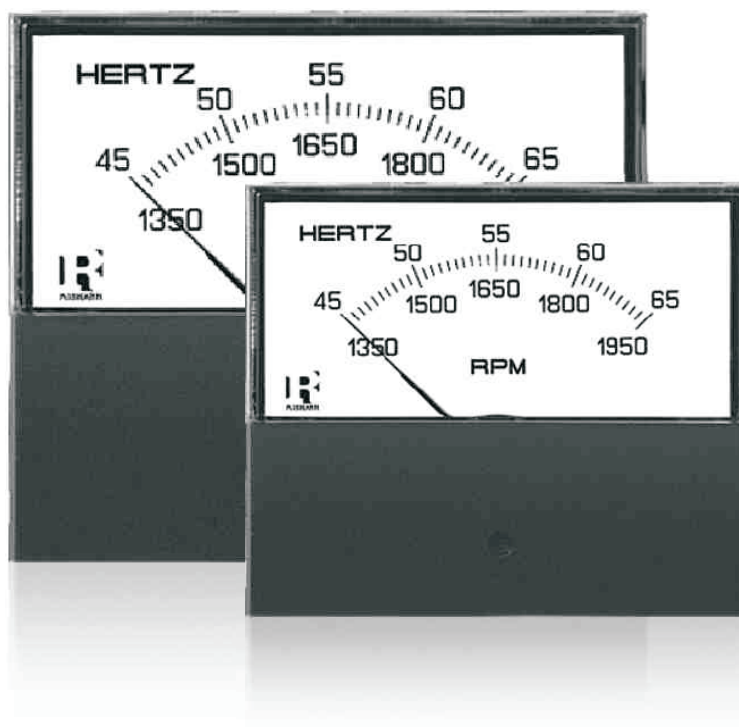


## Data Sheet

011 and 012  
Anush Series  
Panel Meters



## Application

The Anush range of analog panel meters offers accurate measurement and indication of most electrical and electronic parameters in industry standard 1<sup>1/2</sup> ", 2<sup>1/2</sup> " case sizes. This innovative design features a detachable lower fascia plate which allows the flexibility of either surface or window mounting. The fascia is simply unclipped to achieve the completely flush panel appearance of panel window mounting.

The range offers AC and DC ammeters, voltmeters and frequency meters utilizing a high torque scale value and features a rear zero adjuster screw for temperproof installation. AC moving iron meters provided high accuracy true RMS measurement of 1.5%.

### Applications :

- Marine
- Switchgear
- Distribution systems
- Control panels
- Embedded generation
- Energy management
- Building management
- Utility power monitoring
- Process control
- Motor monitoring

## Features

- Measuring and indication of AC amps, volts, frequency and DC signals.
- Surface of window mounting.
- High torque pivot and jewel movement.
- True RMS measurement meters.
- AC and DC inputs.
- Up to 40A DC direct connected.
- Up to 50A AC direct connected.

## Benefits

- AC moving iron and moving coil mechanisms.
- Reduced inventory.
- ANSI standard case sizes.
- Detachable lower fascia plate.
- Easy to modify for distributions.

## Compliant With

- ANSI C39.1
- IEC 51
- UL 3111-1

## Applicable Standards

Nominal case and cutout dimensions for indicating electrical instruments.	: IS 2419 DIN 43700
Scale and pointer for electrical measuring instruments.	: IS 1248 DIN 43802
Connections and Terminal markings for panel meters	: IS 1248 DIN 43807

Terminal bolts / leads	: DIN 46200/46282
Clamp straps for connections.	: DIN 46282
Safety requirements and protective measures for Electrical indicating instruments and their accessories.	IS 9249 DIN 40050 / 8-70 VDE 0110 /11-72 VDE 0410 /10-76 IEC 529,IEC 1010
Performance specifications for direct acting indicating analogue electrical measuring instruments & their accessories	: IS 1248 IEC 51/DIN EN 60051 DIN 43701
Environmental conditions	: IS 1248 IS: 9000, Part 5, 7, 8, VDE / VDI 3540
Front frames for indicating measuring instruments principle dimensions.	: DIN 43718
UL Combustibility class.	: UL 94 V-O
Technical conditions of delivery for electrical instruments.	: DIN 43701
Mechanical strength (Free fall test, vibration test)	: IS 1248/IEC 51 IS 9000 VDE 0411, part I, Sec.43/44, IEC 1010

E M C compliance as per following standards:

E N 50081-2, EN 50082-2, N 55011/CISPR 11,  
EN 60555-2, IEC 555-2  
EN 61000-4-4/IEC 1000-4-4,  
EN 61000-4-2/IEC 1000-4-2,  
EN 61000-4-5/IEC 1000-4-5, ENV 50140.

Comply with following European directives : 89 / 336 / EEC (EMC directive), 73 / 23 / EEC (low voltage directive) & amendment 93 / 68 / EEC, for CE marking.

## Specifications

<b>Accuracy</b>	
<b>DC Ammeters and Voltmeters</b>	1.5% 0 to100% of full scale deflection
<b>AC Ammeters and Voltmeters</b>	Moving Iron: 1.5% 10 to100% of full scale deflection
<b>Frequency Meters</b>	0.5% of end scale value
<b>Input Ratings</b>	
<b>DC Moving Coil Ammeters</b>	50mA to 50A
<b>DC Moving Coil Voltmeters</b>	50 mV to 600V
<b>AC Moving Coil Ammeters (VQ)</b>	1mA to 10A
<b>AC Moving Coil Voltmeters (VQ)</b>	6V to 600V
<b>AC Moving Iron Ammeters (EQ)</b>	100mA to 60A
<b>AC Moving Iron Voltmeters (EQ)</b>	6V to 600V
<b>Frequency meters</b>	45-50-55Hz, 55-60-65Hz, 45-55-65Hz
<b>Burden</b>	20 to 500V AC. Standard 900ohms/volt
<b>Overload</b>	
<b>Voltmeters</b>	2 times for 0.5 sec : 9 overloads 2 times for 5 sec : 1 overload
<b>Ammeters</b>	10 times for 0.5 sec : 9 overloads
<b>DC Center Zero Voltmeter</b>	10 times for 5 sec : 1 overload
<b>Enclosure</b>	
<b>Movement</b>	High torque pivot and jewel moving coil and moving iron
<b>Scale Balance</b>	Within 1% of scale length
<b>Relative Humidity</b>	25% to 80% nominal range of use
<b>Operating Temperature</b>	0° C to +40° C
<b>Storage Temperature</b>	20° C to +55° C
<b>Enclosure Code</b>	IP42
<b>Case and Cover</b>	Matt black case UL94V. Polycarbonate cover
<b>Bezel</b>	Matt black
<b>Bezel Window</b>	Shatterproof polycarbonate
<b>Fixing</b>	Surface mounting: 4 corner studs, 4-40 UNF Rear of panel mounting: 2 through hole mounts
<b>Terminals</b>	011-8-32 UNC 012-1/4"-28 UNC
<b>Compliant With</b>	
<b>Performance</b>	ANSI C39.1 and IEC 51
<b>Manufacture</b>	UL3111-1
<b>Scaling</b>	ANSI C39.1
<b>Safety</b>	IEC61010-1 (LVD) and BS EN 61326:(EMC)
<b>Vibration</b>	ANSI C39.1 cl. 5.13

## Operation

### Moving Coil Meter

These meters offer a centre cored, self shielding moving coil movement using pivots, hairsprings and sprung jewels. Variations in movement are limited by design. All DC voltmeters are 1000 ohms per volt, moving coil rectified products run at 900 ohms per volt. Millivolt meters use te 5 milliamps/50mV resistance.

### Moving Iron Meter

This clapper type repulsion design utilizes a pivot, hairspring and jewel movement. The bottom jewel is oil filled to provide damping

while the top is sprung for resilience. All voltmeters are manufactured with internal voltage dropper resistors.

### Frequency Meter

Frequency meters use a 1mA/350ohm movement driven by an EMC hard frequency conversion circuit.

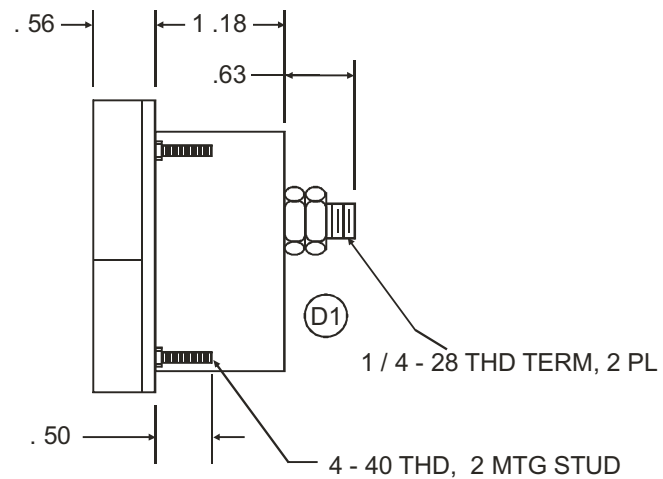
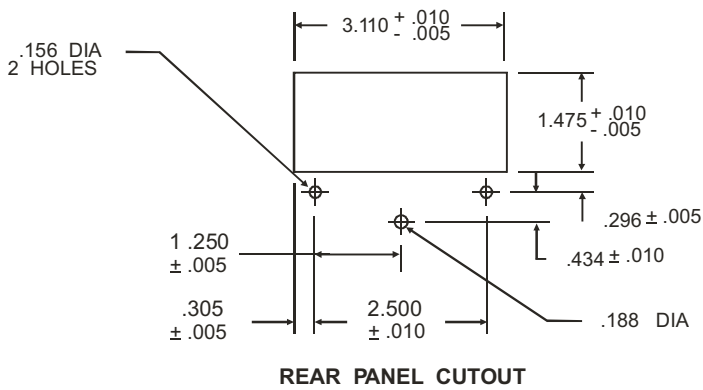
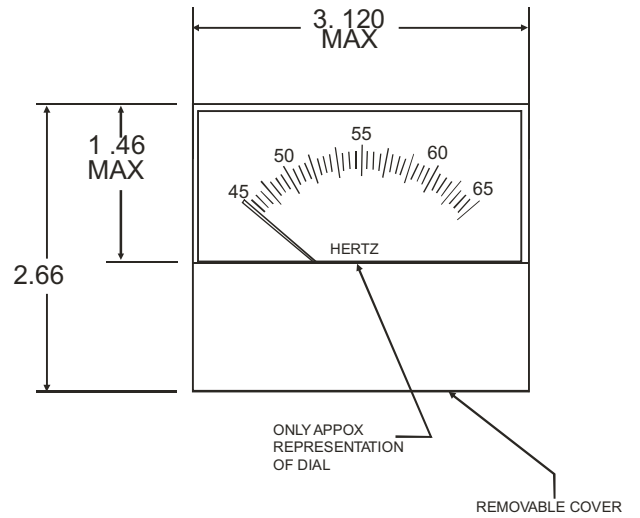
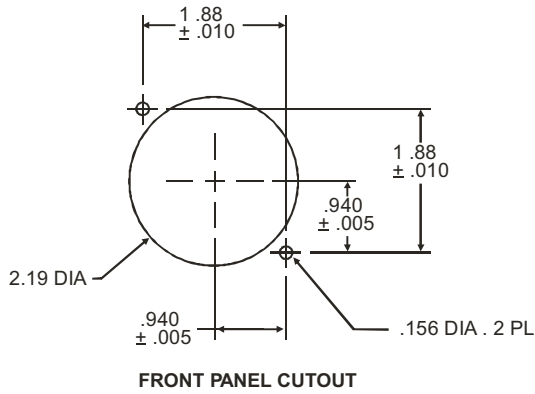
### Dials, Pointers and Scales

Standard dials are matt white black printed scales and a tubular knife-edge black are balanced within 1% of scale length and

feature a highly repeatable flattened arc scale shape, ensuring consistently accurate measurement reading. Dials are interchangeable between the challenger range of products using the same input within the published specification of the meter. Options for non standard customer specific dials are available upon request.

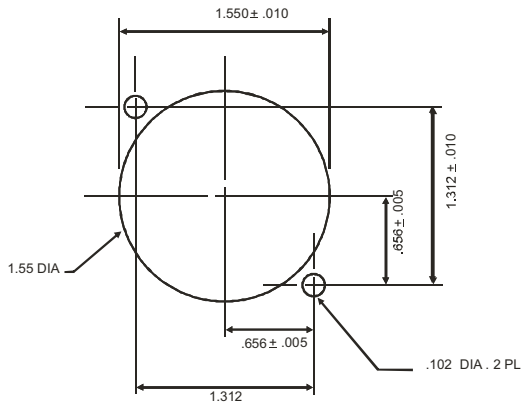
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A) 012

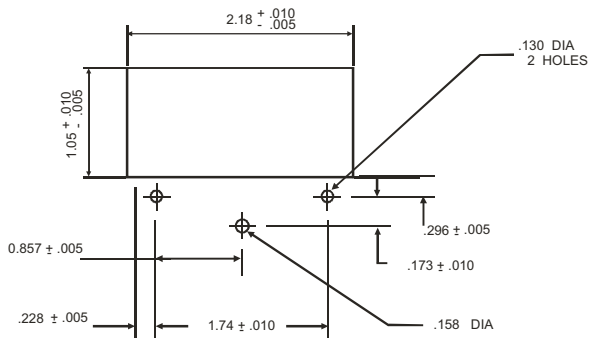
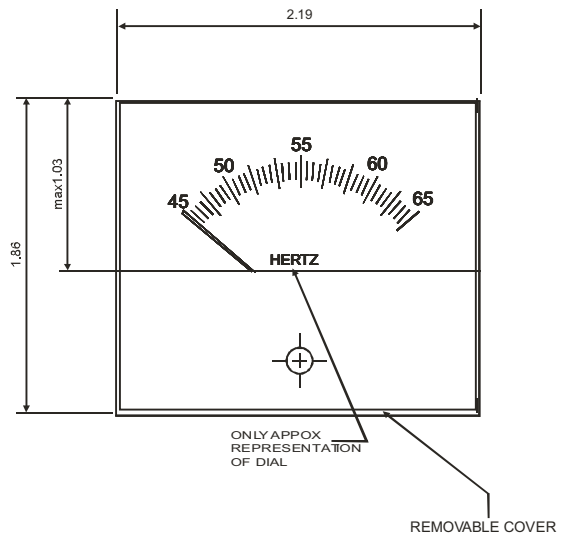


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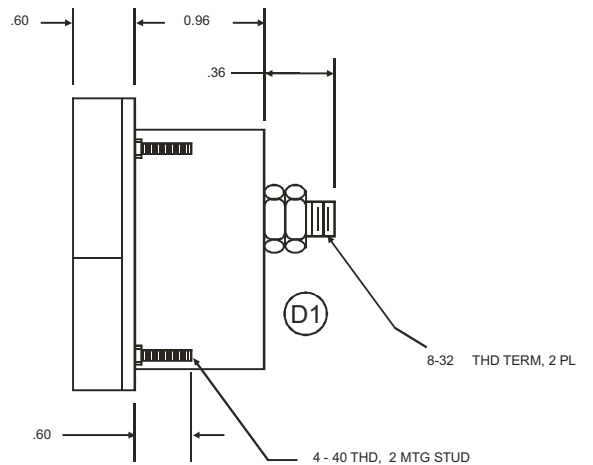
B) 011



FRONT PANEL CUTOUT



REAR PANEL CUTOUT



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