RS Pro - Analogue Panel Meters (DIN) – Data Sheet

A range of 48, 72 and 96mm DIN style panel meters is available for measuring all electrical parameters. These meters comprise Moving Iron & Permanent Magnet Moving Coil movements. All meters incorporate interchangeable scales & terminal covers as standard. A range of customized options is also available on request provided it is possible by design.

AC Moving Iron Meters

Moving Iron meters are designed to measure AC current or voltage, these meters indicate true RMS values & are substantially independent of system waveform. Scales are calibrated down to 10%, and ammeters can have overload scales of X2, X3, X5 or X6 to measure motor inrush current. Ammeters can be supplied for use with current transformers or as Direct connection, while voltmeters can be scaled for use with voltage transformers. Meters are housed in moulded polycarbonate cases and are suitable for the measurement of AC currents for the frequency range of 15 to 400Hz and voltages in the frequency range of 15 to 100Hz.

The Movement consists of an Aluminium spindle attached with Moving Iron & Pivots, Hairspring and Jewels. The bottom jewel is oil filled to provide damping while the top one is sprung to absorb shocks and vibrations. All the voltmeters are manufactured with external voltage dropping resistors to substantially reduce the self heating effects.

DC Moving Coil Meters

Moving Coil meters are designed to measure DC current or voltage, these meters indicate average values. Scales are linear and calibrated down to zero. High currents are measured with separate shunts attached on the rear side of the meter. Suppressed zero, Centre zero and Offset zero models are also available. Scale is linear and interchangeable.

Movement consists of a magnet, aluminium coil suspended on pivots, hairspring and jewel mechanism. Usage of Jewel is similar to top jewel in Moving Iron meter. Damping is achieved through the eddy current damping method. All DC Voltmeters are 1000 ohms per volt, rectified product run at 900 ohms per volt, millivolt meters use a 5 milliamps movement.

Polycarbonate housing having UL 94 V-0

All RS Pro meters are housed in robust case with classical finish. The case is made of polycarbonate, which is flame retardant and non-drip and conforms to international regulations UL 94 V-0. Polycarbonate is a very tough and light weight engineering plastic material which has got the best mechanical properties closest to a metallic housing. It is 10% glass filled providing extra toughness.

Mounting arrangement

The meter has a unique swivel screw clamp which can be mounted on any side face ensuring the meter can be secured and fixed in any panel with thickness from 1mm to 25mm. Two swivel screw clamps are supplied as standard.

Technical Specifications Standards

Nominal case and cut-out dimensions for indicating Electrical instruments Scale and pointer for electrical measuring instruments	DIN IEC 61554 DIN 43802
Connections and Terminal markings	DIN 43807
Terminal bolts/leads	As mentioned with DIN 46200/46282
Safety requirements and protective measures for Electrical indicating instruments and their accessories	ISO 20653:2006-08 EN 61010 VDE 0100-410:2018-10 IEC 529, IEC 61010
Performance specifications for direct acting indicating analogue electrical measuring instruments and their accessories	IEC51/DINEN60051 DIN 43701
Environmental conditions	As mentioned with VDE / VDI 3540
Front frames for indicating measuring instruments Principle Dimensions	DIN 43718
UL Compatibility	UL 94 V-0

Meters Comply with the following European directives

2014/30/EC (EMC directive), 2014/35/EC (low voltage directive) & amendment 93/68/EEC, for CE Marking.

Scale and Pointer
Pointer: Knife - edge Type
Pointer deflection: 0...90°
Scale characteristics: Near Linear above 10% of nominal full-Scale value
Scale division Coarse: Fine
Scale length: 41mm, 63mm, 97mm

Mechanical Data
Case details: Moulded square case suitable for mounting in Control / switchgear panels Machinery consoles.
Case material: Polycarbonate, Flame retardant and drip proof as per UL 94 V-0.
Front facia: Glass
Colour of bezel: Black (optional colours on request)
Position of use: Vertical
Panel fixing: Mounting Clamp
Panel thickness: < 25 mm

Reference Conditions
Accuracy: Class 1 according to IEC 51/DIN EN 60051)
Ambient temperature: 23 C ± 2°C
Position of use: Nominal position ±1°
Input Waveform: Rated value of measured quantity sine wave, distortion factor < 5%
Other Conditions: IEC 51/DIN EN 60051

Nominal Range of use
Ambient Temperature: 0 ...65 °C
Frequency: 45 ...65Hz
External Magnetic Field: At 0.4 kA/m
Accuracy: 1%
AC Voltmeters range: 6 to 1000V
AC Ammeters range: 100mA to 100A Direct connection
DC Voltmeters: 15mV to 600V DC
DC Ammeters: 15uA to 100A DC

Overload
AC Voltmeters: 1.2 times nominal voltage Continuous
AC Ammeters: 2 times nominal current Continuous
DC Voltmeters/Ammeters: 1.2 times nominal voltage Continuous

Burden (AC)
AC Voltmeters: < 4.5 VA
AC Ammeters: < 15A < 0.5 VA, > 15A < 0.8 VA

Impedance (DC)
Approx. voltage drop Ammeter 60mV > 20mA (DC)
Approx. Voltage drop Voltmeter 1kOhm/V >60mV (DC)

Short Duration
AC Voltmeters: 2 times for 0.5 sec: 9 overloads, 2 times 5 sec: 1 overload
AC Ammeters: 10 times for 0.5 sec: 9 overloads, 10 times for 5 sec: 1 overload
DC Voltmeters: 2 times for 0.5 sec: 9 overloads, 2 times 5 sec: 1 overload
DC Ammeters: 10 times for 0.5 sec: 9 overloads, 10 times for 5 sec: 1 overload

Environmental Conditions
Climatic Suitability: Climate category II as per IEC 60051 (climatic class 3 according to VDE/VDI 3540)
Operating Temperature: -10... + 65 C
Storage temperature: - 25...+75 C
IP rating: IP52 as standard (Optional IP54 with gasket, IP65 with protective cover)
Relative humidity: < 75% annual average, noncondensing
Shock resistance: 15 g. for pulse duration 11ms
Vibration resistance: 10-55-10Hz for ampli. 0.15mm (1.5g at 50Hz)
Pollution degree Stackable in a single cut-out

- **Limited range available with RS PRO, please contact RS components for further availability of other model types**

Dimensions

| Front in mm	Nominal Dimensions, mm		Cutout, mm
	$a_1 \times a_2$	h	$l_1 \times l_2$
48 x 48	48 x 48	5.5	$45^{+0.6} \times 45^{+0.6}$
72 x 72	72 x 72	5.5	$68^{+0.7} \times 68^{+0.7}$
96 x 96	96 x 96	5.5	$92^{+0.8} \times 92^{+0.8}$
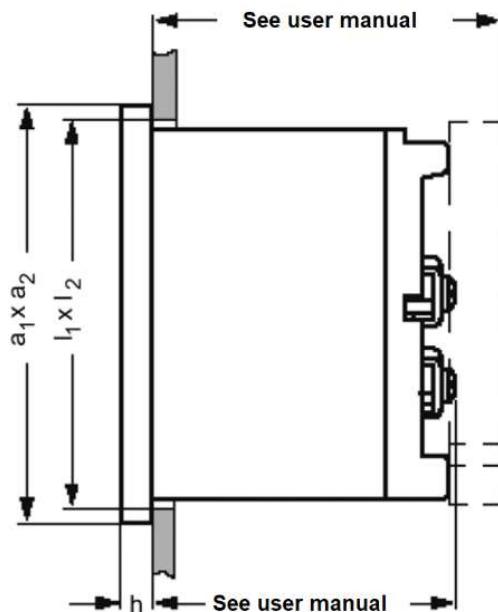
Connections Diagrams

AC Analogue Panel meters
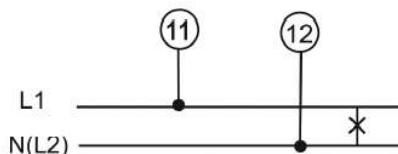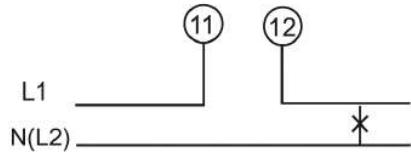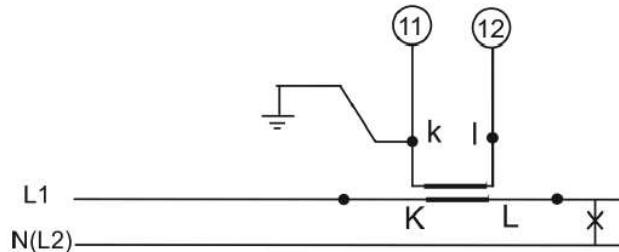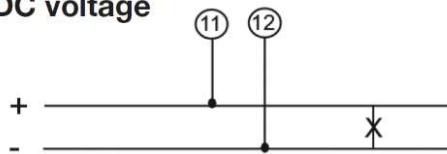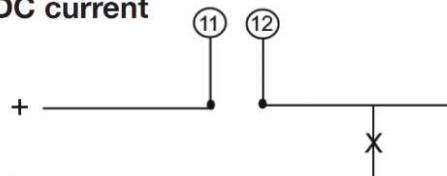
RS Pro Article codes	Description
1862412	48x48mm AC Ammeter Analogue Panel meter Input 0/5A AC, Scaled 0/5A AC
1862413	48x48mm AC Ammeter Analogue Panel meter Input 0/10A, Direct Connected
1862414	48x48mm AC Ammeter Analogue Panel meter Input 0/25A, Direct Connected
1862415	48x48mm AC Ammeter Analogue Panel meter Input 0/30A, Direct Connected
1862416	48x48mm AC Ammeter Analogue Panel meter Input 0/40A, Direct Connected
1862417	48x48mm AC Ammeter Analogue Panel meter Input 0/1.5/3A, Direct Connected
1862418	48x48mm AC Ammeter Analogue Panel meter Input 0/5/10A, Direct Connected
1862419	48x48mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0/50/100A CT50/5A
1862420	48x48mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0/100/200A CT100/5A
1862421	48x48mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0/250/500A CT250/5A
1862422	48x48mm AC Ammeter Analogue Panel meter Input 0/10/20A, Direct Connected
1862423	48x48mm AC Ammeter Analogue Panel meter Input 0/15/30A, Direct Connected
1862424	48x48mm AC Ammeter Analogue Panel meter Input 0/20/40A, Direct Connected
1862425	48x48mm AC Ammeter Analogue Panel meter Input 0/25/50A, Direct Connected
1862426	48x48mm AC Ammeter Analogue Panel meter Input 0/30/60A, Direct Connected
1862428	48x48mm AC Ammeter Analogue Panel meter Input 0/40/80A, Direct Connected
1862429	48x48mm AC Voltmeter Analogue Panel meter Input 0/150V AC
1862430	48x48mm AC Voltmeter Analogue Panel meter Input 0/250V AC
1862431	48x48mm AC Voltmeter Analogue Panel meter Input 0/300V AC
1862432	48x48mm AC Voltmeter Analogue Panel meter Input 0/500V AC
1862434	72x72mm AC Ammeter Analogue Panel meter Input 0/5A AC, Scaled 0/5A AC
1862435	72x72mm AC Ammeter Analogue Panel meter Input 0/5A SC 0 /100A CT100/5A
1862436	72x72mm AC Ammeter Analogue Panel meter Input 0/5A SC 0 /150A CT150/5A
1862437	72x72mm AC Ammeter Analogue Panel meter Input 0/5A SC 0 /200A CT200/5A
1862438	72x72mm AC Ammeter Analogue Panel meter Input 0/10A, Direct Connected
1862439	72x72mm AC Ammeter Analogue Panel meter Input 0/25A, Direct Connected
1862440	72x72mm AC Ammeter Analogue Panel meter Input 0/60A, Direct Connected
1862441	72x72mm AC Ammeter Analogue Panel meter Input 0/1.5/3A, Direct Connected
1862442	72x72mm AC Ammeter Analogue Panel meter Input 0/5/10A, Direct Connected
1862443	72x72mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0 /50/100A CT50/5A
1862444	72x72mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0 /100/200A CT100/5A
1862445	72x72mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0 /200/400A CT200/5A
1862446	72x72mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0 /250/500A CT250/5A
1862447	72x72mm AC Ammeter Analogue Panel meter Input 0/10/20A, Direct Connected
1862448	72x72mm AC Ammeter Analogue Panel meter Input 0/15/30A, Direct Connected
1862450	72x72mm AC Ammeter Analogue Panel meter Input 0/20/40A, Direct Connected

AC Analogue Panel meters

RS Pro Article codes	Description
1862451	72x72mm AC Ammeter Analogue Panel meter Input 0/25/50A, Direct Connected
1862452	72x72mm AC Ammeter Analogue Panel meter Input 0/30/60A, Direct Connected
1862453	72x72mm AC Ammeter Analogue Panel meter Input 0/40/80A, Direct Connected
1862454	72x72mm AC Voltmeter Analogue Panel meter Input DIN 72 150V AC
1862455	72x72mm AC Voltmeter Analogue Panel meter Input DIN 72 250V AC
1862456	72x72mm AC Voltmeter Analogue Panel meter Input DIN 72 300V AC
1862457	72x72mm AC Voltmeter Analogue Panel meter Input DIN 72 500V AC
1862458	96x96mm AC Ammeter Analogue Panel meter Input 0/5A, Direct Connected
1862459	96x96mm AC Ammeter Analogue Panel meter Input 0/10A, Direct Connected
1862460	96x96mm AC Ammeter Analogue Panel meter Input 0/25A, Direct Connected
1862461	96x96mm AC Ammeter Analogue Panel meter Input 0/40A, Direct Connected
1862462	96x96mm AC Ammeter Analogue Panel meter Input 0/5/10A, Direct Connected
1862463	96x96mm AC Ammeter Analogue Panel meter Input 0/5/10A SC 0 /50/100A CT50/5A
1862464	96x96mm AC Ammeter Analogue Panel meter Input 0/10/20A, Direct Connected
1862465	96x96mm AC Ammeter Analogue Panel meter Input 0/15/30A, Direct Connected
1862466	96x96mm AC Ammeter Analogue Panel meter Input 0/20/40A, Direct Connected
1862467	96x96mm AC Ammeter Analogue Panel meter Input 0/25/50A, Direct Connected
1862468	96x96mm AC Ammeter Analogue Panel meter Input 0/30/60A, Direct Connected
1862469	96x96mm AC Ammeter Analogue Panel meter Input 0/40/80A, Direct Connected
1862470	96x96mm AC Voltmeter Analogue Panel meter Input DIN 96 150V AC
1862471	96x96mm AC Voltmeter Analogue Panel meter Input DIN 96 250V AC
1862472	96x96mm AC Voltmeter Analogue Panel meter Input DIN 96 300V AC
1862473	96x96mm AC Voltmeter Analogue Panel meter Input DIN 96 500V AC

DC Analogue Panel meters

RS Pro Article codes	Description
1862474	48x48mm DC Ammeter Analogue Panel meter Input 0/1mA
1862475	48x48mm DC Ammeter Analogue Panel meter Input 0/20mA
1862476	48x48mm DC Ammeter Analogue Panel meter Input 4/20mA
1862477	48x48mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/1A
1862478	48x48mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC 0/3A
1862479	48x48mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC 0/10A
1862480	48x48mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/100A
1862481	48x48mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/300A
1862482	48x48mm DC Voltmeter Analogue Panel meter Input DIN 48 15V DC
1862483	48x48mm DC Voltmeter Analogue Panel meter Input DIN 48 30V DC
1862484	48x48mm DC Voltmeter Analogue Panel meter Input DIN 48 40V DC
1862485	48x48mm DC Voltmeter Analogue Panel meter Input DIN 48 100V DC
1862486	48x48mm DC Voltmeter Analogue Panel meter Input DIN 48 150V DC

DC Analogue Panel meters

RS Pro Article codes	Description
1862487	72x72mm DC Ammeter Analogue Panel meter Input 0/1mA
1862488	72x72mm DC Ammeter Analogue Panel meter Input 0/20mA
1862489	72x72mm DC Ammeter Analogue Panel meter Input 4/20mA
1862490	72x72mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/10A
1862491	72x72mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/30A
1862492	72x72mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/100A
1862493	72x72mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/300A
1862494	72x72mm DC Voltmeter Analogue Panel meter Input DIN 72 10V DC
1862495	72x72mm DC Voltmeter Analogue Panel meter Input DIN 72 15V DC
1862496	72x72mm DC Voltmeter Analogue Panel meter Input DIN 72 30V DC
1862497	72x72mm DC Voltmeter Analogue Panel meter Input DIN 72 40V DC
1862498	72x72mm DC Voltmeter Analogue Panel meter Input DIN 72 100V DC
1862499	72x72mm DC Voltmeter Analogue Panel meter Input DIN 72 150V DC
1862500	96x96mm DC Ammeter Analogue Panel meter Input 0/1mA
1862501	96x96mm DC Ammeter Analogue Panel meter Input 0/20mA
1862502	96x96mm DC Ammeter Analogue Panel meter Input 4/20mA
1862503	96x96mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/10A
1862504	96x96mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/30A
1862505	96x96mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/100A
1862506	96x96mm DC Voltmeter Analogue Panel meter Input (SHUNT) 0/75mV SC0/300A
1862507	96x96mm DC Voltmeter Analogue Panel meter Input DIN 96 10V DC
1862508	96x96mm DC Voltmeter Analogue Panel meter Input DIN 96 15V DC
1862509	96x96mm DC Voltmeter Analogue Panel meter Input DIN 96 30V DC
1862510	96x96mm DC Voltmeter Analogue Panel meter Input DIN 96 40V DC
1862511	96x96mm DC Voltmeter Analogue Panel meter Input DIN 96 100V DC
1862512	96x96mm DC Voltmeter Analogue Panel meter Input DIN 96 150V DC
1862513	96x96mm DC Voltmeter Analogue Panel meter Input DIN 96 500V DC