2.6.2 Standard controller

Power Supply

Rated voltage	230 V AC	115 V AC	24 V UC	
	switchable			
Operating voltage range	195 to 264 V AC	97 to 132 V AC	20 to 28 V AC	20 to 35 V DC[1]
Frequency range	48 to 63 Hz			– – –
External current I_{Ext}[2]	200 mA			
Power consumption				
Standard controller without options without I_{Ext} active power/apparent power (capacitive)	5 W/9 VA	5 W/9 VA	4 W/6 VA	4 W
Standard controller with options without I_{Ext} active power/apparent power (capacitive)	11 W/15 VA	11 W/15 VA	8.5 W/12 VA	8.5 W
Standard controller with options with I_{Ext} active power/apparent power (capacitive)	15 W/19 VA	15 W/19 VA	12 W/17 VA	12 W
Permissible voltage breaks based on 0.85 U_N and max. load Time[3]	≤ 20 ms	≤ 20 ms	≤ 20 ms	≤ 20 ms

1) including harmonic
2) current transmitted from L+, DO, AO to external loads
3) The load voltages of the AO are reduced hereby to 13 V, L+ to 15 V and the DO to 14 V

Table 2-1 Power supply standard controller

Analog inputs AI1 to AI2

Current

Rated signal range	0/4 to 20 mA		
Modulation range	-0.1 to 22 mA		
Input resistance			
Difference (load)	248 Ω ± 1 %		
Filter time constant	10 ms		
Zero error	see AD-converter		
Full scale error	see AD-converter		
Linearity error	see AD-converter		
Temperature influence	see AD-converter		
Static destruction limit	±40 mA		
Parameterizable transmitter fault message			
AI1/2	0 mA to 20 mA	≤ -0.5 %;	≥ 106.25 %
	4 mA to 20 mA	≤ -2.5 %;	≥ 106.25 %
AI3/4	0/4 mA to 20 mA	≤ -2.5 %;	≥ 106.25 %

Digital inputs DI1, DI2

Signal status 0	≤ 4.5 V or open
Signal status 1	≥ 13 V
Input resistance	≥ 27 kΩ
Static destruction limit	± 35 V

☞ **NOTE**

All error specifications refer to the rated signal range

Analog outputs AO

Rated signal range (0 to 100 %)	0 to 20 mA or 4 to 20 mA
Modulation range	0 to 20.5 mA or 3.8 to 20.5 mA
Load voltage	from –1 to 18 V
No-load voltage	≤ 26 V
Inductive load	≤ 0.1 H
Time constant	10 ms
Residual ripple 900 Hz	≤ 0.2 %
Resolution	≤ 0.1 %
Load dependence	≤ 0.1 %
Zero error	≤ 0.3 % [1)]
Full scale error	≤ 0.3 % [1)]
Linearity	≤ 0.05 %
Temperature influence	
Zero point	≤ 0.1 %/10 K
Full scale	≤ 0.1 %/10 K
Static destruction limit	–1 to 35 V

S-output (relay 230 V) DO7 and DO8

- **Contact material**	Ag / Ni	
- **Contact load capacity**		
Switching voltage		
AC	≤ 250 V	
DC	≤ 250 V	
Switching current	Contacts locked	Contacts unlocked
AC	≤ 8 A	≤ 2.5 A
DC	≤ 8 A	≤ 2.5 A
Rating		
AC	≤ 1250 VA	
DC	≤30 W at 250 V ≤100 W at 24 V	

[1)] Applies for interference acc. to IEC 801-3 to 3 V/m, with 10 V/m at 290 to 310 MHz ≤4.3 %

Service life	
mechanical	2×10^7 switching cycles
230 V AC 8A electrical ohmic	10^5 switching cycles
Spark quenching element	Series circuit 22 nF/220 Ω parallel to it varistor 420 V_{rms}

Digital outputs DO1 to DO2 (with wired-or diodes)

Signal status 0	≤1.5 V
Signal status 1	+19 V to 26 V
load current	≤30 mA
Short-circuit current	≤50 mA
Static destruction limit	-1 V to +35 V

Measuring transmitter feed L+

Rated voltage	+20 to 26 V
load current	≤ 60 mA, short-circuit-proof
Short-circuit current	≤ 200 mA clocking
Static destruction limit	–1 to +35 V

CPU data

Cycle time	100 ms
Minimum integration speed	$\frac{dy}{dt} = \frac{kp \cdot xd}{tn} = \frac{0.1 \cdot 0.1\ \%}{10^4\ s}$

A/D conversion except UNI module 6DR2800-8V

Procedure	Successive approximation per input > 120 conversions and averaging within 20 or 16.67 ms
Modulation range	-5 % to 105 % of the modulation range
Resolution	11 bits ≙ 0.06 % of the modulation range
Zero error	≤ 0.2 % of the modulation range
Full scale error	≤ 0.2 % of the modulation range
Linearity error	≤ 0.2 % of the modulation range
Temperature influence	
Zero point	≤ 0.05 %/10 K of the modulation range
Full scale	≤ 0.1 %/10 K of the modulation range

Setpoint- and manipulated variable adjustment

Setting		With 2 keys (more - - less)
Speed		progressive
Resolution	wi	1 digit
	y	0.1 % of rated range 0 to 20 mA

Parameters

Setting	With two keys (more – less)
Speed	progressive
Resolution	
Linear parameters, %	≤ 0.1 %
Linear parameters, physical	1 digit
Logarithmic parameters	128 values/octave
Accuracy	
Time parameters	± 2 %
All others	Resolution accordingly, absolute

Display technique

– x- and w-Digital display	4digit 7-segment LED
Color	red
Digit height	7 mm
Display range	Adjustable start and end
Number range	–1999 to 9999
Overrun	<–1999: –oFL >9999: oFL
Decimal point	adjustable (fixed point) _.––– to ––––
Refresh rate	Adjustable 0.1 to 9.9 s
Resolution	1 digit but not better than AD-converter
Display error	corresponding to AD-converter and analog inputs
– x- and w-Analog display	LED array vertical 30 LEDs
Color x	red
w	green
Display range	0 to 100 %
Overrun	flashing first or last LED
Refresh rate	cyclic
Resolution	1.7 % by alternate glowing of 1 or 2 LEDs, the center of the illuminated field serves as a pointer
– y-display (digital)	2digit 7-segment-LED
Color	red
Digit height	7 mm
Display range	0 to 100 %
Overrun	-9 % to 109 %, display >99 % h0 to h9
Refresh rate	Adjustable 0.1 s to 9.9 s
Resolution	1 %

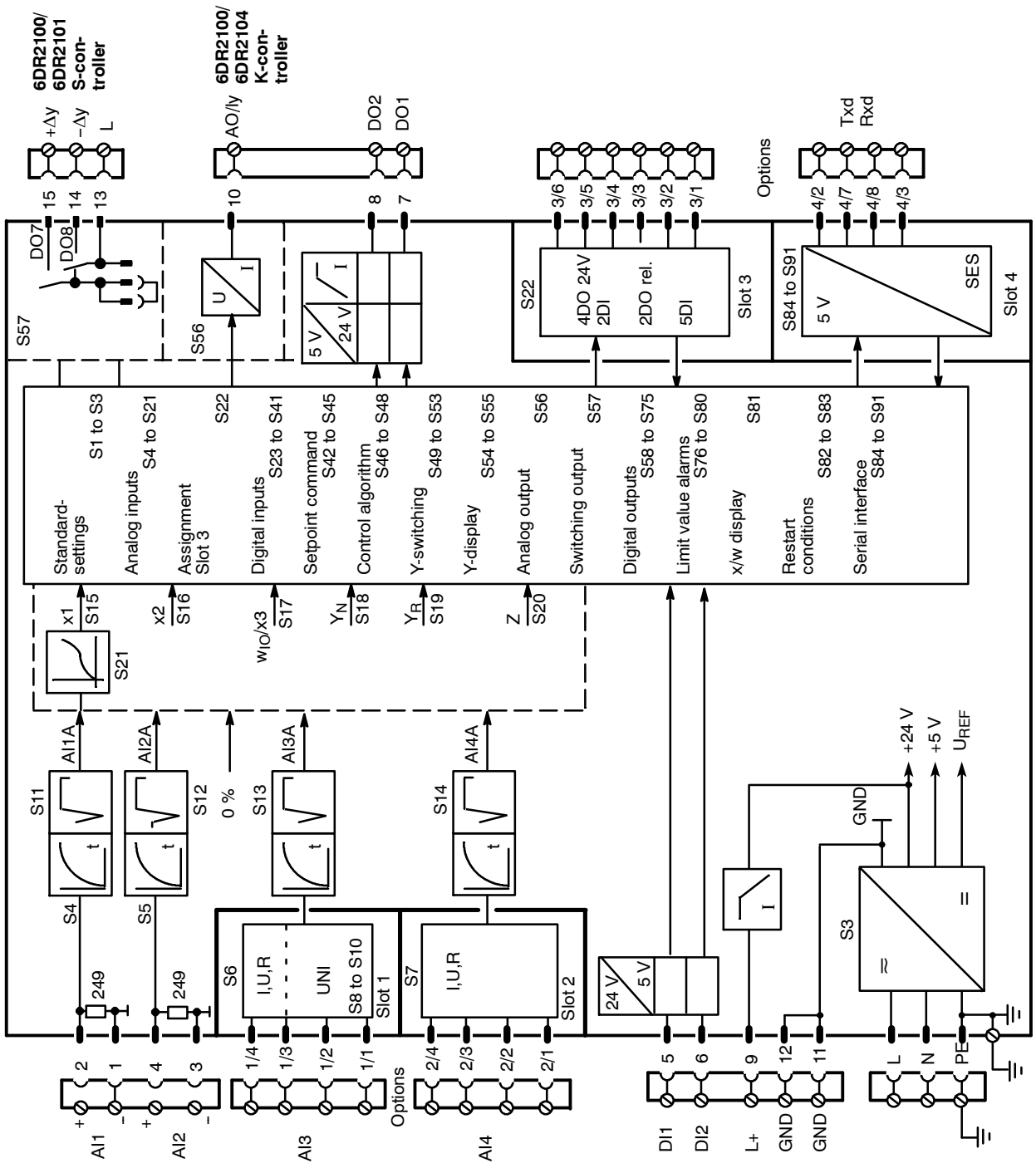


Figure 4-9 Block diagram SIPART DR21

4.2.2 Connection standard controller

- **Power supply connection**

CAUTION

Pay attention to mains jumpering (see figure 4-2, page 122)!

- 6DR210x-5 (115/230 V AC)

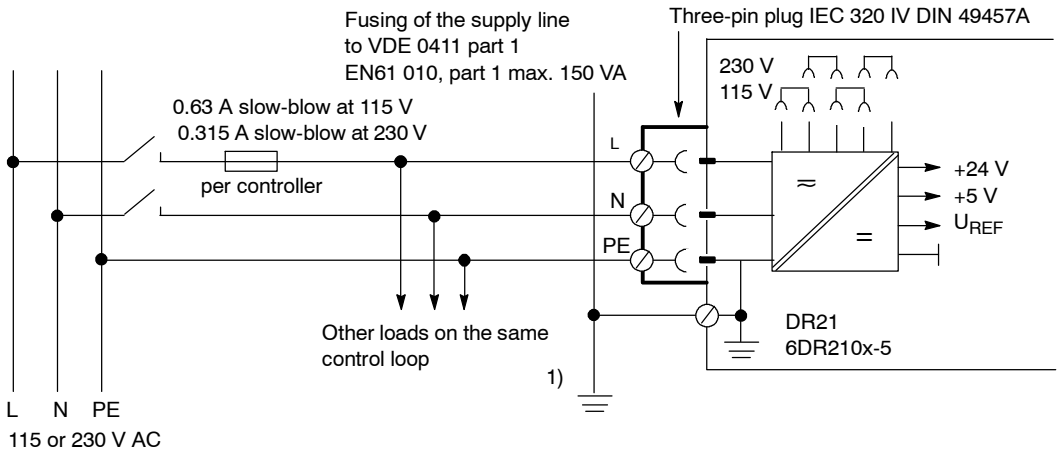


Figure 4-10 Connection 115/230 V AC power supply

- 6DR210x-4 (24 V UC)

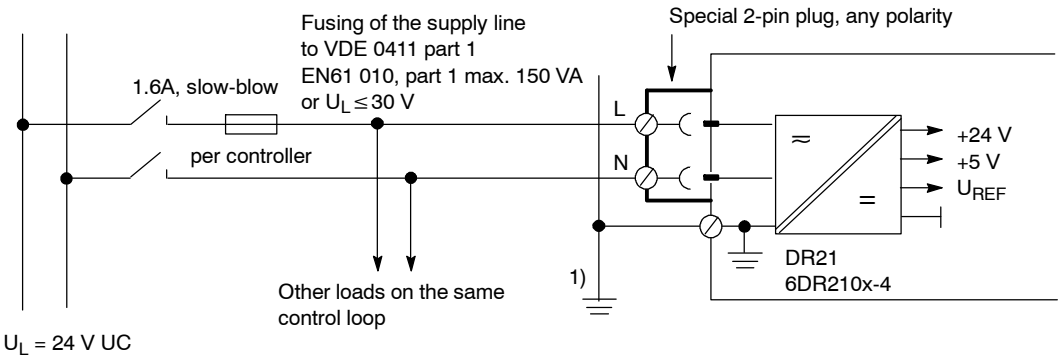


Figure 4-11 Connection 24 V UC power supply

1) The connection between the PE conductor screw (figure4-8, item 5, page128) to ground must be established additionally for high electromagnetic compatibility (EMC) in 115/230 V-controllers.
This connection must also be low resistive for high frequencies (Cu-band or Hf-strand). Alternatively at least 2.5 mm^2 flexible should be used.