

# S110

# Power and Energy Meter



S110



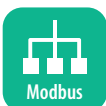
S110-P



**MULTIFUNCTION POWER AND ENERGY METER**  
3-phase, 1-phase



**COMPRESSOR PERFORMANCE**  
Helps to identify compressor efficiency



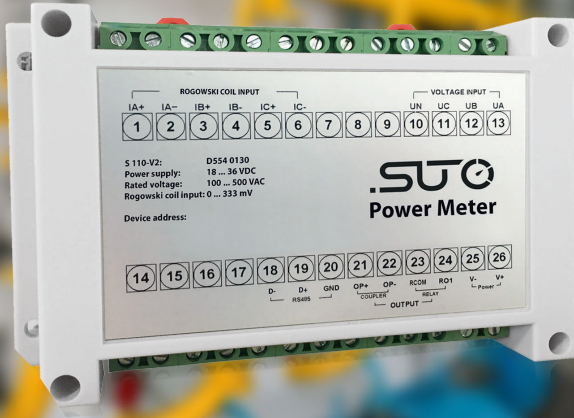
**MODBUS/RTU INTERFACE**  
Connects to any Modbus-Master



**ROGOWSKI COILS**  
Wide range, highly accurate

## Benefits

- ✓ Convenient and easy to set up compressor performance and efficiency monitoring
- ✓ Real power consumption in kW and kWh by measuring each phase voltage and current
- ✓ DIN rail installation for power cabinets or portable version with rugged housing
- ✓ Power range up to 2 MW (2000 kW)
- ✓ Three current sensor models with 100 A, 1000 A or 3000 A available



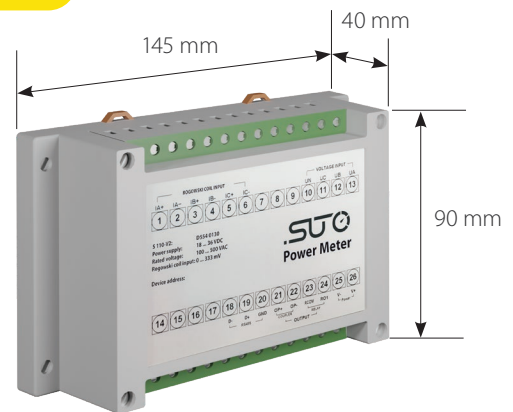
## Operation Principle

The SUTO Power and Energy Meter has been designed with a focus on easy installation and reliable measurements. The main application is to measure the power consumption and the accumulated energy consumption of electrical 3-phase consumers, like compressors, driers and oxygen/nitrogen generators.

The main difference to common power measurements is that all relevant parameters are real measured values and not assumptions. Unlike the traditional method, where only one phase is measured, the voltage is assumed as stable and the phase shift is entered as a constant, the S110 measures the voltage and current of each phase.

By this, the S110 is much more accurate and delivers more reliable measurements compared to single phase current measurements.

S110



## Application

In this illustration, a Power and Energy Meter is installed directly into the connection box of the compressor.

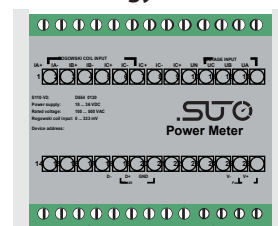
The Rogowski current coils are easy to install, by just clamping them around the power cables. The voltage connection can be drawn directly from the power cabinet of the compressor.

The Power and Energy Meter is then connected to a S330 / S331 Display and Data Logger to record the Voltage and Current of each phase, as well as recording the actual power consumption and the total energy consumption.

This is not only used to identify inefficient compressors, but also letting the compressed air operator know what the real costs of the compressed air are.

S110

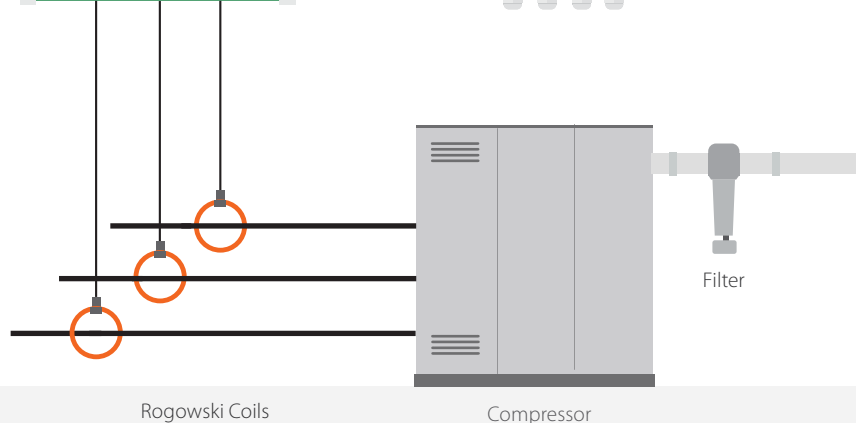
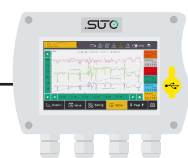
Power and Energy Meter



S331

Data Logger

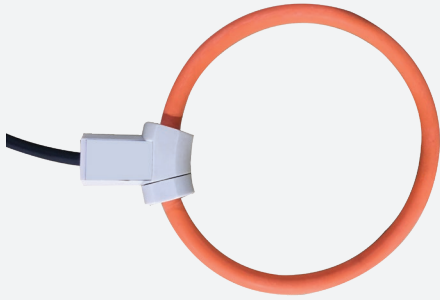
S330 / S331 can be used as stationary display of up to 16 power meters



Rogowski Coils

Compressor

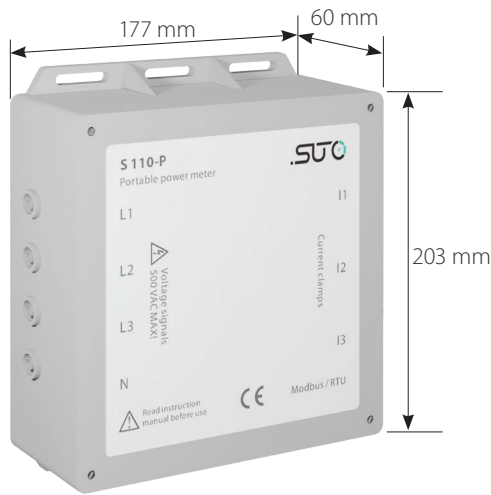
Filter



Current Measuring via Rogowski coils offers a high accuracy over a wide range and an easy installation. (Note: for each phase, one coil is needed)



**S110-P**



**Monitoring Software**



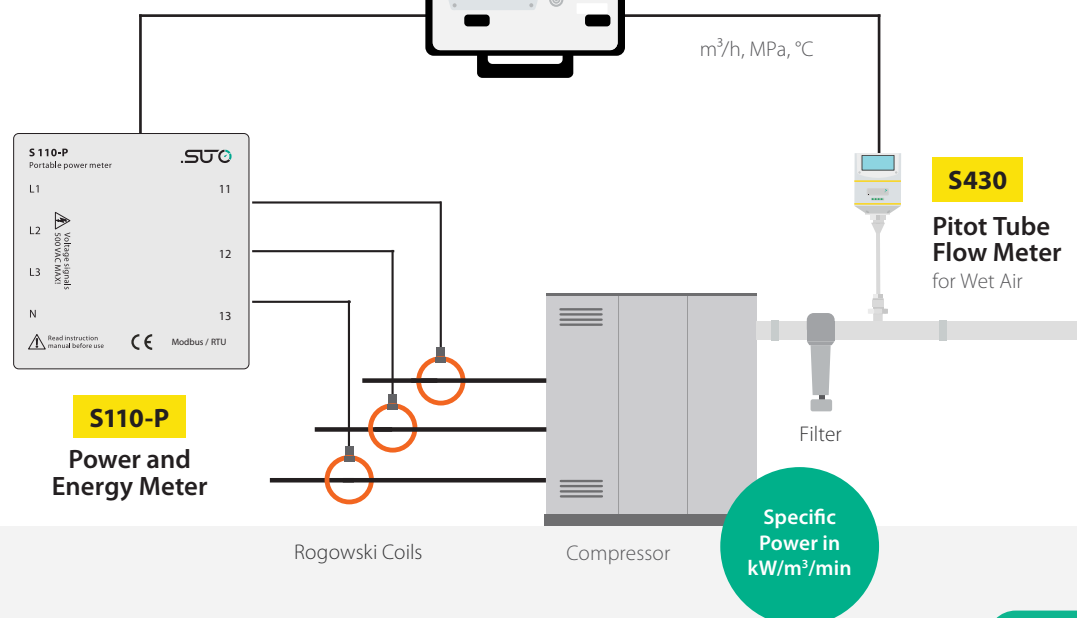
Wireless Connection

**S551**

**Portable Data Logger**  
Can be used as onsite portable display

**Compressor Efficiency Test**

Knowing your compressor efficiency is the first step for your energy saving goals. With this solution you will know, how much electrical energy is needed to produce 1 m<sup>3</sup> compressed air and what are the electrical costs.



## Technical Data

### Measurement

#### Flow

|                  |                                |
|------------------|--------------------------------|
| Accuracy         | V = 0.2%, A = 0.5%             |
| Selectable units | V, A, kW, kvar, kVA, kWh, Hz   |
| Measuring range  | 100 ... 500 VAC, up to 2500 kW |
| Sampling rate    | 8 k/s                          |

### Signal / Interface & Supply

#### Fieldbus

|          |            |
|----------|------------|
| Protocol | Modbus RTU |
|----------|------------|

#### Supply

|                |                   |
|----------------|-------------------|
| Voltage supply | 24 VDC S110 1 W   |
|                | 24 VDC S110-P 2 W |

|                     |            |
|---------------------|------------|
| Current consumption | Max. 50 mA |
|---------------------|------------|

#### Data interface

|            |               |
|------------|---------------|
| Connection | M12 connector |
|------------|---------------|

### General data

#### Material

|         |     |
|---------|-----|
| Housing | ABS |
|---------|-----|

#### Miscellaneous

|                  |      |
|------------------|------|
| Protection class | IP20 |
|------------------|------|

|           |    |
|-----------|----|
| Approvals | CE |
|-----------|----|

|        |         |
|--------|---------|
| Weight | 0.21 kg |
|--------|---------|

#### Operating conditions

|                     |               |
|---------------------|---------------|
| Ambient temperature | -25 ... +55°C |
|---------------------|---------------|

|                     |               |
|---------------------|---------------|
| Storage temperature | -40 ... +85°C |
|---------------------|---------------|

## Ordering

Please use the following tables to assist in placing your order with our sales staff.

### S110 Power and Energy Meter

#### Order No. Description

##### Stationary

|           |   |
|-----------|---|
| D554 0130 | S110 Power and Energy Meter, hat rail, Modbus/RTU, 24 VDC supply              |
| S554 0140 | SUTO current sensor for S110, 1000 A, 100 mm diameter, 1.8 m cable, open ends |
| S554 0141 | SUTO current sensor for S110, 3000 A, 150 mm diameter, 1.8 m cable, open ends |
| S554 0142 | SUTO current sensor for S110, 100 A, 16 mm diameter, 1.8 m cable, open ends   |

##### Portable

|           |  |
|-----------|--|
| P554 0134 | S110-P Portable Power and Energy Meter, incl. 5 m connection cable to S551 (Modbus/RTU), 4 voltage test leads and 4 test clips |
| S554 0160 | SUTO current sensor for S110-P, 1000 A, 100 mm diameter, 1.8 m cable, connector to S110-P                                      |
| S554 0161 | SUTO current sensor for S110-P, 3000 A, 150 mm diameter, 1.8 m cable, connector to S110-P                                      |
| S554 0162 | SUTO current sensor for S110-P, 100 A, 16 mm diameter, 1.8 m cable, connector to S110-P  |



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