

T82 Range

Analogue transducers for AC/DC electrical quantities or physical quantities, class 0.5

Measurement and instrumentation Analogue transducers

PRODUCT ADVANTAGES

- + **AVAILABLE IN 3 VERSIONS:**
plate mounting, plug-in or rack
- + **CONFIGURABLE ON REQUEST:** input quantities, transfer curve, output signal, etc.
- + **WIDE RANGE OF MEASURABLE QUANTITIES:**
AC/DC electrical quantities and physical quantities



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



Rack version for 19" - 3U: model supplied rack-mounted or separately, comes with connections

► Description

The **T82** range of transducers measures AC/DC electrical quantities and physical quantities and converts them into a standard low-level direct signal (current or voltage) (for example: 4...20 mA).

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

► Electrical specifications

■ Inputs

- Input U: 1.5 U_n permanent
2 U_n during 10 s
4 U_n during 0.5 s
- Input I: 2 I_n permanent
10 I_n during 5 s
30 I_n during 3 s
50 I_n during 1 s
- Frequency: 50 Hz (45...55 Hz)
60 Hz (55...65 Hz)
400 Hz (350...450 Hz)

■ Analogue output

- Accuracy: class 0.5 as per IEC 60688
- Response time: 0.3 s at 95% of output current
- Permitted overloads:
Current output: 1.1 I_s
Voltage output: 1.1 U_s

- Operating resistance:
Current output: 20 V/ I_s
Voltage output: 1 k Ω
- Influence of operating resistance:
 $\pm 0.1\%$ from 0 to Max operating resistance
- Repeat accuracy: 0.1%
- Peak-to-peak ripple: 0.4%

■ Auxiliary supply

- Operating range:
 $\pm 20\%$ from 100/ $\sqrt{3}$ to 127 Vac
 $\pm 10\%$ from 220 to 440 Vac
 $\pm 20\%$ from 24 to 220 Vdc
- Consumption:
 ≤ 3 VA from 100/ $\sqrt{3}$ to 440 Vac
 ≤ 3 W from 24 to 220 Vdc

► Reference standards

■ IEC 60688

(Electrical measurement transducers)

■ Electromagnetic compatibility EMC(89/336/EEC)

- Shock voltage as per IEC 61000-4-5:
5 kV in common mode (wave 1.2 / 50 μ s)
- Attenuated oscillation wave as per IEC 61000-4-12:
1 kV in differential mode
2.5 kV in common mode

■ Low voltage directive: 73/23/EEC

■ Insulation and dielectric strength: IEC 61010-1

- Between the input circuits, auxiliary supply and output circuits: 2 kV - 50 Hz - 1 min

- Between auxiliary supply and other terminals:
2 kV - 50 Hz - 1 min
- Between circuits and earth: 4 kV - 50 Hz - 1 min

■ Mechanical shocks: IEC 60068-2-27

- Acceleration: 50 g
- Number of shocks: 3 x 6

■ Vibrations: IEC 60068-2-6

- Frequency: 10-55 Hz
- Amplitude: 1.5 mm
- Number of cycles: 12

■ Operating environment:

- Operating temperature: -10°C to +60°C

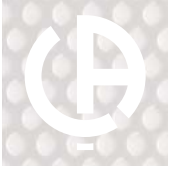
► Casing

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)
Mesurack 5E socket: 0.35 to 0.5 kg
Mesurack 10E socket: 0.6 to 0.7 kg

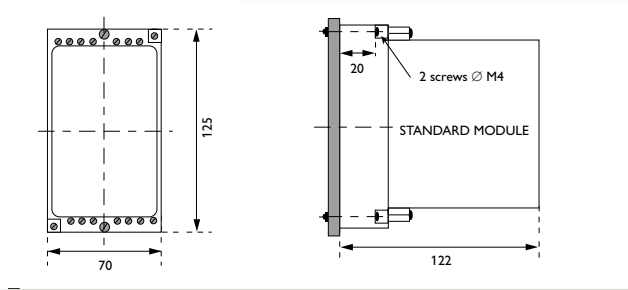


T82 Range

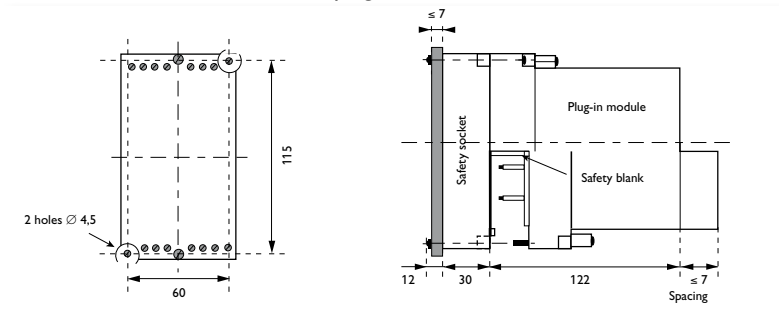
Measurement and instrumentation Analogue transducers

► Dimensions (in mm)

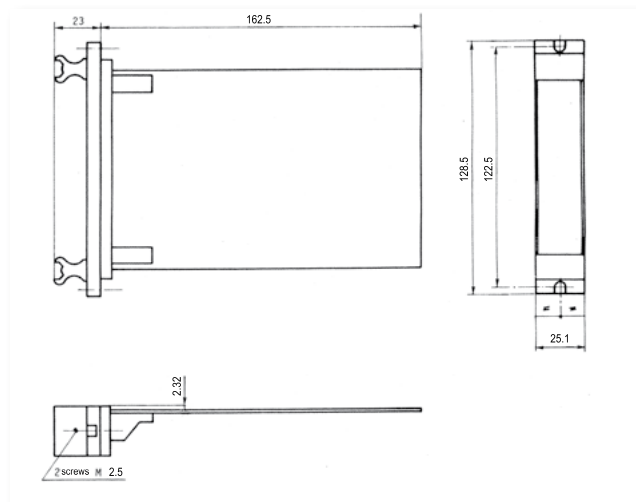
T82 plate-mounting module



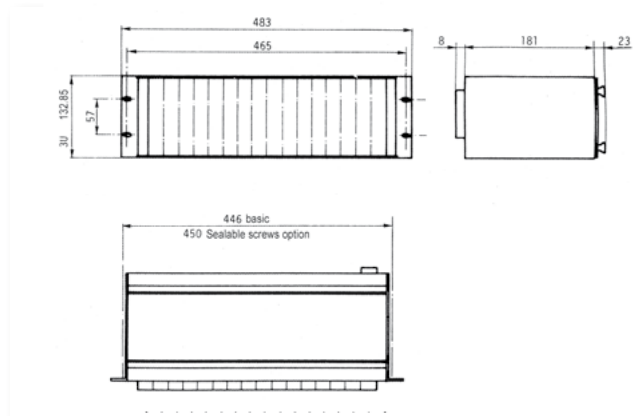
T82 plug-in module



T82 rack



19" - 3U rack



► Mounting accessories

■ Connection socket for plug-in module



Model	Connection socket	
	Type	Reference
UAN 1210B	2	EMBB 4002
UAR 1210B	5	EMBB 4005
UAX 1210B	5	EMBB 4005
UAZ 1220B	2	EMBB 4006
UAZ 1210B	6	EMBB 4002
UER 1210B	5	EMBB 4005
UQR 1210B	5	EMBB 4005
UQX 1210B	5	EMBB 4005
UEX 1210B	5	EMBB 4005
IAN 1210B	1	EMBB 4001
IAR 1210B	4	EMBB 4004
IER 1210B	4	EMBB 4004
IQR 1210B	4	EMBB 4004
IAR 1211B	4	EMBB 4004

Model	Connection socket	
	Type	Reference
FAR 1210B	5	EMBB 4005
FCR 1210B	5	EMBB 4004
JAR 1211B	4	EMBB 4004
JAR 1221B	5	EMBB 4005
UAR 1221B	7	EMBB 4007
PAR 1211B	4	EMBB 4004
PAR 1231B	4	EMBB 4004
PAR 1232B	3	EMBB 4003
PAR 1233B	9	EMBB 4009
PAR 1234B	10	EMBB 4010
PAR 1235B	4	EMBB 4004
QAR 1211B	4	EMBB 4004
QAR 1232B	3	EMBB 4003
QAR 1233B	9	EMBB 4009
QAR 1234B	10	EMBB 4010

Model	Connection socket	
	Type	Reference
UCR 1220B	5	EMBB 4005
UCR 1420B	5	EMBB 4005
UCR 1230B	5	EMBB 4005
UCR 1216B	7	EMBB 4007
ICR 1220B	5	EMBB 4005
ICR 1420B	5	EMBB 4005
ICR 1230B	5	EMBB 4005
ICR 1216B	7	EMBB 4007
TCL 1220B	6	EMBB 4006
RCL 1220B	6	EMBB 4006
RCR 1211B	6	EMBB 4006

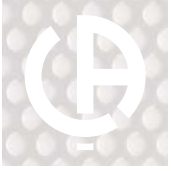
■ Mounting on DIN rail for plate-mounting or plug-in module



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

► Electrical connections

See document MS 0/1-7343.



T82 Range

Measurement and instrumentation Analogue transducers



AC RMS voltage



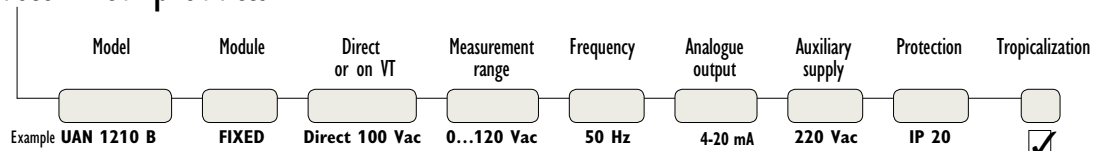
Model	UAN 1210 B	UAR 1210 B	UAX 1210 B	UAZ 1210 B	UAZ 1220 B			
Transfer curve								
Linear	•	•						
Expanded (1 slope)			•	•				
Expanded (2 slopes)					•			
Module								
Plate mounting	0.6 kg	0.7 kg	0.7 kg	0.7 kg	0.7 kg			
Plug-in	0.6 kg	0.7 kg	0.7 kg	0.7 kg	0.7 kg			
Rack	10 E / 0.5 kg	5 E / 0.3 kg	5 E / 0.3 kg					
Measurement input								
Voltage Un	Direct or on VT: 100/√3 110/√3 115/√3 132/√3 90 100 110 115 127 132 138 180 220 250 300 360 380 440 Vac							
Frequency	50, 60 or 400 Hz							
Measurement range 0...Xmax	0...1.25 Un	0...1.25 Un	0.8 Un...1.2 Un	0.8 Un...1.2 Un	0.8 Un...1.2 Un			
Consumption	< 2 VA	1 kΩ / V	1 kΩ / V	< 2 VA	< 2 VA			
Analogue output								
Current	0...Ymax	0...1 mA	0...2.5 mA	0...5 mA	0...10 mA	0...20 mA	0...0.1...1 mA	0...0.25...2.5 mA
	Ymin...Ymax		1...5 mA	2...10 mA	4...20 mA			0...1...10 mA
Voltage	0...Ymax	0...1 V	0...5 V	0...10 V				
	Ymin...Ymax		1...5 V	2...10 V				
Accuracy	0.5% of 0.5 Un...Un					0.5%		
Auxiliary supply								
Alternating current		100/√3 110/√3 115/√3	100 110 115 127 Vac	220 230 240 380 400 440 Vac			idem UAR 1210 B	
Direct current		24 48 110	125 220 Vdc				idem UAR 1210 B	
Self-powered	•					•		
Protection rating								
Plate mounting						IP 20		
Plug-in						IP 20		
Rack						IP 20		

Parameters to be specified when ordering

TO ORDER

Model	Module	Measurement range	Frequency	Analogue output	Auxiliary supply	Protection	Tropicalization	Reference
UAN 1210 B	Fixed	0...100 V	50 Hz	0...20 mA	self-powered	IP 20	without	UANA 3002
		0...380 V	50 Hz	0...20 mA	self-powered	IP 20	without	UANA 3001
UAR 1210 B	Fixed	0...100 V	50 Hz	4...20 mA	220 Vac	IP 20	without	UARD 3002
		0...100/√3 V	50 Hz	4...20 mA	220 Vac	IP 20	without	UARD 3004
		0...380 V	50 Hz	4...20 mA	220 Vac	IP 20	without	UARD 3003

Customized products



AC true RMS voltage

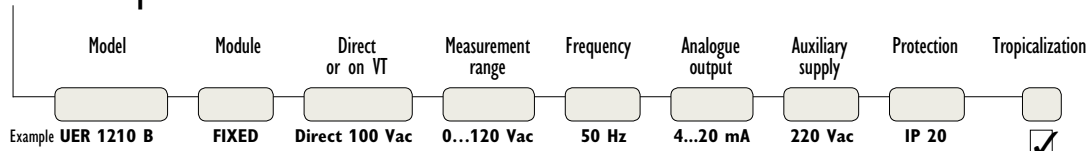


Model	UER 1210 B	UQR 1210B	UQX 1210B	UEX 1210B		
Transfer curve						
Linear	•					
Expanded				•		
Quadratic		•				
Expanded quadratic			•			
Module						
Plate mounting	0.6 kg	0.7 kg	0.7 kg	0.7 kg		
Plug-in	0.6 kg	0.7 kg	0.7 kg	0.7 kg		
Rack	10 E / 0.5 kg	5 E / 0.3 kg	5 E / 0.3 kg	5 E / 0.3 kg		
Measurement input						
Un Voltage	Direct or on VT: 100/√3 110/√3 115/√3 132/√3 90 100 110 115 127 132 138 180 220 250 300 360 380 440 Vac					
Frequency	50, 60 or 400 Hz					
Measurement range 0...Xmax	0...1.25 Un	0...1.25 Un	0.8 Un...1.2 Un	0.8 Un...1.2 Un		
Consumption	1 kΩ / V	500 Ω / V	500 Ω / V	1 kΩ / V		
Analogue 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/√3 110/√3 115/√3 100 110 115 127 Va 220 230 240 380 400 440 Vac					
Direct current	24 48 110 125 220 Vdc					
Protection rating						
Plate mounting	IP 20					
Plug-in	IP 20					
Rack	IP 20					

Parameters to be specified when ordering

TO ORDER

Customized products



Associated products

19" rack
for rack modules

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Socket connection
for plug-in modules

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DIN rail mounting
(fixed panel or plug-in)

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T82 Range



AC RMS and true RMS Current

Measurement and instrumentation Analogue transducers

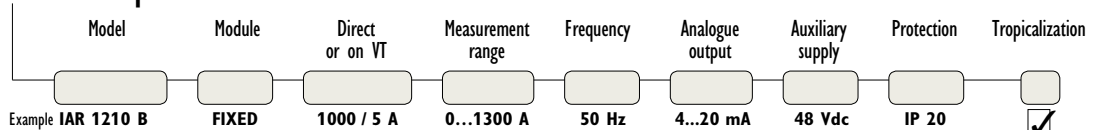
Model	IAN 1210 B	IAR 1210 B	IER 1210 B	IQR 1210 B	IAR 1211 B	
Measurement						
RMS	•	•				
True RMS			•	•		
Motor scale					•	
Transfer curve						
Linear	•	•	•			
Expanded					•	
Quadratic				•		
Module						
Plate mounting	0.6 kg	0.7 kg	0.7 kg	0.7 kg	0.7 kg	
Plug-in	0.6 kg	0.7 kg	0.7 kg	0.7 kg	0.7 kg	
Rack	10 E / 0.5 kg	5 E / 0.3 kg	5 E / 0.3 kg	5 E / 0.3 kg		
Measurement input						
Current In	Direct or on CT: 0.5 0.6 1 1.2 1.3 1.5 2.5 5 6 6.5 7 7.5 10 A				Direct or on CT: 1 or 5 A	
Frequency Fn	50, 60 or 400 Hz					
Measurement range 0...Xmax	0...Xmax In < Xmax < 1.3 In				0...1...3 A 0...5...15 A	
Consumption	≤ 2 VA		≤ 0.2 VA			
Analogue output						
Current	0...Ymax	0...1 mA	0...2.5 mA	0...5 mA	0...10 mA 0...20 mA	0...7...10 mA
	Ymin...Ymax		1...5 mA	2...10 mA	4...20 mA	4...15...20 mA
Voltage	0...Ymax		0...1 V	0...5 V	0...10 V	
	Ymin...Ymax		1...5 V	2...10 V		0...7...10 V
Accuracy	0.5% of 0.5 Un...Un		0.5%			0.5% / 0.1%
Auxiliary supply						
Alternating current		100/√3 110/√3 115/√3	100 110 115 127 220 Vac	230 240 380 400 440 Vac	100 110 115 127 220 Vac	230 240 380 400 440 Vac
Direct current			24 48 110 125 220 Vdc			
Self-powered	•					
Protection rating						
Plate mounting			IP 20			
Plug-in			IP 20			
Rack			IP 20			

Parameters to be specified when ordering

TO ORDER

Model	Module	In	Measurement range	Frequency	Analogue output	Auxiliary supply	Protection	Tropicalization	Reference
IAN 1210 B	Fixed	Direct: 5 A	0...5 A	50 Hz	0...10 mA	self-powered	IP 20	without	IANA 3001
		Direct: 5 A	0...5 A	50 Hz	0...10 mA	self-powered	IP 20	without	IANA 3002
IAR 1210 B	Fixed	Direct: 5 A	0...5 A	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	UARD 3001

Customized products



Associated products

19" rack for rack modules

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Socket connection for plug-in modules

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DIN rail mounting (fixed panel or plug-in)

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CT Current transformers

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Frequency



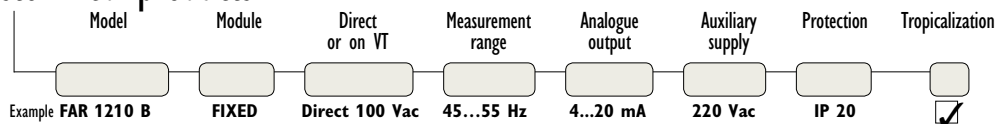
Model	FAR 1210 B	FCR 1210 B
Measurement		
Measurement type	RMS value	
Input type	Tachometer sensor or mains supply	
Module		
Plate mounting	0.7 kg	0.6 kg
Plug-in	0.7 kg	0.6 kg
Rack	5 E / 0.3 kg	-
Measurement input		
Voltage Un	Direct or on VT: 100/√3 110/√3 Vac 115/√3 100 110 115 Vac 127 230 240 380 400 440 Vac	Direct on VT: 50 to 440 V RMS
Measurement range Xmin...Xmax	45...55 Hz 48...52 Hz 49...51 Hz 350...450 Hz 55...65 Hz 58...62 Hz 59...61 Hz 380...420 Hz	F1 ≥ 30 Hz F1...F2 with 40 Hz <F2<10 kHz and F2/F1 ≥ 1.3
Consumption	1 kΩ / V	
Analogue 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	
Voltage	0...Ymax 1...5 V 2...10 V Ymin...Ymax 0...1 V 0...5 V 0...10 V	
Accuracy	0.5%	
Auxiliary supply		
Alternating current	100/√3 110/√3 115/√3 100 Vac 110 115 127 220 230 Vac 240 380 400 440 Vac	100 110 115 127 220 Vac 230 240 380 400 440 Vac
Direct current	24 48 110 125 220 Vdc	24 48 110 125 220 Vdc
Self-powered	•	
Protection rating		
Plate mounting	IP 20	
Plug-in	IP 20	
Rack	IP 20	

Parameters to be specified when ordering

TO ORDER

Model	Module	Un	Measurement range	Fn	Analogue output	Auxiliary supply	Protection	Tropicalization	Reference
FAR 1210 B	Fixed	Direct: 380 V	45...55 Hz	50 Hz	4...20 mA	220 Vac	IP 20	without	FARD 3000

Customized products



Associated products

19" rack
for rack modules

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Socket connection
for plug-in modules

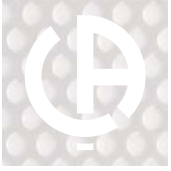
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DIN rail mounting
(fixed panel or plug-in)

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T82 Range



Power factor



Measurement and instrumentation Analogue transducers

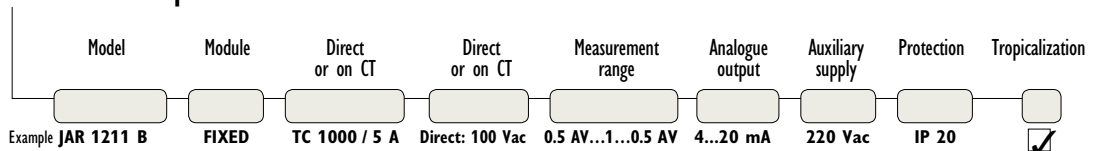
Model	JAR 1211 B	JAR 1231 B
Network + connection		
Single-phase	1 V - 1 I	
Balanced three-phase 3/4 wires		1 U - 1 I
Module		
Plate mounting	0.7 kg	0.7 kg
Plug-in	0.7 kg	0.7 kg
Rack	5 E / 0.3 kg	5 E / 0.35 kg
Measurement input		
Current In	Direct or on VT: 1 or 5 or 10 A	
Voltage Un	Direct or on VT: 100/√3 110/√3 115/√3 100 110 115 Vac 127 230 240 380 400 440 Vac	Direct or on VT: 100 110 115 127 230 240 380 400 440 Vac
Measurement range 0...Xmax	0.5 CAP...1...0.2 IND	0.5 CAP...1...0.5 IND 0.8 CAP...1...0.2 IND
Frequency	50, 60 or 400 Hz	
Consumption	Input I: 0.3 VA Input U: 1 kΩ /V	
Analogue output		
Transfer curve	Linear	
Current 0...Ymax	0...1 mA 0...2 mA 0...2.5 mA 0...5 mA 0...10 mA 0...20 mA	
Ymin...Ymax	4...20 mA	
Voltage 0...Ymax	0...1 V 0...5 V 0...10 V	
Ymin...Ymax	1...5 V 2...10 V	
Accuracy	1%	
Auxiliary supply		
Alternating current	100/√3 110/√3 115/√3 100 110 115 127 220 230 240 380 400 440 Vac	
Direct current	24 48 110 125 220 Vdc	
Self-powered	•	
Protection rating		
Plate mounting	IP 20	
Plug-in	IP 20	
Rack	IP 20	

Parameters to be specified when ordering

TO ORDER

Model	Version	In	Un	Measurement range	Fn	Analogue output	Auxiliary supply	Protection	Tropicalization	Reference
JAR 1231B	Fixed	Direct: 5 A	Direct: 220 V	0.5 CAP...1...0.2 IND	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	JARE 3001

Customized products



Associated products

19" rack for rack modules
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Socket connection for plug-in modules
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DIN rail mounting (fixed panel or plug-in)
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CT Current transformers
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Synchronization

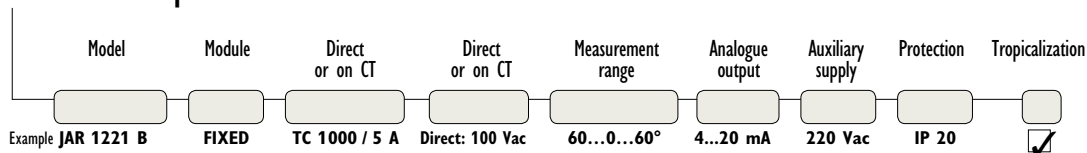


Model	JAR 1221 B	UAR 1221 B
Measurement		
Measurement type	Phase shift between two Uac inputs	
Input type	Differential between two Uac inputs (Vac and V ²)	
Module		
Plate mounting	0.7 kg	0.7 kg
Plug-in	0.7 kg	0.7 kg
Rack	5 E / 0.35 kg	-
Measurement input		
Voltage Un	100/√3 110/√3 115/√3 100 110 115 Vac 127 230 240 380 400 440 Vac	
Frequency 0...Xmax	45...55 or 55...65 or 350...450 Hz	
Measurement range	60...0...60° 120...0...120° 150...0...150°	ΔV = ± (V1-V2)
Consumption	1 kΩ / V	
Analogue output		
Transfer curve	Linear	
Current	0...0.5...1 mA 0...1.25...2.5 mA 0...2.5...5 mA 0...5...10 mA 0...10...20 mA	
	Ymin...Ymax	4...12...20 mA -1...0...1 mA -2.5...0...2.5 mA -1...0...1 mA -2.5...0...2.5 mA -5...0...5 mA -10...0...10 mA -20...0...20 mA -5...0...5 mA -10...0...10 mA -20...0...20 mA
Voltage	0...Ymax 0...0.5...1 V 0...2.5...5 V 0...5...10 V	
	Ymin...Ymax	1...3...5 V -1...0...1 V -1...0...1 V -5...0...5 V -10...0...10 V -10...0...10 V
Accuracy	1%	
Auxiliary supply		
Alternating current	100/√3 110/√3 115/√3 100 110 115 127 220 230 240 380 400 440 Vac	
Direct current	24 48 110 125 220 Vdc	
Self-powered	•	
Protection rating		
Plate mounting	IP 20	
Plug-in	IP 20	
Rack	IP 20	

Parameters to be specified when ordering

TO ORDER

Customized products



Associated products

19" rack
for rack modules

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Socket connection
for plug-in modules

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DIN rail mounting
(fixed panel or plug-in)

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T82 Range



Active power



Measurement and instrumentation Analogue transducers

Model	PAR 1211B	PAR 1231B	PAR 1232B	PAR 1233B	PAR 1234B	PAR 1235B
Network + connections						
Single	1V - 1I					
Balanced three-phase 3 wires		1U - 1I			1U - 2I	2U - 1I
Unbalanced three-phase 3 wires			2U - 2I			
Balanced three-phase 4 wires	1V - 1I					
Unbalanced three-phase 4 wires			2U - 3I	3V - 3I		
Model version						
Plate mounting	0.850 kg	0.850 kg	0.850 kg	0.850 kg	0.850 kg	0.850 kg
Plug-in	0.850 kg	0.850 kg	0.850 kg	0.850 kg	0.850 kg	0.850 kg
Rack	5 E / 0.5 kg	10 E / 0.5 kg	10 E / 0.6 kg	10 E / 0.7 kg	5 E / 0.35 kg	5 E / 0.35 kg
Measurement inputs						
Current In	Direct or on CT: 1. 5 or 10 A					
Voltage Un	Direct or on VT: 100/√3 110/√3 115/√3 230 100 110 115 127 220 240 380 400 440	Direct or on VT: 100 110 115 Vac 127 230 240 380 400 440 Vac		Direct or on VT: 100/√3 110/√3 Vac 115/√3 230 Vac		Direct or on VT: 100 110 115 Vac 127 230 240 380 400 440 Vac
Frequency	50, 60 or 400 Hz					
Measurement range	0...Xmax or Xmin...Xmax with 0.5 Sn ≤ Xmax ≤ 1.35 Sn (1)					
Consumption	Input I: 0.2 VA Input U > 500 Ω / V					
Analogue 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...0...1 mA -2.5...0...2.5 mA -5...0...5 mA -10...0...10 mA -20...0...20 mA 1...5 mA 2...10 mA 4...20 mA 1...3...5 mA 2...6...10 mA 4...12...20 mA				
Voltage	0...Ymax	0...1 V 0...5 V 0...10 V				
	Ymin...Ymax	-1...0...1 V -5...0...5 V -10...0...10 V 1...5 V 2...10 V				
Accuracy	Class 0.5: 0.75 Sn ≤ Xmax ≤ 1.35 Sn Class 1: 0.5 Sn ≤ Xmax < 0.75 Sn					
Auxiliary supply						
Alternating current	100/√3 110/√3 115/√3 100 110 115 127 220 230 240 380 400 440 Vac					
Direct current	24 48 110 125 220 Vdc					
Self-powered	•	•	•	•	•	•
Protection rating						
Plate mounting	IP 20					
Plug-in	IP 20					
Rack	IP 20					

(1) $S_n = V \times I \times \cos \varphi$ (single-phase network) $S_n = 3 \times V \times I \times \cos \varphi$

(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

TO ORDER

Model	Version	Direct or on CT	Direct or on VT	Measurement range	Frequency	Analogue output	Auxiliary supply	Protection	Tropicalization	Reference
PAR 1232 B	Panel mounted	Direct: 5 A	Direct: 380 V	0...3 kW	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRE 3001
PAR 1232 B	Panel mounted	Direct: 5 A	Direct: 100 V	0...866 W	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRE 3002
PAR 1233 B	Panel mounted	Direct: 5 A	Direct: 380 V	0...3 kW	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRF 3001
PAR 1233 B	Panel mounted	Direct: 5 A	Direct: 380 V	0...3 kW	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRC 3003
PAR 1235 B	Panel mounted	Direct: 5 A	Direct: 220 V	0...1 kW	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRC 3001
PAR 1211 B	Panel mounted	Direct: 5 A	Direct: 220 V	0...3 kW	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRC 3002

Customized products

Model	Network	Module	Direct or on CT	Direct or on VT	Measurement range	Frequency	Analogue output	Auxiliary supply	Protection	Tropicalization
Example PAR 1211 B	Bal. 3ph 4 wires	Fixed	TC 1000 / 5 A	TT 20 kV / 100 V	0...2.77 MW	50 Hz	4...20 mA	220 Vac	IP 20	<input checked="" type="checkbox"/>



Reactive power



Model	QAR 1211B	QAR 1211B	QAR 1232B	QAR 1233B	QAR 1234B
Network + connections					
Single	1V - 1I				
Balanced three-phase 3 wires		1U - 1I			1U - 2I
Unbalanced three-phase 3 wires			2U - 2I		
Balanced three-phase 4 wires	1V - 1I				
Unbalanced three-phase 4 wires			2U - 3I	3U - 3I	
Model version					
Plate mounting	0.850 kg	0.850 kg	0.850 kg	0.850 kg	0.850 kg
Plug-in	0.850 kg	0.850 kg	0.850 kg	0.850 kg	0.850 kg
Rack	5 E / 0.5 kg	10 E / 0.5 kg	10 E / 0.6 kg	10 E / 0.7 kg	5 E / 0.35 kg
Measurement inputs					
Current In	Direct or on CT: 1. 5 or 10 A				
Voltage Un	Direct or on VT: 100/√3 110/√3 115/√3 230 single-phase only: 100 110 115 127 220 240 380 400 44	Direct or on VT: 100 110 115 127 230 240 380 400 440 Vac			Direct or on VT: 100/√3 110/√3 Vac 115/√3 230 Vac
Frequency	50, 60 or 400 Hz				
Measurement range Xmin...Xmax	0...Xmax or Xmin...Xmax with 0.5 Sn ≤ Xmax ≤ 1.35 Sn (1)				
Consumption	Input I: 0.2 VA		Input U > 500 Ω / V		
Analogue 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...0...1 mA -2.5...0...2.5 mA -5...0...5 mA -10...0...10 mA -20...0...20 mA 1...5 mA 2...10 mA 4...20 mA 1...3...5 mA 2...6...10 mA 4...12...20 mA			
Voltage	0...Ymax	0...1 V 0...5 V 0...10 V			
	Ymin...Ymax	-1...0...1 V -5...0...5 V -10...0...10 V 1...5 V 2...10 V			
Accuracy	Class 0.5: 0.75 Sn ≤ Xmax ≤ 1.35 Sn Class 1: 0.5 Sn ≤ Xmax < 0.75 Sn				
Auxiliary supply					
Alternating current	100/√3 110/√3 115/√3 100 110 115 127 220 230 240 380 400 440 Vac				
Direct current	24 48 110 125 220 Vdc				
Self-powered	• • • • •				
Protection rating					
Plate mounting	IP 20				
Plug-in	IP 20				
Rack	IP 20				

(1) $S_n = V \times I \times \sin \varphi$ (single-phase network) $S_n = 3 \times V \times I \times \sin \varphi$ (Balanced three-phase, Unbalanced three-phase 4 wires) Parameters to be specified when ordering
 $S_n = \sqrt{3} \times U \times I \times \sin \varphi$ (Balanced three-phase, Unbalanced three-phase 3 wires)

T O O R D E R

Model	Version	Direct or on CT	Direct or on VT	Measurement range	Frequency	Analogue output	Auxiliary supply	Protection	Tropicalization	Reference
QAR 1232 B	mounted	Direct: 5 A	Direct: 380 V	0...3 kvar	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRE 3003
QAR 1232 B	mounted	Direct: 5 A	Direct: 100 V	0...866 var	50 Hz	4...20 mA	220 V / 50 Hz	IP 20	without	PQRE 3004

Customized products

Model	Network	Module	Direct or on CT	Direct or on VT	Measurement range	Frequency	Analogue output	Auxiliary supply	Protection	Tropicalization
Example QAR 1211 B	3-phase 4-wires	Fixed	TC 1000 / 5 A	TT 20 kV / 100 V	-1.73...+1.73 Mvar	50 Hz	4...20 mA	220 Vac	IP 20	<input checked="" type="checkbox"/>

Associated products

19" rack for rack modules

▶ page 252



Socket connection for plug-in modules

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DIN rail mounting (fixed panel or plug-in)

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CT Current transformers

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T82 Range

Measurement and instrumentation Analogue transducers



DC Voltage / Summation



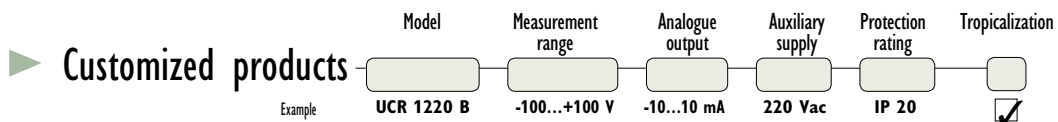
Model	UCR 1220 B	UCR 1420 B (1)	UCR 1230 B	UCR 1216 B
Measurement				
DC Voltage	•	•	•	
Summation of DC voltage				•
Transfer curve				
Linear	•	•		•
Extended			•	
Module				
Plate mounting	0.7 kg	0.7 kg	0.7 kg	0.7 kg
Plug-in	0.7 kg	0.7 kg	0.7 kg	0.7 kg
Rack	5 E / 0.3 kg	5 E / 0.3 kg	5 E / 0.3 kg	5 E / 0.3 kg
Voltage inputs				
Voltage U_n	$5 \text{ mV} \leq U_n \leq 650 \text{ Vdc}$	$5 \text{ mV} \leq U_n \leq 1500 \text{ Vdc}$	$5 \text{ mV} \leq U_n \leq 130 \text{ Vdc}$	Summation of 2 to 6 inputs U with $0.1 \text{ V} \leq U_n \leq 20 \text{ Vdc}$ or $1...5 \text{ V}$ $2...10 \text{ Vdc}$
Measurement range $0...X_{max}$	$0... \pm U_n$ or $U_n1...U_n2$ with $U_n2 > 2 \times U_n1$		$0...U_n...5 U_n$	$U_n1+U_n2+U_n3+U_n4+U_n5+U_n6$
Input resistance				$> 100 \text{ k}\Omega$
Analogue output				
Transfer curve	Linear			
Current $0...Y_{max}$	$0...1 \text{ mA}$ $0...2.5 \text{ mA}$ $0...5 \text{ mA}$ $0...10 \text{ mA}$ $0...20 \text{ mA}$			
$Y_{min}...Y_{max}$	$1...5 \text{ mA}$ $2...10 \text{ mA}$ $4...20 \text{ mA}$			
Voltage $0...Y_{max}$	$0...1 \text{ V}$ $0...5 \text{ V}$ $0...10 \text{ V}$			
$Y_{min}...Y_{max}$	$1...5 \text{ V}$ $2...10 \text{ V}$			
Accuracy	Class 0.5	Class 0.5	Class 0.5 / 1	Class 0.5
Auxiliary supply				
Alternating current	100 110 115 127 220 230 240 380 Vac			
Direct current	24 48 110 125 220 Vdc			
Protection rating				
Plate mounting	IP 20			
Plug-in	IP 20			
Rack	IP 20			

(1) insulation: 4 kV

Parameters to be specified when ordering

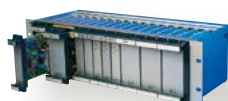
TO ORDER

Model	Version	Measurement range	Analogue output	Auxiliary supply	Protection rating	Tropicalization	Reference
UCR 1220 B	Fixed	$0...10 \text{ Vdc}$	$0...10 \text{ Vdc}$	220 V / 50 Hz	IP 20	without	UCRG 3001



► Associated products

19" rack for rack modules
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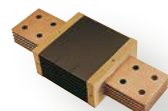
Socket connection for plug-in modules
► page 255



DIN rail mounting (fixed panel or plug-in)
► page 255



Shunts
► page 145





DC Current / Summation



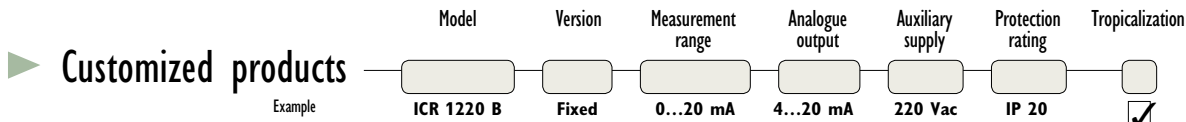
Model	UCR 1220 B	UCR 1420 B (1)	UCR 1230 B	UCR 1216 B
Measurement				
DC current	•	•	•	
Summation of DC current				•
Transfer curve				
Linear	•	•		•
Extended			•	
Module				
Plate mounting	0.7 kg	0.7 kg	0.7 kg	0.7 kg
Plug-in	0.7 kg	0.7 kg	0.7 kg	0.7 kg
Rack	5 E / 0.3 kg	5 E / 0.3 kg	5 E / 0.3 kg	5 E / 0.3 kg
Current inputs				
Current I_n	$5 \mu A \leq I_n \leq 100 \text{ mA}$		$5 \mu A \leq I_n \leq 20 \text{ mA}$	Summation of 2 to 6 inputs I with $1 \text{ mA} \leq I \leq 20 \text{ mA}$ or $1 \dots 5 \text{ mA}$ $2 \dots 10 \text{ mA}$ $4 \dots 20 \text{ mA}$
Measurement range $0 \dots X_{\text{max}}$	$0 \dots \pm I_n$		$0 \dots I_n \dots 5I_n$	$I_n1 + I_n2 + I_n3 + I_n4 + I_n5 + I_n6$
Input resistance	$0.1 \text{ V}/I_n$			$1 \text{ V}/I_n$
Analogue output				
Transfer curve	Linear			
Current	$0 \dots Y_{\text{max}}$	$0 \dots 1 \text{ mA}$ $0 \dots 2.5 \text{ mA}$ $0 \dots 5 \text{ mA}$ $0 \dots 10 \text{ mA}$ $0 \dots 20 \text{ mA}$		
	$Y_{\text{min}} \dots Y_{\text{max}}$	$1 \dots 5 \text{ mA}$ $2 \dots 10 \text{ mA}$ $4 \dots 20 \text{ mA}$		
Voltage	$0 \dots Y_{\text{max}}$	$0 \dots 1 \text{ V}$ $0 \dots 5 \text{ V}$ $0 \dots 10 \text{ V}$		
	$Y_{\text{min}} \dots Y_{\text{max}}$	$1 \dots 5 \text{ V}$ $2 \dots 10 \text{ V}$		
Accuracy	Class 0.5	Class 0.5	Class 0.5 / 1	Class 0.5
Auxiliary supply				
Alternating current	100 110 115 127 220 230 240 380 Vac			
Direct current	24 48 110 125 220 Vdc			
Protection rating				
Plate mounting	IP 20			
Plug-in	IP 20			
Rack	IP 20			

(1) insulation:4 kV

 Parameters to be specified when ordering

TO ORDER

Model	Version	Measurement range	Analogue output	Auxiliary supply	Protection rating	Tropicalization	Reference
ICR 1220 B	Fixed	4 to 20 mA	4 to 20 mA	220 V / 50 Hz	IP 20	without	UCRG 3002



► Associated products

19" rack
for rack modules

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Socket connection
for plug-in modules

► page 255

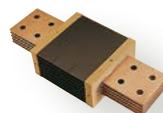
DIN rail mounting
(fixed panel or plug-in)

► page 255



Shunts

► page 145





T82 Range



Temperature



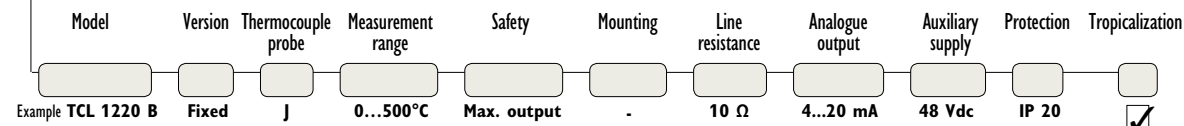
Measurement and instrumentation Analogue transducers

Model	TCL 1220 B							RCL 1220B					
Version													
Plate mounting	0.7 kg							0.7 kg					
Plug-in	0.7 kg							0.7 kg					
Rack	5 E / 0.3 kg							5 E / 0.3 kg					
Measurement input													
Type: thermocouple / probe	K	T	J	E	R	S	B	platinum	copper				
Couple break protection	Max. output or min. output												
Mounting								2, 3 or 4 wires					
Measurement range Xmin...Xmax	-200...1,200°C	-200...350°C	-200...600°C	-200...1,000°C	0...1,750°C	600...1,800°C	600...1,800°C	0...500°C	0...200°C				
Input resistance for CT	> 50 kΩ							-					
Current in probe	-							2 mA max 3 mA					
Line resistance	0 - 200							0 - 10 Ω					
Calibration resistance	100 Ω												
Analogue 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											
Voltage	0...Ymax	0...1 V 0...5 V 0...10 V											
	Ymin...Ymax	1...5 V 2...10 V											
Accuracy	Class 0.5 - Class 1 - Class 1.5							Class 0.5					
Auxiliary supply													
Alternating current	100/√3	110/√3	115/√3	100	110	115	127	220	230	240	380	400	440 Vac
Direct current	24 48 110 125 220 Vdc												
Protection rating													
Plate mounting								IP 20					
Plug-in								IP 20					
Rack								IP 20					

Parameters to be specified when ordering

TO ORDER

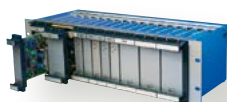
Customized products



Associated products

19" rack for rack modules

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Socket connection for plug-in modules

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DIN rail mounting (fixed panel or plug-in)

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Thermocouple/probe

▶ Pyrocontrol Catalogue





Resistance

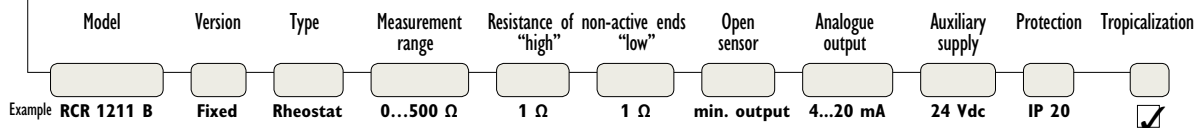


Model	RCR 1211 B	
Version		
Plate mounting	0.7 kg	0.7 kg
Plug-in	0.7 kg	0.7 kg
Measurement input		
Type	Potentiometer	Rheostat
Measurement range 0...Xmax	0...R with $1\text{ k}\Omega \leq R \leq 5\text{ k}\Omega$	0...R with $100 \leq R \leq 5,000\ \Omega$
Sensor break protection	Max. output or min. output	
Sensor current	3 mA for $R \leq 300\ \Omega$ or $I = 1\text{ V/R}$ for $R > 300\ \Omega$	
High dead end resistance	Max. value: 10% of Xmax	
Low dead end resistance	Max. value: 10% of Xmax	
Analogue 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
Voltage	0...Ymax	0...1 V 0...5 V 0...10 V
	Ymin...Ymax	1...5 V 2...10 V
Accuracy	Class 0.5	
Auxiliary supply		
Alternating current	100/√3 110/√3 115/√3 100 110 115 127 220 230 240 380 400 440 Vac	
Direct current	24 48 110 125 220 Vdc	
Protection rating		
Plate mounting	IP 20	
Plug-in	IP 20	

Parameters to be specified when ordering

TO ORDER

Customized products



Associated products

19" rack
for rack modules

▶ page 252



Socket connection
for plug-in modules

▶ page 255



DIN rail mounting
(fixed panel or plug-in)

▶ page 255

