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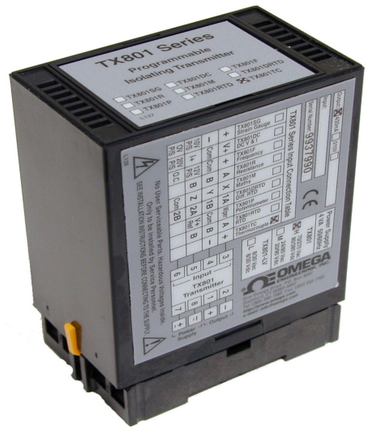
CE

User's Guide

OMEGA ENGINEERING, INC.

An OMEGA Technologies Company



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TX801DC SERIES
ISOLATING DC TRANSMITTER

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OMEGA

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It is the policy of OMEGA to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct but OMEGA Engineering, Inc. 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, patient connected applications.

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 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 should malfunction, 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 being 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 which wear are not warranted, including but not limited to contact points, fuses, and triacs.

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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. P.O. 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. P.O. number to cover the COST of the repair,
2. Model and serial number of 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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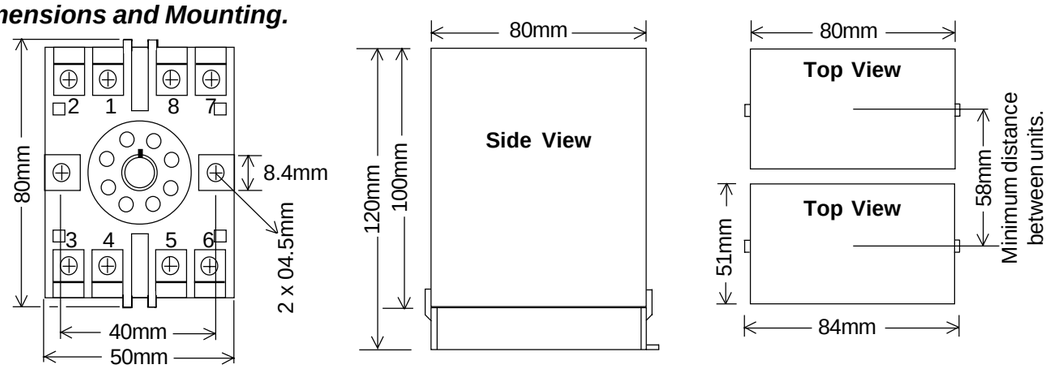
Dimensions and Mounting.



8PFA Octal Termination Base

The Proper Installation & Maintenance of TX801DC.

MOUNTING.

(1) Mount in a clean environment in an electrical cabinet on 35mm, symetrical, mounting rail.
(2) Do not subject to vibration or excess temperature or humidity variations.
(3) Avoid mounting in cabinets with power control equipment.
(4) To maintain compliance with the EMC Directives the TX801DC is to be mounted in a fully enclosed steel cabinet. The cabinet must be properly earthed, with appropriate input / output entry points, filtering and cabling.

WIRING.

(1) A readily accessible disconnect device and overcurrent device must be incorporated in the the power supply wiring.
(2) All cables should be good quality overall screened INSTRUMENTATION CABLE with the screen earthed at one end only.
(3) Signal cables should be laid a minimum distance of 300mm from any power cables.
(4) For 2 wire current loops, 2 wire voltage signals or 2 wire current signals, Austral Standard Cables B5102ES is recommended.
For 3 wire transmitters Austral Standard Cables B5103ES is recommended.
(5) It is recommended that you do not ground current loops and use power supplies with ungrounded outputs.
(6) Lightning arrestors should be used when there is a danger from this source.
(7) Refer to diagrams for connection information.

COMMISSIONING.

(1) Once all the above conditions have been carried out and the wiring checked apply power to the TX801DC loop and allow five minutes for it to stabilize.
(2) Take a low (approx 10%) and high (approx 90%) reading of the variable being measured by the transducer supplying the signal to the TX801DC, and ensure that this agrees with the level being indicated by the PLC or indicator, etc, that the TX801DC is connected into. Adjust for any difference using the Zero and Span trimpots in the top of the TX801DC enclosure with a small screw driver until the two levels agree. (Clockwise to increase the output reading and anti-clockwise to decrease the output reading.)

MAINTENANCE.

(1) Repeat (2) of Commissioning.
(2) Do it regularly - at least once every 12 months.

TX801DC Programmable Isolating DCTransmitter

Programmable Isolating DC Voltage or DC Current input to DC Current or DC Voltage Output Transmitter.

Features.

- **Field Programmable Input and Output Ranges.**
- **Bi-Polar Input and Output Ranges.**
- **Input to Output Isolation 1.6kV.**
- **High Accuracy 0.1%.**
- **Universal AC/DC Power Supply.**
- **Transmitter Power Supply Standard.**
- **Compact DIN Rail Mount Enclosure.**
- **Available Standard or Special Calibration.**
- **Low Cost Fixed Range Available.**

TX801DC Specifications.

Note: TX801DC Input and Output Ranges Reduced. Refer to Ordering Information.

Input	-Voltage	Field Programmable From 10mV to 150Vdc and Bipolar.
		Minimum Input Resistance = 200kΩ.
		Maximum Over-range = 170Vdc Continuous.
	- Current	Field Programmable From 200µA to 100mAdc and Bipolar.
		Input Resistance = 25Ω.
		Maximum Over-range = 120mAdc Continuous.
	-Transmitter P/S	20Vdc±5% Common to Input Com. (Terminal 4.)
		Max Load = 30mA.
		Ripple < 20mV Typical at 30mA Load.
Output	-Voltage	Field Programmable From 500mV to ±12Vdc.
		Maximum Output Drive = 10mA.
	-Current	Field Programmable From 1mA to ±20mAdc.
		Maximum Output Drive = 10Vdc. (500Ω @ 20mA.)
Universal P/S	-Standard High (H)	70~270Vac and 80~380Vdc; 50/60Hz; 4VA.
	-Standard Mid (M)	24~80Vac and 20~90Vdc; 50/60Hz; 4VA.
	-Low Voltage (L)	8~30Vac and 8~30Vdc; 50/60Hz; 4VA.
	-Circuit Sensitivity	<±0.001%/V FSO Typical.
Accurate to		<±0.1% FSO Typical.
Linearity & Repeatability		<±0.1% FSO Typical.
Ambient Drift		<±0.01%/C FSO Typical.
Noise Immunity		125dB CMRR Average. (1.6kV Peak Limit.)
R.F. Immunity		<1% Effect FSO Typical.
Isolation Voltage		1.6kVac/dc Peak Input to Output for 60sec.
Response Time		200msec Typical. (From 10 to 90% 50msec Typical.)
Operating Temperature		0~70C.
Storage Temperature		-20~80C.
Operating Humidity		90%RH max. Non-Condensing.
Construction		Socket Plug-In Type with Barrier Terminals.

Note 1. Specifications based on Standard Calibration Unit, unless otherwise specified.
Note 2. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification. No liability will be accepted for errors, omissions or amendments to this specification.

Quality Assurance Programme.

The modern technology and strict procedures of the ISO9001 Quality Assurance Programme applied during design, development, production and final inspection grant long term reliability of the instrument.

TX801DC Input Programming.

Note: Not Applicable to PI-D-F.

Always set **OUTPUT range first**, then INPUT range. If the input range is not listed in the programming table, use the following formulae to work out the Zero and Span DIP switch settings for gain.

Span Gain = $\frac{24}{\text{Pregain x (Signal High - Signal Low)}}$

Zero Gain = 10 x Pregain x Signal Low.

If Zero is 1/ Positive, put S5-4 OFF.
2/ Negative, put S5-4 ON.

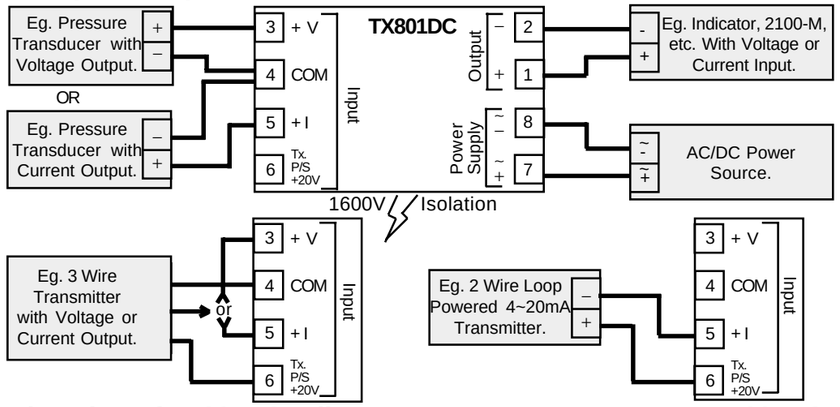
	EFFECTIVE INPUT RANGE (ie Signal High - Signal Low)	S5-1	S5-2	S5-3	PREGAIN
VOLTAGE INPUT	10mV <= Range <= 20mV	0	0	0	200
	20mV < Range <= 200mV	0	0	1	20
	200mV < Range <= 2V	0	1	1	2
	2V < Range <= 20V	1	0	1	0.2
	20V < Range <= 150V	1	1	1	0.02
CURRENT INPUT	200µA <= Range <= 800µA	1	0	0	5000
	800µA < Range <= 8mA	1	0	1	500
	8mA < Range <= 50mA	1	1	1	50

Gain Value	1	2	4	8	16	32
DIP Switch No.	1	2	3	4	5	6

So if a gain value of 28 is required, put DIP switch No's 3, 4, 5 (ie, gains of 4 + 8 + 16 = 28) OFF and all the other DIP switches ON.
DIP switches and trimpots are accessed by removing the small rectangular lid on the top of the TX801DC enclosure.

Notes: (a) Enter ranges with their exponential value: Eg. Enter 20mA as 20 x 10^{-3}; Enter 100mV as 100 x 10^{-3}.
(b) Use the same pregain value in both the Span and Zero gain formulae.
(c) Enter the Zero or Span gain value into the appropriate Zero or Span DIP switch.
(d) If your *GAIN ZERO* exceeds **63**, then your input range will need to be factory calibrated.

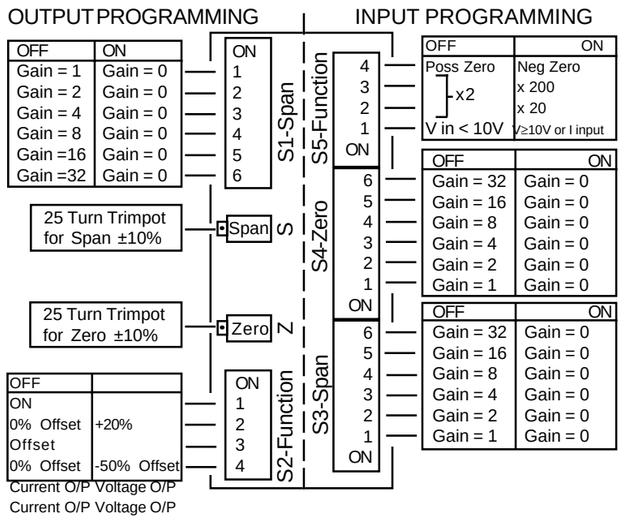
Examples of Input Connection.



Terminations.

Output	1	+Ve
	2	-Ve
Input	3	+ V
	4	COM
	5	+ I
	6	Tx. P/S 20V
P/S	7	~AC/+DC
	8	~AC/-DC

Plan View of TX801DC Adjustments.

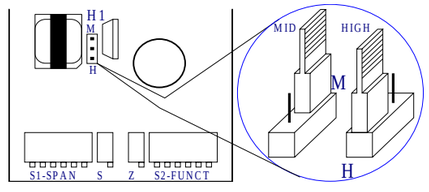


TX801DC H1 Power Supply Link Settings.

WARNING: High Voltages Maybe Present. Only adjust link with power disconnected.

Power Supply Link Settings	
H1	**Power Supply Voltage Range**
H	Link for High: 70~270Vac / 80~380Vdc
M	Link for Mid: 24~80Vac / 20~90Vdc

Notes:
1/ H1 is approx 4cm (1½") behind the 'S' trimpot.
2/ Exceeding voltage ranges may damage the unit.
3/ Ensure the enclosure label is correctly labelled for the link position.
4/ Adjust H1 jumper with a pair of needle nose pliers.
5/ Low Voltage Power Supply version is fixed, and has no link. This must be ordered separately.



TX801DC Input Range Programming Table.

Notes: 1/ Switch status 1 = ON, 0 = OFF, X = DON'T CARE.
2/ Input ranges with '*' beside them reverse the polarity of the input connections.
3/ Input ranges with '#' beside them require more adjustment with the Zero and Span trimpots.

Input Range	S3-SPAN						S4-ZERO						S5-FUNCTION			
	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4
0~10mV	1	1	0	0	1	1	1	1	1	1	1	1	0	0	0	x
0~20mV	1	0	0	1	1	1	1	1	1	1	1	1	0	0	0	x
0~50mV	1	1	1	0	0	1	1	1	1	1	1	1	0	0	1	x
0~100mV	1	1	0	0	1	1	1	1	1	1	1	1	0	0	1	x
0~200mV	1	0	0	1	1	1	1	1	1	1	1	1	0	0	1	x
0~500mV	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	x
0~1V	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	x
0~2V	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	x
0~4V	1	0	0	0	0	1	1	1	1	1	1	1	1	0	1	x
0~5V	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	x
0~10V	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	x
0~20V	1	0	0	1	1	1	1	1	1	1	1	1	1	0	1	x
0~50V	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	x
0~100V	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	x
0~150V	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	x
1~5V	1	0	0	0	0	1	1	0	1	1	1	1	1	0	1	0
2~10V	0	0	0	0	1	1	1	1	0	1	1	1	1	0	1	0
-1~1V	1	0	0	1	1	1	1	1	0	1	0	1	0	1	1	1
-5~5V	1	1	0	0	1	1	1	0	1	0	1	1	1	0	1	1
-10~10V	1	0	0	1	1	1	1	1	0	1	0	1	1	0	1	1
0~200µA	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	x
0~500µA#	1	0	1	0	1	1	1	1	1	1	1	1	1	0	0	x
0~1mA	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	x
0~2mA	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	x
0~5mA#	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	x
0~10mA	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	x
0~20mA	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	x
0~40mA	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	x
0~50mA#	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	x
1~5mA	1	1	0	0	1	1	0	1	0	1	1	1	1	0	1	0
2~10mA	1	0	0	1	1	1	1	0	1	0	1	1	1	0	1	0
4~20mA	1	0	0	0	0	1	1	0	1	1	1	1	1	1	1	0
10~50mA	1	1	0	0	1	1	0	1	0	1	1	1	1	1	1	0
-1~1mA	1	1	1	0	0	1	0	1	0	1	1	1	1	0	1	1
-10~10mA	1	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1
-20~20mA	1	1	0	0	1	1	1	0	1	0	1	1	1	1	1	1
* 20~4mA	1	0	0	0	0	1	1	0	1	0	1	1	1	1	1	1
* 50~10mA	1	1	0	0	1	1	0	1	1	0	0	1	1	1	1	1

TX801DC Output Range Programming Table.

Notes: 1/ Switch status 1 = ON 0 = OFF
2/ Output ranges with '*' beside them reverse the polarity of the output connections.

Output Range (V)	S1-SPAN						S2-Function				Output Range (I)	S1-SPAN						S2-Function			
	1	2	3	4	5	6	1	2	3	4		1	2	3	4	5	6	1	2	3	4
0~500mV	0	1	1	1	1	1	0	0	1	1	0~1mA	0	1	1	1	1	1	0	0	0	0
0~1V	1	0	1	1	1	1	0	0	1	1	0~2mA	1	0	1	1	1	1	0	0	0	0
0~2V	1	1	0	1	1	1	0	0	1	1	0~5mA	0	1	0	1	1	1	0	0	0	0
0~3V	1	0	0	1	1	1	0	0	1	1	0~10mA	1	0	1	0	1	1	0	0	0	0
0~4V	1	1	1	0	1	1	0	0	1	1	0~16mA	1	1	1	1	0	1	0	0	0	0
0~5V	1	0	1	0	1	1	0	0	1	1	0~20mA	1	1	0	1	0	1	0	0	0	0
0~6V	1	1	0	0	1	1	0	0	1	1	1~5mA	1	1	0	1	1	1	1	0	0	0
0~8V	1	1	1	1	0	1	0	0	1	1	2~10mA	1	1	1	0	1	1	1	0	0	0
0~10V	1	1	0	1	0	1	0	0	1	1	4~20mA	1	1	1	1	0	1	1	0	0	0
0~12V	1	1	1	0	0	1	0	0	1	1	-1~1mA	1	0	1	1	1	1	0	1	0	0
1~5V	1	1	1	0	1	1	1	0	1	1	-2~2mA	1	1	0	1	1	1	0	1	0	0
2~10V	1	1	1	1	0	1	1	0	1	1	-5~5mA	1	0	1	0	1	1	0	1	0	0
-1~1V	1	1	0	1	1	1	0	1	1	1	-10~10mA	1	1	0	1	0	1	0	1	0	0
-2~2V	1	1	1	0	1	1	0	1	1	1	-20~20mA	1	1	1	0	1	0	0	1	0	0
-5~5V	1	1	0	1	0	1	0	1	1	1	0~-10mA *	1	0	1	0	1	1	0	0	0	0
-10~10V	1	1	1	0	1	0	0	1	1	1	0~-20mA *	1	1	0	1	0	1	0	0	0	0
-12~12V	1	1	1	1	0	0	0	1	1	1											
0~-5V *	1	0	1	0	1	1	0	0	1	1											
0~-10V *	1	1	0	1	0	1	0	0	1	1											