



Data Sheet

RISH PFC 08

Power Factor Controller
(Size 96 X 96 mm)



Measure



Control



Record



Analyze



Optimize

Overview

RISH PFC 08 is power factor controller for reactive power compensation. It controls external reactive power element (Capacitor) to meet reactive power demand of the load. This reduces burden on source to supply additional reactive current. precise and fast measurements are useful tool for system analysis. powerful protection function protects system and switching element in case of system faults

Product Features

Autoinitialisation Function

Controller has auto init function to detect

1. Number of capacitors connected (Capacitor bank count)
2. Capacitor kvar value
3. Phase correction angle

Capacitor programming option

Each output capacitor kvar can be programmed either as

1. Direct kvar value
2. Control series
3. Auto detected value

Control Output

Controller is available in basic 4 ,6 , 8 output option Selectively each output capacitor can be configured as permanently ON (Fixed compensation), Permanently Off (Faulty Bank), Auto mode.

Control Scheme

Controller has intelligent control of outputs so that equal use of system resources is ensured additionally capacitor health monitoring option is available to detect loss of capacitor power for preventive action.

Manual Mode

Controller has manual function for bank connection / disconnection that is used for diagnosis purpose.

Test Run Function

To measure kVAR value of connected capacitor bank test run function is used. banks are connected and disconnected sequentially and effective change in PF monitored so to calculate capacitor bank value

Programmable PFC parameters

Target PF, Number of banks, Bank kVAR value, connecting time, disconnecting time, discharge time, maximum switching kVAR, switching threshold etc.

Programmable system configuration

Voltage and current inputs are configurable and system adopt itself according to configuration so that correct functioning is possible Voltage Input is configurable as VLN or VLL (R/Y/B) Current Input is configurable as IR(kl),IY(kl),IB(kl) or IR(lk), IY(lk), IB(lk)

Protections and Alarm

Alarm relay can be activated for one or more following events High voltage, Low voltage, undercurrent, over-current, over temperature, Frequency faults, over harmonics-voltage, over harmonics current, out of bank (under compensation), overcompensation For each of above event except under and overcompensation capacitors are switched off sequentially to protect capacitor banks

Controller generates system warning for

1. Over temperature
2. If output switching count limit sets exceeds set value
3. Battery low (if RTC used)
4. Capacitor health fault

Programmable energy meter parameters

CT ratio, Nominal voltage, Energy unit for ex (Wh, kWh, Mwh) energy display resolution (7/8/9) digits, energy updation rate on modbus (1-60 min), Demand integration time.

Programmable Display parameter

Display contrast level, auto scrolling (On/Off), backlit (On/Off) are configurable for any viewing condition

System parameter Min / Max value storage

Minimum/maximum values of voltage, current, Frequency, Temperature, Maximum values of kW, V-thd, I-thd are logged

Demand parameters

Demand for kW, kVAR, kVA (import / Export) are logged

THD and individual harmonics

Individual harmonics upto 31st and THD for voltage and current are continuously calculated and displayed

Energy measurement (Import and Export)

Active , Reactive , Apparent energy is measured

High contrast 16 x 2 LCD display

Adjustable contrast with backlit on / off function

Optional MODBUS (RS485) Output

The optional ModBus output enables the instrument to transmit all the measured parameters over standard MODBUS (RS485).



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Product Features

Reset Function

Instrument has reset function which used to Reset

1. Minimum , maximum value of parameters recorded.
2. Switching count, operation time of each bank or all at once
3. Energy counter
4. Demand
5. ON/RUN hour
6. Interruption count

Enclosure Protection for dust and water

conforms to IP 54 (front face) as per IEC60529

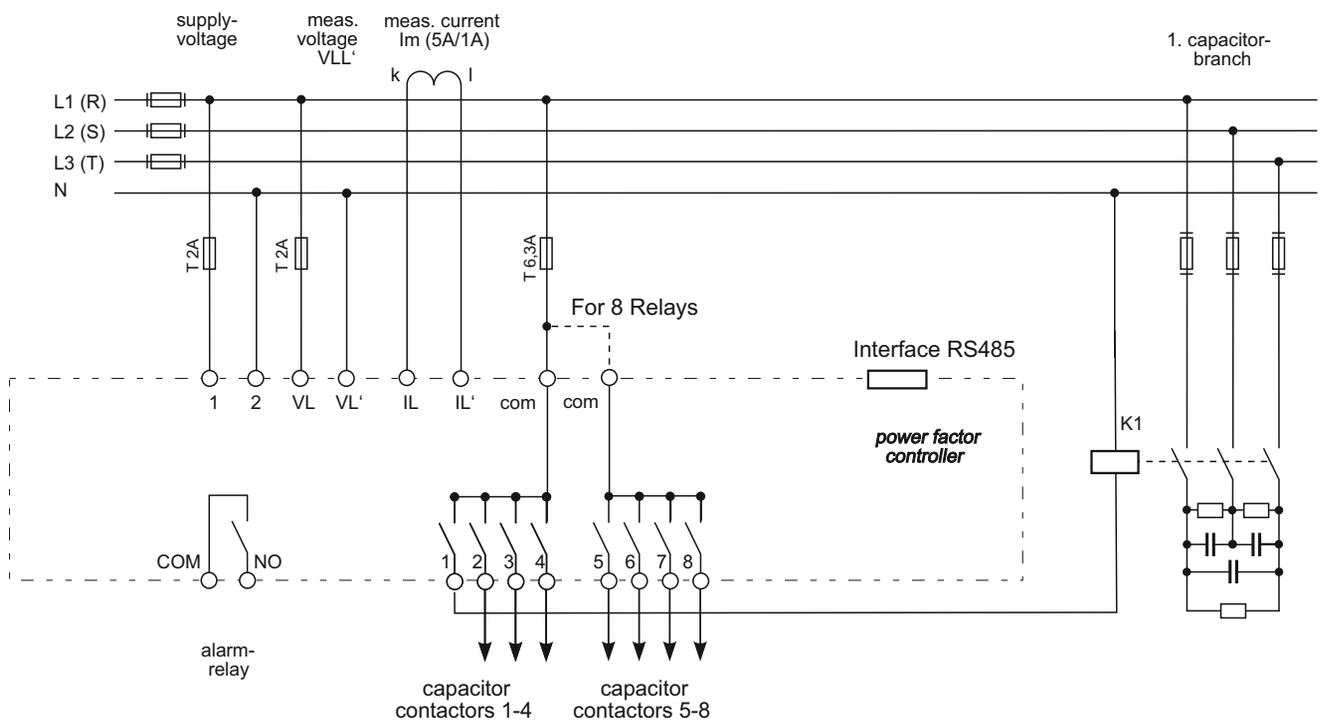
Compliance to International Safety standards

Compliance to International Safety standard IEC 61010-1- 2001

EMC Compatibility

Compliance to International standard IEC 61326

Electrical Connections:



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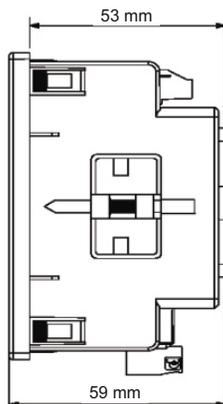
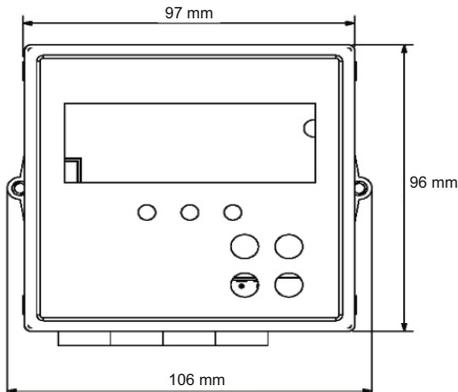
Analyze



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Dimensions Details:

Without add on card
96 x 96 x 59 mm



Technical Specifications:

Accuracy :

Voltage	± 0.5% of Nominal value
Current	± 0.5% of Nominal value
Frequency	± 0.15% of mid frequency
Active Power	± 1.0 % of Nominal value
Re-Active Power	± 1.0 % of Nominal value
Apparent Power	± 1.0 % of Nominal value
Active energy (kWh)	± 1.0 % of Nominal value
Re Active energy (kVArh)	± 1.0 % of Nominal value
Apparent energy (kVAh)	± 1.0 % of Nominal value
Total Harmonic Distortion	± 1.0 % of Applied value

Measurement error is normally much less than the error specified above. Variation due to influence quantity is less than twice the error allowed for reference condition

Influence of Variations:

Temperature coefficient :	0.05%/°C for Voltage (50... 120% of rated value) &
(for rated value Range of use	0.05%/°C for Current (10... 120% of rated value)
(0...50°C))	

Display update rate:

Response time to step input	1 sec approx.
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Applicable Standards:

EMC	IEC 61326-1:2012, Table 2
Accuracy	IEC 62053-21
Safety	IEC 61010-1-2010
IP for water & dust	IEC60529
Pollution degree:	2
Installation category:	III
High Voltage Test	2.2 kV AC, 50Hz for 1 minute between all electrical circuits

Environmental

Operating temperature	-10 to +60°C
Storage temperature	-20 to +65°C
Relative humidity	0... 90% non condensing
Warm up time	Minimum 3 minute
Shock	15g in 3 planes
Vibration	10... 55 Hz, 0.15mm amplitude

Fault / Event	Limits	Default Trip values	Restore values
Under-voltage	75 - 90 % of Vnom	85 %	3% + trip value
Over-voltage	105 -115 % of Vnom	115 %	2% - trip value
Under-Frequency	2 -10 % of Freq-Nom	6 %	1 % of Freq-Nom
Over-Frequency	2 -10 % of Freq-Nom	6 %	1 % of Freq-Nom
Under-current	1 - 3 % of CT primary	2 %	1% of CT primary + trip value
Over-current	60 -120 % of CT primary	110 %	1% of CT primary - trip value
V-thd	1 - 25 %	7 %	2%
I-thd	1 - 99 %	7 %	2%
Temperature	---	60 Degree celcius	55 Degree celcius
Overcompensation/ Out of bank	Threshold x Min CkVAr	Threshold x Min CkVAr	Demand kVAr > Min CkVAr



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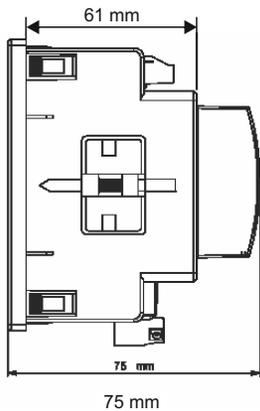
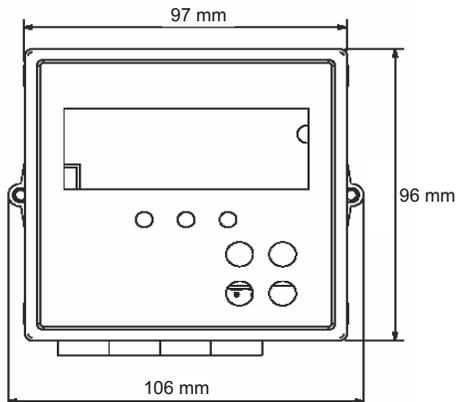
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Dimensions Details:

With add on card
96 x 96 x 75 mm



Number of outputs	Upto 8 Max
Alarm output	1
Target PF range	0.8 Ld to 0.8 Lg
Switching Threshold	30 to 100 %
Switch-in-time (Connecting Time)	10 to 1800 Sec
Switch-off-time (Disconnecting Time)	10 to 1800 Sec
Discharge time	60 to 1800 Sec
Input Voltage	
Nominal input voltage (AC RMS)	240 V
Input Current	
Nominal input current	1A / 5A AC RMS.
System CT secondary values	1A & 5A programmable
System CT primary values	From 1A up to 9999A
Max continuous input current	120% of rated value
Supply (Auxiliary) Voltage	
AC supply voltage range	110 V AC to 550 VAC
AC supply frequency range	40 to 70 Hz
VA Burden	
Nominal input voltage burden	< 0.2 VA approx. per phase
Nominal input current burden	< 0.6 VA approx. per phase
Auxiliary Supply burden	< 10 VA approx
Overload Withstand	
Voltage	2 x rated value for 1 second, repeated 10 times at 10 second intervals
Current	20 x for 1 second, repeated 5 times at 5 min
Operating Measuring Ranges	
Voltage	30 - 550 VAC
Current	3 mA measuring starting current, 10 mA operating current , Max 6 Amp
Frequency	40...70 Hz
Reference conditions for Accuracy	
Reference temperature	23°C +/- 2°C
Input waveform	Sinusoidal (distortion factor 0.005)
Input frequency	50 or 60 Hz ±2%
Auxiliary supply voltage	Rated Value ±1%
Auxiliary supply frequency	Rated Value ±1%
Voltage Range	50... 100% of Nominal Value. 60... 100% of Nominal Value for THD.
Current Range	10... 100% of Nominal Value. 20... 100% of Nominal Value for THD.
Power	Cos phi / sin phi = 1 for Active / Reactive Power & Energy. 10... 100% of Nominal Current & 50... 100% of Nominal Voltage.



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Parameter Measurement and Display

Sr.No.	Displayed Parameters	Sr. No.	Displayed Parameters
1.	Voltage	21.	Date/Time
2.	Current	22.	System warning
3.	Power factor, Bank status	23.	Active demand Import, Export
4.	Active Power	24.	Min , Max Voltage
5.	Re-active Power (kVAr)	25.	Min , Max Current
6.	Apparent Power	26.	Min , Max Frequency
7.	Difference kVAR to Target Power factor	27.	Min , Max Temperature
8.	Frequency	28.	Max VTHD
9.	THD-V, THD-I in %	29.	Max ITHD
10.	Individual harmonics upto 31st	30.	Max active import power
11.	Energy kWh (Import, Export)	31.	Max active export power
12.	Energy kVARh (Inductive, Capacitive)	32.	Max reactive capacitive power
13.	Energy kVAh	33.	Max reactive inductive power
14.	Demand kVA	34.	Max Apparent power
15.	Demand current	35.	Max active import demand
16.	Run Hour	36.	Max active export demand
17.	On Hour	37.	Bank switching count (Number of banks configured)
18.	Number of interruptions	38.	Bank operation time (Number of banks configured)
19.	System fault window1	39.	Bank value (Number of banks configured)
20.	System fault window2	40.	Test run menu

Ordering Information

Ordering Information	PF40-	A	1	H	X	A	X	X	0000RI
Size	96X96								
Input Voltage	240V, 50/60Hz								
Aux Voltage	110-550VAC								
Relay Output	4 Relay Output				4				
	6 Relay Output				6				
	8 Relay Output				8				
Alarm Output	Alarm Output								
Communication Option	With MODBUS - RS485						R		
	Without MODBUS - RS485						Z		
RTC Option	With RTC							R	
	Without RTC							Z	

Ordering Code Example : PF40-A1H8ARR0000RI

RISH PFC 08 - LCD Display, Size 96X96 with 8 Relay Modbus and RTC



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Specifications may change without prior notice



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