

# AVM230

## Multi-Function Power and Energy Meter



### HIGH PERFORMANCE

- Cost-Effective
- Large LCD, White Backlight, Easy Reading
- 4th CT Input Measure Neutral Current
- Historical Data Logs with Large Capacity Storage

### REVENUE METERING

- IEC 62053-22 0.5S and ANSI C12.20 0.5
- TOU, Four Tariffs, 12 Seasons, 14 Schedules
- Four Quadrant Power and Energy

### STATISTICS/ ALARM

- Max/Min Values with Time Stamp
- Peak Demand with Time Stamp
- Power Quality Event Record
- Over/ Under Limit Alarm

### COMMUNICATION

- Modbus RTU Protocol via RS485 Port
- Dual RS485 Ports
- PROFIBUS DP



## APPLICATIONS

### ■ Power Distribution



### ■ Medium and Low Voltage Systems



### ■ Commercial Metering



### ■ Industrial Facility Metering



## FEATURES

### **Metering**

- Phase-to-Neutral Voltage, Line-to-Line Voltage, Current
- Active Power, Reactive Power, Apparent Power, Power Factor
- Frequency
- Current Demand and Power Demand
- Load Nature
- Four Quadrant Power and Energy

### **Max/Min Record**

- Max/Min Parameter Value and Time Stamp
- Parameter Sources: Voltage, Current, Power, Frequency, etc
- Max/Min Value can be Reset

### **Power Quality**

- Voltage Unbalance, Current Unbalance
- THD, TOHD, TEHD and Individual Harmonics to 63rd
- Crest Factor, THFF, K Factor
- Voltage and Current Phase Angles

### **Time of Use (TOU)**

- Four Tariffs, 12 Seasons, 14 Schedules
- Weekends and 10-Year Holiday Settings
- DST Function

### **Data Logging**

- Two Groups Historical Data Logs Available in 2 MB
- Record Metering Parameters with Time Stamp
- Metering Parameter with Programmable

### **Alarms**

- Over or Under Setting Limit
- Up to 50 Power Measurement Parameters can be Set
- Alarm can Trigger the Relay Output, Screen Flashing and Alarm Record

### **Multiple I/O Functions**

- Digital Input; Monitor Switch Status; SOE Record
- Relay Output: Relay Command Control Output ON/OFF; Limit Alarm Control Output

### **Communications**

- Modbus RTU Protocol via RS485
- Dual RS485 Ports (Optional)
- PROFIBUS DP

### **Display**

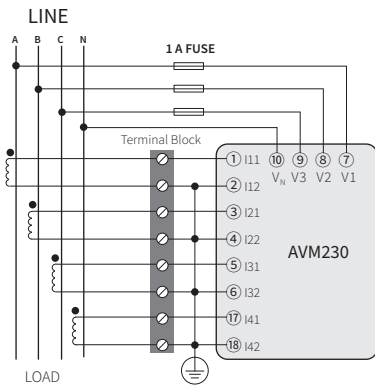
- Large LCD, White Backlight
- View Metering Parameters, Load Nature, Energy, Power Quality, etc

### **Energy and Energy Record**

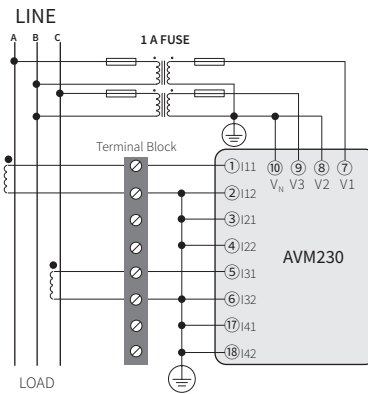
- Bi-Directional and Four Quadrant Energy
- Single-Phase Energy
- Daily Energy Record

# TYPICAL WIRING

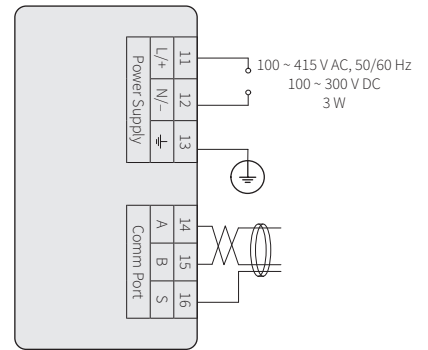
## 3LN, 3CT



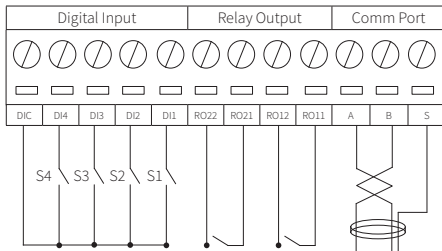
## 2LL, 2CT



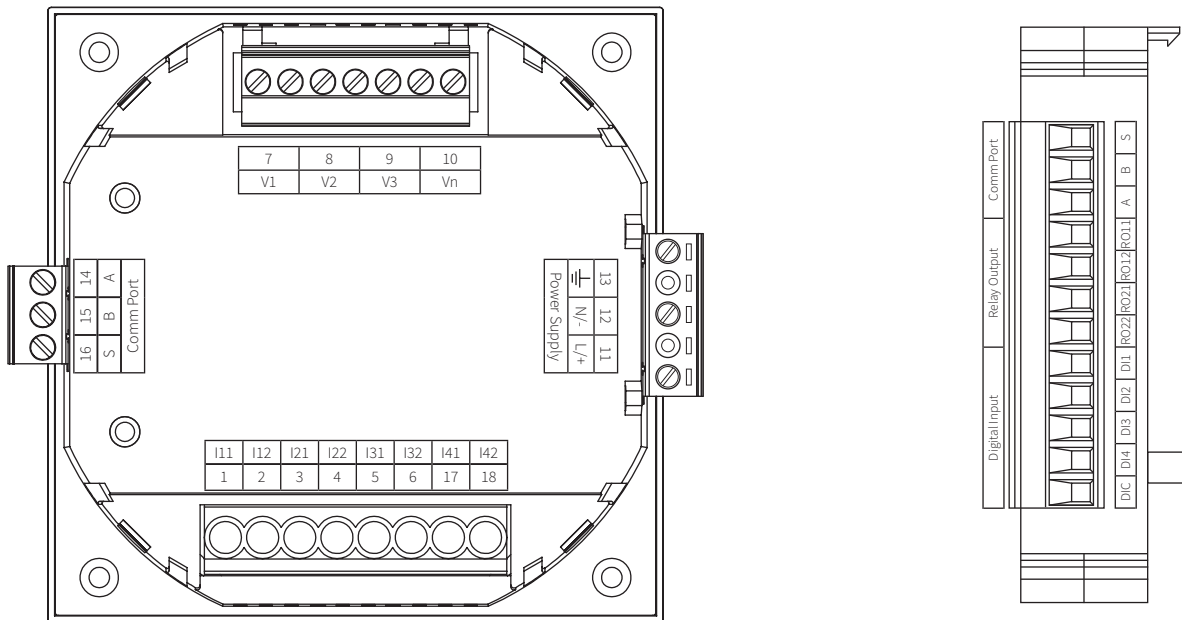
## Power Supply + RS485



## Digital Input, Relay Output



# TERMINAL DIAGRAM



# SPECIFICATION

Parameters	Accuracy	Resolution	Range
<b>Voltage</b>	0.2%	0.1 V	10 V ~ 1000 kV
<b>Current</b>	0.2%	0.001 A	0 ~ 50000 A
<b>Current Demand</b>	0.5%	0.001 A	0 ~ 50000 A
<b>Active Power</b>	0.5%	1 W	-9999 MW ~ 9999 MW
<b>Reactive Power</b>	0.5%	1 var	-9999 Mvar ~ 9999 Mvar
<b>Apparent Power</b>	0.5%	1 VA	0 ~ 9999 MVA
<b>Power Demand</b>	0.5%	1 W	-9999 MW ~ 9999 MW
<b>Reactive Power Demand</b>	0.5%	1 var	-9999 Mvar ~ 9999 Mvar
<b>Apparent Power Demand</b>	0.5%	1 VA	0 ~ 9999 MVA
<b>Power Factor</b>	0.5%	0.001	-1.0 ~ 1.0
<b>Frequency</b>	0.2%	0.01 Hz	45.00 ~ 65.00 Hz
<b>Active Energy</b>	0.5%	0.1 kWh	0 ~ 99999999.9 kWh
<b>Reactive Energy</b>	0.5%	0.1 kvarh	0 ~ 99999999.9 kvarh
<b>Apparent Energy</b>	0.5%	0.1 kVAh	0 ~ 99999999.9 kVAh
<b>Harmonics</b>	1.0%	0.01%	
<b>Running Time</b>		0.01 h	0 ~ 9999999.99 h

Input	
Current Input	
<b>Nominal Current</b>	① 5 A, ② 1 A, ③ 1 A (80 mA/100 mA/200 mA)
<b>Range</b>	① 0 ~ 10 A, ② 0 ~ 2 A, ③ 0 ~ 1.2 A
<b>Starting Current</b>	① 5 mA, ② 1 mA, ③ 5 mA
<b>Burden</b>	0.05 VA (Typical) @ 5 A rms
<b>Withstand</b>	100 A rms for 1 second , Non-Recurring
<b>Accuracy</b>	0.5%
Voltage Input	
<b>Nominal Voltage</b>	400 V AC L-N, 690 V AC L-L (+20%)
<b>Withstand</b>	1500 V AC Continuous 2500 V AC, 50/60 Hz for 1 minute
<b>Input Impedance</b>	2 MΩ/Phase
<b>Metering Frequency</b>	45 Hz ~ 65 Hz
<b>Accuracy</b>	0.5%
Energy Accuracy	
<b>Active Energy</b>	IEC 62053-22 Class 0.5S ANSI C12.20 0.5
<b>Reactive Energy</b>	IEC 62053-24 Class 1.0S
Harmonics	
<b>Metered Value</b>	2nd ~ 63rd Harmonics

Communication	
RS485 (Standard)	
	Modbus RTU Communication Protocol
	Baud Rate: 1200 ~ 57600 bps
Second RS485 Port (Optional)	
	Modbus RTU Communication Protocol
	Baud Rate: 1200 ~ 57600 bps
PROFIBUS (Optional)	
	PROFIBUS-DP/V0 Protocol
	Work as PROFIBUS Slave, Baud Rate Adaptive, Up to 12 M
	Model : Input Bytes: 32, Output Bytes: 32
	PROFIBUS Standard According to EN 50170 Vol. 2

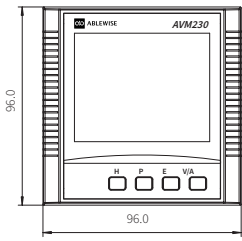
Digital Input (DI)	
<b>Input Type</b>	Dry
<b>Input Resistance</b>	4 kΩ
<b>Pulse Frequency(Max)</b>	100 Hz, 50% Duty Ratio
<b>SOE Resolution</b>	2 ms

Relay Output (RO)	
<b>Switching Voltage</b>	250 V AC, 30 V DC
<b>Switching Current</b>	5 A (R), 2 A (L)
<b>Set Time</b>	10 ms (Max)
<b>Contact Resistance</b>	30 mΩ (Max)
<b>Isolation Voltage</b>	2500 V AC
<b>Mechanical Life</b>	1.5 × 10 <sup>7</sup>

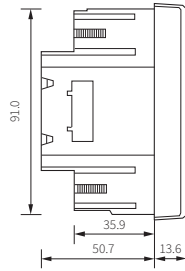
Power Supply	
AC/DC Power Supply	
<b>Operating Range</b>	100 ~ 415 V AC, 50/60 Hz; 100 ~ 300 V DC
<b>Power Consumption</b>	3 W
<b>Withstand</b>	3250 V AC, 50/60 Hz for 1 minute
Low Voltage DC Power Supply (Optional)	
<b>Operating Range</b>	20 ~ 60 V DC
<b>Power Consumption</b>	3 W

Operating Environment	
<b>Operating Temperature</b>	-25 ~ 70 °C
<b>Storage Temperature</b>	-40 ~ 85 °C
<b>Relative Humidity</b>	5% ~ 95% (Non-Condensing)

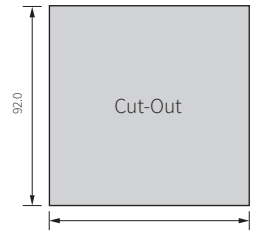
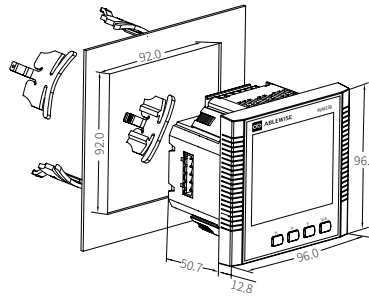
Standards Compliance	
Product Standard	
<b>Product Standard</b>	IEC 61557-12
Safety Standard	
<b>Safety Standard</b>	IEC 61010-1 ed.3; IEC 61010-2-30 ed.2
Electromagnetic Compatibility	
<b>Electrostatic Discharge Immunity</b>	IEC 61000-4-2
<b>Radiated Field Immunity</b>	IEC 61000-4-3
<b>Fast Transients Immunity</b>	IEC 61000-4-4
<b>Surge Immunity</b>	IEC 61000-4-5
<b>Conducted Disturbances Immunity</b>	IEC 61000-4-6
<b>Power Frequency Magnetic Field Immunity</b>	IEC 61000-4-8
<b>Radio-Frequency and Radio Disturbance</b>	CISPR 11/CISPR 22; EN 55011/EN 55022



**Front View**



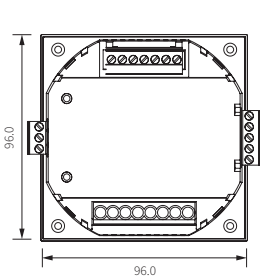
**Side View**



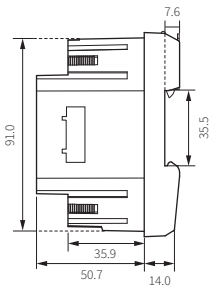
**Cut Out**

*DIN-Rail Mount Meter Dimensions*

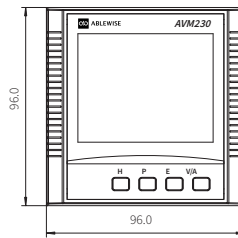
*External Display Module Dimension*



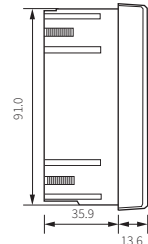
**Rear View**



**Side View**

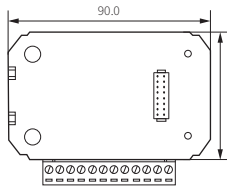


**Front View**



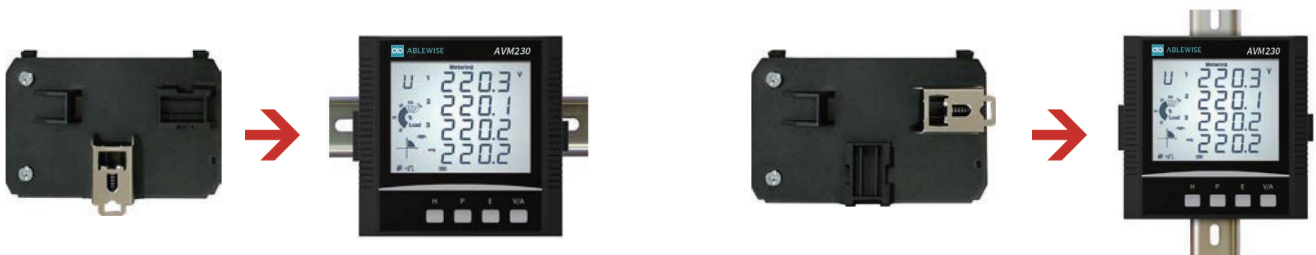
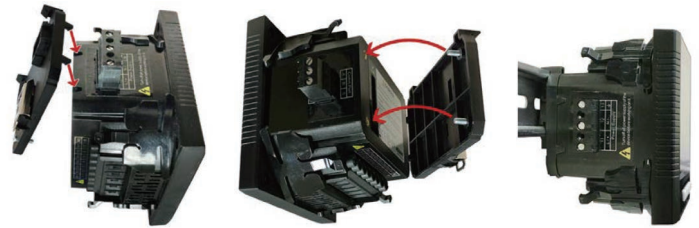
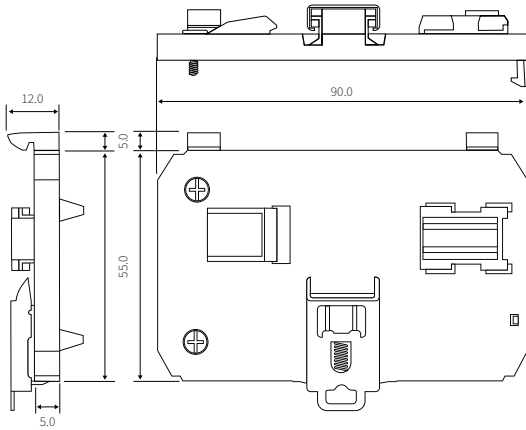
**Side View**

*I/O Module Dimensions*



# AVM2-DIN DIMENSIONS

Unit: mm



## ORDERING INFORMATION

Model	Mounting Options	Current Input	Power Supply	Expansion Module
AVM230	- D: LCD display	- 5A: 5 A	- P1: 100 ~ 415 V AC , 50/60 Hz; 100 ~ 300 V DC	- X3: PROFIBUS
	- M: DIN-Rail Mounting without Display	- 1A: 1 A	- P2: 20 ~ 60 V DC	- X6: 4DI+2RO+RS485
		- 200mA: 1 A		

Ordering Example: AVM230 - D - 5A - P1 - X6

Accessories (Optional)	
AVM2-DIN	- DIN-Rail Adapter
AVM2-IP66/NEMA4X	- Environmental Protection Cover
AVM2-DS1	- Remote Display (Only for DIN-Rail Mounting "M")

Ordering Example: AVM2-DS1

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