IN-588A Rev1. Prescaler

Programmable frequency or flow input, prescaled to frequency output.

Features.

- **Programmable.**
- **Cost Effective.**
- **Easily Calibrated.**
- **DIN Rail Mount.**
- **Outputs**
  - **-Isolated Open Collector.**
  - **-Push/Pull.**
  - **-Relay.**
- **LED Indication of P/S.**
- **LED Indication of Frequency Output.**

Z495

Description.

The IN-588A Prescaler is primarily designed and manufactured for use with flow transducers or other devices with frequency output signals. It scales an incoming frequency to engineering units which it then sends out in the form of pulses through an optocoupler, Push/Pull Circuit, or Relay. These pulses can then be used to accurately drive totalisers or digital inputs to PLC's etc.

Typical applications could include scaling frequency from a flow transducer in a water pipe to pulses representing cubic metres or water used for display on a totaliser or scaling frequency from an encoder to pulses representing mm of linear movement for input to a PLC etc.

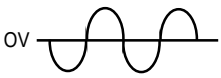
Terminals and Specifications.

HZ out 1
1 + : Open collector isolated output 30V 100mA maximum.
2 - :2kHz maximum output frequency.

HZ out 2
13 + : Push/Pull Output. Amplitude P/S - 2V.
14 - :100mA maximum. 2kHz Maximum Output Frequency.

HZ out 3
15 NO :Relay; Change Over; Isolated. Contact: Silver Alloy, Maximum Rating 125Vac; 2A; 1/10hp.
16 COM :Isolation Test Voltage=1.5kV 50Hz for 1min. No of Ops=$2x10^5$ Min, at 125Vac, 1A Resistive.
17 NC :For Relay Operations Refer to SW5 & SW6.

Hz in 1
3 + :Frequency input 12 mV to 30Vpp.
4 - :200kHz maximum. For wave forms that
5 G :oscillate about the OV reference.



Hz in 2
6 + :Frequency input 2.5V trigger level. 30Vpp, max.
7 - :200kHz max. For wave forms that oscillate
8 G :above the OV reference.

P/S
9 + :Power supply connections.
10 - :8~26VDC.

Reset
11 + :Logic reset.
12 - :Short together for reset.

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.

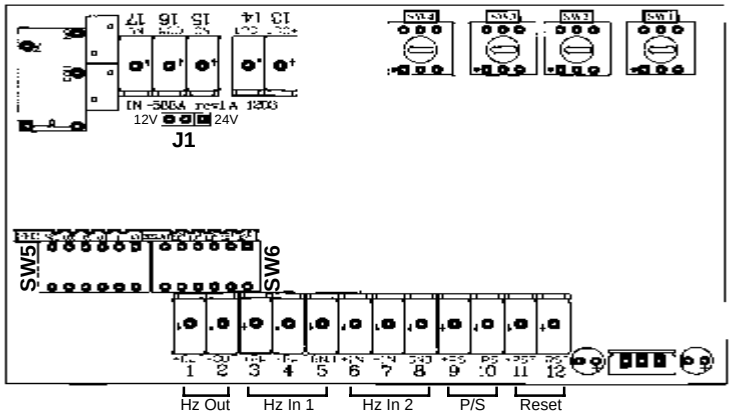
General Specifications.

Current Use	50mA Typical, Regardless of P/S Voltage. (90mA if Relay Output is Used.)
Prescaling Range	Divides Input Signal From 1 to 10,000,000.
Temperature Range	0~50C.
Storage Temperature	-20~80C.
Operating Humidity	5~85%RH Max. Non-condensing.
Mounting	Fits all Available DIN and EN Mounting Rails.
Dimensions	L = 113mm, W = 78mm, H = 48mm.

Product Liability. This information describes our products. It does not constitute guaranteed properties and is not intended to affirm the suitability of a product for a particular application. Due to ongoing research and development, designs, specifications, and documentation are subject to change without notification. Regrettably, omissions and exceptions cannot be completely ruled out. No liability will be accepted for errors, omissions or amendments to this specification. Technical data are always specified by their average values and are based on Standard Calibration Units at 25C, unless otherwise specified. Each product is subject to the 'Conditions of Sale'.

Warning: These products are not designed for use in, and should not be used for patient connected applications. In any critical installation an independant fail-safe back-up system must always be implemented.

Schematic of Circuit Board.



SW6 DIP Switch.

1	Multiply signal in by 1.0	(10^0)
2	Multiply signal in by 0.1	(10^{-1})
3	Multiply signal in by 0.01	(10^{-2})
4	Multiply signal in by 0.001	(10^{-3})
5	Multiply signal in by 0.0001	(10^{-4})
6	Relay ON. For 10 to 13V P/S, set J1 to 12V. For 19 to 27V P/S set J1 to 24V.	

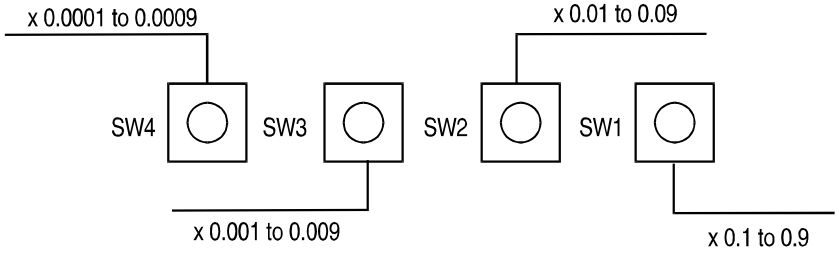
Note 1: Failure to set J1 correctly will cause the relay to fail.
Note 2. DIP switch states active when DIP switch "ON"
Note 3. For SW6 only one of DIP switches 1, 2, 3, 4 or 5 should be on at any time.

SW5 DIP Switch.

1	1sec	**- Use for Relay Output**
2	100msec	**- Do Not Use for Relay Output**
3	10msec	
4	1msec	
5	0.1msec	
6	N/C	

Note 1. SW5 settings are minimum output pulse widths and are approximate only.
Note 2. If the Output Frequency and SW5 are incorrectly matched the output frequency will not be accurate.
Note 3. For SW5 only one of DIP switches 1, 2, 3, 4, 5 or 6 should be on at any time.
Note 4. SW5-5 is the standard setting.

BCD Switch Settings.



Example of Calibration Procedure.

We want the flow in a schedule 40, 4 inch pipe to be totalised in cubic metres.

(1) From the 'Flow Research Impellor Transducer Calibration Data' (next page) for schedule 40, 4" pipe there are 2.074 pulses per litre generated by the impellor flow transducer.

(2) One cubic metre = 1000 litres. So 2.047 x 1000 = 2074 pulses/m^3.

(3) So for every 2074 pulses into the prescaler from the impeller flow transducer, we want one unit totalised on the display.

=> 1 ÷ 2074 = 0.0004822 or 0.4822 x 10^{-3}.

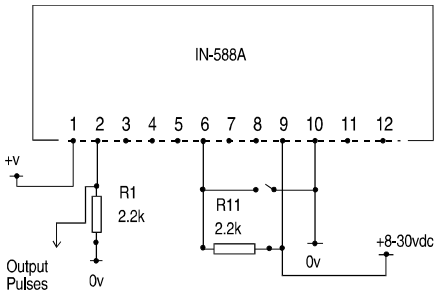
=> 0.4822 x 10^{-3} is the scaling factor that we must program into the IN-588A.

(4) Set the DIP switches 1, 2, 3, 5, "OFF" and DIP switch 4 (i.e. 10^{-3}) "ON".

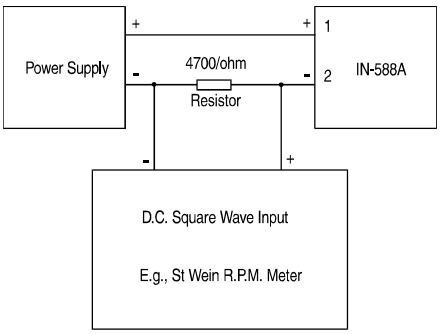
Set SW4 = 2 (i.e. 0.0002)
SW3 = 2 (i.e. 0.002)
SW2 = 8 (i.e. 0.08)
SW1 = 4 (i.e. 0.4)

0.4822 x 10^{-3}

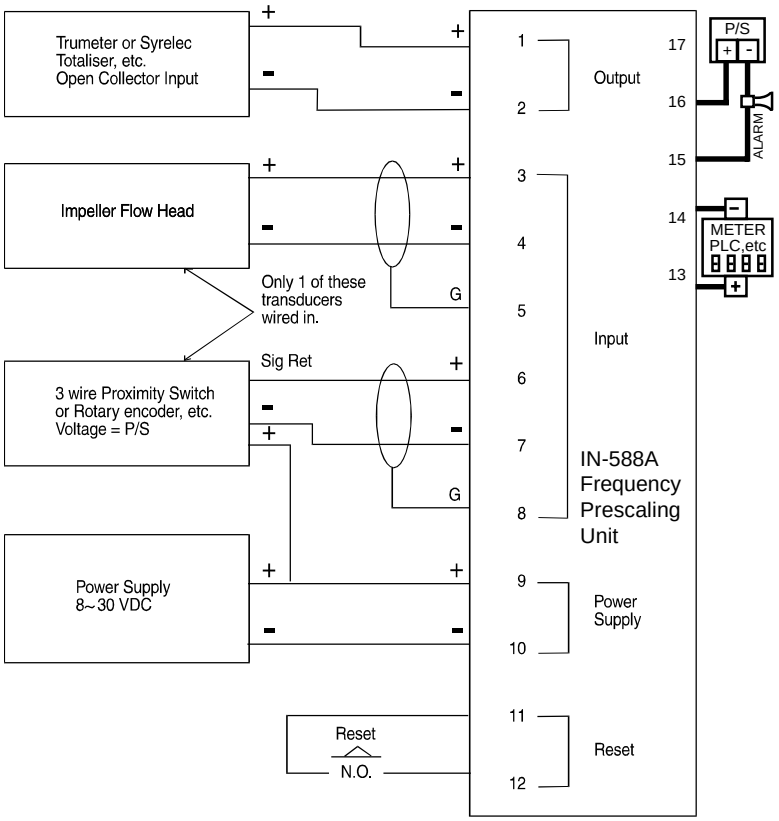
Diagram for Clean Contact Input.



Alternative Ways of Connecting the IN-588A Open Collector Output.



Connection Diagram Example for IN-588A.



Flow Research Corporation Impellor Transducer Calibration Data.

Model	Pipe Size			Minimum Flow Rate (l/min)	Maximum Flow Rate (l/min)	Output (pulses/l)
	Schedule*	Nominal (")	I.D. (mm)			
TR475		1/2	12.7	3.6	107.6	65.722
TR475		3/4	19.05	6.3	188.8	42.346
TR475		1	25.4	10.2	305.8	23.194
TR475		1 1/4	31.75	17.6	529.4	12.724
TR475		1 1/2	38.1	24.0	720.5	9.52
TR400/500	80ST,80S	2	49.3	34.8	1045.2	8.542
TR400/500	40ST,40S	2	52.5	39.6	1187.8	7.08546
TR400/500	40ST,40S	2 1/2	62.713	56.5	1694.7	5.01338
TR400/500	80XS,80S	3	73.7	77.9	2338.0	3.2265622
TR400/500	40ST,40S	3	77.92	87.2	2616.7	2.74791
TR400/500	40ST,40S	4	102.26	150.2	4506.0	2.07418
TR400/500	40ST,40S	5	128.19	235.9	7078.5	1.2112
TR400/500	40ST,40S	6	154.05	340.9	10226.0	0.813775
TR400/500	40ST,40S	8	202.7	590.3	17707.6	0.4275536
TR400/500	40ST,40S	10	254.5	930.4	27911.3	0.2712331
TR400/500	80S	10	247.7	880.9	26427.4	0.2864488
TR400/500	ST,40S	12	304.8	1334.4	40032.0	0.1890966
TR400/500	40	12	303.2	1320.6	39619.4	0.1910668
TR400/500	XS,80S	12	298.5	1279.4	38381.4	0.1972742
TR400/500	30,ST	14	336.6	1626.9	48806.4	0.1551093
TR400/500	40	14	333.3	1596.1	47882.5	0.1581373
TR400/500	30,ST	16	387.4	2155.1	64652.4	0.1171079
TR400/500	40,XS	16	381	2085.0	62550.0	0.1210443
TR400/500	40	18	428.7	2639.1	79174.2	0.0956091

Perry's Chemical Engineers' Handbook, Pages 6-42, Table 6-6. Calibration figures for other pipe sizes are available on request.

The Proper Installation & Maintenance of IN-588A.

All power and signals must be de-energised before connecting any wiring, or altering any Jumpers or Dip Switches.

MOUNTING.

(1) Mount in a clean environment in an electrical cabinet on DIN or EN 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 IN-588A must be mounted in a fully enclosed, metal, electrical cabinet. The cabinet must be properly earthed, with appropriate input/output entry points and cabling.

WIRING.

(1) All cables should be good quality overall screened INSTRUMENTATION CABLE with the screen earthed at one end only.
(2) Signal cables should be laid a minimum distance of 300mm from any power cables.
(3) For 2 wire current loops and 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.
(4) It is recommended that you do not ground current loops and use power supplies with ungrounded outputs.
(5) Lightning arrestors should be used when there is a danger from this source.
(6) 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 IN-588A .
(2) Take a low (approx. 10%) and high (approx. 90%) reading of the variable being measured by the transducer supplying the signal to the IN-588A, and ensure that this agrees with the level being indicated by the PLC or indicator, etc., that the IN-588A is connected to.

MAINTENANCE.

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

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