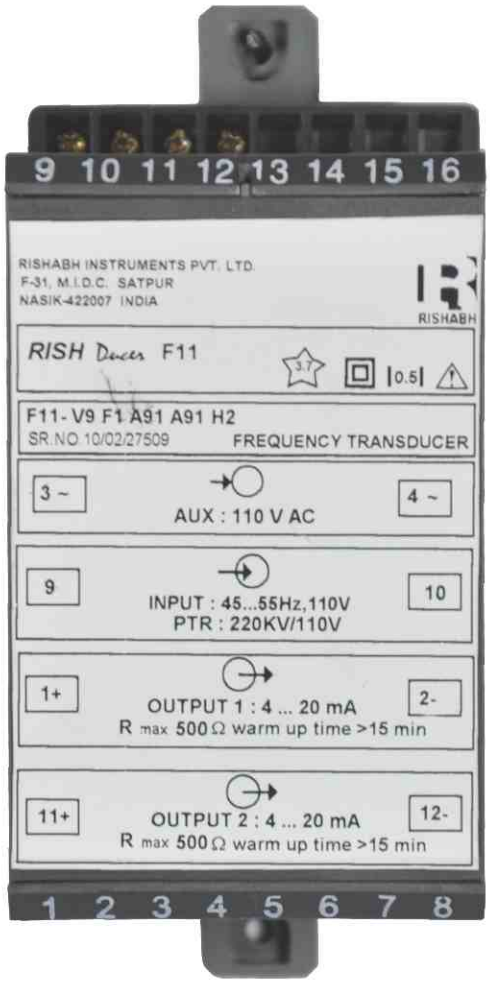
RISH Ducer F11 / F12 Transducer for measuring Frequency

Data Sheet

Transducer for measuring Frequency

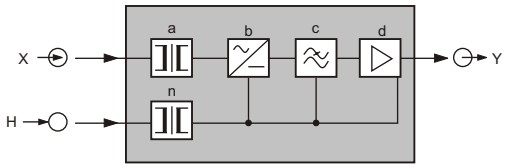


RISH Ducer F11 in housing
E8 clipped onto a top-hat rail.

RISH Ducer F12 in housing
E8 clipped onto a top-hat rail.

Application

The ***RISH*** Ducer F11 / F12 measuring transducer is used for frequency measurement. The output signal is proportional to measured frequency and is either a load - independent DC current or a load - independent DC voltage.



Features / Benefits

- Measuring output : DC current signal or DC voltage signal (Load-independent) directly proportional to the change of input within a specified span.
- Electrical isolation between all transducer connection circuits / prevents interference voltages and currents being transmitted.
- Narrow housing, 35 mm /saves space and therefore cost.
- Provision for either snapping the transducer onto top-hat rails or securing it with screws to a wall or panel.
- Two isolated outputs (Optional)
- Electric isolation between output 1 and output 2 is 500V

Mode of Operation

Input signal X is galvanically separated from the mains network using a voltage transformer (a). The input signal is given to frequency to voltage converter (b) which is then filtered (c) and amplified (d). The power module (n) connected either to an AC or DC voltage source, supplies the transducer with the required power supply.

Symbols and their meaning

Symbols	Meaning
X	Measuring input / Input variable
X0	Start value of input voltage
X2	Final value of input voltage
Y	Measuring output / Output variable
Y0	Start value of output variable
Y2	Final value of output variable
Yi	Output actual value
Ys	Rated Output

Technical Data

	F11	F12
Measured quantity :	Frequency	
Measuring input ⊖X		
Measuring Ranges :	45 - 55 Hz, 55-65 Hz, 45 - 65 Hz, 360 - 440 Hz	45 - 55 Hz, 55-65 Hz, 45 - 65 Hz, 360 - 440 Hz
Nominal Voltage :	63.5 V, 100 V, 110 V, 120 V, 220 V, 230 V, 240 V, 380 V, 400 V, 415 V, 440 V & 480 V	63.5 V, 100 V, 110 V, 120 V, 220 V, 230 V, 240 V, 380 V, 400 V, 415 V, 440 V & 480 V
Own Consumption :	< 2VA for one output transducer < 5VA for two output transducer	< 2VA for one output transducer
Overload Capacity :	1.2 X rated voltage continuously 1.5 X rated voltage for 10 sec.	1.2 X rated voltage continuously 1.5 X rated voltage for 10 sec.
Measuring output ⊖▸Y		
Output Y :	Load independent DC Current OR Load independent DC Voltage	Load independent DC Current OR Load independent DC Voltage
No of Analog Outputs	one or two	One only
Standard Ranges :	0/1 mA in to 0-10 K Ohms, 0/5 mA in to 0-1 K Ohms, 0/20 mA in to 0-500 Ohms, 4/20 mA in to 0-500 Ohms, 0/5V, 0/10V external resistance > 200 KΩ / V	0/1 mA in to 0-10 K Ohms, 0/5 mA in to 0-1 K Ohms, 0/20 mA in to 0-500 Ohms, 4/20 mA in to 0-500 Ohms, 0/5V, 0/10V external resistance > 200 KΩ / V
Current Output Protection :	Fully protected against open & short circuited output	Fully protected against open & short circuited output
Voltage Output Protection :	Fully protected against open circuit output	Fully protected against open circuit output
Residual Ripple		
One output Transducer :	Output Current - < 0.5 %	Output Current - < 0.2 %
Response Time :	< 400 ms	< 400 ms
Two output Transducer :	Output Current - < 0.5 %	
Response Time :	< 800 ms	

Technical Data

	F11	F12
Accuracy		
Reference value :	Measuring Span Δf	Measuring Span Δf
Basic Accuracy :	Class 0.5 of output end value	Class 0.2 of output end value
Reference condition		
Ambient Temperature :	23°C, ± 5 K	23°C, ± 2 K
Load Resistance for		
a) Current output :	Rn = 5V / Y2 ± 1%	Rn = 5V / Y2 ± 1%
b) Voltage output :	Rn = 2 kΩ ± 1%	Rn = 2 kΩ ± 1%
Power Supply :	± 1%	± 1%
Warm - up time :	≥ 20 min	≥ 15 min

Influence effects (maxima):

Influence quantity	Rated operating range	Allowed influence effect as percentage of class Index
Operating Temperature	0℃... **23℃**...55℃	200%
Load Resistance	Current : 0...5V/Y2...10V/Y2	50%
	Voltage : 1 kΩ - (5V, 10V DC)	

--do--

Power Supply →○

Rated Value	Rated Operating Range
AC 24 V	22 .... 26 V
AC 110 V	99 .... 121 V
AC 120 V	108 .... 132 V
AC 230 V	207 .... 253 V
AC 380 V	360 .... 440 V

--do--

Rated operating range of frequency :	45 **… 50 … 60 …** 65 Hz	45 **… 50 … 60 …** 65 Hz
Power consumption :	≤ 4 VA at rated for One Output Transducer ≤ 8VA at for Two Output Transducer	≤ 4 VA at rated for One Output Transducer
Version with AC/DC power pack		

DC and 45 ... 400Hz :

Rated Voltage U_N	Permissible variation
24 .... 60 V DC / AC	DC - 15 ... + 33% AC ± 15%
85 .... 230 V DC / AC	

--do--

Power consumption : < 4 VA /4W for one output transducer
< 8 VA /8W for two output transducer
Self power version available

Environmental Condition

Climatic Rating :	Climatic class 3Z acc. to VDI/VDE 3540	Climatic class 3Z acc. to VDI/VDE 3540
Storage Temperature :	-20°C to +70°C	-20°C to +70°C
Operating Temperature :	0°C to + 60°C	0°C to + 60°C
Humidity range :	Up to 75 % RH	Up to 75 % RH

Installation Data

Mechanical design	Housing **E8 / E16** Dimensions see Section "Dimensional drawings"
Material of housing	Lexan 940 (polycarbonate), flammability Class 0 acc. to UL 94, self - extinguishing, non - dripping, free of halogen
Mounting	For rail or well mounting
Mounting position	Any
Electrical connection	Screw - type terminals with indirect wire pressure, for max. 2 X 2.5 mm^2 or 1 X 6 mm^2
Weight	Approx. < 450 gm
Cross - selection of wire	≤ 1 X 6 mm^2 or ≤ 2 X 2.5 mm^2

Electrical Connections

Connection	Terminals		
	One Output Transducer E8 Housing	Two Output Transducer E8 Housing (AC Aux.)	Two Output Transducer E16 Housing (AC/DC Aux.)
Measuring Input	~ 5 ~ 6	~ 7 ~ 8	~ 9 ~ 10
Measuring output 1	+ 1 - 2	+ 4 - 3	+ 1 - 2
Measuring output 2	N/A	+ 6 - 5	+ 11 - 12
Power Supply	~, + 3 ~, - 4	~ 1 ~ 2	~, + 3 ~, - 4

Dimensional Drawings

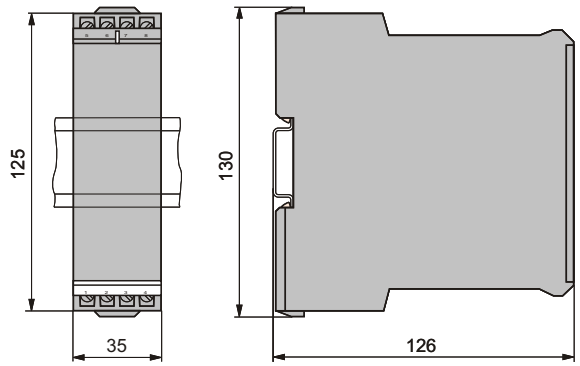


Fig. 14. *RISH Ducer* F11 one output in housing E8 clipped onto a top hat rail (35 X 15 mm or 35 X 7.5 mm) acc. to EN 50022.

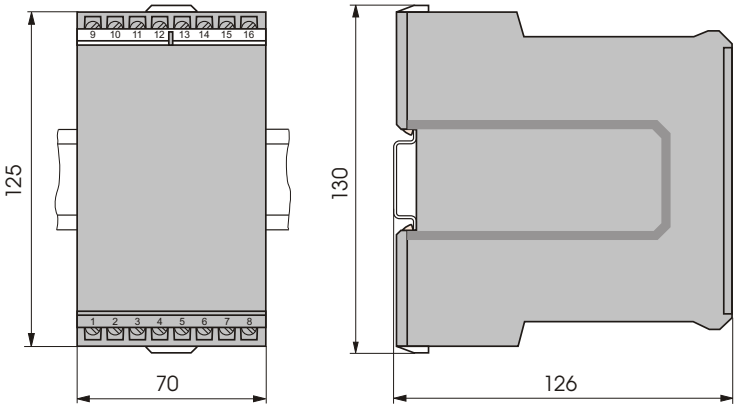


Fig. 16. *RISH Ducer* F11 two output in housing E16 clipped onto a top hat rail (35 X 15 mm or 35 X 7.5 mm) acc. to EN 50022.

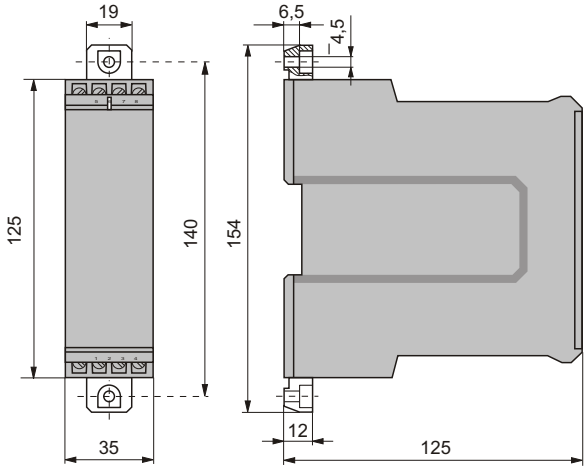


Fig. 15. ***RISH*** *Ducer* F11 one output in housing E8 with the screw hole brackets pulled out for wall mounting.

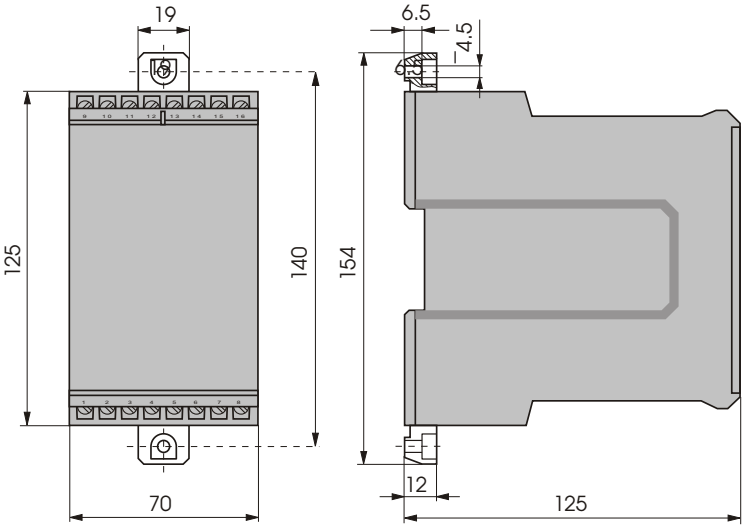


Fig. 17. *RISH Ducer* F11 two output in housing E16 with the screw hole brackets pulled out for wall mounting.

Ordering Information

DESCRIPTION	MARKING
Measuring transducer for Frequency	F11/F12
Nominal Input Voltage 63.5 V, 100 V, 110 V, 120 V, 220 V, 230 V, 240 V, 380 V, 400 V, 415 V, 440 V and 480 V Input Voltage > 300 V ; phase - to - phase connection to a three - phase supply only	V9
Measuring Range 45 - 55 Hz 55 - 65 Hz, 45 - 65 Hz, 360 - 440 Hz	 F1 F2 F3 F4
Final value of output signal[1] 1mA ≤ X Y2 ≤ 20 mA 1V ≤ Y2 ≤ 10 V [1] Two Analog Outputs Applicable in F11 only	 A91 A92
Power Supply 45 ... 50 .. 60 ...65 Hz AC 22 V ... 26 V AC 99 V ... 121 V AC 180 V ... 253 V AC 360 V ... 440 V * DC and 45 ... 400 Hz DC / AC 24 V ... 60 V DC / AC 85 V ...230 V * > 300 V ; phase - to - phase connection to a three - phase supply only	 H1 H2 H3 H4 H5 H7 H8

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