P6.3+	40	10	P6.1+
	25		P6.1-
P6.3-	39	9	P6.0+
	24		P6.0-
GND	38	8	J2_Spare
	23		GND
GND	37	7	P5.2+
	22		P5.2-
P5.3+	36	6	P5.1+
	21		P5.1-
P5.3-	35	5	P5.0+
	20		P5.0-
REF_5	34	4	NC
	19		NC
REF_4	33	3	P4.2+
	18		P4.2-
P4.3+	32	2	P4.1+
	17		P4.1-
P4.3-	31	1	P4.0+
	16		P4.0-

Table 1. JR2 Connector Pin Assignments

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

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Table 2. Front Panel Signal Descriptions

J1	XJ2		J2	XJ2
P0.0+	I/O_0+		P4.0+	I/O_16+
P0.0-	I/O_0-		P4.0-	I/O_16-
P0.1+	I/O_1+		P4.1+	I/O_17+
P0.1-	I/O_1-		P4.1-	I/O_17-
P0.2+	I/O_2+		P4.2+	I/O_18+
P0.2-	I/O_2-		P4.2-	I/O_18-
P0.3+	I/O_3+		P4.3+	I/O_19+
P0.3-	I/O_3-		P4.3-	I/O_19-
P1.0+	I/O_4+		P5.0+	I/O_20+
P1.0-	I/O_4-		P5.0-	I/O_20-
P1.1+	I/O_5+		P5.1+	I/O_21+
P1.1-	I/O_5-		P5.1-	I/O_21-
P1.2+	I/O_6+		P5.2+	I/O_22+
P1.2-	I/O_6-		P5.2-	I/O_22-
P1.3+	I/O_7+		P5.3+	I/O_23+
P1.3-	I/O_7-		P5.3-	I/O_23-
P2.0+	I/O_8+		P5.0+	I/O_24+
P2.0-	I/O_8-		P6.0-	I/O_24-
P2.1+	I/O_9+		P6.1+	I/O_25+
P2.1-	I/O_9-		P6.1-	I/O_25-
P2.2+	I/O_10+		P6.2+	I/O_26+
P2.2-	I/O_10-		P6.2-	I/O_26-
P2.3+	I/O_11+		P6.3+	I/O_27+
P2.3-	I/O_11-		P6.3-	I/O_27-
P3.0+	I/O_12+		P7.0+	I/O_28+
P3.0-	I/O_12-		P7.0-	I/O_28-
P3.1+	I/O_13+		P7.1+	I/O_29+
P3.1-	I/O_13-		P7.1-	I/O_29-
P3.2+	I/O_14+		P7.2+	I/O_30+
P3.2-	I/O_14-		P7.2-	I/O_30-
P3.3+	I/O_15+		P7.3+	I/O_31+
P3.3-	I/O_15-		P7.3-	I/O_31-

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XJ2 Connector Pinout
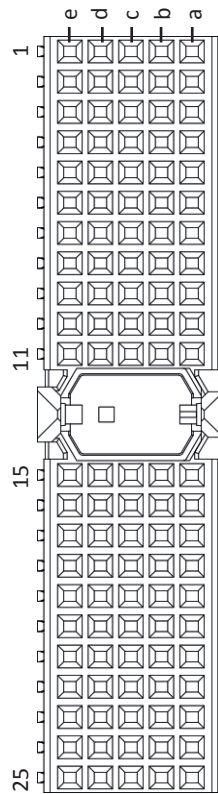
Table 3. XJ2 Connector Pin Assignments

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+

Table 3. XJ2 Connector Pin Assignments (Continued)

Row	e	d	C	b	a
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+

Table 4. XJ2 Connector Signal Descriptions

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

XJ3
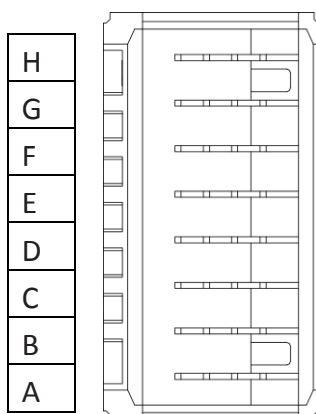
Table 2. XJ2 Connector Pin Assignments

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

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LED Behavior

LED Name	LED Behavior	Definition of Behavior
Power	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
Power	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 operations and reboot chassis

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Issue 03   30/07/2019

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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	60Vdc	Limited by connector
Min. Input Voltage	Any Pin	-60Vdc	Limited by connector
Max. Current rating		1.5A	2A transient

Physicals 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	For mating connectors and cables, see below
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	

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