

# RISH Ducer IXX / VXX Series (TRMS/Average) Transducer for AC current / AC Voltage (Single or Dual Output)

## Data Sheet

Transducer for AC Current and AC Voltage



Fig. 1. RISH Ducer I11 in housing E16 clipped onto a top-hat rail.



Fig. 2 RISH Ducer V11 in housing E16 screw hole mounting brackets pulled out.

## Application

The RISH *Ducer* IXX / VXX measuring transducer is used to convert a sine - wave or distorted AC current and AC Voltage into an impressed output signal. The output signal is proportional to the root - mean square value of the input current and Voltage.

### AC Current & AC Voltage Transducers series

#### Rish Ducer IXX / VXX

Very wide range of product to meet the needs of varied applications.

Current : I11 - Average type, Self Powered. (Class 0.5)  
 I12 - Average type, Self Powered  
           with dual range input (Class 0.5)  
 I21 - True RMS. (Class 0.5)  
 I22 - True RMS, (Class 0.2)

Voltage : V11 - Average type, Self Powered. (Class 0.5)  
 V21 - True RMS. (Class 0.5)  
 V22 - True RMS, (Class 0.2)

## Unique Features

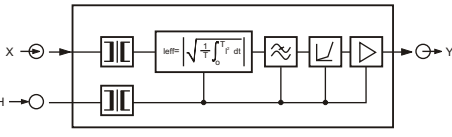
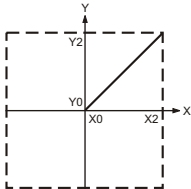
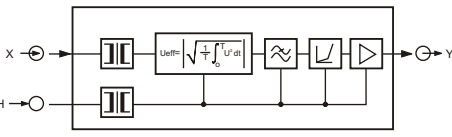
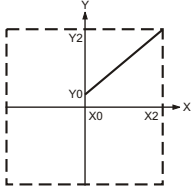
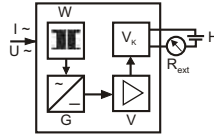
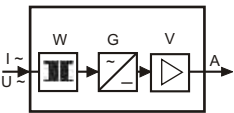
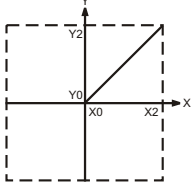
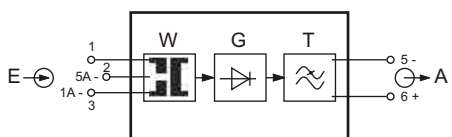
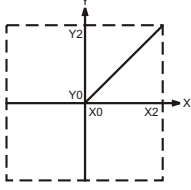
- State of the art products with SMT : Compact & reliable.
- Well proven technology from Gossen Metrawatt Camille Bauer, Germany / Switzerland.
- Meets requirements of International Standard IEC688 for accuracy
- Insulation level of 3.7kV/4kV.
- Impulse withstand voltage 5 kV.
- Higher load capacity : 750 Ohms at 20 mA.
- True RMS models (I21/V21).
- Self Powered models (I1X/V1X)
- Mounting : DIN rail or Panel mounting. Easy "onsite" conversion.
- Response time < 300 mS standard, < 50mS optional.
- Mounting position : Any
- Electrical isolation between all transducer connections.
- Terminal connection : Electricians delight. Even suitable for multistrand or solid wire connection. Large space for lopping of wires.
- Housing : Polycarbonate, Flammability class V-0 acc to UL94, conforming to V0 grade of UL 94. (Self extinguishing, non drip)
- Accuracy class 0.5 as per IEC 688, (I22 & V22 class 0.2.)
- Output short circuit & open circuit proof.
- Option of SMPS supply for wide range of AC / DC supply available.
- Operating temperature - 10 to +55° C.  
Storage temperature - 40 to +70° C.
- Optional dual output (accuracy class 0.5 only)

## Symbols and their meaning

Symbols	Meaning
X	Measuring input / Input variable
X0	Start value of input voltage
X1	Elbow of input voltage, see Fig. 6 and 7
X2	Final value of input voltage
Y	Measuring output / Output variable
Y0	Start value of output variable
Y1	Elbow of output variable, see Fig. 6 and 7

Symbols	Meaning
Y2	Start value of output variable
H	Power supply
Hn	Rated value of power supply
T	Setting time
Tn	Rated value of setting time
R <sub>ext</sub>	Max. output burden
Rn	Rated value of output burden

## Mode of Operation

Layout and mode of Operation	Block Diagram	Standard Transformation Characteristics
<p>I21 I22</p> <p>Input signal X is galvanically separated from the mains network using a transformer. The following mathematical expression is then formed using a RMS value Computer</p> $I_{eff} = \sqrt{\frac{1}{T} \int_0^T i^2 dt}$ <p>Following filtration by means of an active filter, the transformation properties of the measuring transducer are determined in the characteristics circuit. The o/p amplifier transforms the measuring signal into an impressed o/p signal Y. The electronic components are supplied with voltage H from the mains supply unit.</p>	 <p><b>Fig. 1.</b> Block Diagram</p>	 <p><b>Fig. 6.</b> Block Diagram Linear curve, characteristics (X<sub>0</sub> = 0; Y<sub>0</sub> = 0)</p>
<p>V21 V22</p> <p>Input signal X is galvanically separated from the mains network using a voltage transformer. The following mathematical expression is then formed using a RMS value computer.</p> $V_{eff} = \sqrt{\frac{1}{T} \int_0^T u^2 dt}$ <p>Following filtration by means of an active filter, the transformation properties of the measuring transducer are determined in the characteristics circuit. The o/p amplifier transforms the measuring signal into an impressed o/p signal Y. The electronic components are supplied with voltage H from the mains supply unit.</p>	 <p><b>Fig. 2.</b> Block Diagram</p>	 <p><b>Fig. 7.</b> Block Diagram Linear curve, characteristics (X<sub>0</sub> = 0; Y<sub>0</sub> = 0.2 Y<sub>2</sub>)</p>
<p>I11 &amp; V11</p> <p>The Transducer comprises a transformer W, a rectifier unit G and the amplifier V. The measured variable I/U AC is isolated from the electronics by the transformer W, and is rectified and a smoothed in the rectifier unit G. The o/p amplifier V amplifies the resultant signal and converts it into the load-independent DC o/p signal A. The version with live-zero o/p has a 4mA constant current source to provide the zero setting. In the case of 2-wire connection the o/p increases from the zero setting of 4mA with an increase in measured value.</p> <p>The constant current source needs a supply voltage H between 12 and 30 V DC, which may be supply typically from the main installation, the receiving equipments or a separate power pack.</p> <p>Note : For two output, independent sections of Fig 3 &amp; 4 are used.</p>	 <p><b>Fig. 3.</b> Block Diagram for transducer with live-zero output &amp; 2-wire connection.</p>  <p><b>Fig. 4.</b> Block Diagram for transducer with unipolar output.</p>	 <p><b>Fig. 8.</b> Block Diagram Linear curve, characteristics (X<sub>0</sub> = 0; Y<sub>0</sub> = 0)</p>
<p>I12</p> <p>The Transducer comprises a transformer W, a rectifier unit G and a low-pass filter T. The measured variable is isolated from the electronics by the transformer W, and is rectified and a smoothed in the rectifier unit G.</p>	 <p><b>Fig. 5.</b> Block Diagram</p>	 <p><b>Fig. 8.</b> Block Diagram Linear curve, characteristics (X<sub>0</sub> = 0; Y<sub>0</sub> = 0)</p>

## General and Measuring Input (Specification available on request)

Parameters	RISH Ducer I21	RISH Ducer I22	RISH Ducer V21	RISH Ducer V22	RISH Ducer I12	RISH Ducer I11 & V11 (Single or Dual Output)							
<b>General</b>	AC Current		AC Voltage		AC current or AC Voltage Sinusoidal								
1 Measured Quantity	Sine or distorted waveforms True RMS value measurement		Sine or distorted waveforms True RMS value measurement		arithmetical mean measured, calibration to rms with sine wave form (Average value)								
2 Measured Principle	Logarithmic				Rectifier method								
Measuring Input	Current		Voltage		Current	Current and Voltage							
1 Nominal Frequency $F_N$	50, 60 or 400 Hz	50, 60 Hz	50, 60 or 400 Hz	50, 60 Hz	50, 60 Hz								
2 Nominal Input *	Current X2 : $1A \leq X2 \leq 7.5 A$		Voltage X2 : $100 V \leq X2 \leq 7.5 A$		Current : 1A & 5 A Site configurable	Current $I_N$ 1A or 5A Voltage $V_N$ 100 / $\sqrt{3}$ / 110 / 150 / 240 / 415 / 440 V *							
3 Re-calibration of X2	Final value permanently set of final value can be adjusted in range. $0.5 \cdot X2 \leq X2$		---		---	Range adjustment 0.9...1.1. $I_N$ resp. $U_N$ ( $\pm 10\%$ ) (Admissible alternation of full scale output, variable sensitivity, adjustable with potentionmeter)							
4 Own Consumption	< 1 VA at X2				$\leq 1 VA$	At nominal freq. Hz :				Option (for two output)			
						Full o/p Value [mA]	I11 [VA]	V11 [VA]	I11 [VA]	V11 [VA]			
						1	0.8	0.8	2.0	2.0			
						5	1.8	1.2	4.0	3.0			
						10	2.2	1.5	4.5	3.5			
						20	2.5	1.8	5	4			
5 Overload Capacity	Measured Quantity	No. of Appl.	Duration of 1 Appln	Interval between 2 successive appln.	Measured Quantity	No. of Appl.	Duration of 1 Appln	Interval between 2 successive appln.	$1.2 \times I_N$ continuously	Measured Quantity	No. of Appl.	Duration of 1 Appln	Interval between 2 successive appln.
	$2 \cdot X2$	---	Cont..	---	$1.2 \cdot X2$	---	Cont..	---		$1.5 \times I_N$	Cont..	---	---
	$10 \cdot X2$	5	3s	5 s.	$1.5 \cdot X2$	10	10s	10 min		$2 \times I_N$	10	10s	10 s.
	$20 \cdot X2$	5	1s	5 s.						$10 \times I_N$	5	3s	5 min
	$50 \cdot X2^{\text{a}}$	1	1s	1 h						$20 \times I$	5	1s	5 min
	X2 = Final value, but <sup>a</sup> max.250 A									$40 \times I_N$	1	1s	---
										$1.5 \times V_N$	Cont..	---	---
										$2 \times V_N$	10	10s	10 s
										$4 \times V_N$	1	2s	---

\* Other input available on request

## Measuring Output

Sr. No.	Parameter	I21	I22	V21	V22	I12	I11 & V11 (Single or Dual Output)
1	Output Variable Y	Load-independent DC current or DC voltage				DC depends on load	Load - independent DC current $I_A$ or DC voltage o/p $V_A$ (not Superimposed)
2	Load independent DC current output range	$1 mA \leq Y2 \leq 20 mA$				0...5 mA 0...10 mA 0...20mA	0...1/0...5/0...10 or 0...20 mA (4...20mA refer cl. for 2 wire output)

## Measuring Output

Sr. No.	Parameter	I21	I22	V21	V22	I12	I11 & V11 (Single or Dual Output)
3	O/p burden with DC current o/p signal	$0 \leq R \leq 15V/Y2$				$R_{ext} \text{ max. [K}\Omega\text{]} = 15 V/I_{AN} \text{ [mA]}$ $I_{AN} = \text{full o/p value}$	$R_{ext} \text{ max. [K}\Omega\text{]} = 15 V/I_{AN} \text{ [mA]}$ $I_{AN} = \text{full o/p value}$
4	DC voltage o/p range	$1V \leq Y2 \leq 10 V$				10 V	O/p $V_A$ not superimposed : std range of $V_A$ : 0 ... 10V
5	O/p burden with DC voltage o/p signal	$Y2 / 2mA \leq R < \infty$				$\geq 100 \text{ K}\Omega$	Ext resistance $\geq 200 \text{ k}\Omega / v$
6	Current limit under overload	$\leq 1.7 Y2$ with current o/p Approx. 20 mA with voltage o/p				$\leq 3 X I_{AN}$	$\leq 1.5 X I_{AN}$ for current o/p Approx. 30 mA for voltage
7	Voltage limit under $R_{ext} = \infty$	$\leq 40 V$ with Current o/p $\leq 1.7.Y2$ with voltage o/p				$< 20 V$	$< 24 V$
8	Residual ripple in o/p signal	$\leq 5\%$ p.p. at setting time 50 msec $\leq 0.5\%$ p.p. at setting time 300 ms	$\leq 5\%$ p.p. at setting time 50 msec and $C \leq 1$ $\leq 5\%$ p.p. + C 0.5% at setting time 50 msec and $C > 1$ $\leq 5\%$ p.p. at setting time 300 msec and $C > 1$		$\leq 1\%$ p.p at $750 \Omega / 20 \text{ mA}$	Current ripple $\leq 1\%$ p.p.	
9	Response time	$\leq 300 \text{ ms}$ standard, $\leq 50 \text{ ms}$ optional				$< 2s$	$< 300 \text{ ms}$
10	Output Standard Ranges *	Current : 0-1mA/5mA/10mA/20mA/4-20mA Voltage : 0-10V				Current : 0...5 / 0...10 / 0...20 mA Voltage : 0-10V	Current : 0...1/0...5/0...10 or 0...20 mA Voltage : 0-10 V

\* Other input available on request

## Accuracy (IEC 688-1 / IS 12784)

Parameter	I21	I22	V21	V22	I12	I11 & V11(Single or Dual Output)
Reference Value	Output end value Y2					Input end value X2
Basic Accuracy (for std ranges)	Class 0.5	Class 0.2	Class 0.5	Class 0.2	Class 0.5	Class 0.5

## Reference Conditions

Parameter	I21	I22	V21	V22	I12	I11 & V11(Single or Dual Output)	
Ambient Temp	$23^{\circ}\text{C}, \pm 5 \text{ k}$				$23^{\circ}\text{C}, \pm 1^{\circ}\text{C}$	$23^{\circ}\text{C}, \pm 5 \text{ k}$	
Input Variable	Rated operating range					0 to 100% for current measurement 20 to 100 % for voltage measurement	
Frequency	$F_n \pm 2\%$						
Distortion Factor	---				$< 0.5\%$		
External Resistance	Current o/p Voltage o/p				$R_n = 15 V/Y2 \pm 1\%$ $R_n = Y2/1 \text{ mA} \pm 1\%$	Rext. Max - 1% Rext. Min + 1%	0 - $R_{ext}$ (max.) $R_{ext}$ (min.) to $\infty$

## Reference Conditions

Parameter	I21	I22	V21	V22	I12	I11 & V11(Single or Dual Output)
Curve Shape	Sine - Wave					
Shape Factor	1.1107					
Curve Shape	Hn ± 1%			---		± 1% for 24 V DC with 4-20 mA output
Warm-up Time	≤ 5 min.					

## Influence Effects (maxima) accuracy Included In Basic Error

Sr. No.	Parameter	I21	V21	I22	V22	I12	I11 & V11 (Single or Dual Output)
1	Linearity Error	< ± 0.1%				< ± 0.3%	
2	Frequency	----		----		----	± 0.3% (Fn ± 2%)
3	Dependance on External resistance △ R ext max.	± 0.1%		± 0.1%		± 0.5%	± 0.1%

### Additional Error \*

1.	Ambient Temp	Rated Operating Range	Permitted effect factor of precision class	Rated Operating Range	Permitted effect factor of precision class	- 25 <sup>0</sup> C...+ 55 <sup>0</sup> C ± 0.5% 10K	
		+ 10 <sup>0</sup> C...23 <sup>0</sup> C ...40 <sup>0</sup> C	1	Usage group 0...23 <sup>0</sup> C ... 45 <sup>0</sup> C	1		
		+ 0 <sup>0</sup> c...23 <sup>0</sup> C ...55 <sup>0</sup> C	1	+ 10 <sup>0</sup> C...23 <sup>0</sup> C ...55 <sup>0</sup> C	2		
2.	Curve Shape of Input	Rectangle 1:1	1	Rectangle 1:1	1	Sine Waveform only	
		Cut-in sine wave 90 <sup>0</sup> (for V21)	2				
3.	Frequency of input Variable	40...400 Hz	1	45...65 Hz	1	45...55Hz ± 0.3%	45...200Hz ± 0.5%
		> 400...1000 Hz	2	---	---		

\* Other input available on request

## Power Supply

Parameter	I21	I22	V21	V22	I12	I11 & V11(Single or Dual Output)										
Version with AC Power packs standard voltage :-	<table border="1"> <thead> <tr> <th>Rated Value Hn</th> <th>Rated Operating Voltage</th> </tr> </thead> <tbody> <tr> <td>AC 24 V</td> <td>22...26V</td> </tr> <tr> <td>AC 110 V</td> <td>99...121V</td> </tr> <tr> <td>AC 230 V</td> <td>207...253V</td> </tr> <tr> <td>AC 400 V</td> <td>360...440V</td> </tr> </tbody> </table>		Rated Value Hn	Rated Operating Voltage	AC 24 V	22...26V	AC 110 V	99...121V	AC 230 V	207...253V	AC 400 V	360...440V			---	---
Rated Value Hn	Rated Operating Voltage															
AC 24 V	22...26V															
AC 110 V	99...121V															
AC 230 V	207...253V															
AC 400 V	360...440V															
Rated operating range of frequency :	45...50...60...65 Hz															

## Power Supply

Parameter	I21	I22	V21	V22	I12	I11 & V11(Single or Dual Output)						
External Resistance Current o/p Voltage o/p	AC $\leq 4$ VA at H=Hn DC $\leq 4$ w	AC $\leq 3$ VA at H=Hn DC $\leq 3$ w	AC $\leq 4$ VA at H=Hn DC $\leq 4$ w	AC $\leq 3$ VA at H=Hn DC $\leq 3$ w								
Version with AC / DC Power Packs (Dc & 45 -- 400 Hz)	<table border="1"> <thead> <tr> <th>Rated Value Un</th> <th>Permissible Variation</th> </tr> </thead> <tbody> <tr> <td>24...60 V DC/AC</td> <td>DC - 15...+33%</td> </tr> <tr> <td>85...230 V DC/AC</td> <td>AC <math>\pm 15\%</math></td> </tr> </tbody> </table>			Rated Value Un	Permissible Variation	24...60 V DC/AC	DC - 15...+33%	85...230 V DC/AC	AC $\pm 15\%$		---	---
Rated Value Un	Permissible Variation											
24...60 V DC/AC	DC - 15...+33%											
85...230 V DC/AC	AC $\pm 15\%$											
Power consumption	$\leq 1.4$ W resp. $\leq 2.7$ VA											
DC Voltage Supply	---	---			---	12-30 V (only for 2-wire connection with output 4 ...20 mA)						

## Environmental Condition

Sr. No.	Parameter	I21	I22	V21	V22	I12	I11 & V11(Single or Dual Output)	
1	Climatic Rating	Climate Class 3Z acc. To VDI/VDE 3540						
2	Operating Temperature	-25 to +55 degree C				-10 to +55 degree C	-25 to +55 degree C	
3	Storage Temperature	-40 to +70 degree C						
4	Relative Humidity of Annual Mean	$\leq 75\%$				$\leq 75\%$ Standard Climate Rating $\leq 90\%$ Enhanced Climate Rating		
5	Permissible Vibration	2 g acc. To EN 60 068-2-6						
6	Shock	3 x 50 g 3 shocks each in 6 directions						

## Regulations

Sr. No.	Parameter	I21	I22	V21	V22	I12	I11 & V11 (Single or Dual Output)
1	Safety Standards	Acc. To IEC 1010					
2	Housing Protection	IP 40 acc. To EN 60 529 Terminals IP 20					
3	Rated Insulation Voltage	Measuring input AC 300 V, Power supply AC 300 V, DC 230V Measuring output DC 40 V				---	---
4	Contamination Level	2				---	---
5	Over voltage Category	III				---	---
6	Protection Class	II				---	---

## Regulations

Sr. No.	Parameter	I21	I22	V21	V22	I12	I11 & V11 (Single or Dual Output)
6	Protection Class	II				---	---
7	Safe Isolation	Acc. to IEC 1010 and DIN/VDE 106, part 101				---	---
8	Impulse withstand Voltage Acc to IEC 255-4 Cl,III:	5 KV 1.2/ 50 $\mu$ sec, 0.5 Ws Common - mode and differential mode between any terminals				---	5 KV 1.2/50 $\mu$ sec, 0.5 Ws Common-mode and differential mode between any terminals
9	Test Voltage	3.7 KV 50 Hz/1 min. between electrically isolated circuits. Measuring output versus housing 0.5 kV/50 Hz/1 min.				Measuring input versus measuring output 3.7 kV, 50Hz, 1 min. Measuring input versus housing 3.7 Kv,50Hz,1 min measuring output versus housing 740V, 50 Hz, 1 min	4 kV/50 Hz/1 min
10	Product Performance					IEC 688,IS 12784	

## Installation Data

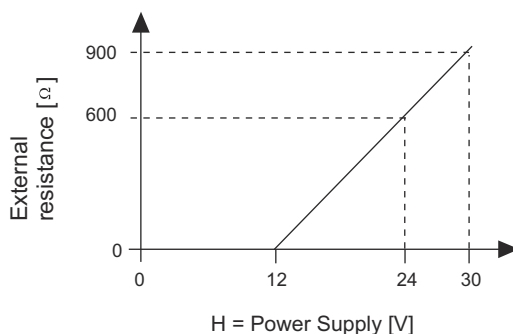
Sr. No.	Parameter	I21	I22	V21	V22	I12	I11 & V11 (single and dual)
1	Mechanical Design	Housing 35 mm width (E8) or 70mm width (E16)					
2	Material of Housing	Glassfilled polycarbonate, flammability Class V-0 acc. to UL 94, self extinguishing, non-dripping.					
3	Mounting	DIN rail mounting (35 x 15 mm or 35 x 7.5 mm) acc. To EN 50 022 <b>OR</b> Directly onto a wall or panel using to pull-out screw hole brackets (on site conversion possible)					
4	Mounting Position	Any					
5	Electrical Connection	Screw-type terminals with indirect wire pressure, 2 for max. 2 x 2.5 mm <sup>2</sup> or 1 x 6 mm <sup>2</sup>					
6	Weight	Approx. 0.5 Kg					Approx. 0.4 Kg

## Special Features (Optional)

### Current & Voltage Transducer

1) 2 Wire output with 4-20 mA, for I11 & V11 with 12...30V DC AUX :

**With 2 wire connection**



**Fig . 9**

Standard ranges of  $I_A = 4...20$  mA  
External resistance  $R_{ext}$  --- dependent on power supply H (12...30 V DC)

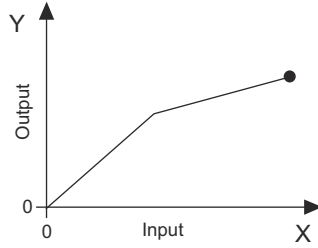
$$R_{ext \text{ max.}} [k\Omega] = \frac{H[V] - 12V}{20mA}$$



## Special Features (Optional)

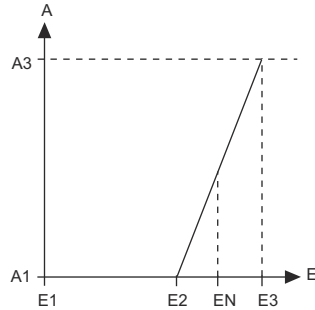
- 2) Response Time <50 ms for I21 / I22 / V21 / V22
- 3) Special Transformation Characteristics :

A) Bent Characteristics.  
Factor c (V21)



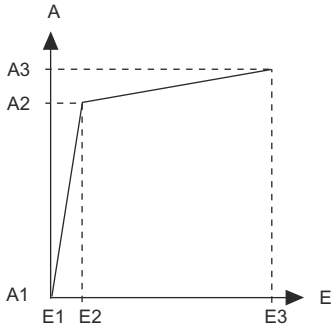
**Fig. 10**  
Linear Curve = 1  
BENT Curve  
 $c = \frac{1}{1 - \frac{x1}{x2}}$  or  $c = \frac{x2}{x1}$   
(the larger value applies)

B) Suppressed Initial Range :

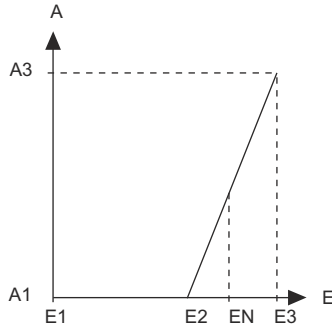


**Fig. 11**  
Characteristic B  
"Voltage magnifier in end range".  
E1...E2 suppressed completely,  
E2...E3 main measuring range magnified

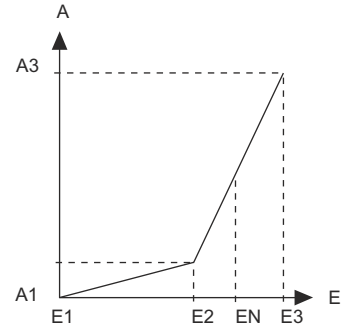
C) Magnified Beginning or End of measuring range :



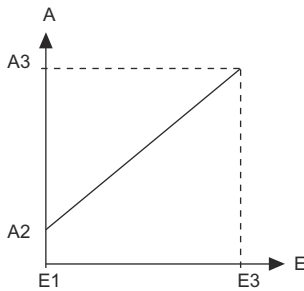
**Fig. 12**  
Characteristic D "Main value magnification in initial range".  
E1...E2 (main measuring range) magnified,  
E2...E3 (secondary measuring range) suppressed  
Input Magnification Of Initial range.



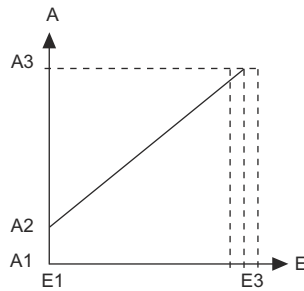
**Fig. 13**  
Characteristic B "Current resp. Voltage magnifier in end range".  
E1...E2 suppressed completely,  
E2...E3 (main measuring range) magnified.  
End Value Magnified.



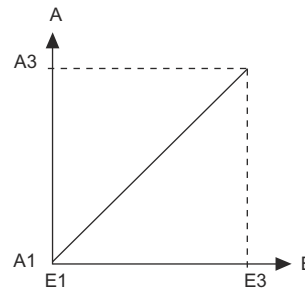
**Fig. 14**  
Characteristic C "Main value magnification in end range".  
E1...E2 (secondary measuring range) suppressed,  
E3...E3 (main measuring range) magnified.  
End Value Magnified.



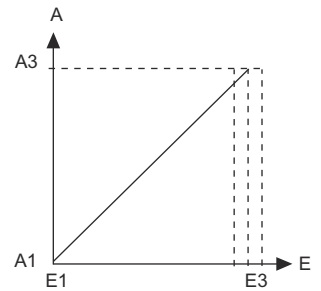
**Fig. 15**  
Characteristic A "Standard and live zero."



**Fig. 16**  
Characteristic A "Standard" Variable sensitivity and live zero.



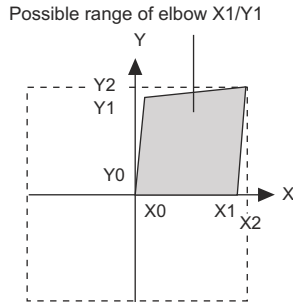
**Fig. 17**  
Characteristic A "Standard"



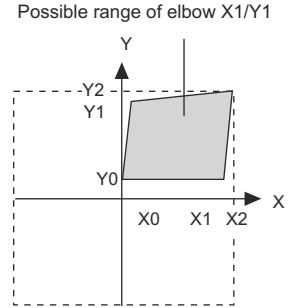
**Fig. 18**  
Characteristic A "Standard and variable sensitivity." E3 adjustable by max. ± 5% or ± 10%

## Special Features (Optional)

### 4) Transformation Characteristics (V21) :



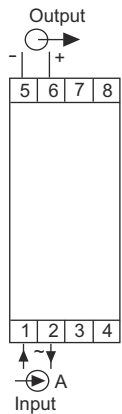
**Fig. 19**  
Bent curve,  
characteristic  
( $X_0 = 0 \quad 0.05 X_2 \leq X_1 \leq 0.9 X_2$   
 $Y_0 = 0 \quad Y_0 \leq Y_1 \leq 0.9 Y_2$ ).



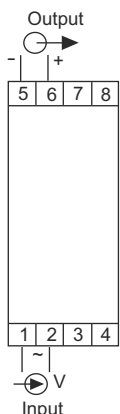
**Fig. 20**  
Bent curve,  
characteristic  
( $X_0 = 0 \quad 0.05 X_2 \leq X_1 \leq 0.9 X_2$   
 $Y_0 = 0.2 Y_2 \quad Y_0 \leq Y_1 \leq 0.9 Y_2$ ).

- 5) Any other input / output / power supply
- 6) Dual Channel current Transducer
- 7) Dual output current Transducer.
- 8) Input Frequency (if other than 50 Hz)

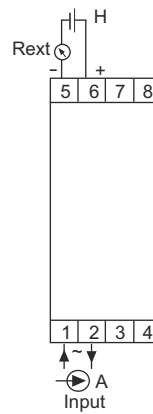
## Electrical Connection



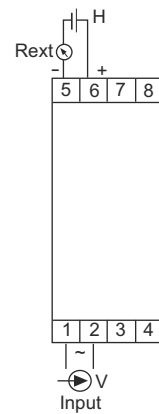
**Fig 21 :**  
RISHDucer I11  
for measuring  
AC Current



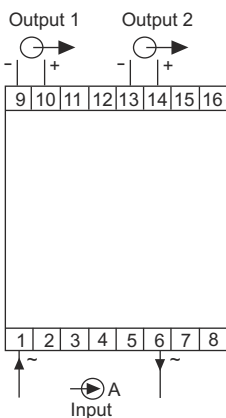
**Fig 22 :**  
RISHDucer V11  
for measuring  
AC Voltage



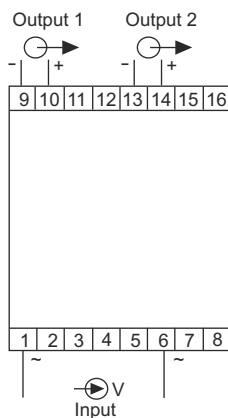
**Fig 23 :**  
RISHDucer I11  
as 2-wire converter  
with 4.. 20 mA output.



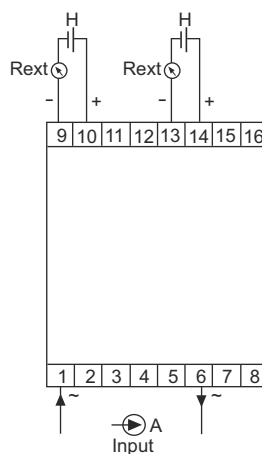
**Fig 24 :**  
RISHDucer V11,  
as 2-wire converter  
with 4.. 20 mA output.



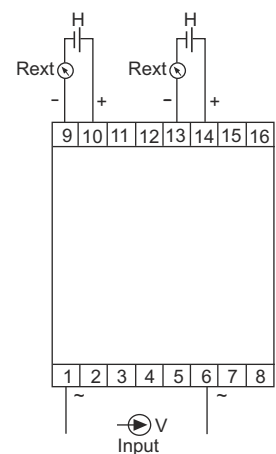
**Fig 27 :**  
RISHDucer I11 Dual Output  
for measuring AC current  
with dual output



**Fig 28 :**  
RISHDucer V22 Dual Output  
for measuring AC voltage  
with dual output



**Fig 25 :**  
RISHDucer I11 Dual Output  
for measuring AC current  
with dual output



**Fig 26 :**  
RISHDucer V22 Dual Output  
for measuring AC voltage  
with dual output

Connection	Connecting terminals
Measuring input E $\rightarrow$ 1A~	1 and 3
Measuring input E $\rightarrow$ 5A~	1 and 2
Measuring output A $\rightarrow$	5 - and 6 +

I12

**I11,V11**

Connection	Terminals
Measuring input $\rightarrow$	~ 5 ~ 6
Measuring Output $\rightarrow$	+ 1 - 2
Power supply $\rightarrow$	~/+ 3 ~/ - 4

I21 / I22

Connection	Terminals
Measuring input $\rightarrow$	~ 5 ~ 6
Measuring Output $\rightarrow$	+ 1 - 2
Power supply $\rightarrow$	~/+ 3 ~/ - 4

V21 / V22

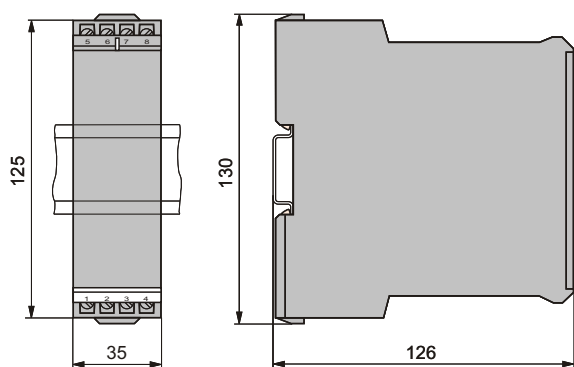
Connection	Terminals
Measuring input $\rightarrow$	~ 5 ~ 6
Measuring Output 1 $\rightarrow$	+ 1 - 2
Measuring Output 2 $\rightarrow$	+ 11 - 12
Power supply $\rightarrow$	~/+ 3 ~/ - 4

I11 Dual Output

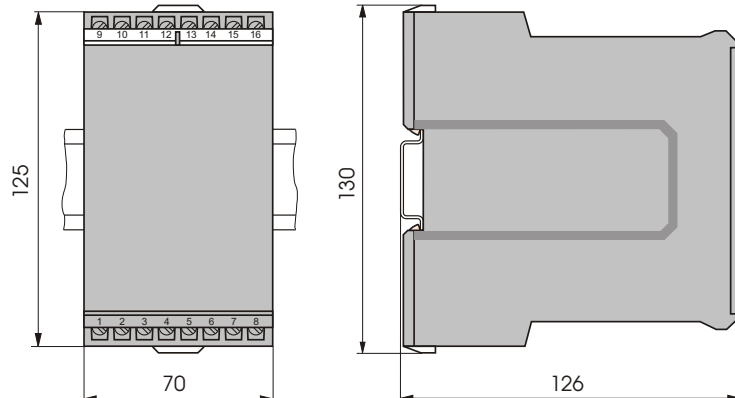
Connection	Terminals
Measuring input $\rightarrow$	~ 5 ~ 6
Measuring Output 1 $\rightarrow$	+ 1 - 2
Measuring Output 2 $\rightarrow$	+ 11 - 12
Power supply $\rightarrow$	~/+ 3 ~/ - 4

V11 Dual Output

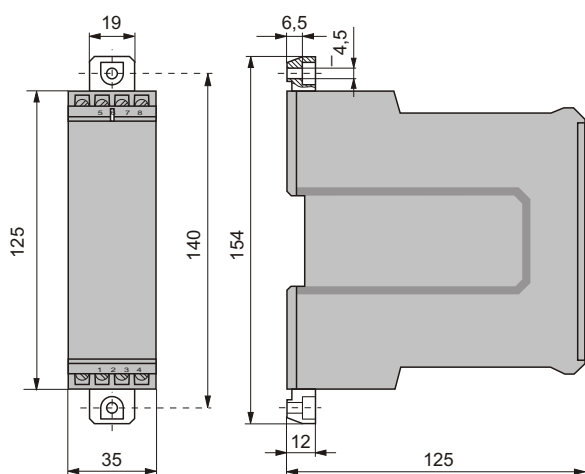
## Dimensional Drawings



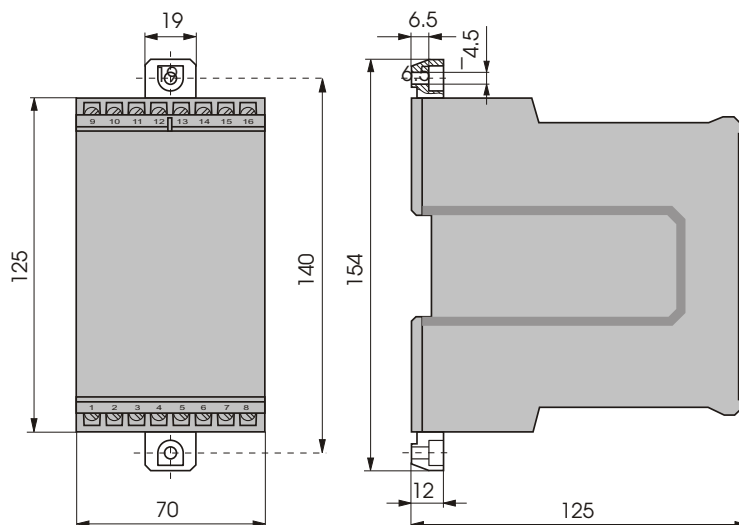
**Fig 27.** Transducer with one output in housing E8 clipped onto a top hat rail (35 X 15 mm or 35 X 7.5 mm) acc. to EN 50022.



**Fig 28.** Transducer with 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 29.** Transducer with one output in housing E8 with the screw hole brackets pulled out for wall mounting.



**Fig 30.** Transducer with two output in housing E16 with the screw hole brackets pulled out for wall mounting.

**Specification & Ordering Information for TRMS Model**

Sr. No.	Features Selection	Current Transducer	Voltage Transducer
1	Measuring Transducer for AC current/Voltage (RMS value measurement) Accuracy Class 0.5 0.2	I21 <input type="checkbox"/> I22 <input type="checkbox"/>	V21 <input type="checkbox"/> V22 <input type="checkbox"/>
2	Frequency of Input Current Fn = 50 Hz Fn = 60 Hz Fn = 400 Hz	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
3	Final Value of Input Current 0...1A ... 7.5 A	<input type="checkbox"/> Specify range	Not applicable
4	Final value of input voltage ** 0...110/√3... 500 V * * >300 V; phase-to-phase connection to a 3-phase supply only.	Not applicable	<input type="checkbox"/> Specify range
5	Final value of output signal ** 0...1mA, 5mA, 10mA, 20mA, 4...20mA 0...10V	<input type="checkbox"/> <input type="checkbox"/>	Specify range
6	Linear Characteristics Bent (if applicable) X0 = 0                    0.05.X2 ≤ X1 ≤ 0.9.X2 Y0 = 0                    Y0 ≤ Y1 ≤ 0.9.Y2 X0 = 0                    0.05.X2 ≤ X1 ≤ 0.9.X2 Y0 = 0.2.Y2            Y0 ≤ Y1 ≤ 0.9.Y2	Not applicable  Not applicable	<input type="checkbox"/> Specify value of X1 & Y1  <input type="checkbox"/> Specify value of X1 & Y1
7	Re-calibration of X2 Final value permanently set Final value can be adjusted in range 0.5.X2 ≤ X2	<input type="checkbox"/> <input type="checkbox"/> Specify value	Not applicable
8	Response time                    50ms 0.3s (standard)	<input type="checkbox"/> <input type="checkbox"/>	
9	Power Supply                    AC 22 V...26V AC 99V...121V AC 108V...132V AC 207V...253V AC 360V...440V * DC/AC 24V...60V DC/AC 85V...230V  * > 300V; Phase -to-phase connection to a 3-phase supply only.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

**Note :**

Please tick ✓ in appropriate box

Also specify the ranges wherever necessary

\*\* other specifications on request. (Contact to factory)

**I12 model (Class 0.5)**

For I12 model 1A/5A input is fixed only specify output signal 0...5 mA, 0...10mA, 0...20mA, 0...10V

**Specification & Ordering Information for V<sub>11</sub> / I<sub>11</sub> model**

Sr. No.	Features Selection	Current Transducer	Voltage Transducer
1)	Measuring Transducer for AC current/Voltage Accuracy class 0.5	I <sub>11</sub> <input type="checkbox"/>	V <sub>11</sub> <input type="checkbox"/>
2)	Measuring Range (Measuring Input Current ) ** 0...1A, 0... 5A	<input type="checkbox"/> Specify range	Not applicable

**Specification & Ordering Information for V<sub>11</sub> / I<sub>11</sub> model**

Sr. No.	Features Selection	Current Transducer	Voltage Transducer
3)	Output Signal 1 (measuring Output A)** 0...1mA, R <sub>ext</sub> ≤ 15 kΩ 0...5 mA, R <sub>ext</sub> ≤ 3 kΩ 0..10mA, R <sub>ext</sub> ≤ 1.5 kΩ 0...20mA, R <sub>ext</sub> ≤ 750Ω 4...20mA, 2 wire connection, R <sub>ext</sub> dependant on power supply (12..30VDC) 0...10V, R <sub>ext</sub> ≥ 200 kΩ/V	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Specify Aux. supply volt DC <input type="checkbox"/>
4)	Output Signal 2 (measuring Output A)** 0...1mA, R <sub>ext</sub> ≤ 15 kΩ 0...5 mA, R <sub>ext</sub> ≤ 3 kΩ 0..10mA, R <sub>ext</sub> ≤ 1.5 kΩ 0...20mA, R <sub>ext</sub> ≤ 750Ω 4...20mA, 2 wire connection, R <sub>ext</sub> dependant on power supply (12..30VDC) 0...10V, R <sub>ext</sub> ≥ 200 kΩ/V	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Specify Aux. supply volt DC <input type="checkbox"/>
5)	Special Feature Without With (Specify separately)	<input type="checkbox"/>	<input type="checkbox"/>

**Note :**

Please tick ✓ in appropriate box

Also specify the ranges wherever necessary

\*\* other specifications on request. (Contact to factory)



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**RISHABH INSTRUMENTS PVT.LTD.**

F-31, MIDC, Satpur, Nashik-422 007, India.

Tel.: +91 253 2202160, 2202202 Fax : +91 253 2351064

E-mail : India :- marketing@rishabh.co.in

International :- exp.marketing@rishabh.co.in

Web-site : www.rishabh.co.in