Issue June 2003

ISOLATION AMPLIFIER 2284

- **Galvanically separated input, output, and supply**
- **Bipolar current / voltage input**
- **Signal conversion**
- **Current and voltage output**
- **24 VDC or universally supplied**
- **Applicable in PELV/SELV circuits**

Application:
Galvanic separation of analogue signals (ground loop elimination). Measurement of floating signals. Signal conversion within the ranges: -250...+250 VDC or -50...+50 mA on the input and 0...10 (20) VDC and 0...20 mA on the output.

Description:
The 2284 uses microprocessor technology for the selection of gain and zero offset, yet the signal processing is analogue with a fast response time less than 25 ms.

Technical characteristics:
In standard ranges, the 2284 is programmable within the input and output ranges using internal dipswitches. Provided that the front adjustments are still sealed, the unit needs no re-adjustment after programming. The unit is galvanically separated between input, supply, and output.

Input:
Current or voltage in standard or special ranges within the measurement range. The programming schedule shows the standard ranges. Nominal standard input resistance is 50 . for mA signals. The 2284 has a 2-wire transmitter supply and a reference voltage of 2.5 VDC, max. 15 mA for short circuit-protected supply of potentiometers.

Output:
The output can be ordered for standard or special currents and voltages within the signal range.

Standard current output (pin 3) 0/4...20 mA, and 0/1...5 mA acc. to the programming schedule with the possibility of signal reversal. Current limit: 23...28 mA.

Standard voltage output (pin 2) is achieved by short-circuiting pins 2 and 3.
The voltage signal is available between pins 2 and 1.
For voltage signals in the ranges 0...1 VDC, a 50 .shunt (DP 2-1) is applied; in the ranges 0...10 VDC, a 500 .shunt (DP 2-2) is applied.
Using both signals simultaneously, the mA-loop to ground must go through the internal shunt.
The 2284 is available with a buffered voltage output, 0...20 V 10 mA. The current output cannot be used simultaneously. In applications where the output must sink current, the following min. voltages on the output can be achieved: At 100 µA; 10 mV, and at 1 mA; 90 mV.
Fine adjustment of 0 and 100% values for special ranges is possible at the front ±2.5%, but please note that the basic calibration is thereby lost.

Electrical specifications:
Specification range:
(@-20°C to +60°C)
Common specifications:

Supply voltage DC	24 VDC ±20%
Universal supply voltage	24...230 VAC ±10%, 50...60 Hz 24...250 VDC ±20%
Max. consumption 2284--D, (24VDC)	=2.4 W
Max. consumption 2284--P (Uni. sup.)	=2.5 W
Isolation, test / operation	3.75 kVAC / 250 VAC
Signal/noise ratio	Min. 60 dB
Response time (0...90%)	< 25 ms
Temperature coefficient	< ±0.01% of span / °C
Linearity error	< ±0.1% of span
Effect of supply voltage change	< ±0.005% of span / V
2-wire transmitter supply	20...28 VDC / 20...0 mA
Reference voltage	2.5 VDC ±0.5%, 15 mA
EMC-immunity influence	< ±0.5% of span
Humidity	< 95% RH (non-cond.)
Dimensions (HxWxD) (D is without pins)	80.5 x 35.5 x 84.5 mm
Tightness	IP50
Weight DC / universally supplied	125 g / 165 g

Input:

Measurement range	-50...+50 mADC
Min. measurement range (span)	0.53 mADC
Max. offset	50% of max. value
Input resistance	Nom. 50 Ω.

Voltage

Measurement range	-250...+250 VDC
Min. measurement range (span)	27 mVDC
Max. offset	50% of max. value
Input resistance	>1 MΩ....<10 M

Current output:

Signal range	0...20 mA
Min. signal range	4 mA
Max. offset	20% of max. value
Load (max)	20 mA/ 1000 Ω//20 VDC
Load stability	< ±0.01% of span / 100Ω .
Current limit	23...28 mA

Voltage output through internal shunt:

Signal range	0...10 VDC
Min. signal span	200 mVDC
Max. offset	20% of max. value
Load (min.)	500 κ
Buffered voltage	Min.0.2...1 VDC/max.0...20 VDC
Max. load	10 mA

Observed authority requirements Standard

EMC 89/336/EEC, Emission	EN 50 081-1, EN 50 081-2
Immunity	EN 50 082-2, EN 50 082-1
LVD 73/23/EEC	EN 61 010-1
PELV/SELV	IEC 364-4-41 and EN 60 742

Of span = Of the presently selected range

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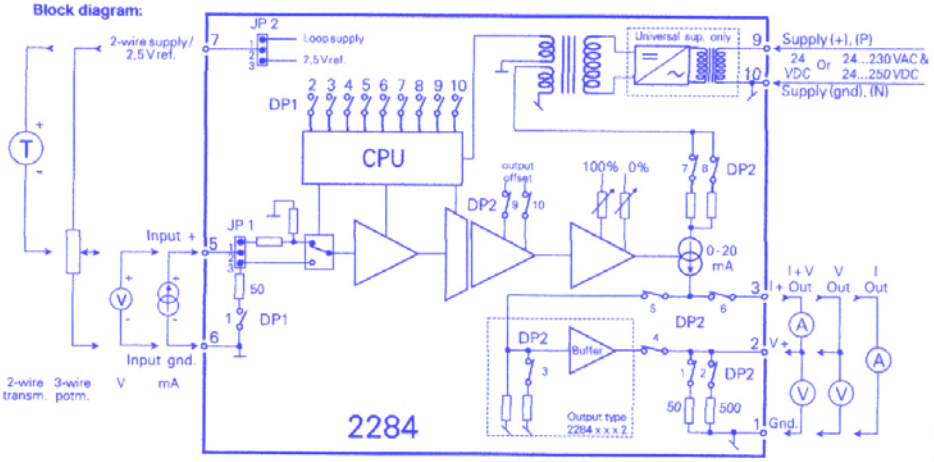
Order: 2284

Type	Input	Output	Supply	Output type
2284	0...20 mA : A	Special : 0	24 VDC : D	Standard : 1
	4...20 mA : B	0...20 mA : 1	24...230 VAC &	Buffered voltage : 2
	0...1 V : C	4...20 mA : 2	24...250 VDC : P	
	0.2...1 V : D	0...5 mA : 3		
	0...10 V : E	0...1 V : 4		
	2...10 V : F	0.2...1 V : 5		
	0...2.5 V : G	0...10 V : 6		
	-10...+10 V : H	2...10 V : 7		
	Special : X	0...2.5 V : 8		

Block diagram:



INPUT PROGRAMMING	DP1 (10-pole) SW 1, 2, 3, 4, 5, 6		JP1 POSITION	
	SW ON	SW OFF	1 - 2	2 - 3
0...5 mA	1, 2, 3	4, 5, 6		X
0...20 mA	1, 2, 3, 4	5, 6		X
0...100 mV	-	1, 2, 3, 4, 5, 6		X
0...500 mV	4	1, 2, 3, 5, 6		X
0...1 V	3	1, 2, 4, 5, 6		X
0...2.5 V	3, 4	1, 2, 5, 6		X
0...10 V	2	1, 3, 4, 5, 6	X	
0...100 V	2, 4	1, 3, 5, 6	X	
For 20% offset on input, set DP1 SW5 ON e.g. input 4...20 mA	1, 2, 3, 4, 5	6		X
For bipolar input set DP1, SW6 ON e.g. -10 V...+10 V	2, 6	1, 3, 4, 5	X	

OUTPUT PROGRAMMING	DP1 (10-pole) SW 7, 8, 9, 10		** DP2 (10-pole) SW 1, 2, 6, 7, 8, 9, 10	
	SW ON	SW OFF	ON	OFF
0...5 mA	8	7, 9, 10	6, 7	1, 2, 8, 9, 10
0...20 mA	7	8, 9, 10	6, 8	1, 2, 7, 9, 10
0...5 mA / 0...250 mV	8	7, 9, 10	1, 6, 7	2, 8, 9, 10
0...20 mA / 0...1 V	7	8, 9, 10	1, 6, 8	2, 7, 9, 10
0...5 mA / 0...2.5 V	8	7, 9, 10	2, 6, 7	1, 8, 9, 10
0...20 mA / 0...10 V	7	8, 9, 10	2, 6, 8	1, 7, 9, 10
For 20% offset on output, set DP1 SW9 ON, DP2 SW9 and SW10 ON, e.g. output 4...20 mA	7, 9	8, 10	6, 8, 9,10	1, 2, 7
For reversed output set DP1, SW10 ON e.g. output 20...4 mA	7, 9, 10	8	6, 8, 9,10	1, 2, 7

** DP2 SW 6 is ON and SW 3, 4, 5 are OFF, except for buffered output 2284XXX2.

Note: At other spans than the ones mentioned in the table and at a buffered voltage output, DP1, DP2, JP1, and JP2 have a different setting which applies to the delivered special range.

The buffered voltage output cannot be programmed acc. to the above programming table, but will be delivered fully-configured from factory.

2284Y102-UK (0005)

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