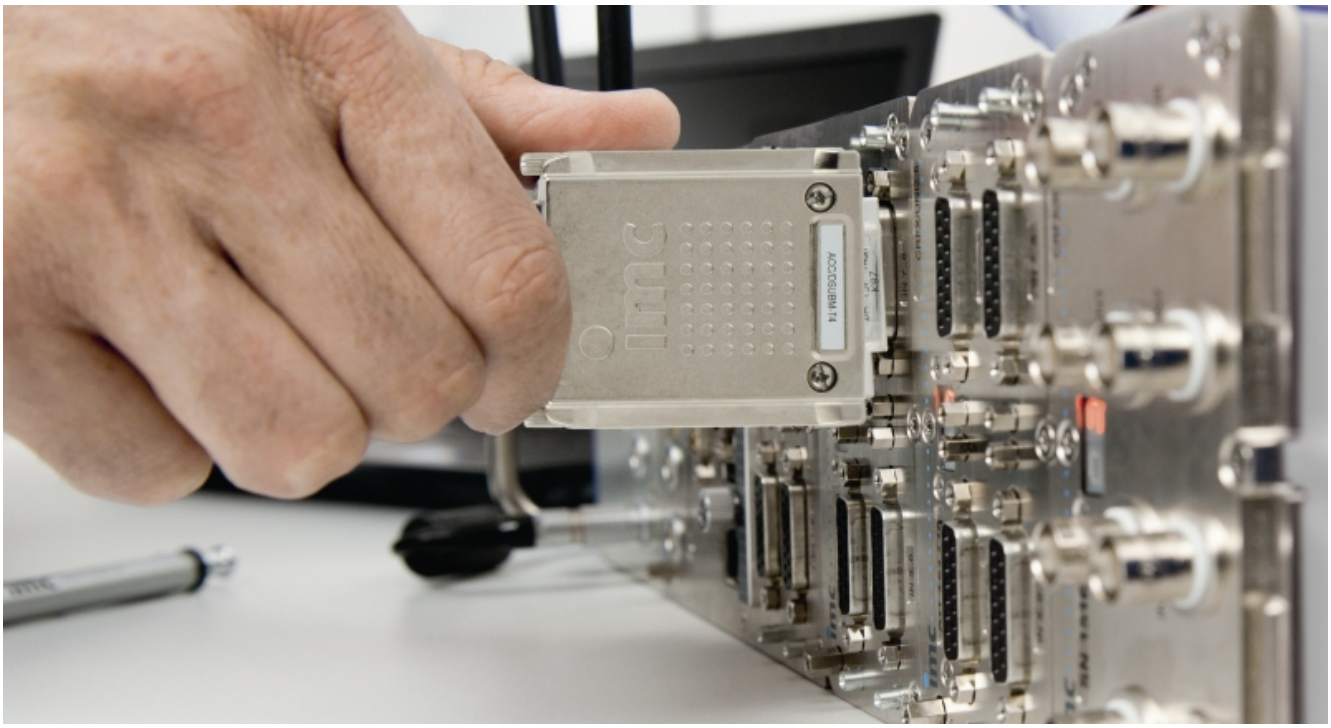
Pin configuration



Ther terminal plug is an adapter for connecting the DSUB-15 sockets which are provided with most imc modules as the standard signal terminal connector to screw terminals directly clamped to cables. It is available in a number of varieties either as a metal connector or as a sealed version (IP65).

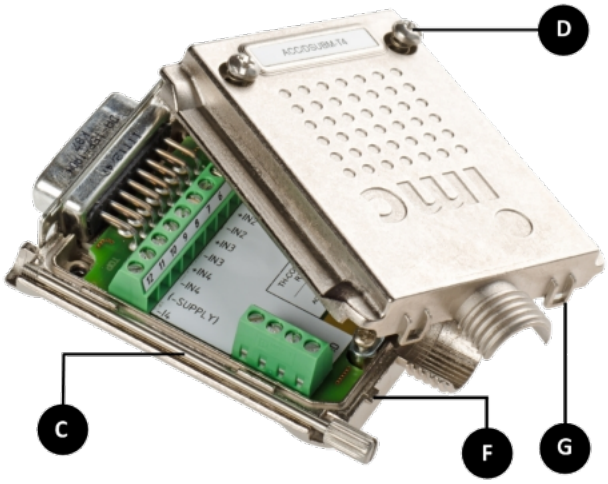
7 Pin configuration

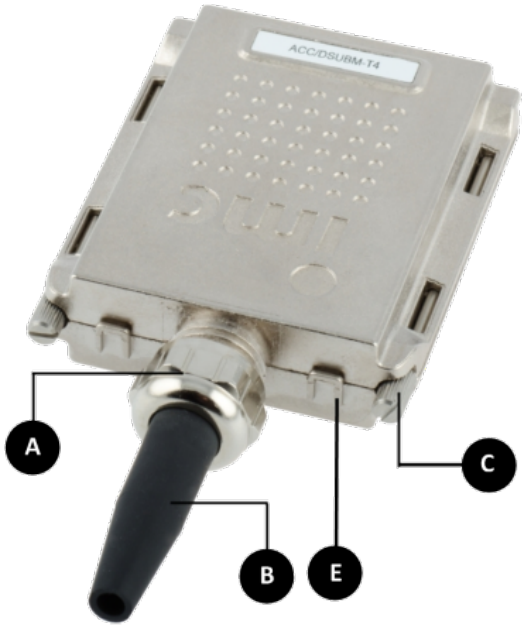
7.1 Metal connector

ACC/DSUBM-xxx

Open the Metal connector:

1. Unscrew the cable fitting (cable gland)
2. Remove the bend protection
3. Unscrew the lid screws
4. Lift the lid in the DSUB connection area and unfasten the nose of the slot





A: Pressure nut
B: Bend protection
C: Fastening screw for the devices' front pane
D: Lid screws
E: Locking key (Nose / Slot)
G: Slot
F: Nose

Close the Metal connector:

1. Assemble the lid by snapping the nose into the slot (see the following picture)
2. Audible click when the lid snaps in the front of the DSUB pod
3. Insert the bend protection
4. The pressure nut must be screwed back on
5. The lid screws can be tightened

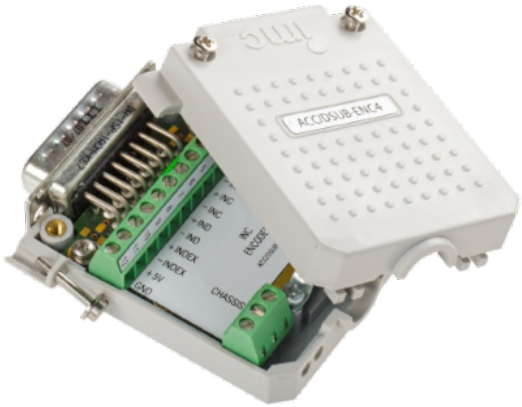
7.2 Connecting DSUB-15 adapter plug

The Standard connector 498 is a 1:1 DSUB-15 to screw terminal adapter. It can be used for all modules which come with the corresponding pin configuration. Apart from specific labeling, those connectors are electrically identical.

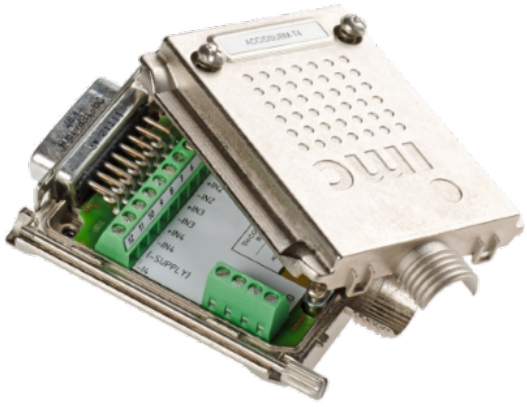
The Special connector 499 do not offer direct adaption from the DSUB pins to the screw terminals, but instead come with extra functions:

For current measurement (up to 50 mA) with voltage channels the Shunt connector 499 (ACC/DSUB(M)-I2 and I4) have a built-in 50 Ω shunt. The scaling factor 0.02 A/V must be set in order to display the current value.

For temperature measurements, a special, patented Thermo connector 499 (ACC/DSUB(M)-T4) is available. This DSUB-15 connector is suited for measurement of voltages as well as temperatures with PT100 and thermocouples with integrated cold junction compensation (CJC). Any types of thermocouples can be connected at the differential inputs (+IN and -IN). It also has additional "auxiliary contacts" for connecting PT100 in 4-wire configurations, where the reference current loop is already pre-wired internally.The Thermo connector can also be used for normal voltage measurement.



Plastic connector (ACC/DSUB-)



Metal connector (ACC/DSUBM-)

The Universal connector 499 (ACC/DSUB(M)-UNI2) contains an additional built-in PT1000 temperature sensor providing cold junction compensation (CJC) for thermocouple measurement. If this function is not required, it is also possible to use a Standard connector for other measurement types.

The ICP connector 499 (ACC/DSUB(M)-ICP2 and ICP4) provide a current supply source as well as a capacitive coupling.

The TEDS connectors 500 are special, TEDS capable (according to IEEE1451.4 for the use with imc Plug & Measure) imc plugs for saving sensor information. The sensor-TEDS are serial PROMS which are connected with an amplifier channel via a digital signal line (One-wire-PROM). For a detailed description of the use of TEDS, see the imc STUDIO User's Manual.

Note on the screw terminals of the connector

To connect the measurement leads with the screw terminals, suitable leads should have a maximum cross section of 1.5 mm2 incl. cable end-sleeve.

The terminals' screw heads only have secure electrical contact once they are tightened to a connection wire. For this reason, a control measurement (for instance with multimeter probe tips) at "open" terminals can falsely mimic a missing contact!

Cable shielding must be connected at CHASSIS (DSUB frame) as a rule. At some connectors, V_{CC} (5 V) is available, with a maximum load current of typically 135 mA per plug.

7.2.1 Overview of the modules and connectors

		Voltage	Current	Bridge	Thermocouple	Current feed sensors IEPE (ICP)	Universal
Analog amplifier	UNI2-8	UNI2 B2	UNI2 I2	UNI2 B2	UNI2	ICP2	UNI2
	UNI-4	UNI2	UNI2 I2	UNI2 B2	UNI2	ICP2	UNI2
	DCB2-8	B2 UNI2	I2	B2 UNI2		ICP2	
	BR2-4	B2	I2	B2		ICP2	
	LV-16	U4	I4				
	LV3-8	U4	I4			ICP4	
	SC2-32	U4	I4			ICP4	
	OSC-16	U4 T4	I4		T4		
	C-8	U4 T4	I4		T4		
	ISO2-8	U4 T4	I4		T4	ICP4	
	ISOF-8	U4 T4	I4		T4	ICP4	

		INC.-ENCODER	FREQUENCY	DIGITAL IN	DIGITAL OUT	DIGITAL OUT HIGH CURRENT	RELAIS	ANALOG OUT
Digital modules	ENC-4, HRENC-4	ENC4, ENC4-IU						
	FRQ2-4		FRQ2					
	DI-16			DI8				
	DIOINC	ENC4		DI2-8			REL4	
	DIO-PL2			DI8			REL4	
	DI2-16			DI4-8				
	DO-16				DO-8			
	DO-16-HC					DO8-HC		
	DAC-8							DAC4
	DI16-DO8-ENC4	ENC4		DI4-8	DO-8			
	DI8-DO8-ENC4-DAC4	ENC4		DI4-8	DO-8			DAC4

7.3 DSUB-15 pin configuration

In general: DSUB pin 1 is internally reserved.

7.3.1 Standard and Universal connector

Plastic		Metal connector			
ACC/DSUB-		ACC/DSUBM-		B2	U4
DSUB-15 Pin	Terminal	DSUB-15 Pin	Terminal	BRIDGE	VOLTAGE
9	1	9	1	+VB1	(RES.)
2	2	2	2	+IN1	+IN1
10	3	10	3	-IN1	-IN1
3	4	3	4	-VB1	(+SUPPLY)
11	**5**	**11**	**5**	**[+SENSE1_1/4B1]**	+IN2
4	6	4	6	-SENSE1	-IN2
12	7	12	7	+VB2	(-SUPPLY)
5	8	5	8	+IN2	+IN3
13	9	13	9	-IN2	-IN3
6	10	6	10	-VB2	**(GND) ***
14	**11**	**14**	**11**	**[+SENSE2_1/4B2]**	+IN4
7	12	7	12	-SENSE2	-IN4
15	14	15	15	GND	(GND)
8	17	8	18	+5V	(+5V)
	13		13		
	18		14		
Case	15	Case	16	CHASSIS	CHASSIS
Case	16	Case	17	CHASSIS	CHASSIS

[ ] : if SEN-SUPPLY with ±15V option then this pin = -15V

[ ] : 1/4 Bridge with UNI2-8, DCB2-8, B-8, UNI-4 and +SENSE with BR2-4, UNI-4

* if SEN-SUPPLY with ±15V option then pin 6 is the reference

Universal connector

Plastic		Metal connector			
ACC/DSUB-		ACC/DSUBM-		UNI2	UNI2
DSUB-15 Pin	Terminal	DSUB-15 Pin	Terminal	UNIVERSAL	UNIVERSAL
9	1	9	1	+VB1	+VB1
2	2	3	2	+IN1	-VB1
10	3	2	3	-IN1	+IN1
3	4	10	4	-VB1	-IN1
11	**5**	**11**	**5**	**I1_1/4B1***	**I1_1/4B1***
4	6	4	6	-SENSE1	-SENSE1
12	7	5	7	+VB2	+IN2
5	8	13	8	+IN2	-IN2
13	9	**14**	**9**	-IN2	**I2_1/4B2***
6	10	7	10	-VB2	-SENSE2
14	**11**	12	11	**I2_1/4B2***	+VB2
7	12	6	12	-SENSE2	-VB2
15	14	15	15	GND	(GND)
8	17	8	18	+5V	(+5V)
	13		13		
	18		14		
Case	15	Case	16	CHASSIS	CHASSIS
Case	16	Case	17	CHASSIS	CHASSIS

*** if special version with ±15V option then this pin = -15V**

(+5 V): Note concerning ACC/DSUB(M)-U4 connector: +5 V (DSUB pin 8) for C-8, OSC-16 not available

Plastic		Metal connector								
ACC/DSUB-		ACC/DSUBM-		ENC4, ENC4-IU	FRQ2	DI8	DI2-8	DI4-8	DO8	REL	DAC4
DSUB-15 Pin	Terminal	DSUB-15 Pin	Terminal	INC.-ENCODER	FREQUENCY	DIGITAL IN	DIGITAL IN	DIGITAL IN	DIGITAL OUT	RELAIS	ANALOG OUT
9	1	9	1	+INA	+IN1	BIT1	+IN1	+IN1	BIT1	IN1	
2	2	2	2	-INA	-IN1	BIT2	+IN2	+IN2	BIT2	IN2	DAC1
10	3	10	3	+INB		BIT3	-IN1/2	+IN3	BIT3	IN3	AGND
3	4	3	4	-INB		BIT4	+IN3	+IN4	BIT4	IN4	
11	5	11	5	+INC	+IN2	BIT5	+IN4	-IN1/2/3/4	BIT5	OFF1	DAC2
4	6	4	6	-INC	-IN2	BIT6	-IN3/4	+IN5	BIT6	OFF2	AGND
12	7	12	7	+IND		BIT7	+IN5	+IN6	BIT7	OFF3	
5	8	5	8	-IND		BIT8	+IN6	+IN7	BIT8	OFF4	DAC3
13	9	13	9	+INDEX		CLK	-IN5/6	+IN8		ON1	AGND
6	10	6	10	-INDEX			+IN7	-IN5/6/7/8		ON2	
14	11	14	11	+5V	+5V	HCOM	+IN8	+HCOM	HCOM	ON3	DAC4
7	12	7	12	GND *	GND	LCOM	-IN7/8	-IN7/8	LCOM	ON4	AGND
15	14	15	15	(-SUPPLY)		LCOM	LEVEL	LEVEL	LCOM	(GND)	
8	17	8	18	(+SUPPLY)		LEVEL	LCOM	LCOM	OPDRN	(+5V)	
	13		13								
	18		14								
Case	15	Case	16	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS
Case	16	Case	17	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS	CHASSIS

with **HRENC-4**: INDEX only on **CON1**

with **ENC-4**: INDEX only on **CON2**

* if SEN-SUPPLY with ±15 V option then pin 7 is the reference

7.3.2 Special connector

Plastic

ACC/DSUB-		T4
DSUB-15 Pin	Terminal	TH-COUPLE/RTD
9	1	+I1
2	2	+IN1
10	3	-IN1
	4	+I2
11	5	+IN2
4	6	-IN2
	7	+I3
5	8	+IN3
13	9	-IN3
6	10	-I4
14	11	+IN4
7	12	-IN4
	14	-I2
	17	-I3
	13	-I1
	18	+I4
Case	15	CHASSIS
Case	16	CHASSIS

Metal connector

ACC/DSUBM-		T4
DSUB-15 Pin	Terminal	TH-COUPLE/RTD
9	1	+I1
3	2	(+SUPPLY)
2	3	+IN1
10	4	-IN1
11	5	+IN2
4	6	-IN2
5	7	+IN3
13	8	-IN3
14	9	+IN4
7	10	-IN4
12	11	(-SUPPLY)
6	12	-I4 (GND)*
	15	-I3
	18	+I2
15	13	GND
	14	+I3
	16	+I4
	17	-I1
	19	-I2
Case	20	CHASSIS

Plastic Metal connector

ACC/DSUB-		ACC/DSUBM-		I4	I2
DSUB-15 Pin	Terminal	DSUB-15 Pin	Terminal	CURRENT	CURRENT
9	1	9	1	(RES.)	+SUPPLY1
2	2	2	2	+IN1	+IN1
10	3	10	3	-IN1	-IN1
3	4	3	4	(+SUPPLY)	-SUPPLY1
11	5	11	5	+IN2	
4	6	4	6	-IN2	
12	7	12	7	(-SUPPLY)	+SUPPLY2
5	8	5	8	+IN3	+IN2
13	9	13	9	-IN3	-IN2
6	10	6	10	(GND)	-SUPPLY2
14	11	14	11	+IN4	
7	12	7	12	-IN4	
15	14	15	15	(GND)	(GND)
8	17	8	18	(+5V)	(+5V)
	13		13		
	18		14		
Case	15	Case	16	CHASSIS	CHASSIS
Case	16	Case	17	CHASSIS	CHASSIS
			19		
			20		

* if SEN-SUPPLY with ±15V option then pin 6 is the reference

Plastic

ACC/DSUB-	ICP4	ICP2
Terminal	ICP	ICP
1	+ICP1	+ICP1
2	-ICP1	-ICP1
3	+ICP2	
4	-ICP2	
5	+ICP3	+ICP2
6	-ICP3	-ICP2
7	+ICP4	
8	-ICP4	
9		
10		
11		
12		
14	CHASSIS	CHASSIS
17	+5V	+5V
13	CHASSIS	CHASSIS
18	AGND	AGND
15	CHASSIS	CHASSIS
16	CHASSIS	CHASSIS

Metal connector

ACC/DSUBM-		DO8-HC
DSUB-15 Pin	Terminal	DIGITAL OUT HIGH CURRENT
9	1	BIT1
2	2	BIT2
10	3	BIT3
3	4	BIT4
11	5	BIT5
4	6	BIT6
12	7	BIT7
5	8	BIT8
13	9	HCOM_1-4
6	10	LCOM_1-4
14	11	HCOM_5-8
7	12	LCOM_5-8
15	15	LCOM
8	18	OPDRN
	13	
	14	
Case	16	CHASSIS
Case	17	CHASSIS

Plastic connector

ACC/DSUB-		SYNTH4
DSUB-15 Pin	Terminal	SYNTHESIZER
9	1	
2	2	AOUT1
10	3	AGND
3	4	
11	5	AOUT2
4	6	Vcc
12	7	HCOM
5	8	AOUT3
13	9	AGND
6	10	DIN1
14	11	AOUT4
7	12	LCOM
	13	
15	14	DI_LEVEL/DG
	13	
8	17	OPDRN
Case	15	CHASSIS
Case	16	CHASSIS

Metal connector

ACC/DSUBM-		SYNTH4
DSUB-15 Pin	Terminal	SYNTHESIZER
9	1	DOUT1
2	2	AOUT1
10	3	AGND
3	4	DOUT2
11	5	AOUT2
4	6	+5V
12	7	HCOM
5	8	AOUT3
13	9	AGND
6	10	DIN1
14	11	AOUT4
7	12	LCOM
15	15	LEVEL
8	18	OPDRN
	13	
	14	
⏚	4	CHASSIS
⏚	17	CHASSIS

7.3.3 TEDS connector

Plastic

ACC/DSUB-TEDS-		U4	B2
DSUB-15 Pin	Terminal	VOLTAGE	BRIDGE
9	1	(RES.)	+VB1
2	2	+IN1	+IN1
10	3	-IN1	-IN1
3	4	(+SUPPLY)	-VB1
11	5	+IN2	**+SENSE1_1/4B1**
4	6	-IN2	-SENSE1
12	7	(-SUPPLY)	+VB2
5	8	+IN3	+IN2
13	9	-IN3	-IN2
6	10	GND*	-VB2
14	11	+IN4	**+SENSE2_1/4B2**
7	12	-IN4	-SENSE2
15	14	TEDS2	GND
8	17	TEDS3	+5V
	13	TEDS1	TEDS1
	18	TEDS4	TEDS2
Case	15	CHASSIS	CHASSIS
Case	16	TEDS_GND	TEDS_GND

* if SEN-SUPPLY with ±15V option then pin 6 is reference

Metal connector

ACC/DSUBM-TEDS-		U4	B2
DSUB-15 Pin	Terminal	VOLTAGE	BRIDGE
9	1	(RES.)	+VB1
2	2	+IN1	+IN1
10	3	-IN1	-IN1
3	4	(+SUPPLY)	-VB1
11	5	+IN2	**[+SENSE1_1/4B1]**
4	6	-IN2	-SENSE1
12	7	(-SUPPLY)	+VB2
5	8	+IN3	+IN2
13	9	-IN3	-IN2
6	10	GND	-VB2
14	11	+IN4	**[+SENSE2_1/4B2]**
7	12	-IN4	-SENSE2
15	15	TEDS_GND	(GND), TEDS_GND
8	18	(+5V)	(+5V)
	13	TEDS1	TEDS1
	14	TEDS2	TEDS2
Case	16	CHASSIS	CHASSIS
Case	17	CHASSIS	CHASSIS
	19	TEDS3	
	20	TEDS4	

[ ] : if SEN-SUPPLY with ±15V option then this pin = -15V

[ ] : 1/4 Bridge with UNI2-8, DCB2-8, B-8 and +SENSE with BR2-4

Universal connector

Plastic

ACC/DSUB-TEDS-UNI2		
DSUB-15 Pin	Terminal	UNIVERSAL
9	1	+VB1
2	2	+IN1
10	3	-IN1
3	4	-VB1
11	**5**	**I1_1/4B1***
4	6	-SENSE1
12	7	+VB2
5	8	+IN2
13	9	-IN2
6	10	-VB2
14	**11**	**I2_1/4B2***
7	12	-SENSE2
15	14	(GND)
8	17	(+5V)
	13	TEDS1
	18	TEDS2
Case	15	CHASSIS
Case	16	TEDS_GND

*** if SEN-SUPPLY with ±15V option then this pin = -15V**

Metal connector

ACC/DSUBM-TEDS-UNI2		
DSUB-15 Pin	Terminal	UNIVERSAL
9	1	+VB1
3	2	-VB1
2	3	+IN1
10	4	-IN1
11	**5**	**I1_1/4B1***
4	6	-SENSE1
5	7	+IN2
13	8	-IN2
14	**9**	**I2_1/4B2***
7	10	-SENSE2
12	11	+VB2
6	12	-VB2
15	15	TEDS_GND
8	18	(+5V)
	13	TEDS2
	14	TEDS1
Case	16	CHASSIS
Case	17	CHASSIS

Plastic

ACC/DSUB-TEDS-T4		
DSUB-15 Pin	Terminal	TH-COUPLE RTD
9	1	+IREF
2	2	+IN1
10	3	-IN1
3	4	
11	5	+IN2
4	6	-IN2
12	7	
5	8	+IN3
13	9	-IN3
6	10	-IREF
14	11	+IN4
7	12	-IN4
15	14	TEDS2
8	17	TEDS3
	13	TEDS1
	18	TEDS4
Case	15	CHASSIS
	16	TEDS_GND

Metal connector

ACC/DSUBM-TEDS-T4		
DSUB-15 Pin	Terminal	TH-COUPLE RTD
9	1	+I1
3	2	(+SUPPLY)
2	3	+IN1
10	4	-IN1
11	5	+IN2
4	6	-IN2
5	7	+IN3
13	8	-IN3
14	9	+IN4
7	10	-IN4
12	11	(-SUPPLY)
6	12	-I4
	15	-I3
	18	TEDS4
15	13	TEDS_GND
	14	+I3
	16	+I4
	17	TEDS3
	19	TEDS2
	20	TEDS1
	21	-I1
	22	+I2
	23	-I2
Case	24	CHASSIS

Plastic

ACC/DSUB-TEDS-		I4	I2
DSUB-15 Pin	Terminal	CURRENT	CURRENT
9	1	(RES.)	+SUPPLY1
2	2	+IN1	+IN1
10	3	-IN1	-IN1
3	4	(+SUPPLY)	-SUPPLY1
11	5	+IN2	
4	6	-IN2	
12	7	(-SUPPLY)	+SUPPLY2
5	8	+IN3	+IN2
13	9	-IN3	-IN2
6	10	(GND)	-SUPPLY2
14	11	+IN4	
7	12	-IN4	
15	14	TEDS2	TEDS_GND
8	17	TEDS3	(+5V)
	13	TEDS1	TEDS1
	18	TEDS4	TEDS2
Case	15	CHASSIS	CHASSIS
	16	TEDS_GND	CHASSIS

Metal connector

ACC/DSUBM-TEDS-		I4	I2
DSUB-15 Pin	Terminal	CURRENT	CURRENT
9	1	(RES.)	+SUPPLY1
2	2	+IN1	+IN1
10	3	-IN1	-IN1
3	4	(+SUPPLY)	-SUPPLY1
11	5	+IN2	
4	6	-IN2	
12	7	(-SUPPLY)	+SUPPLY2
5	8	+IN3	+IN2
13	9	-IN3	-IN2
6	10	GND	-SUPPLY2
14	11	+IN4	
7	12	-IN4	
15	15	TEDS_GND	TEDS_GND
8	18	(+5V)	(+5V)
	13	TEDS1	TEDS1
	14	TEDS2	TEDS2
Case	16	CHASSIS	CHASSIS
Case	17	CHASSIS	CHASSIS
	19	TEDS3	
	20	TEDS4	