Quality Management ISO 9001:2008
▶ Voluntary participation in regular monitoring
DEKRA Certification
DEKRA certified

x / y

Product Guide

800.U.001.05

Transducers

J / U =

P/Q =

P+Q =

f =

φ =

≈ ~ =
RS232
RS485

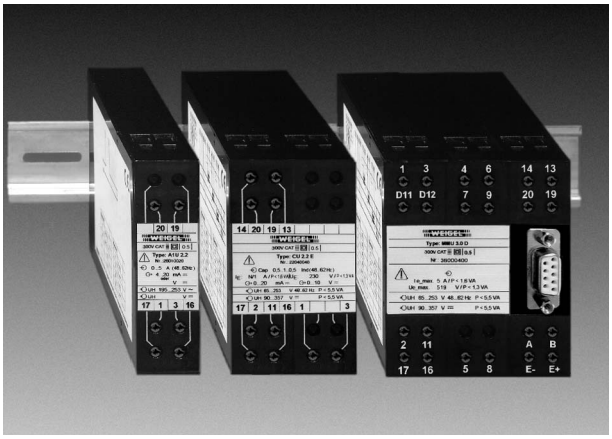
= =

ϑ =

= =
RS232
RS485

RS232
RS485

- ✓ **for AC Current or AC Voltage:**
  A1U / V1U 2.2 – also self-powered: AU / VU 2.0
  A1U / V1U 2.3
- ✓ **for AC Current (Co–generation):**
  A1U 2.2 E/D
- ✓ **for Active or Reactive Power**
  DUW/B / VUW/B 2.1
  EW/B / DGW/B / DUW/B / VGW/B / VUW/B 2.2
  EW/B / DGW/B / DUW/B / VGW/B / VUW/B 2.3
- ✓ **for Active *and* Reactive Power**
  EW+B / DGW+B / DUW+B / VGW+B / VUW+B 2.2
- ✓ **Programmable Multi-Functional Transducer: MMU 3.0**
- ✓ **for Frequency: FU 2.2**
- ✓ **for Phase Angle (cos φ): CU 2.2**
- ✓ **for DC Current or DC Voltage: AUD / VUD 2.2**
- ✓ **for RMS Current or RMS Voltage: AUE / VUE 2.2**
- ✓ **for Temperature: PTU 2.0**
- ✓ **Isolation Transducers for Standard Signals: TUA 2.2**
  also self-powered: TUP 2.0
- ✓ **Standard Signal Interface Converter: MU-RS232/485**
- ✓ **RS232-RS485 Converter: AP-RS232/485**
- ✓ Accuracy: class 0.5
- ✓ Mounting on DIN-rail 35 mm
- ✓ Auxiliary supply AC 115/230 V (50/60 Hz), DC 24 V
  or wide range supply



CE

WEIGEL

General Data

Transducers

Application

Transducers convert power current and voltage quantities or proccess control inputs into proportional load independent DC current or voltage outputs.

for measuring	AC current or AC voltage, active or reactive power, frequency, phase angle (φ) / power factor (cos φ), DC current or DC voltage, standard signals, temperature

Technical Data

case details	projecting case clamping to TH35 mounting rail according to DIN EN 60 715
material of case	ABS/PC black self-extinguishing to UL rating 94 V–0
terminals	screw-terminals
wire cross-section	4 mm^2 max.
enclosure code	IP 40 case IP 20 terminals
class of protection	II
measuring category	CAT III
pollution level	2
operating voltage	300 V (rated mains voltage phase to zero)
climatic suitability	climatic class 3 acc. to VDE/VDI 3540 sheet 2
operating temperature range	–10 ... +55°C
storage temperature range	–25 ... +65°C
relative humidity	≤ 75% annual average, non-condensing

Output Ratings

current output

rated current	I_{AN}	load independent DC current 0 ... 20 mA or optionally 0 ... 10 mA, 0 ... 5 mA, 4 ... 20 mA (”live zero”), –20 ... 0 ... 20 mA (bipolar output only with wide range supply)
load range	R_A	0 ... 10 V / I_{AN}

voltage output

rated voltage	U_{AN}	load independent DC voltage 0 ... 10 V or optionally 2 ... 10 V (”live zero”), –10 ... 0 ... 10 V (bipolar output only with wide range supply)
load	R_A	≥ 4 kΩ
load error		≤ 0.1% based on 50% load change
residual ripple		≤ $1\%_{rms}$
response time		approx. 500 ms or optionally approx. 250 ms (A1U/V1U/AUD/VUD/TUA 2.2 only) approx. 100 ms (AUD/VUD/TUA 2.2 only)
idling voltage		≤ 15 V

(Ratings do not apply completely to self-powered transducers.)

Auxiliary Supply

auxiliary voltage U_{HN}	230 V AC (195 ... 253 V), 48 ... 62 Hz
optional	115 V AC (98 ... 126 V), 48 .. 62 Hz 24 V DC (20 ... 72 V)
wide range supply	20 ... 100 V DC resp. 20 ... 70 V AC 90 ... 357 V DC resp. 65 ... 253 V AC

galvanic isolation between input, output and auxiliary supply circuits

Short Form Data

Transducers for AC Current or AC Voltage, Self-Powered

AU 2.0
VU 2.0

Input Ratings

input quantity	sinusoidal AC current (AU 2.0) sinusoidal AC voltage (VU 2.0)	
type rated input	**AU 2.0** current I_{EN} 1 A *), 1.2 A, 5 A *), 6 A other rating on request	**VU 2.0** voltage U_{EN} 57.7 V, 63.5 V, 100 V *), 110 V *), 150 V, 250 V, 400 V, 500 V
	*) also for use on transducer	
measuring range	0 ... I_{EN}	0 ... U_{EN}
modulation range overload limit	1.2 I_{EN} 1.5 I_{EN} continuously 10 I_{EN} 1 s max.	1.2 U_{EN} 1.2 U_{EN} continuously 2 U_{EN} 1 s max.
frequency range	48 ... 62 Hz	
power consumption	voltage transformer current transformer 5A current transformer 1A	< 3 VA < 4 VA < 2 VA

Output Ratings

current output

output current	I_A	load independent DC current
rated current	I_{AN}	0 ... 20 mA
load range	R_A	0 ... 500 Ω
load error		≤ 0.4% based on 50% load change
idling voltage		≤ 20 V
accuracy		**class 0.5** (±0.5% of end value)

Other Ratings

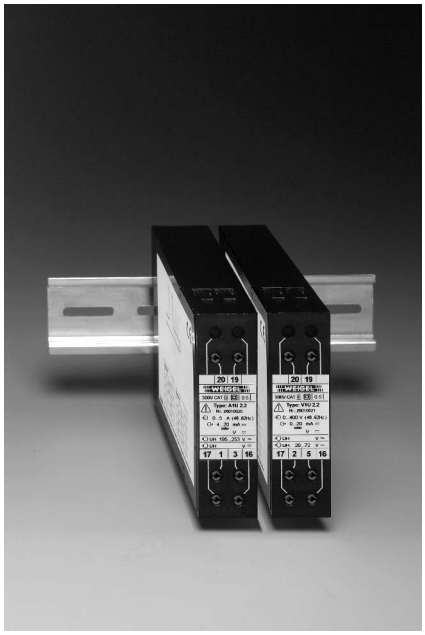
auxiliary voltage	*none required*
dimensions WxHxL	22.5 mm x 80 mm x 115 mm
weight	approx. 0.35 kg

for detailed information refer to Data Sheet No. 045.##

Short Form Data

Transducers for AC Current or AC Voltage

A1U 2.2
V1U 2.2



Input Ratings

input quantity	sinusoidal AC current or sinusoidal AC voltage	
type	**A1U 2.2**	**V1U 2.2**
meeasuring unit	AC current	AC voltage
rated input	current I_{EN}	voltage U_{EN}
in the range	0 ... 200 µA up to 5 A (also for use on transformer)	0 ... 60 mV up to 519 V
measuring range	0 ... I_{EN}	0 ... U_{EN}
	current input	**voltage input**
modulation range	1.2 I_{EN}	1.2 U_{EN}
overload limit	1.2 I_{EN} continuously 10 I_{EN} 1 s max.	1.2 U_{EN} continuously 2 U_{EN} 1 s max.
power consumption	$I_E \cdot 0{,}1$ V	U_E^2 / R_E
frequency range	48 ... 62 Hz or $16^2/_3$ Hz, 100 Hz, other ratings on request	

Output Ratings

output current *or* voltage output
refer to **General Data**

Other Ratings

accuracy **class 0.5** (±0.5% of end value)
auxiliary voltage *refer to* **General Data**
dimensions WxHxL 22.5 mm x 80 mm x 115 mm
weight approx. 0.12 kg

for detailed information refer to Data Sheet No. 061.##

Short Form Data

Transducers for AC Current or AC Voltage

A1U 2.3
V1U 2.3

Input Ratings

input quantity	sinusoidal AC current or sinusoidal AC voltage	
type	**A1U 2.3**	**V1U 2.3**
meeasuring unit	AC current	AC voltage
rated input	current I_{EN} 1 A*) / 5 A*) *) also for use on transformer	voltage U_{EN} 100 V*) / 250 V / 500 V
measuring range	0 ... I_{EN}	0 ... U_{EN}
	current input	**voltage input**
modulation range	1.2 I_{EN}	1.2 U_{EN}
overload limit	1.2 I_{EN} continuously 10 I_{EN} 1 s max.	1.2 U_{EN} continuously 2 U_{EN} 1 s max.
power consumption	$I_E \cdot 0{,}1$ V	U_E^2 / R_E
frequency range	48 ... 62 Hz	

Output Ratings

current output

output current	I_A	load independent DC current
rated current	I_{AN}	0 ... 20 mA or 4 ... 20 mA
load range	R_A	0 ... 600 Ω
current limitation		to 120 ... 140% of end value

or **voltage output**

output voltage	U_A	impressed DC voltage
rated voltage	U_{AN}	0 ... 10 V or 2 ... 10 V
load	R_A	≥ 4 kΩ

load error, residual ripple, response time *refer to* **General Data**
idling voltage ≤ 20 V

Other Ratings

accuracy **class 0.5** (±0.5% of end value)
auxiliary voltage U_{HN} 230 V AC (195 ... 253 V), 48 ... 62 Hz
optional 115 V AC (98 ... 126 V), 48 .. 62 Hz
galvanic isolation between input, output and auxiliary supply circuits
dimensions WxHxL 22.5 mm x 80 mm x 115 mm
weight approx. 0.16 kg

for detailed information refer to Data Sheet No. 068.##

J/U
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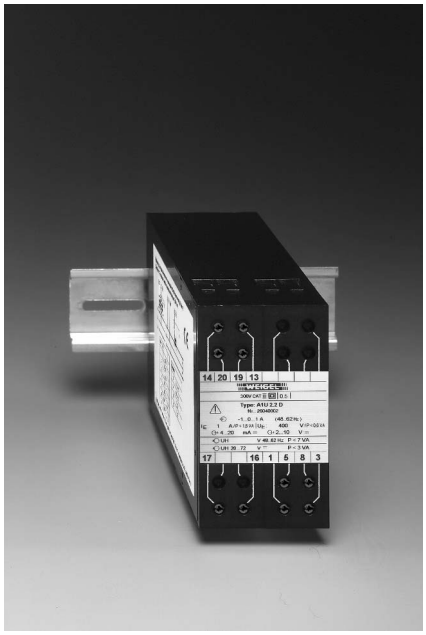
Short Form Data

Transducers for AC Current (Co-generation)

A1U 2.2 E
A1U 2.2 D



with μP

Input Ratings

input quantity	sinusoidal AC current
type / meeasuring unit	AC current with co-generation indication
A1U 2.2 E	single-phase AC system
A1U 2.2 D	3-phase 3- or 4-wire balanced load system
rated input current	**measuring range**
I_{EN}	$-I_{EN}$ ... 0 ... $+I_{EN}$
1 A	–1 A (input) ... 0 ... +1 A (output)
5 A	–5 A (input) ... 0 ... +5 A (output) (also for use on transformer)
rated input voltage U_{EN}	ranging from 57.7 V to 500 V
modulation range	1.2 I_{EN}
overload limit	1.2 I_{EN} continuously 10 I_{EN} 1 s max.
power consumption	approx. 0.25 mA each voltage circuit $I^2 \cdot 0.01\ \Omega$ each current circuit
frequency range	50 ... 60 Hz

Output Ratings

outputs	current *and* voltage outputs *refer to* **General Data**

Other Ratings

outputs	*refer to* **General Data**
accuracy	**class 0.5** (±0.5% of end value)
auxiliary voltage	*refer to* **General Data**
dimensions WxHxL	45 mm x 80 mm x 115 mm
weight	approx. 0.27 kg

for detailed information refer to Data Sheet No. 065.##

P/Q
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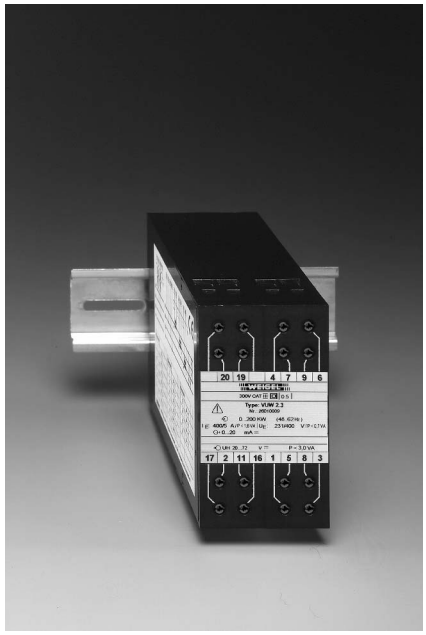
Short Form Data

Transducers for Active or Reactive Power, Fixed Calibration

EW 2.3
EB 2.3
DGW 2.3
VGW 2.3
DUW 2.3
VUW 2.3
DGB 2.3
VGB 2.3
DUB 2.3
VUB 2.3



with μP

Input Ratings

input quantity	sinusoidal AC current and voltage	
measuring unit P_E or Q_E	active / reactive power	
single-phase AC system	**EW 2.3**	**EB 2.3**
3-phase 3-wire balanced load system	**DGW 2.3**	**DGB 2.3**
3-phase 4-wire balanced load system	**VGW 2.3**	**VGB 2.3**
3-phase 3-wire unbalanced load system	**DUW 2.3**	**DUB 2.3**
3-phase 4-wire unbalanced load system	**VUW 2.3**	**VUB 2.3**
measuring range	0 ... P_N P_N=calibration factor · P_S	
single phase AC	$P_S = U \cdot I$	(calibration factor=0.87)
3-phase system	$P_S = \sqrt{3} \cdot U \cdot I$	(calibration factor=0.72)
rated input voltage	U_{EN} 0 ... 230 V / 0 ... 400 V	
rated input current	I_{EN} 0 ... 1 A / 0 ... 5 A (also for use with CT)	
modulation range	1.2 U_{EN} and 1.2 I_{EN}	
overload limits	1.2 U_{EN}, 1.2 I_{EN} continuously 2 U_{EN}, 10 I_{EN} 1 s max.	
power consumption	approx. 0.25 mA each voltage circuit $I^2 \cdot 0.01\ \Omega$ each current circuit	
frequency range	48 ... 62 Hz	

Output Ratings

outputs	current *and* voltage output *refer to* **A1U/V1U 2.3**

Other Ratings

accuracy	**class 0.5** (±0.5% of end value)		
auxiliary voltage U_{HN}	230 V AC (195 ... 253 V), 48 ... 62 Hz		
optional	115 V AC (98 ... 126 V), 48 .. 62 Hz 24 V DC (20 ... 72 V)		
dimensions WxHxL	45 mm x 80 mm x 115 mm		
weight approx.	EW/B 2.3 DGW/B 2.3 VGW/B 2.3	DUW/B 2.3	VUW/B 2.3
	0.24 kg	0.26 kg	0.28 kg

for detailed information refer to Data Sheet No. 069.##

P/Q
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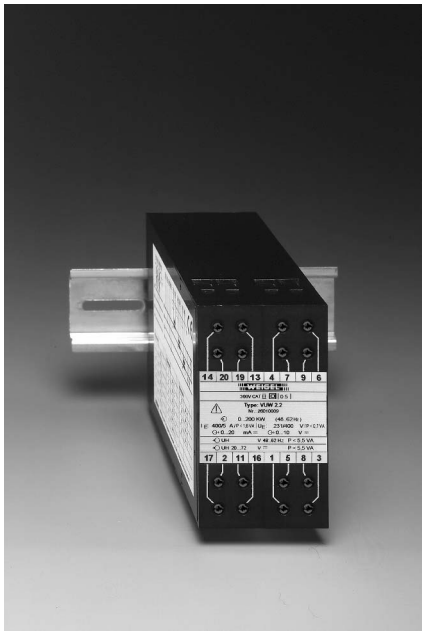
Short Form Data

Transducers for Active or Reactive Power

EW 2.2
EB 2.2
DGW 2.2
VGW 2.2
DUW 2.2
VUW 2.2
DGB 2.2
VGB 2.2
DUB 2.2
VUB 2.2

with μP



Input Ratings

input quantity	sinusoidal AC current and voltage		
measuring unit P_E / type	active / reactive power		
single-phase AC system	**EW 2.2**	**EB 2.2**	
3-phase 3-wire balanced load system	**DGW 2.2**	**DGB 2.2**	
3-phase 4-wire balanced load system	**VGW 2.2**	**VGB 2.2**	
3-phase 3-wire unbalanced load system	**DUW 2.2**	**DUB 2.2**	
3-phase 4-wire unbalanced load system	**VUW 2.2**	**VUB 2.2**	
measuring range	0 ... P_N or $-P_N$ ... 0 ... P_N $P_N = (0.3 \ldots 1.5) \cdot P_S$ $P_S = U \cdot I$ (single-phase AC system) $P_S = \sqrt{3} \cdot U \cdot I$ (3-phase systems)		
rated input voltage U_{EN}	ranging from 50 V to 519 V		
rated input current I_{EN}	1 A or 5 A (also for use on transformer) or ranging from 0.5 to 5 A		
modulation range	1.2 U_{EN} and 1.2 I_{EN}		
overload limits	1.2 U_{EN}, 1.2 I_{EN} continuously 2 U_{EN}, 10 I_{EN} 1 s max.		
power consumption	approx. 0.25 mA each voltage circuit $I^2 \cdot 0.01\ \Omega$ each current circuit		
frequency range	48 ... 62 Hz		

Output Ratings

outputs	current *and* voltage output *refer to* **General Data**

Other Ratings

accuracy	**class 0.5** (±0.5% of end value)		
auxiliary voltage	*refer to* **General Data**		
dimensions WxHxL	45 mm x 80 mm x 115 mm		
weight approx.	EW/B 2.2 DGW/B 2.2 VGW/B 2.2	DUW/B 2.2	VUW/B 2.2
	0.27 kg	0.29 kg	0.31 kg

for detailed information refer to Data Sheet No. 062.##

P+Q
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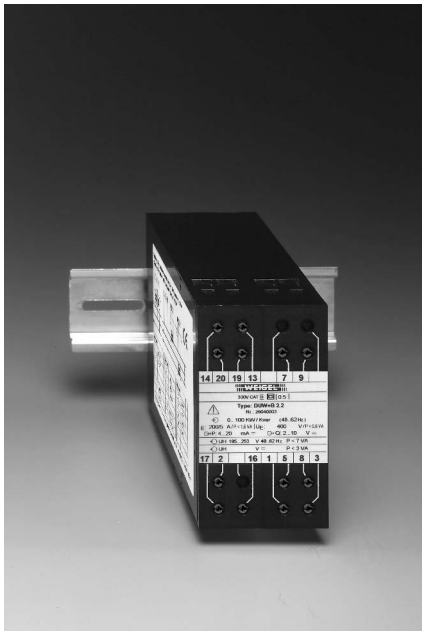
Short Form Data

Transducers for Active *and* Reactive Power

EW+B 2.2
DGW+B 2.2
VGW+B 2.2
DUW+B 2.2
VUW+B 2.2

with μP



Input Ratings

input quantity	sinusoidal AC current and voltage		
measuring unit P_E / type	active *and* reactive power		
single-phase AC system	**EW +B 2.2**		
3-phase 3-wire balanced load system	**DGW+B 2.2**		
3-phase 4-wire balanced load system	**VGW+B 2.2**		
3-phase 3-wire unbalanced load system	**DUW+B 2.2**		
3-phase 4-wire unbalanced load system	**VUW+B 2.2**		
equal active and reactive power ranges, optonally also *not* equal			
measuring range	0 ... P_N or $-P_N$ ... 0 ... P_N $P_N = (0.3 \ldots 1.5) \cdot P_S$ $P_S = U \cdot I$ (single-phase AC system) $P_S = \sqrt{3} \cdot U \cdot I$ (3-phase systems)		
rated input voltage U_{EN}	ranging from 50 V to 519 V		
rated input current I_{EN}	1 A or 5 A (also for use on transformer)		
modulation range	1.2 U_{EN} and 1.2 I_{EN}		
overload limits	1.2 U_{EN}, 1.2 I_{EN} continuously 2 U_{EN}, 10 I_{EN} 1 s max.		
power consumption	approx. 0.25 mA each voltage circuit $I^2 \cdot 0.01\ \Omega$ each current circuit		
frequency range	48 ... 62 Hz		

Output Ratings

outputs	current *or* voltage outputs *refer to* **General Data**

Other Ratings

accuracy	**class 0.5** (±0.5% of end value)		
auxiliary voltage	*refer to* **General Data**		
dimensions WxHxL	45 mm x 80 mm x 115 mm		
weight approx.	EW+B 2.2 DGW+B 2.2 VGW+B 2.2	DUW+B 2.2	VUW+B 2.2
	0.27 kg	0.29 kg	0.31 kg

for detailed information refer to Data Sheet No. 066.##

Short Form Data

Transducer for Frequency

FU 2.2

with μP

Input Ratings

input quantity	AC voltage
measuring unit	frequency f_E $f_{Emin} \geq 14$ Hz $f_{Emax} \leq 500$ Hz

measuring ranges

f_{Emin} ...	f_N ...	f_{Emax}	Δf	class
45 ...	50 ...	55 Hz	10 Hz	**0,2**
48 ...	50 ...	52 Hz	4 Hz	**0,3**
55 ...	60 ...	65 Hz	10 Hz	**0,2**
58 ...	60 ...	62 Hz	4 Hz	**0,5**
360 ...	400 ...	440 Hz	80 Hz	**0,2**
380 ...	400 ...	420 Hz	40 Hz	**0,2**

other ratings on request ($\Delta f = f_{Emax} - f_{Emin}$)

rated input voltage	U_{EN} 100 V, 110 V, 115 V, 120 V, 230 V, 240 V, 380 V, 400 V, 415 V, 440 V
overload limit	1.2 U_{EN} continuously 2 U_{EN} 1 s max.
current consumption	approx. 0.25 mA

Output Ratings

outputs	current *and* voltage output *refer to* **General Data**

Other Ratings

accuracy	*refer to* **measuring ranges**
auxiliary voltage	*refer to* **General Data**
dimensions WxHxL	45 mm x 80 mm x 115 mm
weight	approx. 0.23 kg

for detailed information refer to Data Sheet No. 064.##

Short Form Data

Transducer for Phase Angle (cos φ)

CU 2.2 E
CU 2.2 D

with μP

Input Ratings

input quantity	sinusoidal AC current / voltage
type / measuring unit	phase angle φ (power factor) in
CU 2.2 E	single-phase AC system or
CU 2.2 D	3-phase 3-wire balanced load system
measuring ranges	
–37° ... 0 ... 37°	corresponds to cos φ : cap 0.8 ... 1 ... 0.8 ind
–60° ... 0 ... 60°	corresponds to cos φ : cap 0.5 ... 1 ... 0.5 ind
optional	to be specified in the range
–180° ... 0 ... 180°	corresponds to cos φ : ind. (output) –1 ... 1 ... –1 cap. (output) (unique measuring range –175° to + 175°)
rated input voltage U_{EN}	ranging from 50 V to 519 V
rated input current I_{EN}	1 A or 5 A (also for use on transformer) or ranging from 0.5 to 5 A
modulation range	1.2 U_{EN} and 1.2 I_{EN}
overload limits	1.2 U_{EN}, 1.2 I_{EN} continuously 2 U_{EN}, 10 I_{EN} 1 s max.
power consumption	approx. 0.25 mA each voltage circuit $I^2 \cdot 0.01\ \Omega$ each current circuit
frequency range	48 ... 62 Hz

Output Ratings

outputs	current *and* voltage output *refer to* **General Data**

Other Ratings

accuracy	**class 0.5** (±0.5% of end value)
auxiliary voltage	*refer to* **General Data**
dimensions WxHxL	45 mm x 80 mm x 115 mm
weight	approx. 0.27 kg

for detailed information refer to Data Sheet No. 063.##

Short Form Data

Programmable Multi-Functional Transducer for AC Currents, AC Voltages and Powers

MMU 3.0

with μP

Input Ratings

input quantities	AC current and AC voltage in single phase or 3 phase system
voltages	L1, L2, L3 (3 terminals), N (1 terminal) 519 V (inter-connected) or optionally N/120V (also for N/100V or N/110V)
currents	I1, I2, I3 (6 terminals) N/5 A or optional N/1.2 A (also for N/1 A)

Measuring Units	Total	L1	L2	L3
voltage (U)	U	U_1	U_2	U_3
current (I)	I	I_1	I_2	I_3
active power (P)	P	P_1	P_2	P_3
reactive power (Q)	Q	Q_1	Q_2	Q_3
apparent power (S)	S	S_1	S_2	S_3
active factor (PF)	PF	PF_1	PF_2	PF_3
reactive factor (QF)	QF	QF_1	QF_2	QF_3
phase angle (PH)	PH	PH_1	PH_2	PH_3
frequency (f)		F		

Depending on power system, not all these values van be measured.

10 V measuring input	INP	(±10 V)

Other Ratings

analog output 1	voltage & current synchronous (2 terminals each) *refer to* **General Data**
interfaces	RS 232 (SUB–D jack), RS 485 (2 terminals)
digital output	contact-free via opto coupler

1, 2, or 3 additional analog outputs (galvanically isolated) and up to 8 additional digital outputs (galvanically isolated) are optional

accuracy	**class 0.5** (±0.5% of end value)
auxiliary voltage	wide range supply *refer to* **General Data**
dimensions	basic version: 3 modules in single-phase resp. 4 modules in three-phase systems, optional outputs: additional 1 to 3 modules
each module WxHxL	22.5 mm x 80 mm x 115 mm
weight	approx. 0.6 kg (basic version)

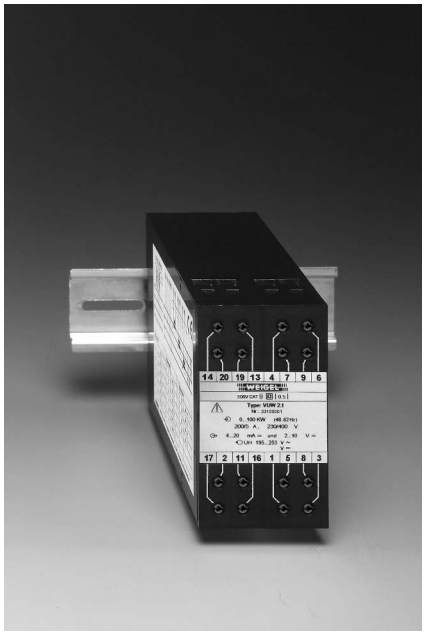
for detailed information refer to Data Sheet No. 055.##

Short Form Data

Transducers for Active Power or Reactive Power

DUW 2.1
DUB 2.1
VUW 2.1
VUB 2.1

with μP



Input Ratings

input rating	sinusoidal AC current and sinusoidal AC voltage
measuring unit P_E / type	active / reactive power
3-phase 3-wire unbalanced load system	**DUW 2.1** **DUB 2.1**
3-phase 4-wire unbalanced load system	**VUW 2.1** **VUB 2.1**
measuring range	0 ... P_N or $-P_N$ ... 0 ... P_N $P_N = (0.3 \ldots 1.5) \cdot P_S$ $P_S = \sqrt{3} \cdot U \cdot I$
rated input voltage U_{EN}	65 V, 100 V, 110 V, 240 V, 400 V, 415 V, 440 V, 500 V or deviating from standard inputs ranging from 0 ... (60 V ... U_{EN} ... 519 V)
rated input current I_{EN}	N/1 A, N/5 A or deviating from standard inputs ranging from 0 ... (0,5 A ... I_{EN} ... 5 A)
modulation range	1.2 U_{EN} and 1.2 I_{EN}
overload limits	1.2 U_{EN}, 1.2 I_{EN} continuously 2 U_{EN}, 10 I_{EN} 1 s max.
power consumption	approx. 0.25 mA each voltage circuit $I^2 \cdot 0.01\ \Omega$ each current circuit
frequency range	50 Hz (48 ... 52 Hz) or $16^2/_3$ Hz, 60 Hz, 100 Hz, others on request

Output Ratings

outputs	current *and* voltage output *refer to* **General Data**

Other Ratings

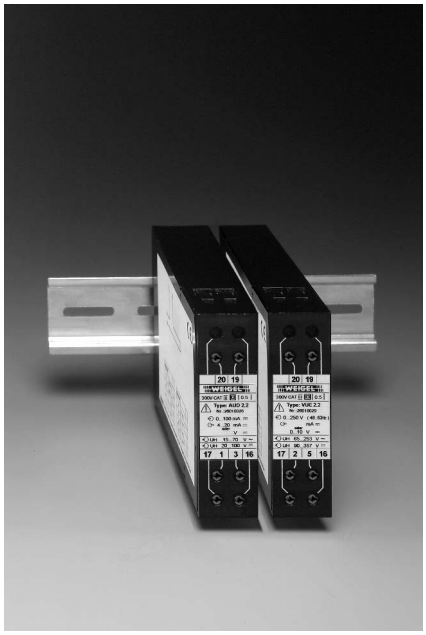
accuracy	**class 0.5** (±0.5% of end value)	
auxiliary voltage	*refer to* **General Data**	
dimensions WxHxL	45 mm x 80 mm x 115 mm	
weight	**DUW/DUB 2.1** approx. 0.29 kg	**VUW/VUB 2.1** approx. 0.31 kg

for detailed information refer to Data Sheet No. 051.##

Short Form Data

Transducers for DC Current/Voltage, RMS Current/Voltage, Isolating Transducers

AUD 2.2
VUD 2.2
AUE 2.2
VUE 2.2
TUA 2.2



Input Ratings

	current input	voltage input
measuring range	0 ... I_{EN}	0 ... U_{EN}
modulation range	1.2 I_{EN}	1.2 U_{EN}
overload limit	1.2 I_{EN} continuously 10 I_{EN} max. 1 s	1.2 U_{EN} continuously 2 U_{EN} max. 1 s
power consumption	$I_E \cdot 0{,}1$ V	U_E^2 / R_E

model	input quantities	rated input value
AUD 2.2	DC current	I_{EN} = 200 µA – 5 A
VUD 2.2	DC voltage	U_{EN} = 60 mV – 300 V
AUE 2.2	non-sinusoidal AC current (true RMS value) *)	I_{EN} = 200 µA – 5 A
VUE 2.2	non-sinusoidal AC voltage (true RMS value) *)	U_{EN} = 60 mV – 519 V
TUA 2.2	DC standard signals	I_{EN} = 20 mA U_{EN} = 60 mV, 10 V

*) also for use on transformer

AUE/VUE 2.2:

frequency range	48 ... 62 Hz or $16^2/_3$ Hz, 100 Hz, other ratings on request
crest factor	≤ 4 (peak value / rms value)

Output Ratings

output	current *or* voltage output *refer to* **General Data**

Other Ratings

as an option	selectable from standard output ratings via jumpers located behind front panel
accuracy	**class 0.5** (±0.5% of end value)

class 0.2 (±0,2% of end value) only for DC models on request

auxiliary voltage	*refer to* **General Data**
dimensions WxHxL	22.5 mm x 80 mm x 115 mm
weight	approx. 0.12 kg

for detailed information refer to Data Sheet No. 061.##

Short Form Data

Isolating Transducer for Standard Signals, Self-Powered

TUP 2.0

Single or Dual Channel

Input Ratings

input quantity	I_E	DC current
rated input current	I_{EN}	20 mA
measuring range		0 ... I_{EN}
modulation range		1.2 I_{EN}
overload limit continuously		2 I_{EN} max.
max. input voltage permissible		16 V
power consumption		2.4 V based on 20 mA

Output Ratings

current output

output current	I_A	load independent DC current
rated current	I_{AN}	0 ... 20 mA
load range	R_A	0 ... 500 Ω (rated load 250 Ω)
load error		≤ 0.1% based on 50% load change
residual ripple		≤ 30 mV_{ss}
idling voltage		≤ 25 V
response time		≤ 0.05 s based on $R_{A\ max}$

Input and output are galvanically isolated.

Other Ratings

accuracy	**class 0.2** (±0.2% of end value)
auxiliary voltage	*none required*
dimensions WxHxL	22.5 mm x 80 mm x 115 mm
weight	approx. 0.12 kg
dual channnel unit	on request

for detailed information refer to Data Sheet No. 049.##

Short Form Data

Standard Signal Interface Converter

MU-RS232/485

with μP

Input Ratings

input quantity	I_E U_E	DC current or DC voltage	
rated input current voltage	 I_{EN} U_{EN}	 20 mA 10 V / 1 V	input resistance 50 Ω 1 MΩ / 100 kΩ
measuring range		current input 0 ... I_{EN} "live zero" option	voltage input 0 ... U_{EN}
modulation range, admissible		1.2 I_{EN}	1.2 U_{EN}
overload limit continuously 1 s max.		 1.2 I_{EN} 2 I_{EN}	 1.2 U_{EN} 2 U_{EN}

Interfaces

type	RS232 (V.24) and RS485 (SCPI commands)
Baud-rate	19200 Baud
as an option:	
switching output open collector	8 ... 40 V DC / 10 ... 30 mA insulation voltage 1 kV
switching output MOS FET	for voltages up to 230 V AC/DC and currents up to 100 mA insulation voltage 3 kV

Other Ratings

accuracy	±0.1% and ±1 count (for 0 ... I_{EN} resp. 0 ... U_{EN})
auxiliary voltage	*refer to* **General Data**
dimensions WxHxL	22.5 mm x 80 mm x 115 mm
weight	approx. 0.12 kg

for detailed information refer to Data Sheet No. 052.##

Short Form Data

RS232-RS485 Converter

AP-RS232/485

Function

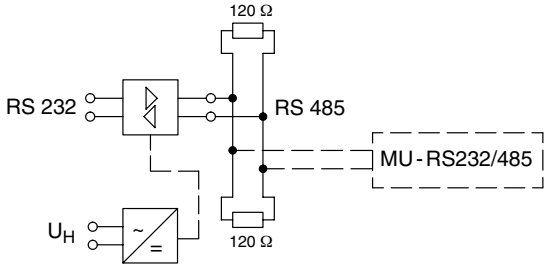
The converter is directly plugged to a 9-contact serial interface of a PC. It converts the RS232 signals of the PC into standardized RS485 signals. This conversion enables to simultaneously connect several devices by a 2-wire junction to one interface and to inquire one after another.

The device is protocol-transparent, i.e. the RS485 signals are translated 1:1 into the signals of the RS232 interface.

Depending on the 2-wire junction of the RS485, a half-duplex operation only will be possible. This means, only one device may send in the network at a time. By that a simultaneous operation of sending and receiving will not be possible.

Ratings

case details	metalized thermoplastic case
terminals	SUB-D 9 contact (RS232 interface on the PC) screw-terminals 2 contacts, wire-cross section 4 mm² max. (RS485 interface)
auxiliary supply	power adapter prim. AC 230 V, ±10%, 50 Hz, sec. DC 9 V / 250 mA included with supply
dimensions	73 mm x 34 mm x 12 mm
weight	approx. 50 g



for detailed information refer to Data Sheet No. 054.##

Short Form Data

Transducers for Temperature (Pt 100)

PTU 2.0 L

Input Ratings

input quantity	temperature (for RTD Pt 100)

Initial Temperature T_{E1}	**Spans** ΔT
– 200 ˚C	100 K
– 150 ˚C	150 K
– 100 ˚C	200 K
– 50 ˚C	300 K
0 ˚C	400 K
+ 50 ˚C	500 K
+100 ˚C	600 K
+150 ˚C	700 K (for $T_{E1} \leq$ 100˚C only)
+200 ˚C	800 K (for $T_{E1} \leq$ 0˚C only)
	900 K (for $T_{E1} \leq$ –100˚C only)
	1000 K (for T_{E1} = –200˚C only)

or deviating from standard values in the range of 100 ... 1000 K

measuring range	T_{E1} ... $T_{E2} = T_{E1} + \Delta T$
input	potential–free differential input
connection	2–, 3– or 4–wire system

Output Ratings

current output

output current	I_A	load independent DC current
rated current	I_{AN}	4 ... 20 mA
load range	R_A	0 ... 500 Ω (based on 20 mA)
load error		≤ 0.1% based on 50% load change
residual ripple		≤ 1%$_{rms}$ of I_{AN} with load R_{AN}
idling voltage		≤ 16 V
response time		≤ 1 s based on $R_{A\,max}$

Other Ratings

accuracy	±0.5% referred to the span ΔT
auxiliary voltage	*refer to* **General Data**
dimensions WxHxL	22.5 mm x 80 mm x 115 mm
weight	approx. 0.12 kg

for detailed information refer to Data Sheet No. 050.##

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