



RS-485

### FEATURES

- The **KPFI-12** power factor controllers are instruments used for the measurement and compensation of reactive power in electrical installations by controlling and operating capacitor banks.
- Applicable at low, medium, or high voltage levels, through programming of the ratios of Potential and Current Transformers and connection schemes (single-phase measurement, three-phase control).
- The KPFI-12 has 12 outputs for controlling banks, 1 output for alarm, and 1 RS-485 output for serial communication (optional).
- It offers two operating modes: control, in which you can select 1 out of 20 activation patterns for capacitive stages, and auto-start, where the controller identifies the reactive power of each bank, as well as the connection diagram applied in the installation, and uses the obtained values as settings for power factor control.

### APPLICATIONS

- Control and operation of capacitor banks for power factor correction.

### CHARACTERISTICS

#### INFORMATION

- Includes current, voltage, frequency, power (active, reactive, and apparent), power factor, amount of missing Kvar for correction, THD (Total Harmonic Distortion), and harmonics (voltage and current, up to the 31st order), temperature, energy (active, reactive, and apparent), demands (active, apparent, and current), and the number of activations for each capacitive stage.

#### CONNECTION TYPES

- The measurements taken by the KPFI-12 are single-phase; however, power factor control is performed considering a three-phase system (star or delta).

#### INSTALLATION

- Painel Door
- Technical support: get in touch via e-mail, telephone, WhatsApp and YouTube videos

#### INTERFACES, LEITURA & CONFIGURAÇÃO

- HMI composed of an LCD display and four navigation keys, allowing local reading and configuration.
- RS-485 communication (optional).
- Incorporates Modbus-RTU Protocol, allowing integration with PLCs, external HMIs, SCADA systems, and concentrators.
- It includes 12 outputs for activation and control of capacitor banks. It also features 1 auxiliary output for alarms related to the following conditions: undervoltage and overvoltage, underfrequency and overfrequency, undercurrent and overcurrent, voltage THD, current THD, temperature, undercompensation, and overcompensation..
- It offers two operating modes: control, where you can choose 1 out of 20 distinct programming patterns, or auto-start, where the controller identifies the reactive power of each bank, as well as the connection diagram applied in the installation, and uses the obtained values as settings for power factor control.

### RELAY OUTPUTS

*Capacitor Banks  
(Power Factor Correction).*

12 outputs for controlling capacitive stages (4A AC / 250V AC). It can be used in two modes: control, where the user selects 1 out of 20 predefined stage activation patterns, or auto-start, where the controller identifies the reactive power of each bank, as well as the connection diagram applied in the installation, using the obtained values as new settings for power factor control.

*Configuration - Power factor of interest  
Supervisory Alarm*

0.8 inductive...0....0.8 capacitive

### MEASUREMENTS

*Instantaneous*

1 output (4A AC / 250V AC) - Related to the following conditions: undervoltage and overvoltage, underfrequency and overfrequency, undercurrent and overcurrent, voltage THD, current THD, temperature, undercompensation, and overcompensation.

*Energies, Demands and Activations*

Current, voltage, frequency, power (active, reactive, and apparent), power factor, amount of missing Kvar for correction, THD (Total Harmonic Distortion), and harmonics (voltage and current, up to the 31st order), temperature.

*Minimum and Maximum*

Energies (active, reactive and apparent), demands (active, apparent and current), number of activations of each capacitive stage.

### CIRCUIT

*Connection Type*

Voltage, Current, Frequency, Power, Demands, Temperature, THD

*Control*

Single phase - 1 current, 1 voltage (PH-PH or PH-N)

*Nominal Voltage / Working Range*

Three-phase (Star or Delta)

*Nominal Current / Working Range*

Nominal: 240 Vac | Working range: 30 to 550Vac (PH-PH)

*Frequency - Working Range*

Nominal: 5Aac | Working range: 2mA to 6Aac.

*Connection*

40 to 70 Hz

*Maximum Cable to be used*

Quick coupling terminal blocks

*Internal Consumption*

2,5mm<sup>2</sup>

*Temperature Measurement*

<0,6VA

### POWER SUPPLY

*Voltage - Working Range*

-10 a 60°C (14 to 140°F)

*Internal Consumption*

110 a 550Va.c.

### ACCURACY

at 25°C (77 °F),  
referred to the full  
scale

*Voltage and Current*

< 10VA

*Powers*

0,5%

*Energies*

1,0%

*THD*

Active and Apparent: 1,0% | Reactive: 2,0%

### COMMUNICATION

*Connection/Protocol*

4%

*RS-485 Cabling*

RS-485 - Modbus RTU

*Transmission Speed*

Shielded cables, with at least two twisted pairs (2x24 AWG), minimum section of 0.25mm<sup>2</sup> and characteristic impedance of 120ohms

*Data Format*

4800, 9600,19200, 38400 or 57600bps (configurable)

*Addressing*

8N1, 8N2,8O1,8O2,8E1 ou 8E2 (configurable)

### DISPLAY

*LCD (green)*

1 to 247 (configurable)

### CASE

*Material*

2 lines x 16 characters, with backlight

*Mass*

Thermoplastic

*Protection Degree*

0,35Kg

### ENVIRONMENTAL CONDITIONS

*Storage/operation temperature*

IP-50 (Front) e IP-20 (Casing)

*Moisture*

-20 ... +65°C (-4....149°F) | -10 ... +60°C (14....140°)

### NORMALIZATION

*Electrical Parameters*

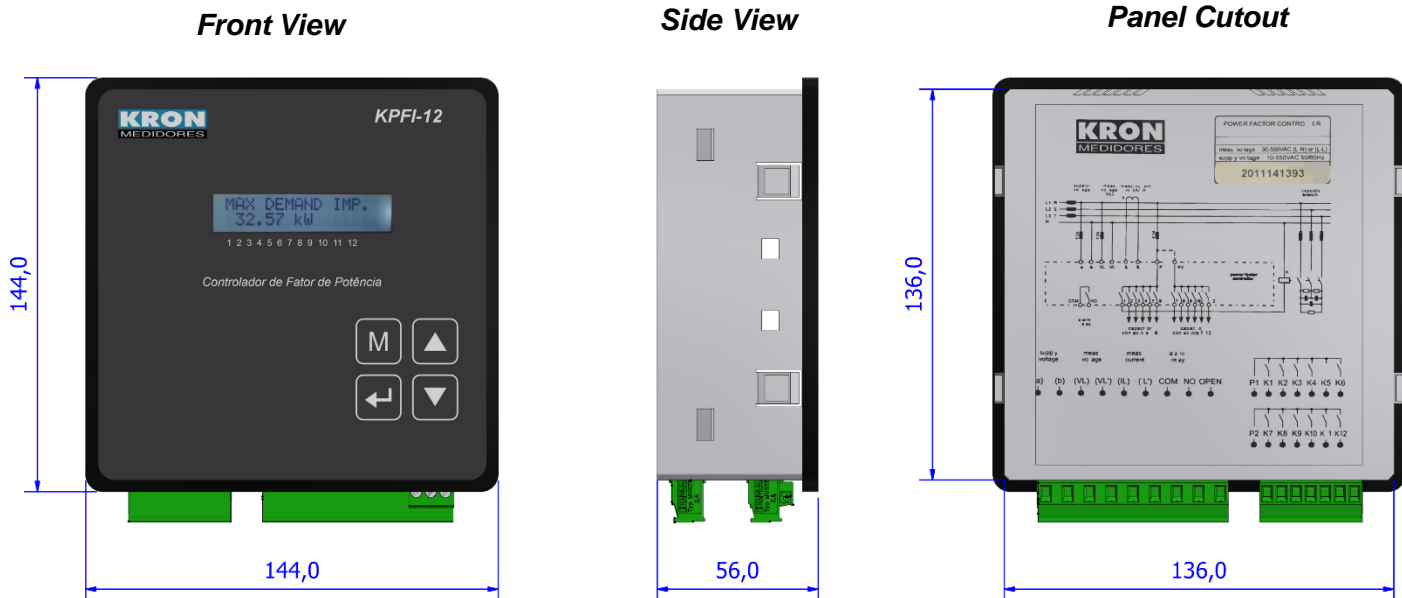
15...95% (No condensation)

IEC 61326-1:2012 Table – 2

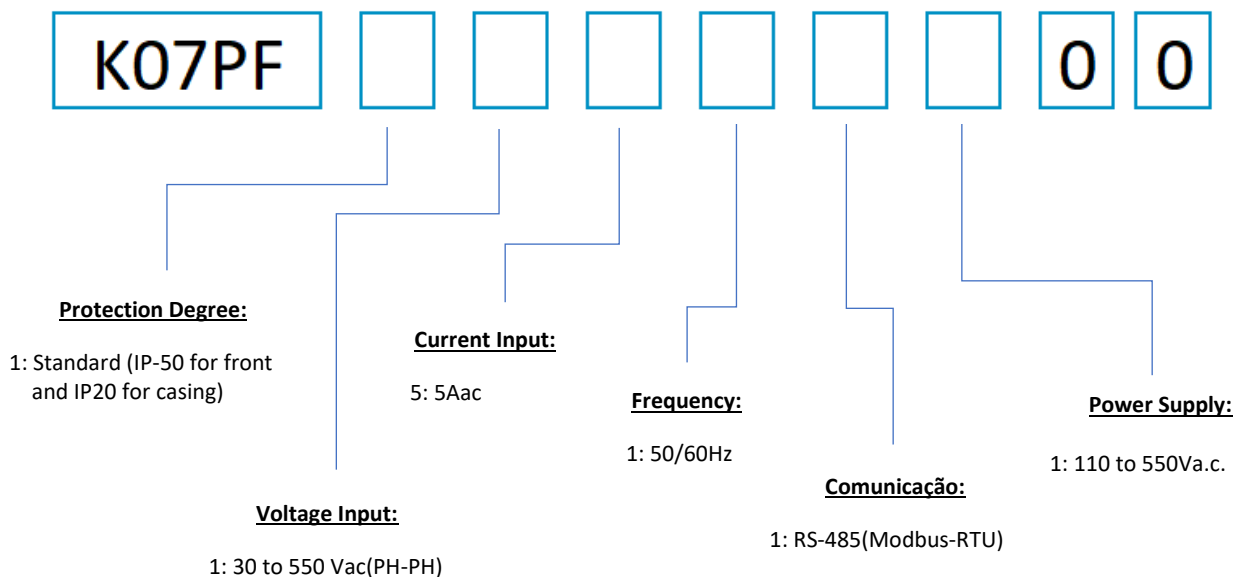
IEC 61010-1:2010

IEC 60529

### DIMENSIONS



### How to Specify:



#### Standard Model: (Example)

**K07PF 1 1 5 1 1 1 0 0**

Power Factor Controller KPFI-12 {Degree of Protection - Standard} {Voltage Input: 30 to 550V AC (L-L)} {Current Input: 5A AC} {Frequency: 50/60Hz} {RS-485 - Modbus-RTU} {Power Supply: 110 to 550Va.c.}

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