

# Isolated signal converter



## Economical Signal Converter for Process and Temperature applications



DR-I3P shown smaller than actual size.

OMEGA's new isolated signal converter delivers high-performance for integration in a wide range of industrial applications. The DR-I3P accepts universal inputs including mA and Vdc process signals (provides +15Vdc excitation voltage), usual temperature signals such as Pt100, Pt500, Pt1000, Ni100, Ni1000, NTC, thermocouples J, K, N, E, T, R and S, resistances and potentiometer signals, offering application flexibility for signal acquisition and industrial requirements.

A single universal AC/DC power supply allows this unit to be suited for global use.

Configurable output in 4/20mA or 0/10Vdc, high levels of isolation and DIN rail mount.

Additional features of the DR-I3P isolated signal converter include ready to use 'out of the box' unit, with no additional configuration tools needed, easy configuration by programming codes, and special 'force' functions for installation testing.

- ✓ 'Force' functions - Built in 'Force Low' and 'Force High' functions provide an easy way to generate 4 and 20 mA output signals (or 0 and 10 Vdc) to easily validate connections to remote instruments, such as PLCs. of PLC connections.
- ✓ Isolation - 3 way isolation to protect your remote systems from signals noise and ground loops, delivering better performance.

### APPLICATIONS

- ✓ Assembly Line
- ✓ Control Panel
- ✓ Laboratory
- ✓ Universal power supply - Real universal power supply from 18 to 265 Vac/dc, allows for global use and consolidation of stock references.
- ✓ Easy configuration with codes from 00 to 99 and predefined input ranges. No additional tools needed for configuration, can be installed 'out of the box'.
- ✓ High quality plug-in screw terminals for easy maintenance and replacements.
- ✓ Password Protection to protect your configuration

## Specifications

### Input signal

**Process:** 4/20mA (active and passive, max 25mA,  $V_{term} < 1.2Vdc$ ), 0/10Vdc (max. 25Vdc,  $Z_{in} = 1M\Omega$ )

**Excitation Voltage:** +15Vdc (@30mA)

**Thermocouple:** J, K, N, E, T, R and S (automatic compensation for the thermocouple cold junction)

**'Pt' and 'Ni' probes:** Pt100 (2 and 3 wires, with automatic cable compensation up to 30 $\Omega$ ), Pt500, Pt1000, Ni100, Ni1000 (2 wires)

**'NTC' probes:** NTC (with  $R_{25} = 10K$ , Beta=3500), NTC 44006

**Resistances:** ranges for 100K, 50K, 25K, 5K and 2.5K $\Omega$ s

**Potentiometers:** nominal from 500 $\Omega$ m up to 20K $\Omega$ m potentiometers

**Accuracy at 25°C:** (see Table 4)

**Thermal Stability:** 150ppm/°C

**Step response:** 300mSec. (0% to 99% of signal)

### Output signal

**4/20mA active:** max. 22mA, min. 1.5mA, load < 400 $\Omega$ m

**4/20mA passive:** max. 30Vdc on terminals

**0/10Vdc:** max. 11Vdc, min. -1Vdc, load > 1K $\Omega$ m

### Configuration

**display:** 2 digits, 7 segments, 5mm height, red color

**keypad:** 2 keys

### Power

**Power:** 18 to 265Vac/dc (isolated 2500Veff) (20 to 240Vac/dc  $\pm 10\%$ )

**AC frequency:** 45 to 65Hz

**Consumption:** < 1.5W

**Power terminals:** plug-in screw terminals (5.08mm pitch)

**Power wires:** 1 mm<sup>2</sup> to 2.5 mm<sup>2</sup> (AWG17 to AWG14)

**Overvoltage category:** 2

### Isolation

**input - output:** 2300Veff (60 seconds)

**power - input:** 2300Veff (60 seconds)

**power - output:** 2300Veff (60 seconds)

### Temperature

**Operation temperature:** 0 to +50°C (32 to 122 °F)

**Storage temperature:** -20 to +70°C (-4 to 158 °F)

**Warm-up time:** 15 minutes

### Mechanical

**Size:** 106x108mmx22.5mm

**Mounting:** standard DIN rail (35x7.5mm)

**Connections:** plug-in screw terminals (pitch 5.08mm)

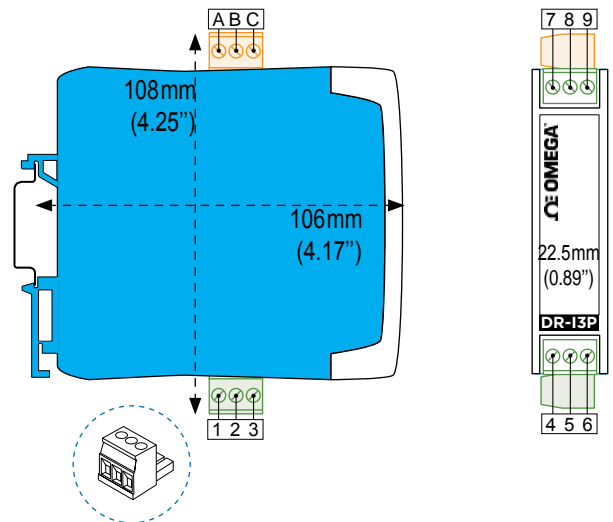
**Weight:** < 150gr (5.3 oz)

**Housing material:** polyamide V0

**IP protection:** IP30

**Impact protection:** IK06

**Packing box:** 120x115x30mm, cardboard



**Detail of the plug-in screw terminal. Both male and female terminals are included.**

Table 1 | INPUT signal connections

Input signal	Input terminals					
	1	2	3	4	5	6
4/20mA passive					mA-	Vexc
4/20mA active				mA-	mA+	
0/10Vdc				common	+Vdc	
0/10Vdc with Vexc				common	+Vdc	Vexc
Potentiometer				Pot.-	Potent.	Pot.+
Resistance	Res-		Res+			
NTC	NTC-		NTC+			
Thermocouple	tc-	tc+				
Pt100 (3 wires)	Pt-	Pt- (3 <sup>rd</sup> wire)	Pt+			
Pt100 (2 wires)	Pt-	(shortcircuit 1 and 2)		Pt+		
Pt1000, Pt500	Pt-		Pt+			
Ni100, Ni500, Ni1000	Ni-		Ni+			

Table 2 | OUTPUT signal connections

Output signal	Output terminals		
	7	8	9
4/20mA active		mA- (in)	mA+ (out)
4/20mA passive	mA+ (out)	mA- (in)	
0/10Vdc	common		+Vdc

Table 3 | POWER connections

Power	Power terminals		
	A	B	C
AC power	Phase		Phase
DC power	+		-

## To Order

Model No.	Description
DR-I3P	Isolated signal converter with 85/265Vac/dc power supply
Comes complete with quick installations guide.	

Table 4 | Input signal - Configuration codes

Code	Input signal range	Technical specs
00 to 09	[no function assigned]	---
10	4/20 mA	Process total error <0.3% FS
11	0/10 Vdc	
12	0/100%	Potentiometer total error <1.0% FS
13	0/100 KOhm	Resistance total error <0.7% FS
14	0/50 KOhm	
15	0/25 KOhm	
16	0/10 KOhm	
17	0/5 KOhm	
18	0/2.5 KOhm	
19	0/1200°C	Thermocouple J (cold junction error included) total error <0.5% FS
20	0/1000°C	
21	0/800°C	
22	0/600°C	
23	0/450°C	
24	0/300°C	
25	0/150°C	Thermocouple K (cold junction error included) total error <0.5% FS
26	0/1350°C	
27	0/1000°C	
28	0/800°C	
29	0/600°C	
30	0/450°C	
31	0/300°C	Thermocouple N (cold junction error included) total error <0.5% FS
32	0/150°C	
33	0/1300°C	
34	0/1000°C	
35	0/800°C	
36	0/600°C	
37	0/450°C	Thermocouple E (cold junction error included) total error <0.5% FS
38	0/300°C	
39	0/150°C	
40	[no function assigned]	---
41	0/900°C	Thermocouple T (cold junction error included) total error <1.0% FS
42	0/600°C	
43	0/450°C	
44	0/300°C	total error <1.3% FS
45	0/150°C	
46	0/400°C	total error <2.0% FS
47	0/300°C	
48	0/200°C	total error <4.0% FS
49	0/100°C	

Table 4 | Input signal - Configuration codes

Code	Input signal range	Technical specs
50	0/1750°C	Thermocouple R (cold junction error included) total error <1.0% FS
51	0/1500°C	
52	0/1200°C	
53	0/900°C	
54	0/1750°C	Thermocouple S (cold junction error included) total error <1.0% FS
55	0/1500°C	
56	0/1200°C	
57	0/900°C	
58	[no function assigned]	---
59	0/700°C	Pt100 total error <0.5% FS
60	0/600°C	
61	0/500°C	
62	0/400°C	
63	0/300°C	
64	0/200°C	
65	0/100°C	
66	-50/+50°C	
67	-100/+100°C	
68	-200/+200°C	
69	0/630°C	Pt500 total error <0.7% FS
70	0/300°C	
71	-150/150°C	
72	0/630°C	Pt1000 total error <1.0% FS
73	0/300°C	
74	-150/150°C	
75	-60/180°C	Ni100 total error <0.7% FS
76	[no function assigned]	---
77	-60/180°C	Ni1000 total error <0.7% FS
78 to 79	[no function assigned]	---
80	-50/50°C	NTC (R <sub>25</sub> =10K, β=3500) total error <0.7% FS
81	0/90°C	NTC (R <sub>25</sub> =10K, β=3500) total error <1.0% FS
82	-50/50°C	NTC (44006) total error <0.7% FS
83	0/90°C	NTC (44006) total error <1.3% FS
84 to 94	[no function assigned]	---
95	Function 'password'	---
96	Pt100 'Alpha' (01=0.0385, 02=0.0390)	---
97	Factory default configuration	---
98	Firmware version	---
98 to 99	[no function assigned]	---
---	Exit the menu and discard changes	---

## Configuration system

1. Remove the output signal terminal
2. Open the front cover
3. Configure the instrument
4. Close the front cover
5. Place the output signal terminal

