

T82N RANGE

Nuclear environments. Analog transducers for AC electrical quantities, class 0.5.



USER SECTORS



Nuclear



Plug-in version with special socket for plate mounting or DIN rail mounting



- Ideal for the requirements of the nuclear market
- Plate-mounted and plug-in versions
- Configurable on request: Input quantities, transfer curve, output signal, etc.

Description

The **T82N** models measure an AC electrical quantity and convert it into a standardized, low-level DC current or voltage signal (e.g. 4...20 mA).

They are normally used in conjunction with analog or digital measuring instruments (panel meters, recorders, etc.), centralized supervision systems (PLCs, SCADA, building management automation systems, etc.) and are also incorporated in measurement and control loops.



IAR 1210B
RMS AC current

UAR 1210B
RMS AC voltage

FAR 1210B
Frequency

UCR 1420B
DC voltage

QAR 1232B
Reactive power

PAR 1232B
Active power

JAR 1211B
Phase angle

RCL 1220B
Temperature

ELECTRICAL SPECIFICATIONS

• Inputs

Short-term overload:

- U input: 2 U_n during 1s repeated 10 times
- I input: 20 I_n during 1s repeated 10 times

DC overload :

- U input: 1.2 U_n
- I input: 1.2 I_n

Frequency:

- 50 Hz (45....55 Hz)
- 60 Hz (55....65 Hz)

• Analog output

- Accuracy: class 0.5 according to IEC 60688 April 2013
- Response time: 120 ms to 260 ms at 95 % of output current
- Current output operating resistance: 20 V / Is
- Influence of operating resistance: ± 0.1 % from 0 Ω to max. operating resistance
- Peak-to-peak ripple: 0.2 à 0.4 %

• Auxiliary power supply

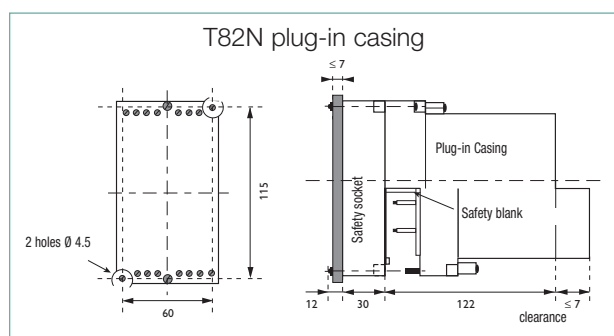
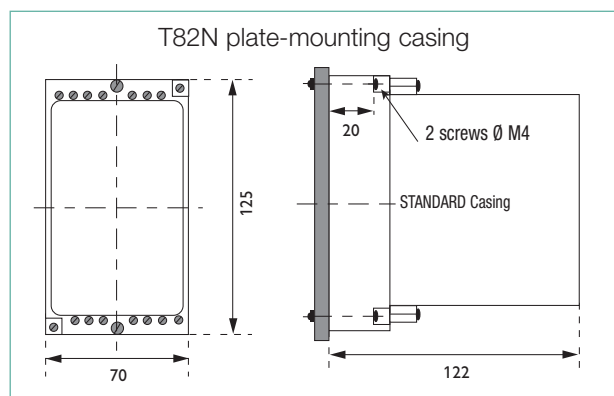
Operating range:

- ± 10 % from 100/ $\sqrt{3}$ Vac to 440 Vac
- ± 20 % from 24 to 125 Vdc

Consumption :

- ≤ 3 VA from 100/ $\sqrt{3}$ to 440 Vac
- ≤ 3 W from 24 to 125 Vdc

DIMENSION (IN MM)



REFERENCE STANDARDS

- **Electromagnetic compatibility:** 2014/30/CE(CEM) IEC 61326-1 (07/2013)
- **Safety:** 2006/95/CE IEC 61010-1 (01/2011)
- **Metrological:** IEC 60688 (04/2013)
- **Climatic:** IEC 60688 (04/2013)
- **Mechanical:** IEC 60068-2-6 (04/2008) IEC 60068-2-27 (07/2009)

OPERATING ENVIRONMENT

- **Operating temperature:** -10 to +60 °C
- **Operating humidity:** Up to 95 % to 45 °C
- **Storage temperature:** -25 to +70 °C

CASINGS

- **Screw connection** terminals, 2 x 2.5 mm² or 1 x 6 mm²
- **IP20 protection** rating as per IEC 60529
- **Weight :** 0.60 to 0.85 kg (Socket: 0.25 kg)

MOUNTING ACCESSORIES

- **Connection socket for plug-in Casing**

Socket		
Model	Type	Reference
UAR 1210B	5	EMBB 4005
IAR 1210B	4	EMBB 4004
PAR 1232B	3	EMBB 4003
QAR 1232B	3	EMBB 4003
FAR 1210B	5	EMBB 4005
JAR 1211B	4	EMBB 4004
UCR 1420B	5	EMBB 4005
RCL 1220B	6	EMBB 4006



- **Mounting on DIN rail for plate-mounting or plug-in Casing**



Model	Reference
Mounting on symmetrical DIN rail	PDIN SYME
Mounting on asymmetrical DIN rail	PDIN ASYM

ELECTRICAL CONNECTIONS

MS01-7562 or the User's Manuals.



Vac

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RMS AC VOLTAGE

Model	UAR 1210 B	
Transfer curve		
Linear	■	
Casing		
Fixed / plate-mounting	0.7 kg	
Measurement input		
Voltage Un	Direct or on VT: "100/√3" "110/√3" "115/√3" "120/√3" "132/√3" "90" "100" "110" "115" "120" "127" "132" "138" "180" "220" "250" "300" "360" "380 Vac	
Frequency Fn	50 Hz ±5 Hz and 60 Hz ±5 Hz	
Measurement range 0...Xmax	0...1.25 Un	
Consumption	1kΩ/ V or 0.4 VA at 400 Vac	
Analog output		
Current	0...Ymax	"0/1 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20 mA"
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA"
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"
	Ymin...Ymax	"1/5 V" "2/10 V"
Accuracy	0.5 %	
Auxiliary supply		
Alternating current	"100/√3 Vac" "110/√3 Vac" "115/√3 Vac" "100 Vac" "110 Vac" "115 Vac" "127 Vac" "220 Vac" "230 Vac" "240 Vac"	
Direct current	"24 Vdc" "48 Vdc" "110 Vdc" "125 Vdc"	
Casing protection rating		
Plate-mounting	IP20	

CUSTOMIZED PRODUCT

	Model	Casing	Direct Un or on VT	Measurement range	Fn	Analog output	Auxiliary supply	Protection	Tropicalization
Example	UAR 1210 B	Fixed	Direct 100 Vac	0...120 Vac	50 Hz	4-20 mA	220 Vac	IP 20	☑



Iac

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RMS AC VOLTAGE

Model		IAR 1210 B
Transfer curve		
Linear		■
Casing		
Fixed / plate-mounting		0.7 kg
Measurement input		
Current In	Direct 0.5 to 10 A or on CT 1/5 A	
Frequency Fn	50 Hz ± 5 Hz and 60 Hz ± 5 Hz	
Measurement range 0...Xmax	0 to In and 0 to 1.3 In if CT present	
Consumption	≤ 0.2 VA	
Analog output		
Current	0...Ymax	"0/1 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20 mA"
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA"
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"
	Ymin...Ymax	"1/5 V" "2/10 V"
Accuracy	0.5 %	
Auxiliary supply		
Alternating current	"100/ $\sqrt{3}$ Vac" "110/ $\sqrt{3}$ Vac" "115/ $\sqrt{3}$ Vac" "100 Vac" "110 Vac" "115 Vac" "127 Vac" "220 Vac" "230 Vac" "240 Vac"	
Direct current	"24 Vdc" "48 Vdc" "110 Vdc" "125 Vdc"	
Casing protection rating		
Fixed / plate-mounting	IP20	

CUSTOMIZED PRODUCT

	Model	Casing	Direct In or on CT	Measurement range	Fn	Analog output	Auxiliary supply	Protection	Tropicalization
Example	IAR 1210 B	Fixed	1000/5 A	0...1300 A	50 Hz	4-20 mA	48 Vdc	IP 20	☒



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REACTIVE POWER

Model

PAR 1232 B

Network + connections

Balanced three-phase - 3 wires

Unbalanced three-phase - 3 / 4 wires

Transfer curve

Linear

Casing

Fixed / plate-mounting

0.85 kg

Measurement input

Current In

Direct or on CT: "1" "5"

Ph-N voltage Un

Direct or on VT: "57.73" "63,51" "66,4" "230"

Ph-Ph voltage Un

Direct or on VT: "100" "110" "115" "120" "127" "230" "240" "380" "400"

Frequency Fn

50 Hz ± 5 Hz and 60 Hz ± 5 Hz

Measurement range 0...Xmax

 $\pm 1.35 \geq S_n^{(1)} \geq \pm 0.50$

Consumption

I input: ≤ 0.2 VA ; U input: ≥ 500 Ω / V

Analog output

Current	0...Ymax	"0/1 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20 mA"
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA" "1/3/5 mA" "2/6/10 mA" "4/12/20 mA" "-1/0/1 mA" "-2.5/0/2.5 mA" "-5/0/5 mA" "-10/0/10 mA" "-20/0/20 mA"
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"
	Ymin...Ymax	"1/5V" "2/10V" "-1/0/1V" "-5/0/5V" "-10/0/10 V"

Accuracy

0.5 %

Auxiliary supply

Alternating current "100/ $\sqrt{3}$ Vac" "110/ $\sqrt{3}$ Vac" "115/ $\sqrt{3}$ Vac" "100 Vac" "110 Vac" "115 Vac" "127 Vac"
"220 Vac" "230 Vac" "240 Vac"

Direct current

"24 Vdc" "48 Vdc" "110 Vdc" "125 Vdc"

Self-powered

For voltages "100 Vac" "110 Vac" "115 Vac" "120 Vac" "127 Vac" "230 Vac" "240 Vac"

Casing protection rating

Fixed / plate-mounting

IP20

(1) $S_n = \sqrt{3} \times I \times \cos \varphi$ (single-phase network) $S_n = 3 \times \sqrt{3} \times I \times \cos \varphi$ (Balanced three-phase, Unbalanced three-phase 4 wires)
 $S_n = \sqrt{3} \times U \times I \times \cos \varphi$ (Network TE, TNE 3 fils)

★ Parameters to be specified when ordering

CUSTOMIZED PRODUCT

★	Model	Network	Casing	Direct In or on CT	Direct Un or on VT	Measurement range	Fn	Analog output	Auxiliary supply	Protection	Tropicalization
Example	PAR 1232 B	Unbal. 3ph 4 wires	Fixed	CT 1000/ 5 A	VT 20 kV/ 100 V	0... 120 Vac	50 Hz	4-20 mA	220 Vac	IP 20	☒



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REACTIVE POWER

Model		QAR 1232 B
Network + connections		
Unbalanced three-phase - 3 / 4 wires		■
Transfer curve		
Linear		■
Casing		
Fixed / plate-mounting		0.85 kg
Measurement input		
Current In		Direct or on CT: "1" "5"
Ph-N voltage Un		Direct or on VT "57.73" "63.51" "66.4" "230"
Ph-Ph voltage Un		Direct or on VT "100" "110" "115" "120" "127" "230" "240" "380" "400"
Frequency Fn		50 Hz ± 5 Hz and 60 Hz ± 5 Hz
Measurement range 0...Xmax		$\pm 1.35 \geq S_n^{(1)} \geq \pm 0.50$
Consumption		I input: ≤ 0.2 VA ; U input: $\geq 500 \Omega / V$
Analog output		
Current	0...Ymax	"0/1 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20 mA"
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA" "1/3/5 mA" "2/6/10 mA" "4/12/20 mA" "-1/0/1 mA" "-2.5/0/2.5 mA" "-5/0/5 mA" "-10/0/10 mA" "-20/0/20 mA"
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"
	Ymin...Ymax	"1/5V" "2/10V" "-1/0/1V" "-5/0/5V" "-10/0/10 V"
Accuracy		0.5 %
Auxiliary supply		
Alternating current		"100/ $\sqrt{3}$ Vac" "110/ $\sqrt{3}$ Vac" "115/ $\sqrt{3}$ Vac" "100 Vac" "110 Vac" "115 Vac" "127 Vac" "220 Vac" "230 Vac" "240 Vac"
Direct current		"24 Vdc" "48 Vdc" "110 Vdc" "125 Vdc"
Self-powered		For voltages "100 Vac" "110 Vac" "115 Vac" "120 Vac" "127 Vac" "230 Vac" "240 Vac"
Casing protection rating		
Fixed / plate-mounting		IP20

(1) $S_n = \sqrt{3} \times I \times \cos \varphi$ (single-phase network) $S_n = 3 \times \sqrt{3} \times I \times \cos \varphi$ (Balanced three-phase, Unbalanced three-phase 4 wires)
 $S_n = \sqrt{3} \times U \times I \times \cos \varphi$ (Balanced three-phase, Unbalanced three-phase 3 wires)

★ Parameters to be specified when ordering

CUSTOMIZED PRODUCT

★	Model	Network	Casing	Direct In or on CT	Direct Un or on VT	Measurement range	Fn	Analog output	Auxiliary supply	Protection	Tropicalization
Example	QAR 1232 B	Unbal. 3ph 4 wires	Fixed	CT 1000/ 5 A	VT 20 kV/ 100 V	0... 2.77 MW	50 Hz	4...20 mA	220 Vac	IP 20	☒



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FREQUENCY

Model	FAR 1210 B	
Measurement		
Measurement type	Effective value	
Input type	■	
Casing		
Fixed / plate-mounting	0.7 kg	
Measurement input		
Voltage Un	Direct or on VT : "100/√3" "110/√3" "115/√3" "100" "110" "115" "120" "127" "230" "240" "380"	
Measurement range Xmin...Xmax	"45/55 Hz" "48/52 Hz" "49/51 Hz" "55/65 Hz" "58/62 Hz" "59/61 Hz"	
Consumption	1 k Ω / V	
Analog output		
Transfer curve	Linear	
Current	0...Ymax	"0/1 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20 mA"
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA" "-1/0/1 mA" "-2.5/0/2.5 mA" "-5/0/5 mA" "-10/0/10 mA" "-20/0/20 mA"
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"
	Ymin...Ymax	"1/5V" "2/10V" "-1/0/1V" "-5/0/5V" "-10/0/10 V"
Accuracy	0.5 %	
Auxiliary supply		
Alternating current	"100/√3 Vac" "110/√3 Vac" "115/√3 Vac" "100 Vac" "110 Vac" "115 Vac" "127 Vac" "220 Vac" "230 Vac" "240 Vac"	
Direct current	"24 Vdc" "48 Vdc" "110 Vdc" "125 Vdc"	
Self-powered	■	
Casing protection rating		
Fixed / plate-mounting	IP20	

★ Parameters to be specified when ordering

CUSTOMIZED PRODUCT

	Model	Casing	Direct Un or on VT	Measurement range	Analog output	Auxiliary supply	Protection	Tropicalization
★								
Example	FAR 1210 B	Fixed	Direct 100 Vac	45...55 Hz	4...20 mA	220 Vac	IP 20	☑



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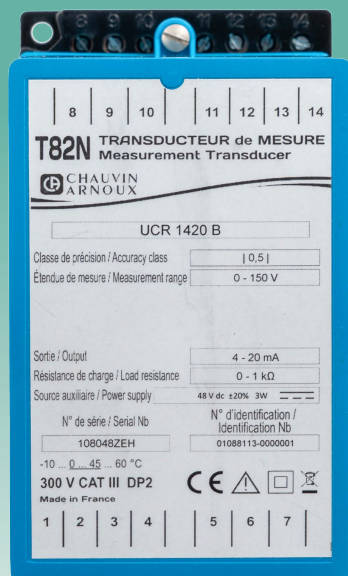
PHASE ANGLE

Model		JAR 1211 B
Network		
Single-phase		■
Casing		
Fixed/plug-in		0.7 kg
Measurement input		
In Current		Direct or on CT: "1" "5" "10 A"
Un Voltage		Direct or on VT : "100/√3" "110/√3" "115/√3" "100" "110" "115" "127" "230" "240" "380" "400"
Fn Frequency		50 Hz, 60 Hz
Measurement range 0...Xmax		±1.35 ≥Sn ⁽¹⁾ ≥ ±0.50
Consumption		Input I: ≤ 0.3 VA; Input U: ≥ 1 kΩ/V
Analog output		Linear
Current	0...Ymax	"0/1 mA" "0/2 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20mA"
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA"
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"
	Ymin...Ymax	"1/5V" "2/10V"
Accuracy		0.5 %
Auxiliary power supply		
Alternating current		"100/√3 Vac" "110/√3 Vac" "115/√3 Vac" "100 Vac" "110 Vac" "115 Vac" "127 Vac" "220 Vac" "230 Vac" "240 Vac"
Direct current		"24 Vdc" "48 Vdc" "110 Vdc" "125 Vdc"
Self-powered		■
Protection for casing		
Fixed/plug-in		IP20

★ Parameters to be specified when ordering

CUSTOMIZED PRODUCT

★	Model	Casing	In Direct or on CT	Un Direct or on VT	Measurement range	Analog output	Auxiliary power supply	Protection	Tropicalization
Example	JAR 1211 B	Fixed	CT 1000/5 A	Direct : 100 Vac	0.5 LEAD/1/0.5 LAG	4/20 mA	220 Vac	IP 20	✓



Vdc

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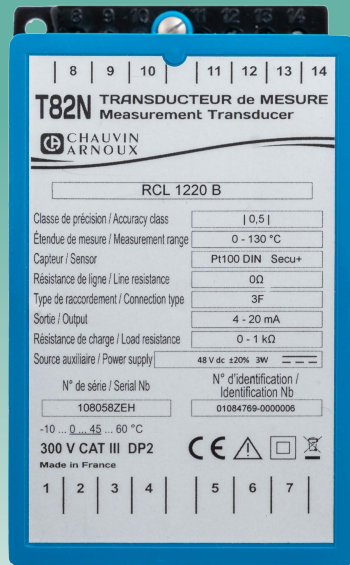
VOLTAGE DC

Model	UCR1420B		
Measurement			
DC voltage			
Transfer curve			
Linear			
Casing			
Fixed	0.7 kg		
Plug-in	0.7 kg		
Voltage input			
Voltage Un	5mV ≤ Un ≤ 300V		
Measurement range 0 ... Xmax	5mV ... 300V		
Input resistance	Umax ≤ 0.3V : 1MΩ		
	Umax ≤ 20V : 30kΩ + (10kΩ / Umax)		
	Umax ≤ 200V : Umax * 10kΩ		
	Umax > 200V : 2.5MΩ		
Analog output			
Current	0...Ymax	"0/1 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20 mA"	
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA"	
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"	
	Ymin...Ymax	"1/5 V" "2/10 V"	
Accuracy	0.5 %		
Auxiliary power supply			
Alternating current	""100/√3 VAC"" ""110/√3 VAC"" ""115/√3 VAC"" ""100 VAC"" ""110 VAC"" ""115 VAC"" ""127 VAC"" ""220 VAC"" ""230 VAC"" ""240 VAC""		
Direct current	"24 VDC" "48 VDC" "110 VDC" "125 VDC"		
Casing protection			
Fixed	IP20		
Plug-in	IP20		

★ Parameters to indicate when ordering

CUSTOMIZED PRODUCT

★	Model	Casing	Measurement range	Analog output	Auxiliary power supply	Ingress protection	Tropicalization
Example	UCR1420B	Fixed	0...150Vdc	4...20 mA	48Vdc	IP 20	☑



T°C

TEMPERATURE

Model		RCL 1220B	
Measurement			
Temperature			
Transfer curve			
Linear			
Casing			
Fixed		0.7 kg	
Plug-in		0.7 kg	
Measurement input			
Type		Platinum	Copper
Thermocouple break safety		Max output or Min output	
Mounting		2, 3 or 4 wires	
Measurement range	Xmin ... Xmax	0 ... 500°C	0 ... 200°C
Current in probe		2 mA	3 mA
Line resistance		0.5%	
Analog output			
Current	0...Ymax	"0/1 mA" "0/2.5 mA" "0/5 mA" "0/10 mA" "0/20 mA"	
	Ymin...Ymax	"1/5 mA" "2/10 mA" "4/20 mA"	
Voltage	0...Ymax	"0/1 V" "0/5 V" "0/10 V"	
	Ymin...Ymax	"1/5 V" "2/10 V"	
Accuracy		0.5 %	
Auxiliary power supply			
Alternating current		"100/√3 VAC" "110/√3 VAC" "115/√3 VAC" "100 VAC" "110 VAC" "115 VAC" "127 VAC" "220 VAC" "230 VAC" "240 VAC"	
Direct current		"24 VDC" "48 VDC" "110 VDC" "125 VDC"	
Casing protection			
Fixed		IP20	
Plug-in		IP20	

CUSTOMIZED PRODUCT

	Model	Casing	Sensor type	Safety	Mounting	Line resistance	Analog output	Auxiliary power supply	Ingress protection	Tropicalization
Example	RCL1220B	Fixed	Plate	Max output	3 wires	2 Ω	4...20 mA	48Vdc	IP 20	☒

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CHAUVIN
ARNOUX
PYROCONTROLE

Thermocouple/probe:
Pyrocontrol Catalog