

**1 YEAR**  
WARRANTY



# OMEGA® User's Guide



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**DRSL SERIES DIN RAIL ISOLATORS  
and SIGNAL CONDITIONERS  
DRSL-TC, DRSL-RTD, DRSL-TC-ISO,  
DRSL-RTD-ISO, DRSL-TEMP,  
and DRSL-RTD-LP**



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, human applications.

# DRSL SERIES OF TEMPERATURE SIGNAL CONDITIONERS

DRSL-TC / DRSL-RTD / DRSL-TC-ISO / DRSL-RTD-ISO /  
DRSL-TEMP / DRSL-RTD-LP

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**GENERAL**



**HAZARD-  
OUS  
VOLTAGE**



**CAUTION**

## **WARNING**

To avoid the risk of electric shock and fire, the safety instructions of this guide must be observed and the guidelines followed. The specifications must not be exceeded, and the device must only be applied as described in the following. Prior to the commissioning of the device, this installation guide must be examined carefully. Only qualified personnel (technicians) should install this device. If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired. Until the device is fixed, do not connect hazardous voltages to the device.

**Repair of the device must be done by OMEGA Engineering only.**

In applications where hazardous voltage is connected to in-/outputs of the device, sufficient spacing or isolation from wires, terminals and enclosure - to surroundings (incl. neighbouring devices), must be ensured to maintain protection against electric shock.

Potential electrostatic charging hazard. To avoid the risk of explosion due to electrostatic charging of the enclosure, do not handle the units unless the area is known to be safe, or appropriate safety measures are taken to avoid electrostatic discharge.

## **SYMBOL IDENTIFICATION**



**Triangle with an exclamation mark:** Read the manual before installation and commissioning of the device in order to avoid incidents that could lead to personal injury or mechanical damage.



**The CE mark** proves the compliance of the device with the essential requirements of the directives.

# SAFETY INSTRUCTIONS

## RECEIPT AND UNPACKING

Unpack the device without damaging it. The packing should always follow the device until this has been permanently mounted. Check at the receipt of the device whether the type corresponds to the one ordered.

## ENVIRONMENT

Avoid direct sunlight, dust, high temperatures, mechanical vibrations and shock, as well as rain and heavy moisture. If necessary, heating in excess of the stated limits for ambient temperatures should be avoided by way of ventilation.

Can be used in overvoltage Category II and Pollution Degree 2. The devices are designed to be safe at least under an altitude up to 2 000 m.

## MOUNTING

Mounting and connection of the device should comply with national legislation for mounting of electric materials, i.e. wire cross section, protective fuse, and location. Descriptions of input / output and supply connections are shown in this installation guide and on the side label.

The device is provided with field wiring terminals and shall be supplied from a Power Supply having double / reinforced insulation. A power switch should be easily accessible and close to the device. The power switch shall be marked as the disconnecting unit for the device.

DRSL Series must be mounted on a DIN rail according to EN 60715.

## UL installation

Use 60/75°C copper conductors only.

Wire size ..... AWG 26-12

UL file number..... E70366

The device is an Open Type Listed Process Control Equipment. To prevent injury resulting from accessibility to live parts the equipment must be installed in an enclosure.

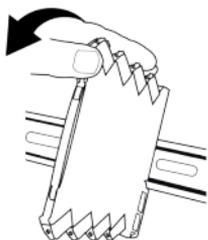
The power Supply unit must comply with NEC Class 2, as described by the National Electrical Code® (ANSI / NFPA 70).

**Cleaning**

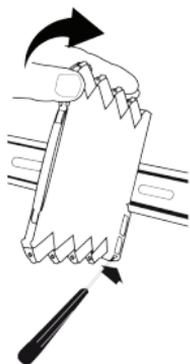
When disconnected, the device may be cleaned with a cloth moistened with distilled water.

## MOUNTING ON DIN RAIL

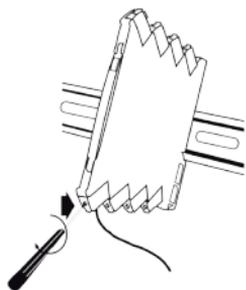
The DRSL devices can easily be mounted on a standard 35 mm DIN rail.



Remove the DRSL Series units from the rail by lifting the DIN rail mounting clip.

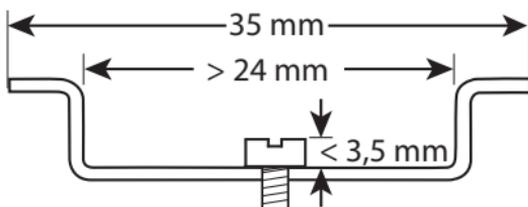


Wire size AWG 26-12 / 0.13 x 2.5 mm<sup>2</sup> stranded wire.  
Screw terminal torque 0.5 Nm.

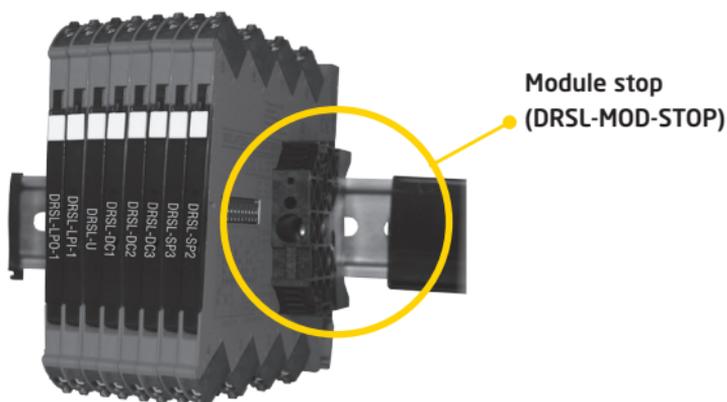


## INSTALLATION ON DIN RAIL

To avoid short circuit between the power rail connectors on the DRSL-TC-ISO and DRSL-RTD-ISO devices and the screws holding the 7.5 mm DIN rail, the head of the screws shall be no more than 3.5 mm high.

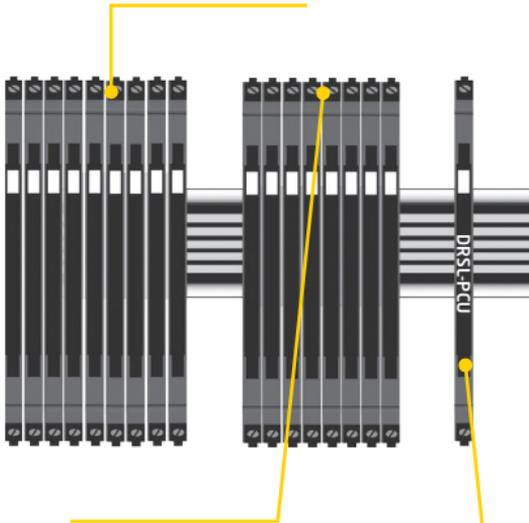


## MODULE STOP



## FLEXIBLE SUPPLY

The DRSL-TC, DRSL-RTD, DRSL-TC-ISO, and DRSL-RTD-ISO devices are powered by 24 VDC +/- 30%. 2.5 A equals 60 W - this means that up to 85 units can be energized by connecting the source in parallel with the power terminals of each unit. **External protective fuse: 2.5 A.**



### Power rail solution:

Alternately, you can connect 24 VDC to one DRSL-TC-ISO or DRSL-RTD-ISO device, which will energize up to 10 other units on the power rail.

**External protective fuse: 0.4 A.**

### Power rail solution:

The DRSL-PCU power connector unit allows easy connection of your 24 VDC/2.5 A source to the power rail. Up to 85 of the DRSL-TC-ISO and DRSL-RTD-ISO units can be powered this way.

**External protective fuse: 2.5 A.**

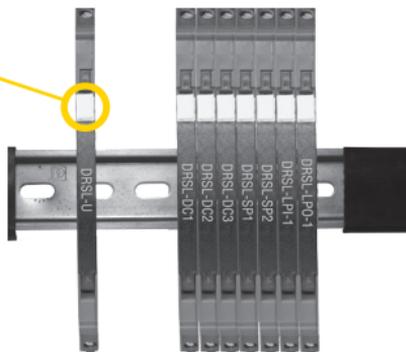
### External fuse characteristics:

The 2.5 A fuse must break after not more than 120 seconds at 6.4 A.

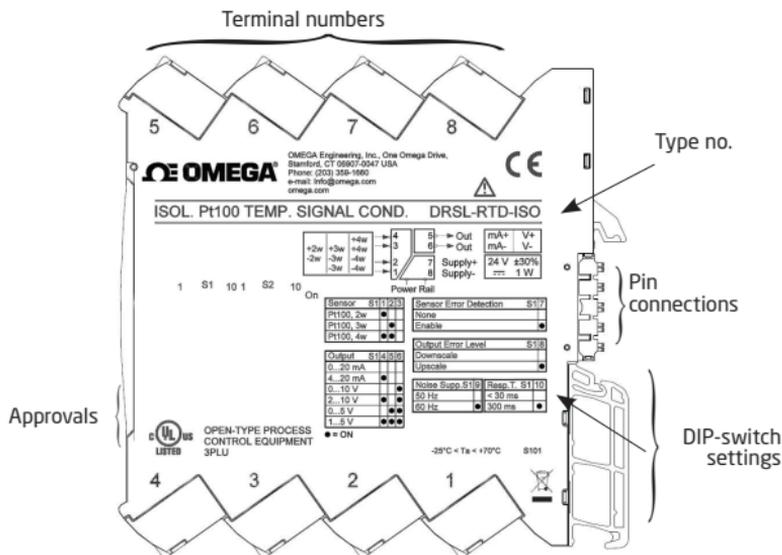
## MARKING

The hinged cover of the DRSL series has a space designed to accept a snap-on marker, which can be used to identify individual units.

This space measures 5 x 7.5 mm, and markers from Weidmuller's MultiCard System, type MF 5/7.5, are suitable.



## SIDE LABEL



# TEMPERATURE SIGNAL CONDITIONERS

- *Converts process measurements from Pt100, TC J and K temperature sensors to voltage or current outputs*
- *Multiple pre-calibrated temperature ranges are selectable via DIP-switches*
- *High accuracy < 0.05% and excellent 50/60 Hz noise suppression*
- *Fast signal response time < 30 ms*
- *Slimline 6 mm housing*

## Applications

- The temperature signal conditioners measure standard 2-, 3- or 4-wire Pt100 and/or TC J & K temperature sensors, and provides an analog voltage or current output.
- High 3 port isolation in the types DRSL-TC-ISO and DRSL-RTD-ISO provide surge suppression and protects the control system from transients and noise.
- The loop powered devices type DRSL-TEMP also have high 2-port galvanic separation to eliminate ground loops.

## Technical characteristics

- High conversion accuracy, better than 0.05% of selected range.
- A visible green LED indicates operational status of the DRSL-TC, DRSL-RTD, DRSL-TC-ISO AND DRSL-RTD-ISO units and status of the input sensor.
- All terminals are protected against overvoltage and polarity error.
- Meeting the NAMUR NE21 recommendations, the DRSL devices ensure top measurement performance in harsh EMC environments.
- The devices meet the NAMUR NE43 standard defining out of range and sensor error output values.
- High galvanic isolation of 2.5 kVAC (DRSL-TC-ISO, DRSL-RTD-ISO, AND DRSL-TEMP).
- Excellent signal/noise ratio of > 60 dB.

## Mounting / installation

- Easy configuration of more than 1000 factory calibrated measurement ranges using DIP-switches.
- The narrow 6 mm housing and very low power consumption allows up to 165 units to be mounted per meter of DIN rail, without any air gap between units.
- Wide temperature operation range of -25...+70°C.

## Order codes:

	Input				Output			LED	Supply	Isolated
	TC			Pt100	Current		Voltage			
	J & K	Int. CJC	Ext. CJC	2-, 3-, 4-wire	Active	Passive				
DRSL-TC	✓	✓			✓		✓	✓	24 VDC	
DRSL-RTD				✓	✓		✓	✓	24 VDC	
DRSL-TC-ISO	✓	✓	✓		✓		✓	✓	24 VDC / power rail	2.5 kV
DRSL-RTD-ISO				✓	✓		✓	✓	24 VDC / power rail	2.5 kV
DRSL-TEMP	✓	✓	✓	✓		✓			Loop-powered	2.5 kV
DRSL-RTD-LP				✓		✓			Loop-powered	

## Accessories

Type	Function
DRSL-PCU	Power rail connector unit - DRSL-TC-ISO, DRSL-RTD-ISO
DRSL-PWR-RAIL	Power rail - 7.5 or 15 mm - DRSL-TC-ISO, DRSL-RTD-ISO
DRSL-MOD-STOP	Module stop

## Specifications

### Environmental conditions:

Specifications range .....	-25°C to +70°C
Storage temperature .....	-40°C to +85°C
Calibration temperature .....	20...28°C
Relative humidity.....	< 95% RH (non-cond.)
Protection degree.....	IP20 / EN60529
Installation.....	Pollution degree 2 and overvoltage category II

### Mechanical specifications:

Dimensions (HxWxD).....	113 x 6.1 x 115 mm
Weight approx. ....	70 g
DIN rail type.....	DIN EN 60715 - 35 mm
Wire size .....	0.13...2.5 mm <sup>2</sup> / AWG 26...12 stranded wire
Screw terminal torque .....	0.5 Nm

## Common electrical specifications:

Supply voltage, 24 VDC nom. ....	16.8...31.2 VDC
Power consumption, max. ....	0.7 W
Loop-powered:	
DRSL-TEMP .....	5.5...35 VDC
DRSL-RTD-LP .....	3.3...35 VDC
Isolation voltage, test.....	2.5 kVAC (reinforced)
Isolation voltage, working.....	300 VAC / 250 VAC
Signal / noise ratio .....	> 60 dB
Signal dynamics, input.....	23 bit
Signal dynamics, output .....	18 bit
Response time, fixed or selectable.....	< 30 ms / 300 ms
Incorrect DIP-sw setting identification:	
Supplied.....	0 V / 0 mA output; LED 0.5 s / 1 Hz
Loop-powered .....	3.5 mA output

Accuracy - the greater of the basic and general value is valid				
Device	Input	Basic accuracy	General accuracy	Temperature coefficient
DRSL-RTD-ISO DRSL-TEMP	Pt100	$\leq 0.1^{\circ}\text{C}$	$\leq \pm 0.05\%$ of selected range	$0.02^{\circ}\text{C}/^{\circ}\text{C}$ (basic) or $\leq \pm 0.01\%$ of selected range/ $^{\circ}\text{C}$
DRSL-TC-ISO DRSL-TEMP	TC	$\leq 0.5^{\circ}\text{C}$		$0.1^{\circ}\text{C}/^{\circ}\text{C}$ (basic) or $\leq \pm 0.01\%$ of selected range/ $^{\circ}\text{C}$
DRSL-RTD, DRSL-RTD-LP	Pt100	$\leq 0.2^{\circ}\text{C}$	$\leq \pm 0.1\%$ of selected range	$0.02^{\circ}\text{C}/^{\circ}\text{C}$ (basic) or $\leq \pm 0.01\%$ of selected range/ $^{\circ}\text{C}$
DRSL-TC	TC	$\leq 1^{\circ}\text{C}$		$0.1^{\circ}\text{C}/^{\circ}\text{C}$ (basic) or $\leq \pm 0.01\%$ of selected range/ $^{\circ}\text{C}$

EMC immunity influence ..... <  $\pm 0.5\%$  of selected range

Extended EMC immunity:

NAMUR NE 21 ..... <  $\pm 1\%$  of selected range

## Input specifications:

### Specifications for Pt100 input:

Temperature range, Pt100 .....	-200...+850°C - IEC 60751
Sensor current.....	< 150 $\mu\text{A}$
Sensor cable resistance .....	< 50 $\Omega$ per wire
Effect of sensor cable resistance, 3- / 4-wire....	< 0.002 $\Omega$ / $\Omega$
Sensor error detection.....	Yes - selectable
Shorted sensor detection .....	< 18 $\Omega$
Broken sensor detection .....	> 800 $\Omega$

### Specifications for TC input:

Temperature range, TC J.....	-100...+1200°C - IEC 60584-1
Temperature range, TC K.....	-180...+1372°C - IEC 60584-1
Sensor cable resistance .....	< 5 kΩ per wire
Cold junction compensation (CJC) accuracy:	
Accuracy @ external Pt100.....	Better than ±0.15°C
Accuracy @ internal CJC.....	Better than ±2.5°C
Open Thermocouple detection.....	Yes - selectable
Internal CJC error detection .....	Yes
External CJC error detection.....	Yes - selected

### Output specifications:

	Current output							Max. load
	Active	Passive	Selectable			NAMUR NE43		
			Invert	Range	Limit	Sensor error	Range 4...20 mA	
DRSL-TC	✓			0/4...20 mA	0/3.8...20.5 mA	0/3.5/23 mA	✓	600 Ω @ 21 mA
DRSL-RTD	✓			0/4...20 mA	0/3.8...20.5 mA	0/3.5/23 mA	✓	600 Ω @ 21 mA
DRSL-TC-ISO	✓			0/4...20 mA	0/3.8...20.5 mA	0/3.5/23 mA	✓	600 Ω @ 21 mA
DRSL-RTD-ISO	✓			0/4...20 mA	0/3.8...20.5 mA	0/3.5/23 mA	✓	600 Ω @ 21 mA
DRSL-TEMP		✓	✓	4...20 mA	3.8...20.5 mA	3.5 / 23 mA	✓	(V <sub>supply</sub> -5.5)/0.023 [Ω]
DRSL-RTD-LP		✓	✓	4...20 mA	3.8...20.5 mA	3.5 / 23 mA	✓	(V <sub>supply</sub> -3.3)/0.023 [Ω]

Load stability..... ≤ 0.01% of span / 100 Ω

	Selectable voltage output						Min. load
	Low range			High range			
	Range	Limit	Sensor error	Range	Limit	Sensor error	
DRSL-TC	0/1...5 V	0/0.875...5.125 V	0/5.5 V	0/2...10 V	0/1.75...10.25 V	0/11 V	10 kΩ
DRSL-RTD	0/1...5 V	0/0.875...5.125 V	0/5.5 V	0/2...10 V	0/1.75...10.25 V	0/11 V	10 kΩ
DRSL-TC-ISO	0/1...5 V	0/0.875...5.125 V	0/5.5 V	0/2...10 V	0/1.75...10.25 V	0/11 V	10 kΩ
DRSL-RTD-ISO	0/1...5 V	0/0.875...5.125 V	0/5.5 V	0/2...10 V	0/1.75...10.25 V	0/11 V	10 kΩ

## Approvals:

EMC 2004/108/EC .....	EN 61326-1
EMC Emission.....	CISPR 22, Class B
LVD 2006/95/EC.....	EN 61010-1
UL, Standard for Safety.....	UL 61010-1
Safe Isolation.....	EN 61140

## DIP-SWITCH CONFIGURATION

### DRSL-TC and DRSL-TC-ISO - TC J & K

<b>Sensor</b> S1	1	2	3	<b>Sensor Error Detection</b> S17	
TC J (Int. cjc)			●	None	
TC K (Int. cjc)	●			Enable	●
TC J (ext. cjc)	●	●			
TC K (ext. cjc)	●	●	●		
<b>Output</b> S1	4	5	6	<b>Output Error Level</b> S18	
0...20 mA				Downscale	
4...20 mA	●			Upscale	●
0...10 V			●		
2...10 V		●			
0...5 V		●	●		
1...5 V		●	●		
● = ON					

<b>Sensor Error Detection</b> S17	
None	
Enable	●

<b>Output Error Level</b> S18	
Downscale	
Upscale	●

<b>Noise Supp.</b> S19	<b>Resp.T.</b> S110
50 Hz	< 30 ms
60 Hz	300 ms

\*DRSL-TC - only int CJC

### DRSL-RTD and DRSL-RTD-ISO - Pt100

<b>Sensor</b> S1	1	2	3	<b>Sensor Error Detection</b> S17	
Pt100, 2w	●			None	
Pt100, 3w		●		Enable	●
Pt100, 4w	●	●			
<b>Output</b> S1	4	5	6	<b>Output Error Level</b> S18	
0...20 mA				Downscale	
4...20 mA	●			Upscale	●
0...10 V			●		
2...10 V		●			
0...5 V		●	●		
1...5 V		●	●		
● = ON					

<b>Sensor Error Detection</b> S17	
None	
Enable	●

<b>Output Error Level</b> S18	
Downscale	
Upscale	●

<b>Noise Supp.</b> S19	<b>Resp.T.</b> S110
50 Hz	< 30 ms
60 Hz	300 ms

### DRSL-TEMP - Pt100 & TC J/K

<b>Sensor</b> S1	1	2	3	<b>Sensor Error Detection</b> S17	
Pt100, 2w	●			None	
Pt100, 3w		●		Enable	●
Pt100, 4w	●	●			
TC J (Int. CJC)			●		
TC K (Int. CJC)	●				
TC J (Ext. CJC)	●	●			
TC K (Ext. CJC)	●	●	●		
<b>Output</b> S1	4	5	6	<b>Output Error Level</b> S18	
4...20 mA				Downscale	
20..4 mA	●			Upscale	●
● = ON					

<b>Sensor Error Detection</b> S17	
None	
Enable	●

<b>Output Error Level</b> S18	
Downscale	
Upscale	●

<b>Noise Supp.</b> S19	<b>Resp.T.</b> S110
50 Hz	< 30 ms
60 Hz	300 ms

### DRSL-RTD-LP - Pt100

<b>Sensor</b> S1	1	2	3	<b>Sensor Error Detection</b> S17	
Pt100, 2w	●			None	
Pt100, 3w		●		Enable	●
Pt100, 4w	●	●			
<b>Output</b> S1	4	5	6	<b>Output Error Level</b> S18	
4...20 mA				Downscale	
20..4 mA	●			Upscale	●
● = ON					

<b>Sensor Error Detection</b> S17	
None	
Enable	●

<b>Output Error Level</b> S18	
Downscale	
Upscale	●

<b>Noise Supp.</b> S19	<b>Resp.T.</b> S110
50 Hz	< 30 ms
60 Hz	300 ms

(Power must be cycled after DIP-switch positions are changed).

# TEMPERATURE RANGE PROGRAMMING

DIP S2				● = ON	Temperature Range °C																				
Start Temp.	1	2	3	4	End Temp.	5	6	7	8	9	10	End Temp.	5	6	7	8	9	10	End Temp.	5	6	7	8	9	10
-200					0							105		●	●	●			375	●	●	●	●		
-180			●		5						●	110	●	●	●	●			400	●	●	●	●	●	
-150			●		10					●		115	●	●	●	●			450	●	●	●	●	●	
-100			●	●	15					●	●	120	●	●	●	●			500	●	●	●	●	●	
-50		●	●		20				●			125	●	●	●	●	●		550	●	●	●	●	●	
-25		●	●	●	25				●	●		130	●	●	●	●			600	●	●	●	●	●	
-10		●	●	●	30				●	●		135	●	●	●	●			650	●	●				
-5		●	●	●	35				●	●	●	140	●	●	●	●			700	●	●				●
0		●	●	●	40				●			145	●	●	●	●			750	●	●				●
5		●	●	●	45				●		●	150	●	●	●	●			800	●	●				●
10		●	●	●	50				●	●		160	●	●	●	●	●		850	●	●	●			●
20		●	●	●	55				●	●	●	170	●						900	●	●	●	●		●
25		●	●	●	60				●	●		180	●					●	950	●	●	●	●		●
50		●	●	●	65				●	●	●	190	●			●			1000	●	●	●	●	●	●
100		●	●	●	70				●	●	●	200	●			●	●		1050	●	●	●	●	●	●
200		●	●	●	75				●	●	●	225	●			●			1100	●	●	●			●
					80				●			250	●			●	●		1150	●	●	●	●		●
					85				●		●	275	●			●	●		1200	●	●	●	●	●	●
					90				●		●	300	●			●	●	●	1250	●	●	●	●	●	●
					95				●		●	325	●	●					1300	●	●	●	●	●	●
					100				●	●		350	●	●				●	1350	●	●	●	●	●	●
																			1372	●	●	●	●	●	●

Sens. type :	Temp. range °C :
Pt100	-200 - +850°C
TC J	-100 - +1200°C
TC K	-180 - +1372°C

## Please note:

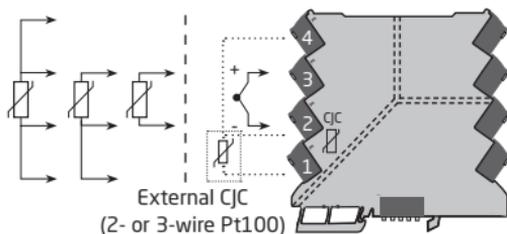
- DRSL-TC and DRSL-TC-ISO - only TC input available  
Valid TC J range: -100...+1200°C = **correct DIP-switch setting**  
Valid TC K range: -180...+1372°C = **correct DIP-switch setting**
- DRSL-RTD, DRSL-RTD-ISO and DRSL-RTD-LP - only Pt100 input available  
Valid Pt100 range: -200...+850 °C = **correct DIP-switch setting**
- "Start temp" **must** be lower than "End temp" = **correct DIP-switch setting**
- Power must be cycled after DIP-switch positions are changed

## FRONT LED INDICATIONS FOR DRSL-TC, DRSL-RTD, DRSL-TC-ISO, AND DRSL-RTD-ISO

LED (green)	Condition	Output	Action required
1 flash 0.5 s ON and OFF	Power-up or Restart	De-energized	-
Flashing 13 Hz / 15 ms ON	Device OK	Energized	-
Flashing 1 Hz / 15 ms ON	Sensor error indication	Up- or Downscale	Check sensor
Flashing 1 Hz / 500 ms ON	Incorrect DIP-switch setting	De-energized	Correct setting and repower
OFF	No supply / device error	De-energized	Connect supply / replace device

# BLOCK DIAGRAM AND WIRING

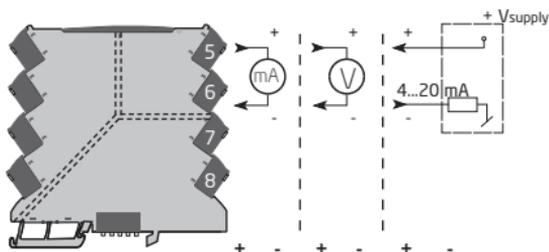
## Input wiring



			+	-	CJC	Type
-	-	-	3	2	Y*	DRSL-TC
1,2 & 3,4; 1,2 & 3	2 & 3	-	-	-	N	DRSL-RTD
-	-	-	3	2	Y	DRSL-TC-ISO
1,2 & 3,4; 1,2 & 3	2 & 3	-	-	-	N	DRSL-RTD-ISO
1,2 & 3,4; 1,2 & 3	2 & 3	3	2	Y	DRSL-TEMP	
1,2 & 3,4; 1,2 & 3	2 & 3	-	-	-	N	DRSL-RTD-LP

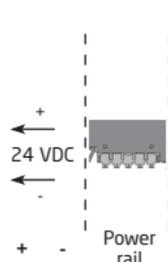
\*DRSL-TC - only internal CJC

## Output wiring



DRSL-TC	5	6	5	6	-	-
DRSL-RTD	5	6	5	6	-	-
DRSL-TC-ISO	5	6	5	6	-	-
DRSL-RTD-ISO	5	6	5	6	-	-
DRSL-TEMP	-	-	-	-	5	6
DRSL-RTD-LP	-	-	-	-	5	6
DRSL-PCU	-	-	-	-	-	-

## Supply wiring



7	8	N
7	8	N
7	8	Y
7	8	Y
-	-	N
-	-	N
7	8	Y

DRSL-TC, DRSL-RTD, and DRSL-RTD-LP - no galvanic isolation  
 DRSL-TEMP - 2 port isolation (reinforced)  
 DRSL-TC-ISO and DRSL-RTD-ISO - 3 port isolation (reinforced)

## WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's Warranty adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

**OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.**

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

## RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence. The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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