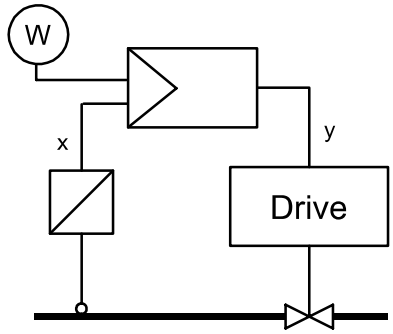
9. Ordering Data

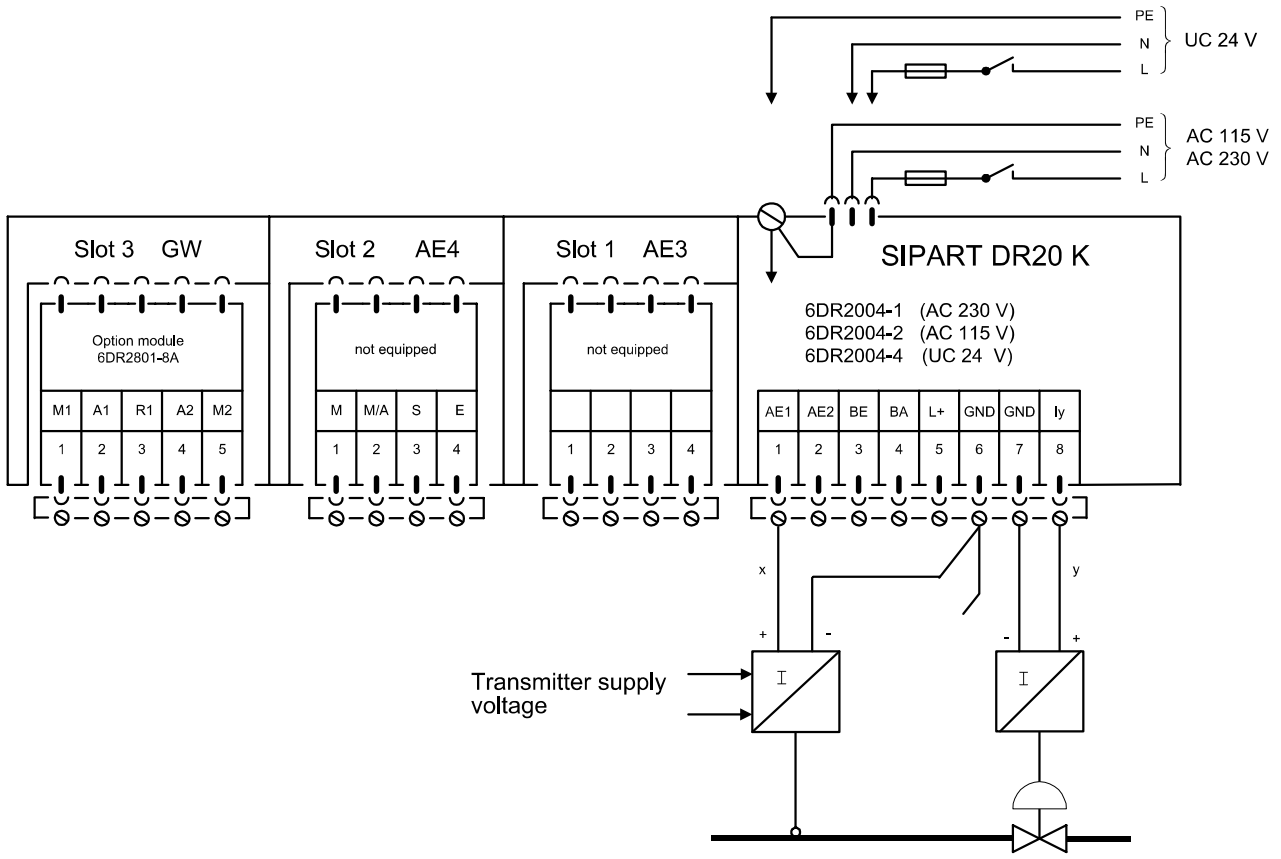
SIPART DR20 S	Standard controller with S output, 2 analog inputs for current, 1 digital input, 1 digital output Power supply 230 V AC Power supply 115VAC Power supply 24 V AC / DC	 6DR2001-1(A) 6DR2001-2(A) 6DR2001-4(A)
SIPART DR20 K	Standard controller with K output, 2 analog inputs for current, 1 digital input, 1 digital output Power supply 230 V AC Power supply 115 V AC Power supply 24 V AC / DC	 6DR2004-1(A) 6DR2004-2(A) 6DR2004-4(A)
Analog input module	For current / voltage For resistance transmitters For Pt 100 resistance thermometers For thermocouples / mV-signals	6DR2800-8J 6DR2800-8R 6DR2800-8P 6DR2800-8T
Relay output module	For alarm signals	6DR2801-8A
Digital output module	For alarm signals and manipulated variable output of S controller	6DR2801-8B
Serial interface module	For serial communication (RS 232)	6DR2803-8A
Mains plug for 115/230 V *)		C73334-Z343-C3
Mains plug for 24 V *)		C73334-Z343-C6
Terminal block	8-way for standard K controller *)	W73078-B4-A908
Terminal block	1 a-way for standard S controller *)	W73078-B4-A910
Terminal block	4-way for input modules *)	W73078-B4-A904
Terminal block	4-way for thermocouple input module *)	C73451-A3000-B17
Terminal block	5-way for alarm module *)	W73078-B5-A905
Plug for ribbon cable (interface)		C73451-A347-D36
Scale for SIPART DR20 (front side printed ~ 10%)		C73451-A3000-C21
Blank scale for SIPART DR20		C73451-A3000-C22

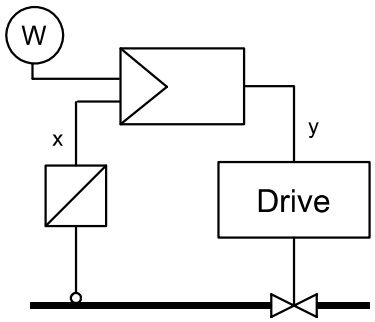
*) Included in scope of deliveries

Planning example K1	Fixed setpoint control, controlled variable from four-wire transmitter
	The controlled variable x from the transmitter is applied to the analog input AE1 of the controller. The programming corresponds to an input signal range of 0 to 20 mA The manipulated variable output is also 0 to 20 mA. The transmitter can be powered from the controller (+ to terminal 5, -1 to terminal 6). The alarm circuit monitors the negative deviation xd for max./ min. deviations (set parameters A2 and A1!).

Please refer to the remarks on page 108 !

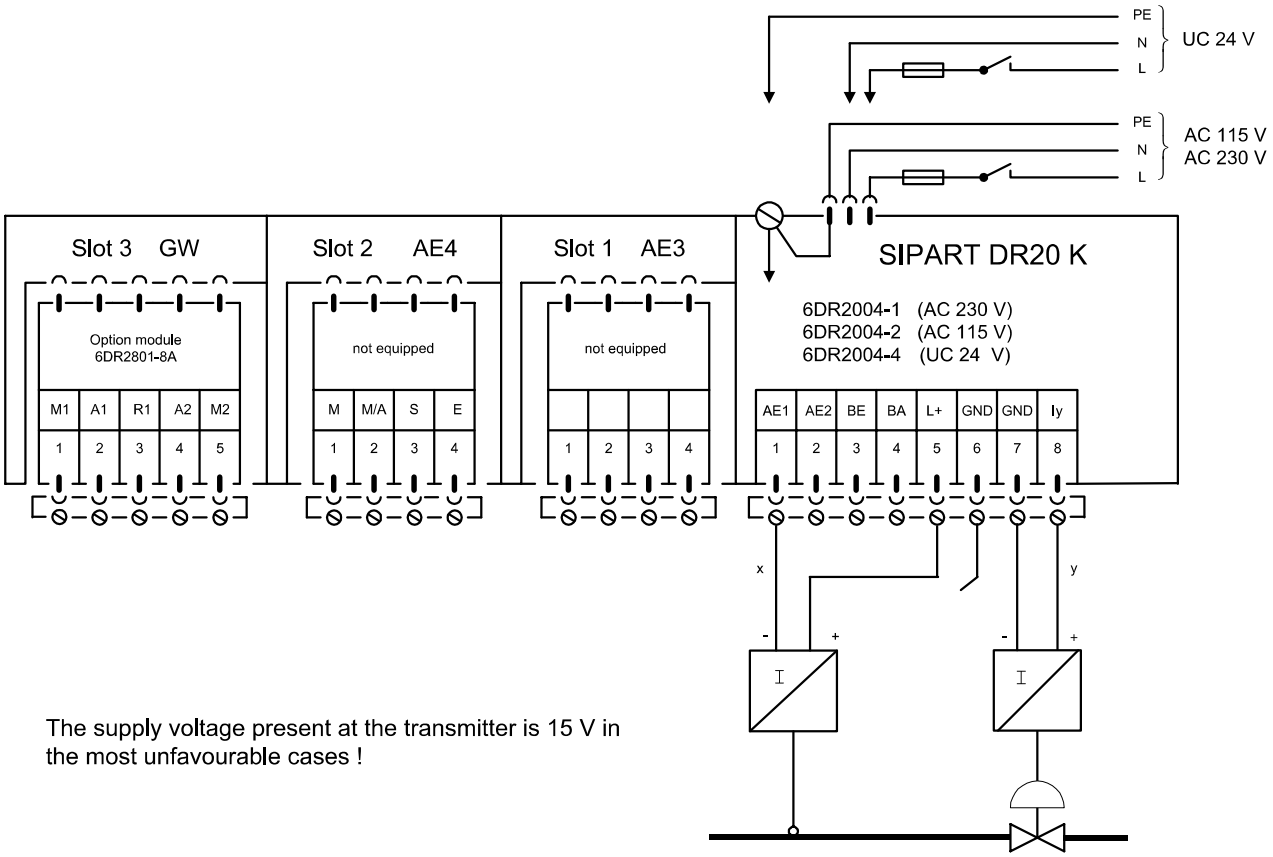
Setting of configuring switches: All configuring switches in factory setting.



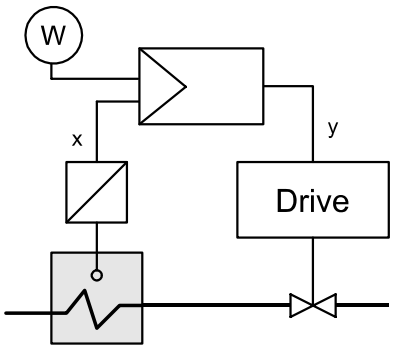
Planning example K2	Fixed setpoint control, controlled variable from two-wire transmitter
	The controlled variable x from the transmitter is applied to the analog input AE1 of the controller; the transmitter supply is via the same lines. The input signal range of the controller is 4 to 20 mA. The manipulated variable output is also 4 to 20 mA. The alarm circuit monitors the negative deviation xd for max./ min. deviations (set parameters A2 and A1!).

Please refer to the remarks on page 108 !

Setting of configuring switches: S4 = 1; S37 = 1

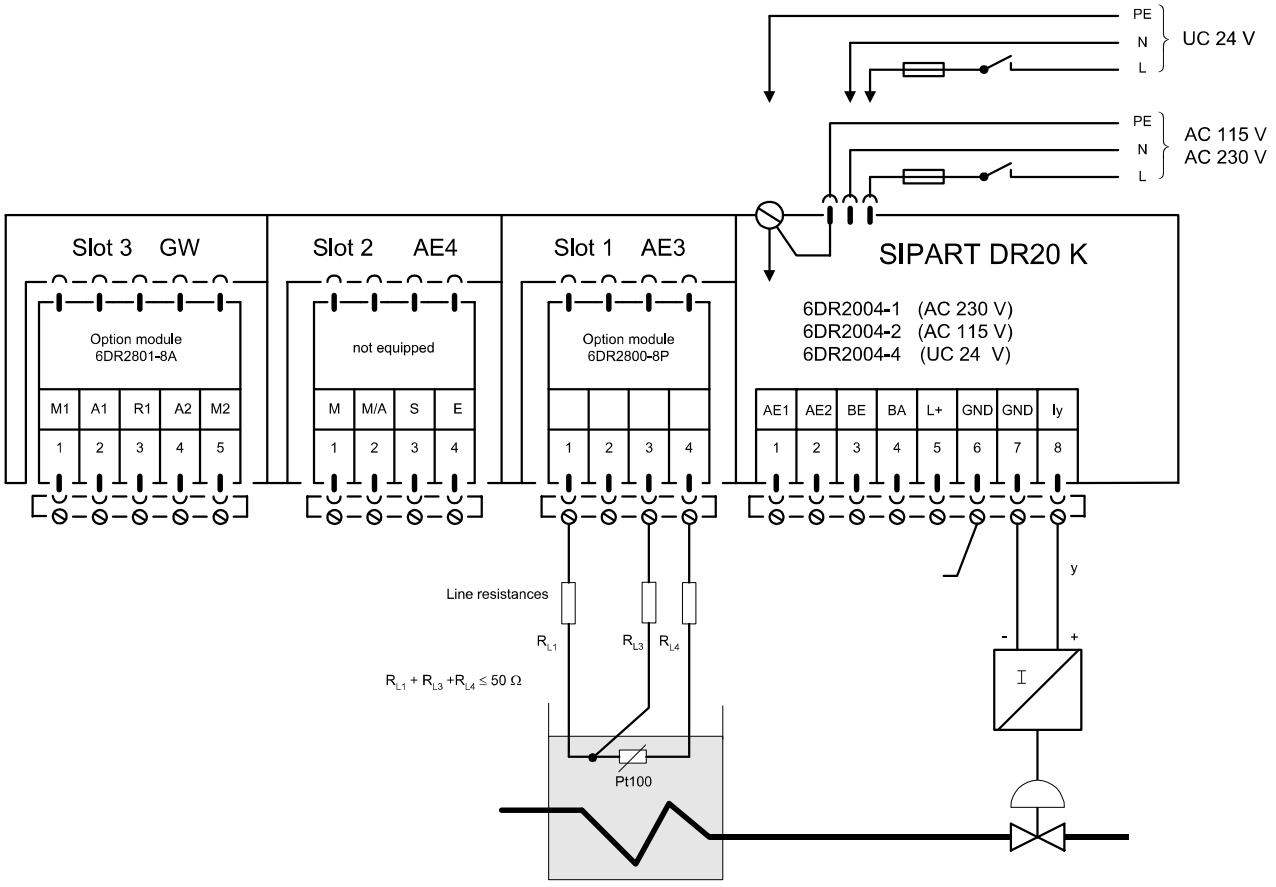


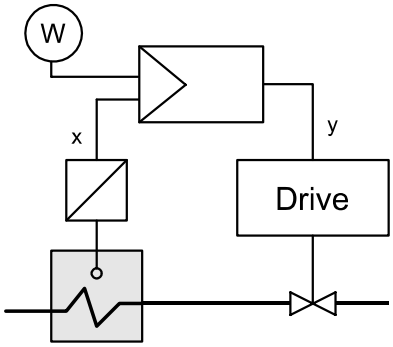
The supply voltage present at the transmitter is 15 V in the most unfavourable cases !

Planning example K3	Fixed setpoint control, controlled variable direct from Pt 100 resistance thermometer in three-wire circuit
	The controlled variable x from the Pt 100 is applied to the analog input AE3. The measuring range can be programmed; the min. span is 50 K, the min. start-of-scale value - 50 °C, the max. full-scale value 850 °C (see information on page 76). The manipulated variable output is 0 to 20 mA; a signal range of 4 to 20 mA can be set using configuring switch S37 = 1. The alarm circuit monitors the controlled variable (temperature) (set parameters A2 = min. and A1 = max. !).

Please refer to the remarks on page 108 !

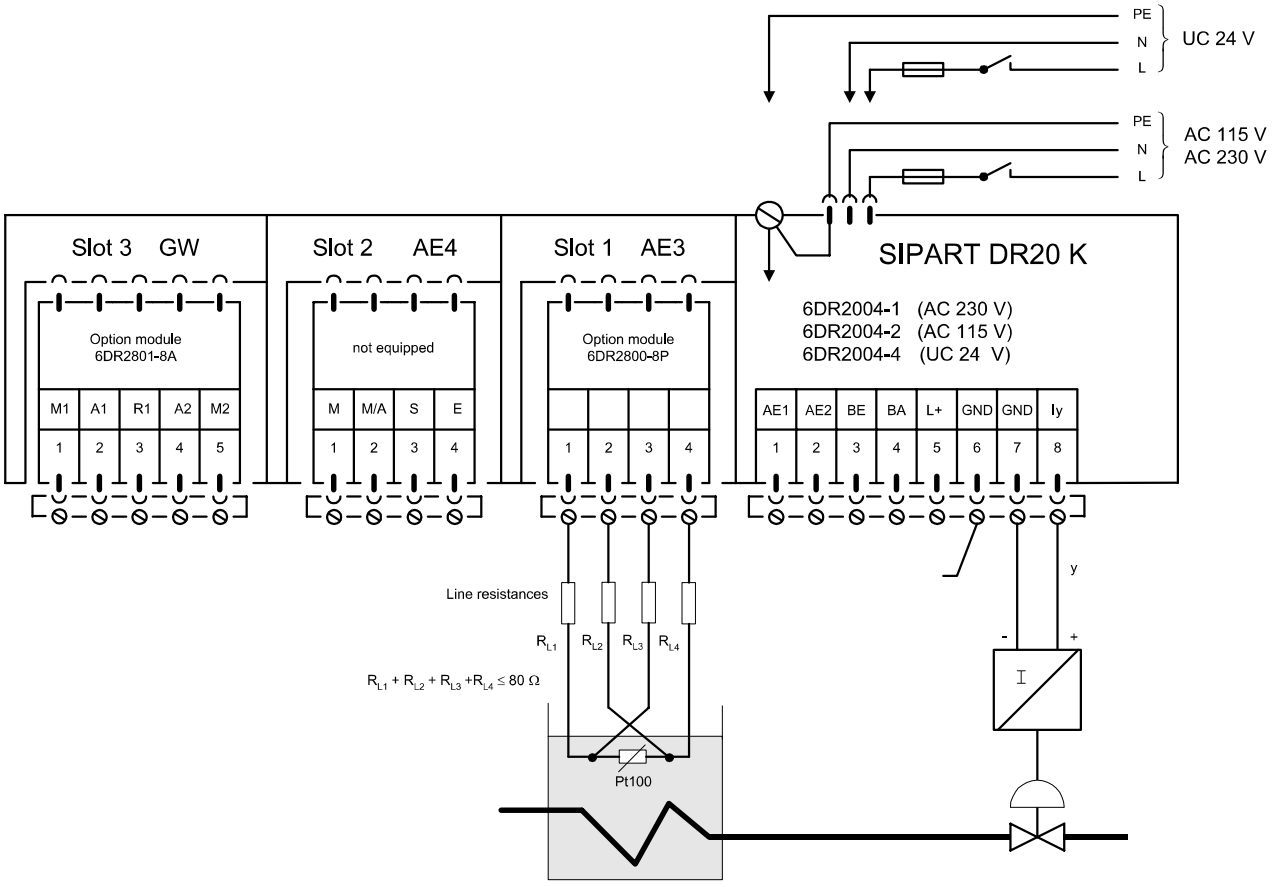
Setting of configuring switches: S8= 1, S22 = 1

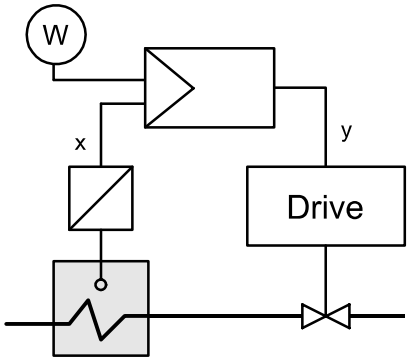


Planning example K4	Fixed setpoint control, controlled variable direct from Pt 100 resistance thermometer in four-wire circuit
	The controlled variable x from the Pt 100 is applied to the analog input AE3. The measuring range can be programmed; the min. span is 50 K, the min. start-of-scale value - 50 °C, the max. full-scale value 850 °C (see information on page 76). The manipulated variable output is 0 to 20 mA; a signal range of 4 to 20 mA can be set using configuring switch S37 = 1. The alarm circuit monitors the controlled variable (temperature) (set parameters A2 = min. and A1 = max.).

Please refer to the remarks on page 108 !

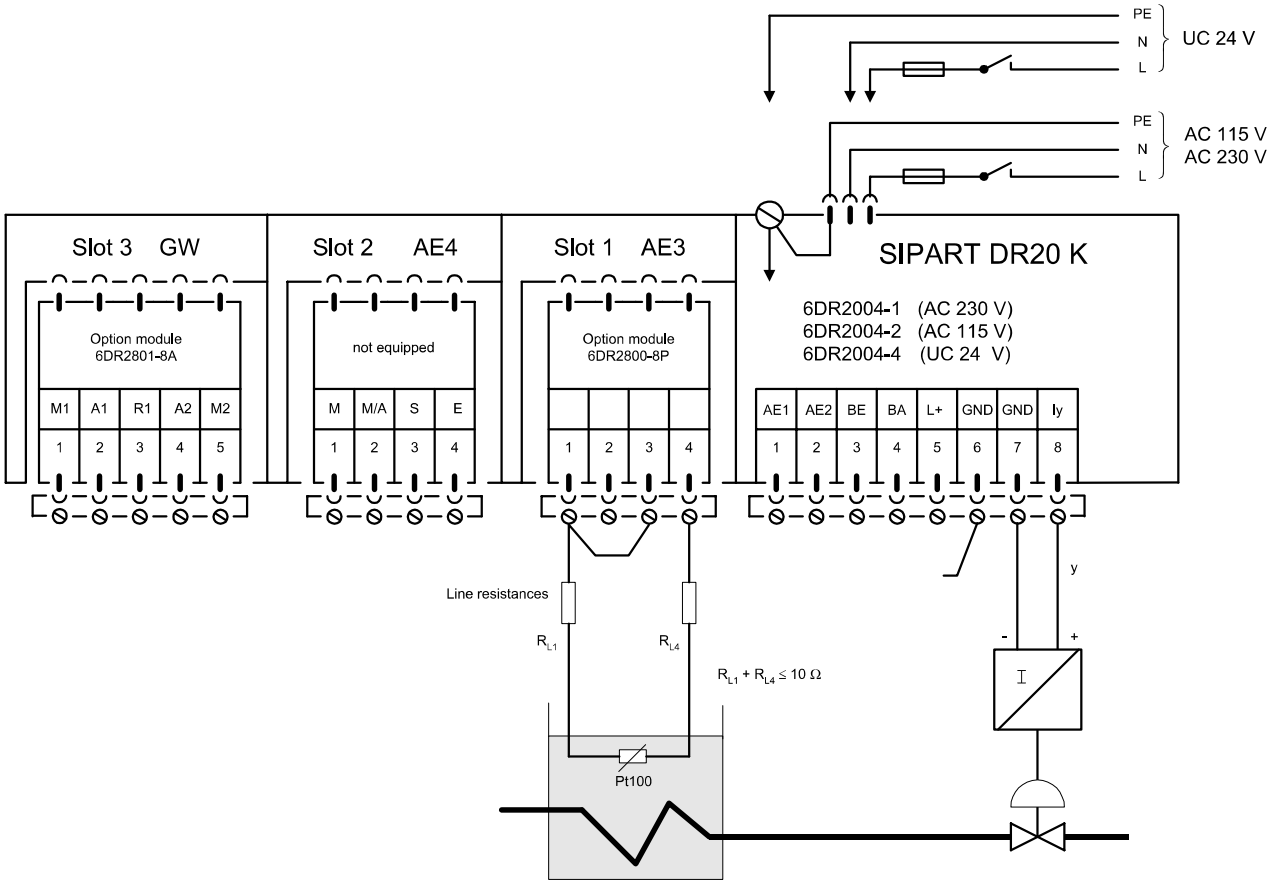
Setting of configuring switches: S8= 1, S22 = 1

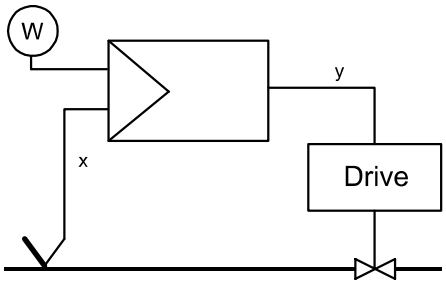


Planning example K5	Fixed setpoint control, controlled variable direct from Pt 100 resistance thermometer in two -wire circuit
	The controlled variable x from the Pt 100 is applied to the analog input AE3. The measuring range can be programmed; the min. span is 50 K, the min. start-of-scale value - 50 °C, the max. full-scale value 850 °C (see information on page 76). The manipulated variable output is 0 to 20 mA; a signal range of 4 to 20 mA can be set using configuring switch S37 = 1. The alarm circuit monitors the controlled variable (temperature) (set parameters A2 = min. and A1 = max.).

Please refer to the remarks on page 108 !

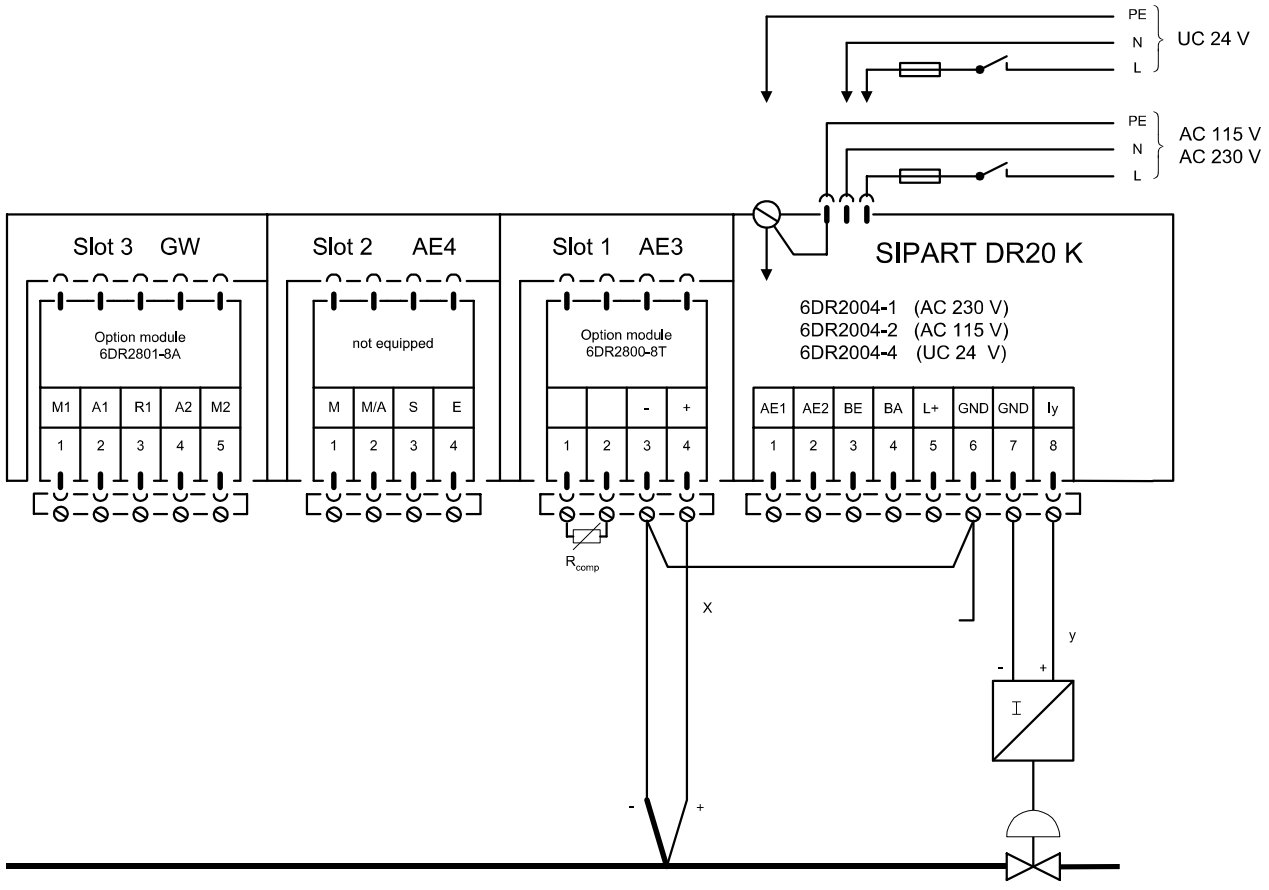
Setting of configuring switches: S8= 1, S22 = 1

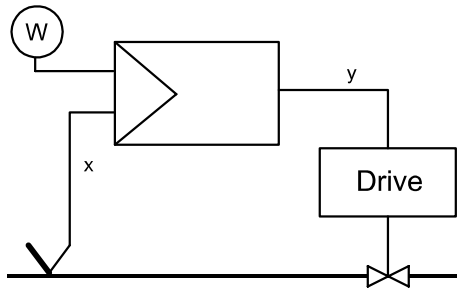


Planning example K6	Fixed setpoint control, controlled variable direct from a thermocouple with internal cold junction
	The controlled variable x from the thermocouple is applied to the analog input AE3. The measuring range is programmable. The controlled variable must be linearized (see instructions on pages 78 and 91). The manipulated variable output is 0 to 20 mA; it can be reconfigured to 4 to 20 mA (S37 = 1). The alarm circuit monitors the negative deviation Xd for max. / min. deviations (set parameters A2 = min. and A1 = max. !).

Please refer to the remarks on page 108 !

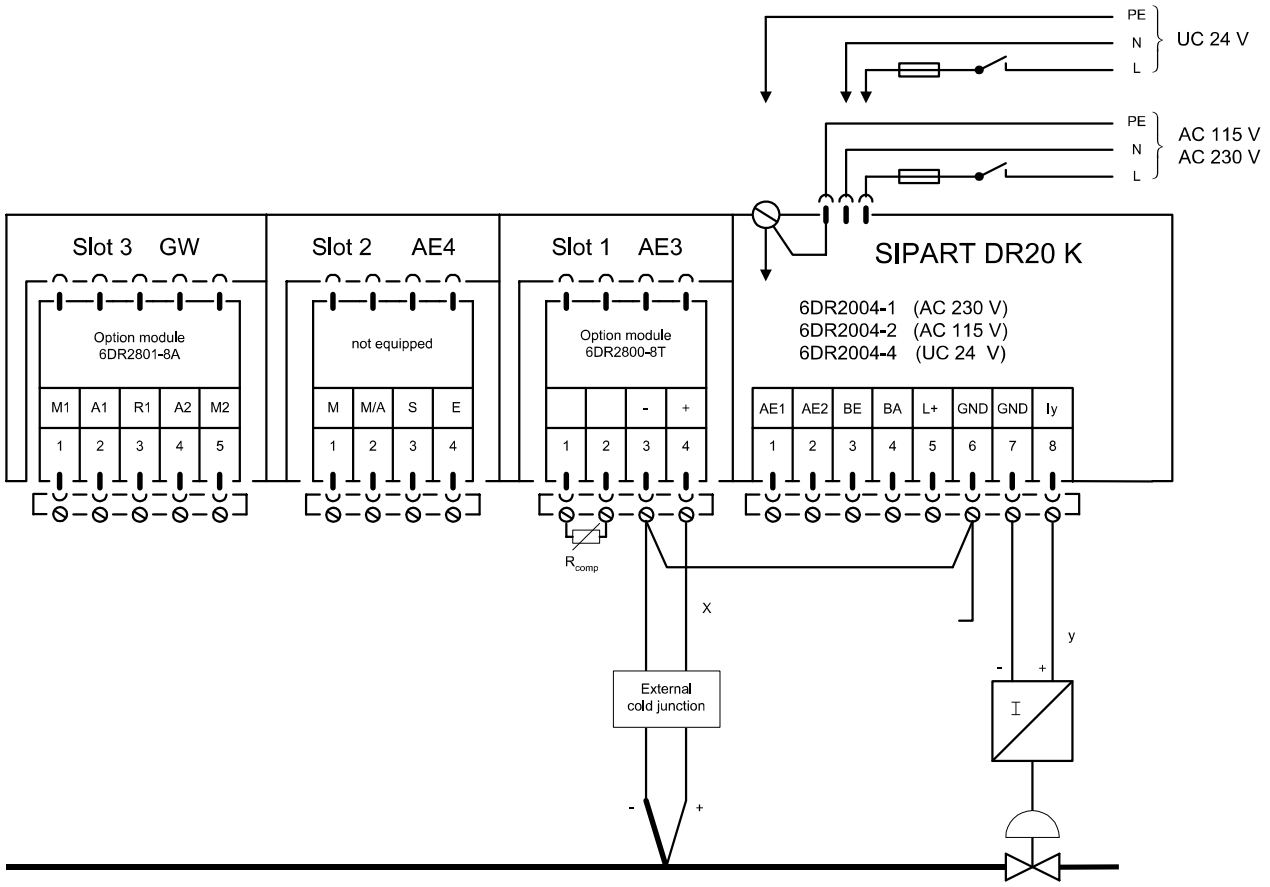
Setting of configuring switches: S8= 1, S14 = 1

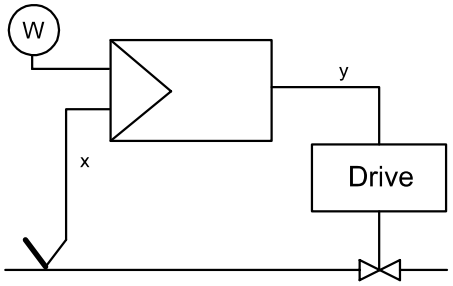


Planning example K7	Fixed setpoint control, controlled variable direct from a thermocouple with external cold junction
	The controlled variable x from the thermocouple is applied to the analog input AE3. The measuring range is programmable. The controlled variable must be linearized (see instructions on pages 78 and 91). The manipulated variable output is 0 to 20 mA; it can be reconfigured to 4 to 20 mA (S37 = 1). The alarm circuit monitors the negative deviation Xd for max. / min. deviations (set parameters A2 = min. and A1 = max. !).

Please refer to the remarks on page 108 !

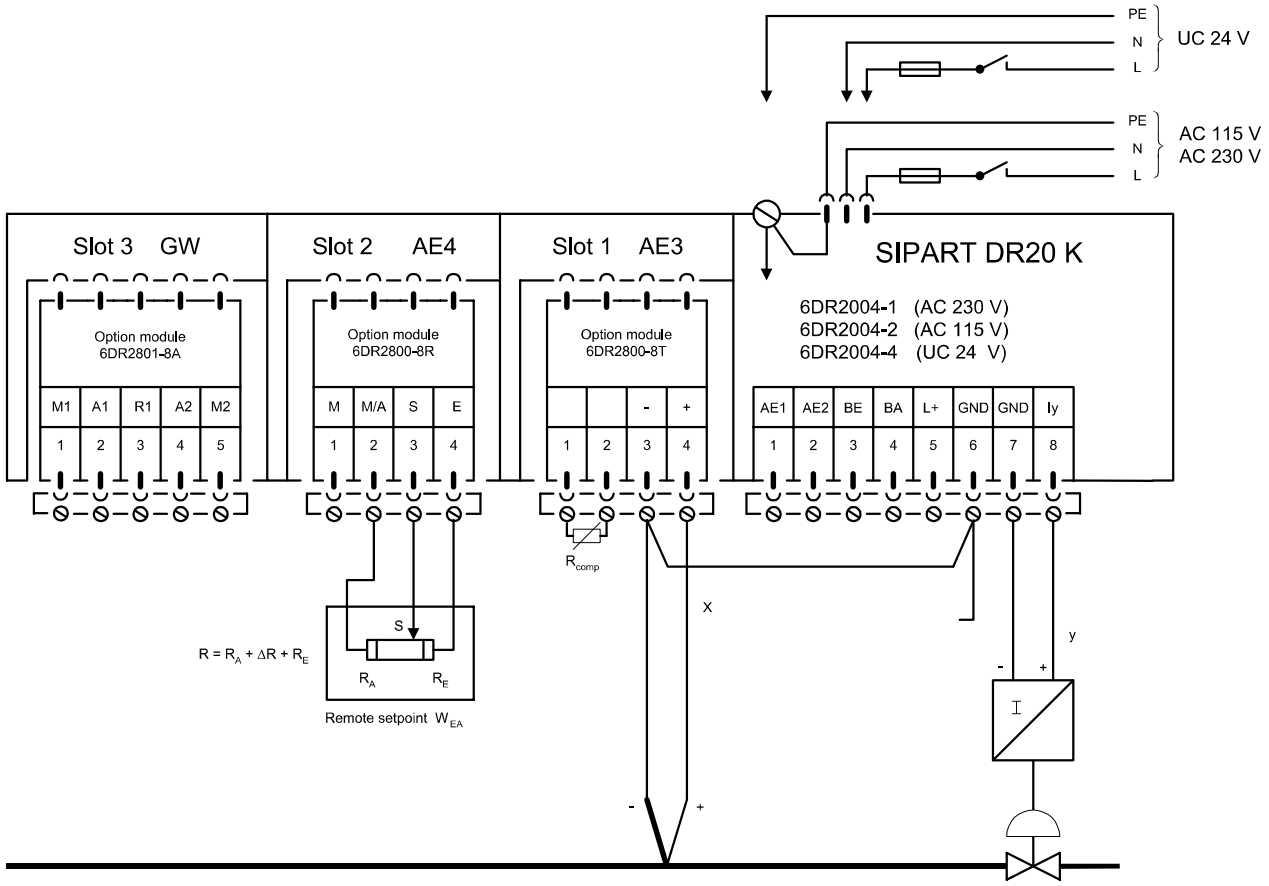
Setting of configuring switches: S8= 1, S14 = 1

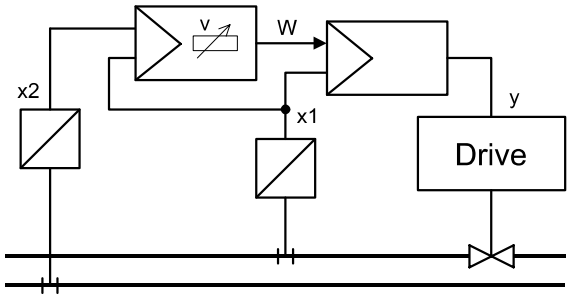


Planning example K8	Fixed setpoint control, controlled variable direct from a thermocouple (internal cold junction), setpoint w adjusted remotely (resistance transmitter)
	The controlled variable x from the thermocouple is applied to the analog input AE3. The measuring range is programmable. The controlled variable must be linearized (see instructions on pages 78 and 91). The manipulated variable output is 0 to 20 mA; it can be reconfigured to 4 to 20 mA (S37 = 1). The alarm circuit monitors the negative deviation Xd for max. / min. deviations (set parameters A2 = min. and A1 = max. !).

Please refer to the remarks on page 108 !

Setting of configuring switches: S1 = 4, S8 = 1, S10 = 1, S14 = 1

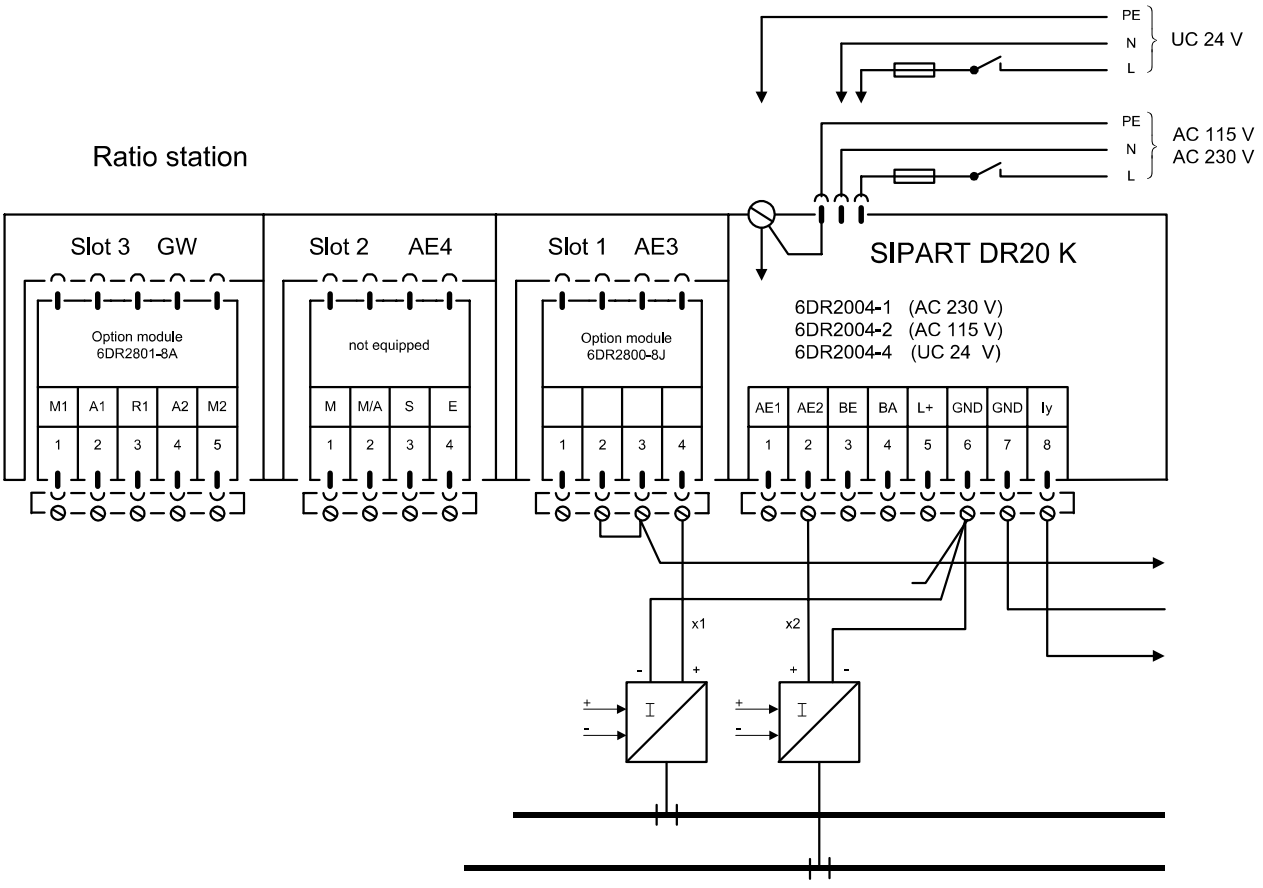


Planning example K9	Ratio control with a ratio station and a slave controller
	The controlled variable x2 from a four-wire transmitter is linked to the analog input AE2 of the ratio station. The output signal follows the formula: $Y = v * x2 + (\pm c1)$ and is applied to the slave controller as remote setpoint w. The ratio factor wv (page 38) is indicated in display 4 as setpoint.

Please refer to the remarks on page 108 !

Setting of configuring switches of the ratio station:

S1 = 8, S8 = 1, S10 = -1, S25 = OFF



Planning example K9	Ratio control with a ratio station and a slave controller

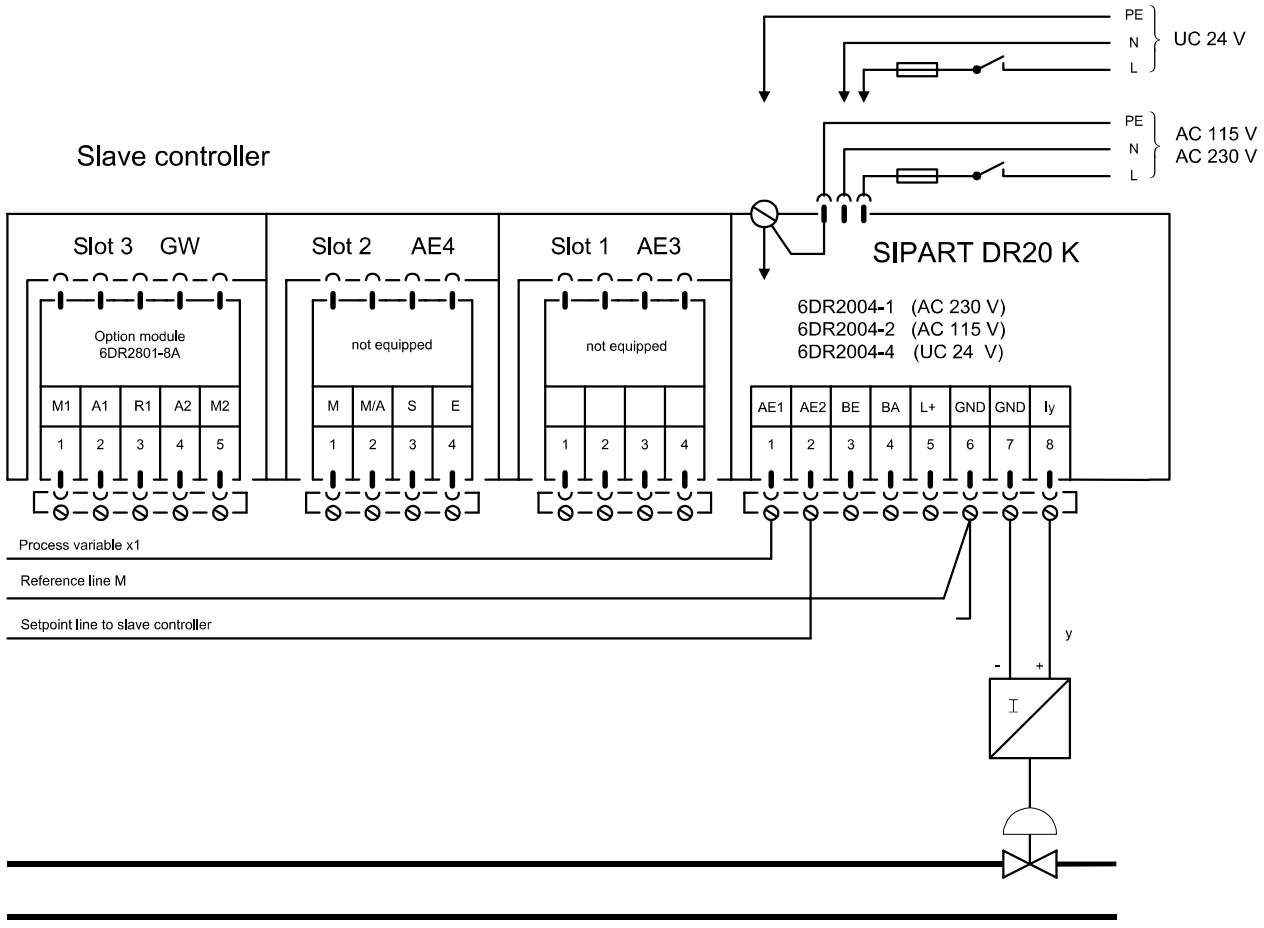
The process variable x1, also from a four-wire transmitter, is applied to the slave controller. Only for indication of the process ratio factor xv, it can be linked to input AE3 of the ratio station in a current loop with input AE1 of the slave controller. If this is not necessary, input module 6DR2800-8J must not be equipped and x1 is directly connected to the slave controller.

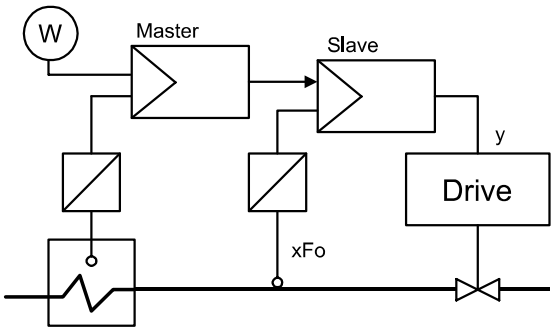
By switchover of the ratio station to manual operation, the setpoint of the slave controller is adjusted by the manual manipulated variable: the ratio control is now changed to a fixed setpoint control. If S17 in the ratio station is set to “1” the switchover back to automatic mode is hitchless and droopless by x-tracking (wv is tracked).

The alarm circuit in the slave controller monitors the negative deviation xd for max./min. deviations (set parameter A1 = max and A2 = min).

Setting of configuring switches of the slave controller:

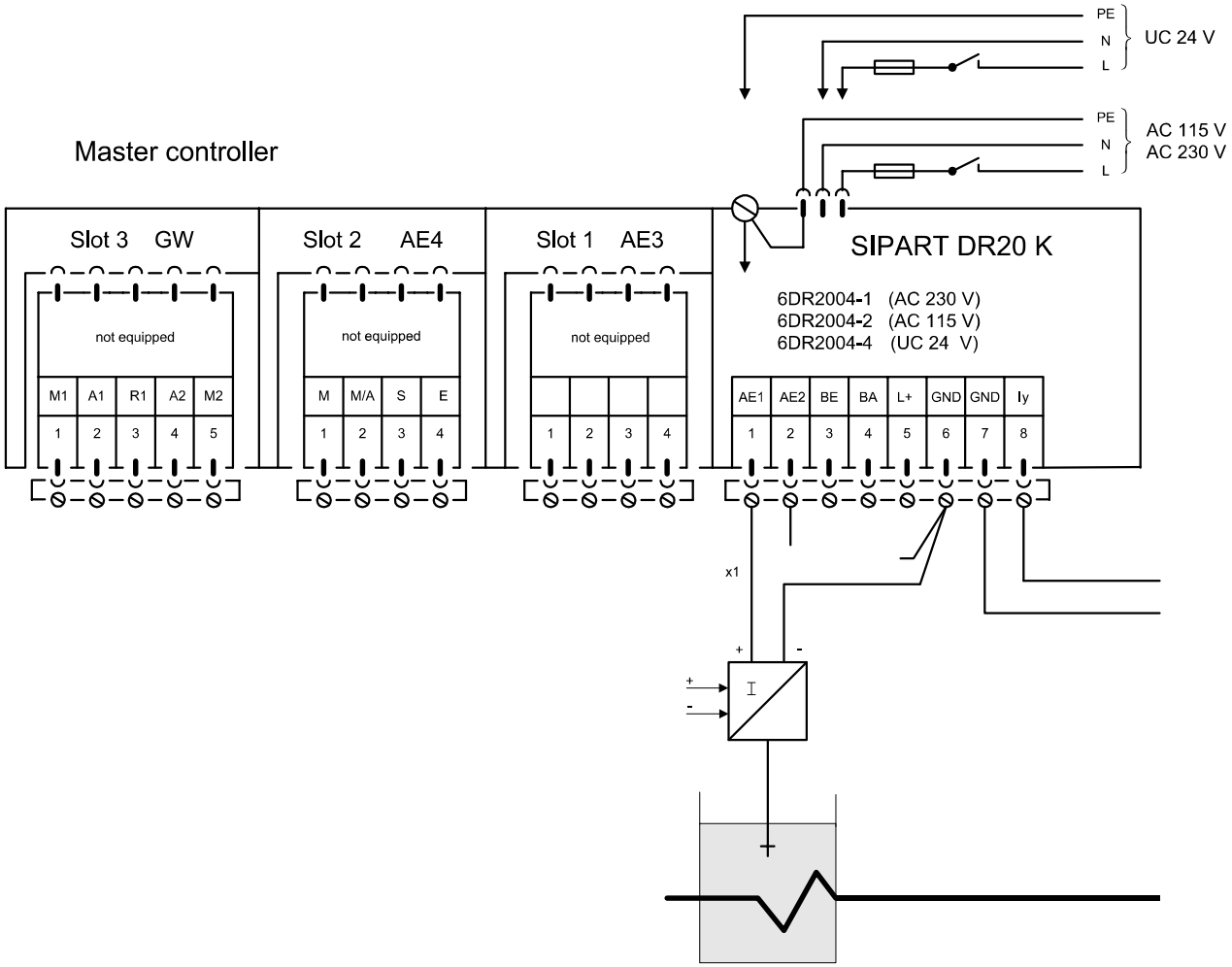
S1 = 4, S10 = -1



Planning example K10	Cascade control Controlled variables for both controllers from four-wire transmitters
	The controlled variables x1 and x2 are connected to the inputs AE1 of the respective controllers. The output signal of the master controller is the remote setpoint of the slave controller and linked to its analog input AE2.

Please refer to the remarks on page 108!

Setting of configuring switches: All configuring switches in factory setting

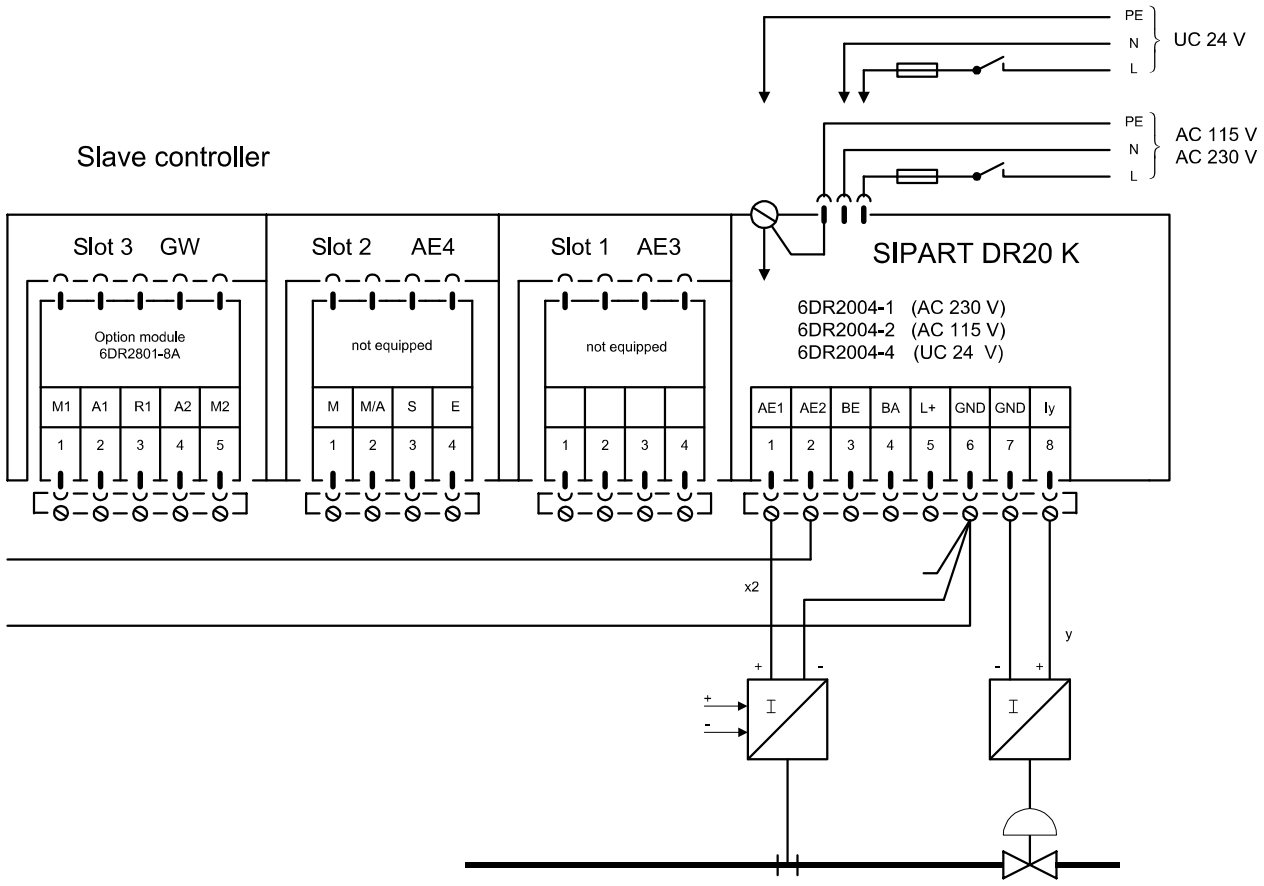


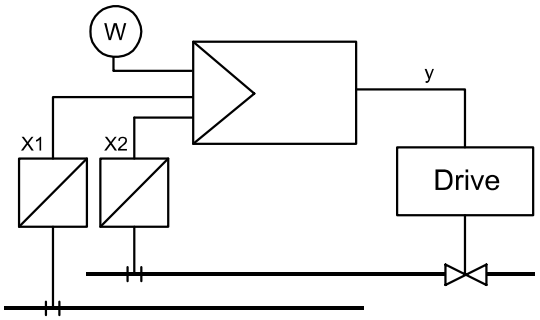
Planning example K10	Cascade control Controlled variables for both controllers from four-wire transmitters

In order to disable the cascade the master controller can be switched to manual mode, which corresponds to local mode of the slave controller. The switchover back to automatic mode of the master is hitchless. Beyond that x-tracking can be configured, so that the setpoint of the master controller is tracked during manual mode.

The alarm circuit in the slave controller monitors the negative deviation xd for max./min. deviations.

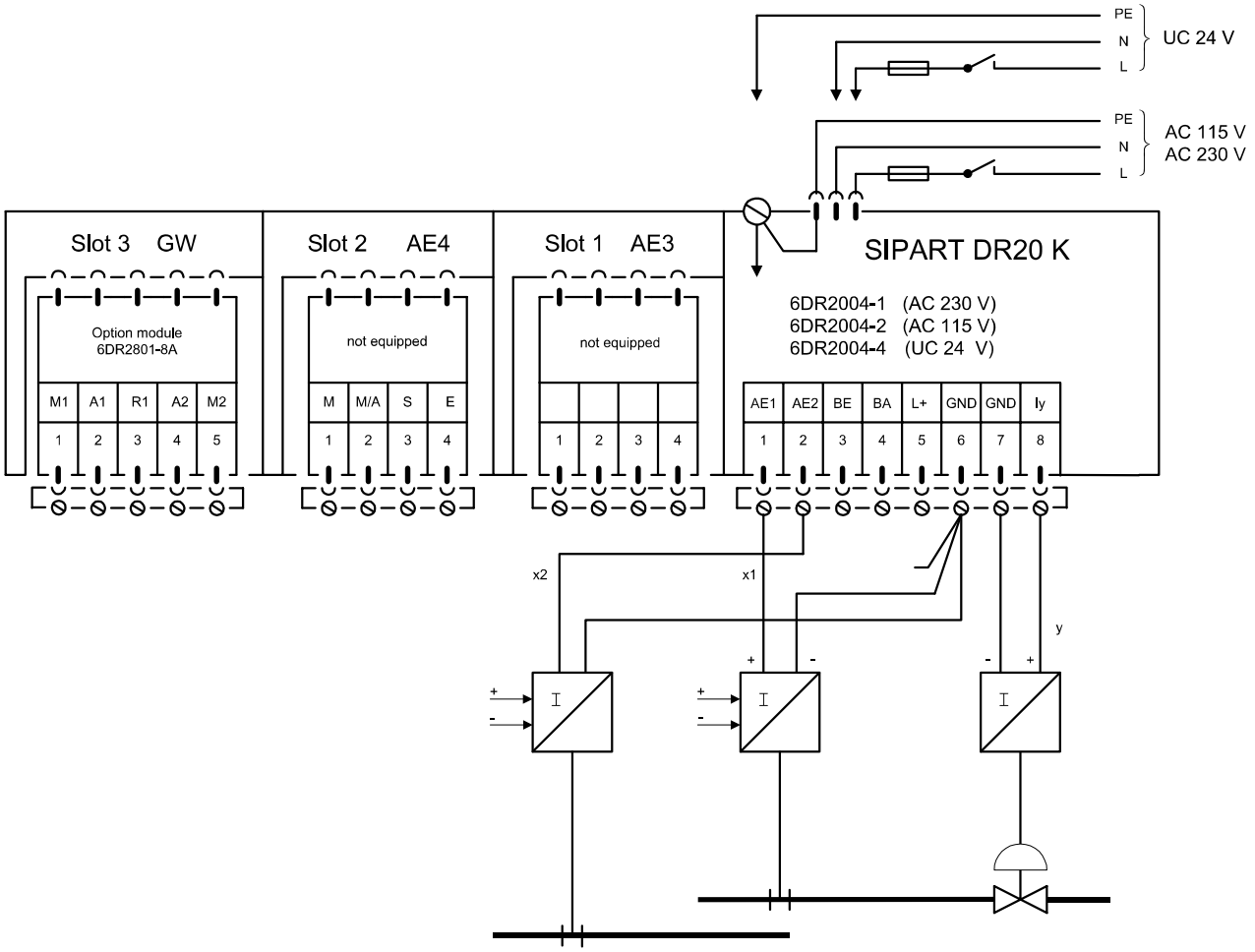
Setting of configuring switches of the slave controller: S1 = 4, S10 = -1

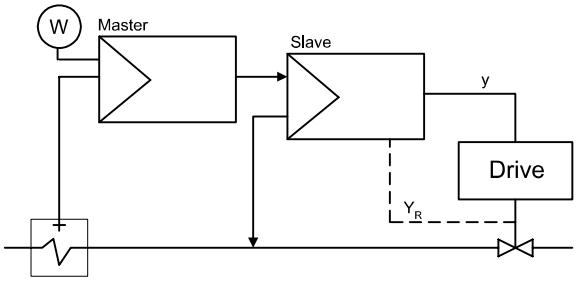


Planning example K11	Ratio control Four-wire transmitters are provided for process variable and command variable
	The process variable x1 is connected to analog input AE1, the command variable x2 is linked to analog input AE2. Signal range of both inputs is 0 to 20 mA as well; it can be reconfigured to 4 to 20 mA (S37 = 1). The alarm circuit monitors the process ratio factor xv for max./min. deviations. For adjustment of the ratio factor range see page 38.

Please refer to the remarks on page 108 !

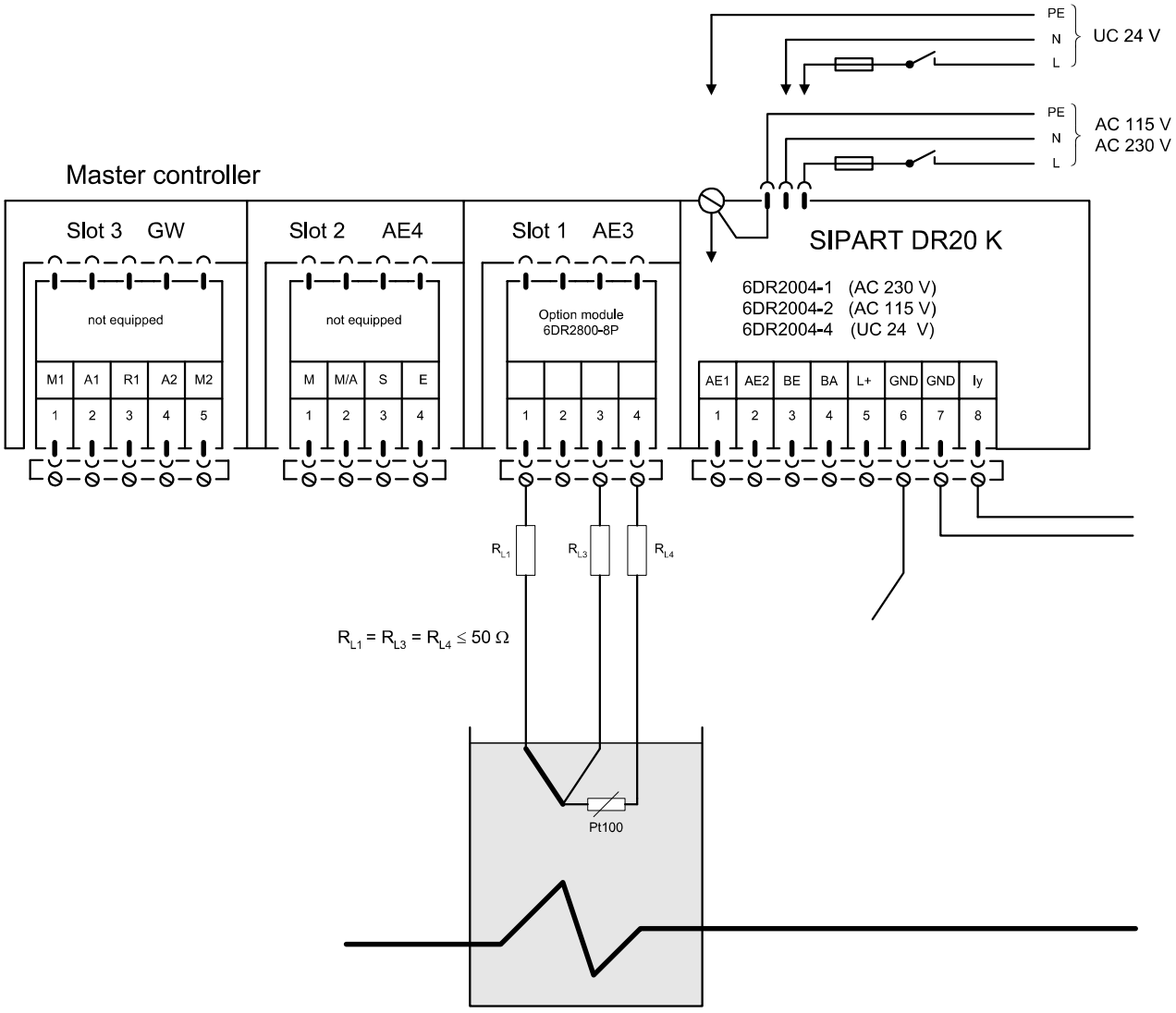
Setting of configuring switches: S1 = 7, S10 = -1, S22 = 1



Planning example S6	Cascade control Process variables for both controllers from resistance thermometers Pt 100
	The master controller has a continuous output, the slave controller is a three-position step controller. The resistance thermometers are directly connected to the analog inputs AE3 of both controllers. The output signal of the master controller is the remote setpoint of the slave controller and linked to its analog input AE2.

Please refer to the remarks on page 108 and the note on page 15 !

Setting of configuring switches: S8 = 1



Circuit diagram K