SINAMICS G: Fans for Closed-Loop Control of Exhaust Air

SINAMICS G120P CU230P-2 from FW 4.4

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Fans for closed-loop control of exhaust air

SINAMICS G120P CU230P-2 from FW 4.4

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1 Introduction

Fans and ventilators for exhaust air are usually used to

- suction dusts and smells from large-scale kitchens
- suction smells from toilettes and washrooms
- suction stale air from living rooms and offices
- maintain a maximum air pressure in air-conditioned rooms with variable air volume
- suction smoke in case of fire from public buildings (e.g. at railway stations or airports)

In standard operation depending on the control concept used, the volume flow (air) can be closed-loop controlled depending on the room temperature, the air pressure or the CO2 content in the room. With the function “Hibernate Mode” the converter will be switched off if it is not required for process reasons. With the function “Staging” further fans can be powered up by contactors if a higher volume flow is required.

In manual mode a fixed fan speed can be adjusted via the motor potentiometer.

Furthermore a fire operation can be selected. This mode will drive the fan in case of an emergency with an adjustable speed which is independent from the speed control. In addition to that in fire operation all faults which would not directly switch off the converter will be ignored. Concerning faults which would result in switch-off the converter will be switched on by its automatic restart function after acknowledging all faults.

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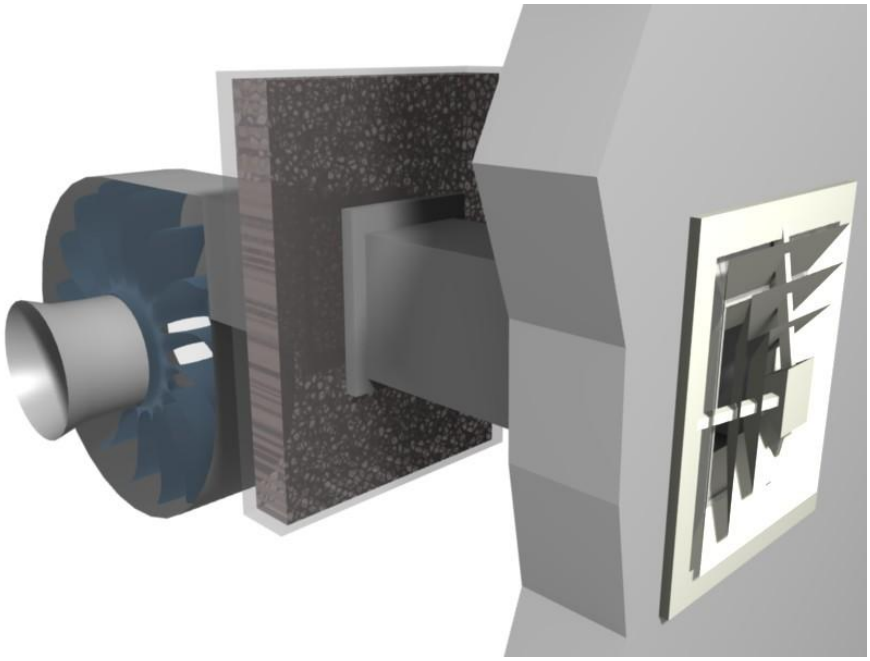

Fig. 1-1: Fan to suction exhaust air from buildings

2 Connection circuit diagram

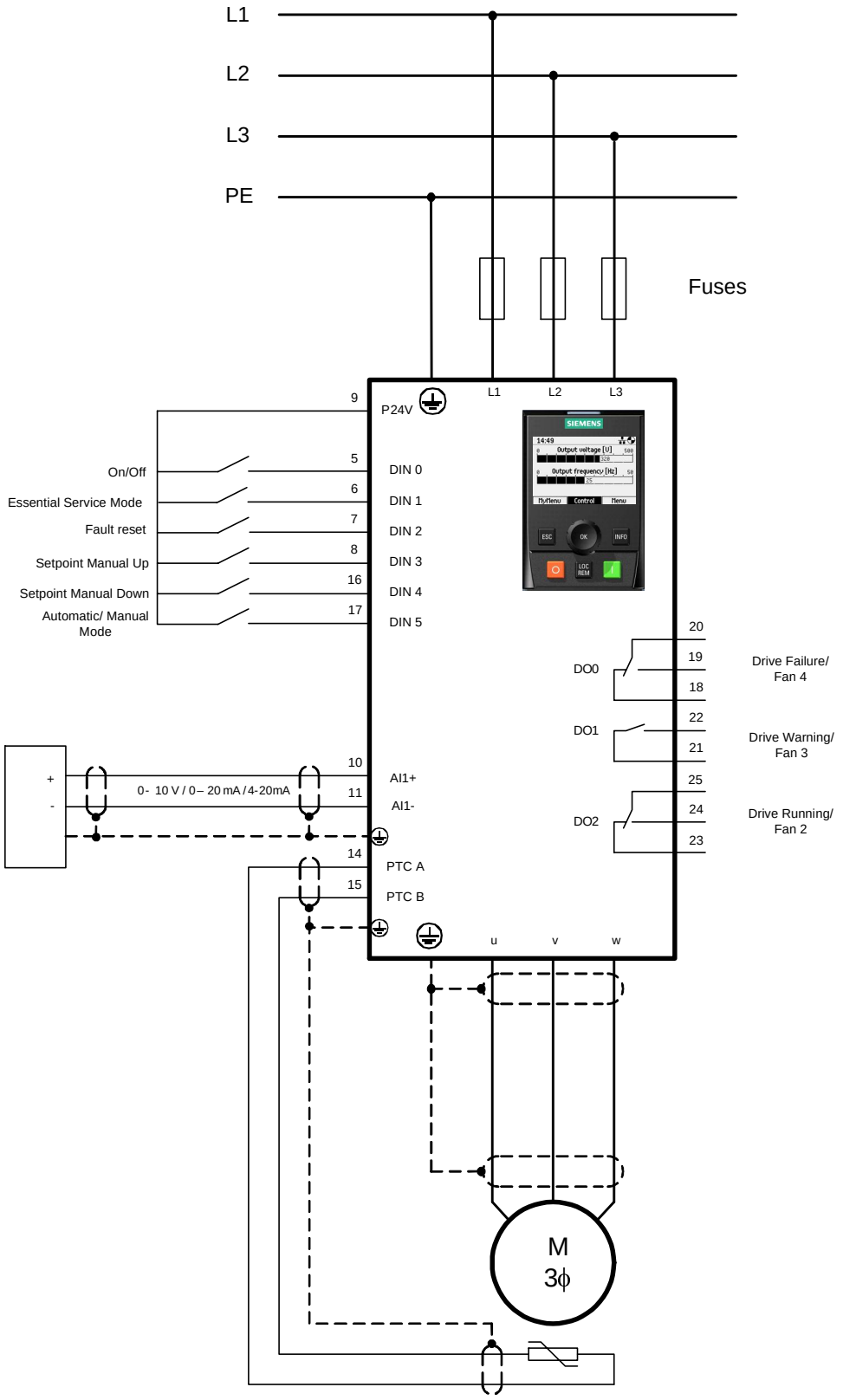

Fig. 2-1:

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The terminal assignment for the subsequent parameterization is as follows:

DI0 – On/Off
DI1 – Enable Essential Service Mode
DI2 – fault acknowledgement
DI3 – Increases the set point (MOP) in manual operation
DI4 – Reduces the set point (MOP) in manual operation
DI5 – Changes over between automatic and manual operation
(open-loop controlled operation via MOP)

AI1+/- – Connection for the temperature sensor (voltage/current)
AI2+/- – Connection for a resistance thermometer **(switch AI2 to TEMP)**

PTC A/B – Connection for the temperature sensor of the variable-speed fan

DO0 – Drive signal, fault / Control fan 4 at Motor Staging
DO1 – Drive signal, alarm / Control fan 3 at Motor Staging
DO2 – Drive signal, operation / Control fan 2 at Motor Staging

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3 Script functionality

- Check the CU module (CU230P-2) and SW Version (>= V4.4)
- Select between complete parameterization or subsequent set point change
- Factory setting
- Quick commissioning
- Motor temperature monitoring
- Enter the minimum speed
- Sensor selection (0 - 10V/0 - 20mA/4 – 20mA/Ni1000/Pt1000) incl. technological calibration (temperature in Degrees Celsius, pressure in Pa, air quality in ppm)
- PID controller setting
- Select automatic restart, yes/no
- Select soft starting (PID controller enable is delayed), yes/no
- Select Hibernation Mode, yes/no
- Select Essential Service Mode
- A fixed set point or two set points alternating using timer 1 and 2 (input in the technological values)
- BiCo wiring of the PID controller, the DI, DO incl. automatic/manual operation
- Only when using a PM330: Motor data identification

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4 Description of the parameterization

4.1 Importing and executing the script

In order to be able to work with scripts, a script folder must first be created below the CU module in STARTER. This is done by marking the CU module ⇒ Select Expert using the right-hand mouse key ⇒ Insert script folder

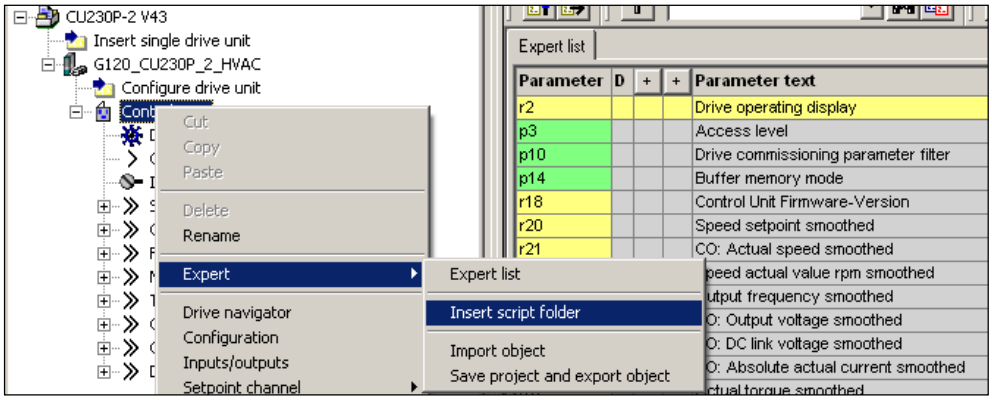

Fig. 4-1: Importing the script folder

The scripts available as text files are inserted using the "ASCII Import" link.

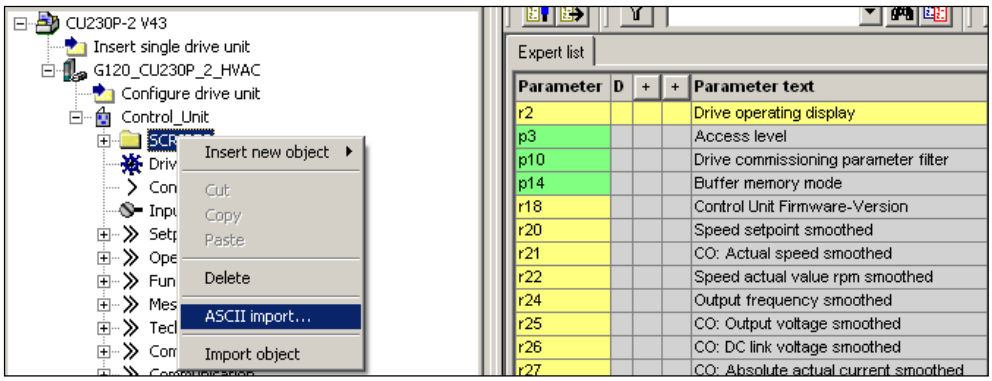

Fig. 4-2: Importing the script

When importing the script, the file manager opens with which the file to be run can be selected. The imported scripts are saved in the directory structure of the project in the Scripts folder.

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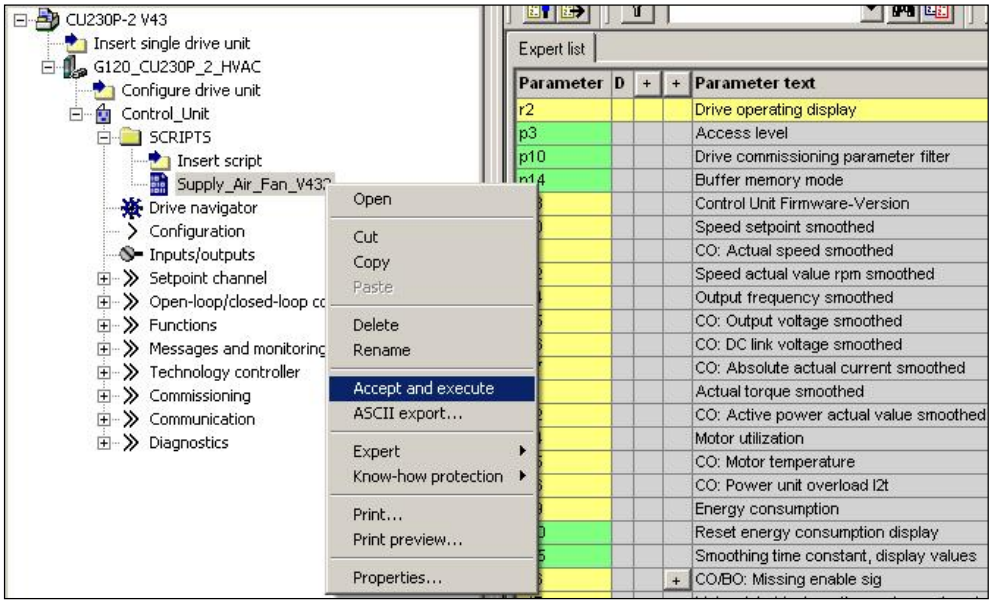

Fig. 4-3: Executing the script

The script is started by selecting the script using the right-hand mouse key and selecting "Accept and execute". The further sequence of the script is controlled using input screen forms, in which Yes/No prompts or value inputs are expected.

NOTE This script can only run in online operation as it includes a reset to the factory setting and motor commissioning.

4.2 Parameterization sequence

The parameterization that is carried out using the script is described in the following. Most of the settings are carried out in the background, parameters shown in bold (□□□□) require that users make the appropriate entries.

4.2.1 Verifying of online status

This script can only run in online operation as it includes a reset to the factory setting (where the factory settings are restored) and motor commissioning.

Because of this the script tries to establish a connection to the CU if not already online. If there is still no online connection a fault message is performed.

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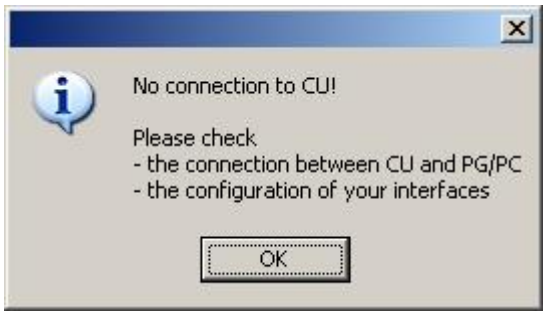

Fig. 4-4: Message no connection to CU

4.2.2 CU module interrogation

The script is only coordinated to the functionality of the CU230P-2 HVAC, CU230P-2 DP,CU230P-2 PN, CU230P-2 BT and CU230P-2 CAN; other modules are rejected.

Fig. 4-5: Message, incorrect CU module

Further, it is assumed that the module has a minimum firmware version of V4.4.

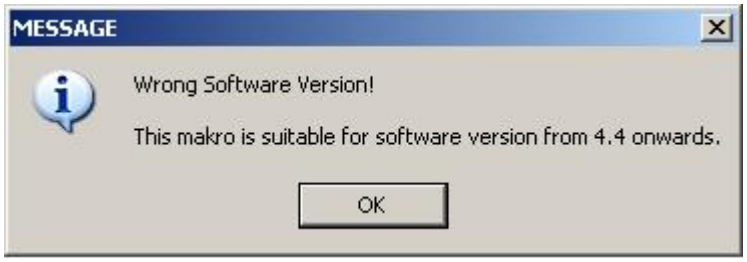

Fig. 4-6: Message, incorrect firmware version

Both of these facts are queried in the background; if they are not fulfilled, then the script is interrupted.

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4.2.3 Power module interrogation

The script is not released for power module PM330 and SINAMICS G120P Cabinet drives.

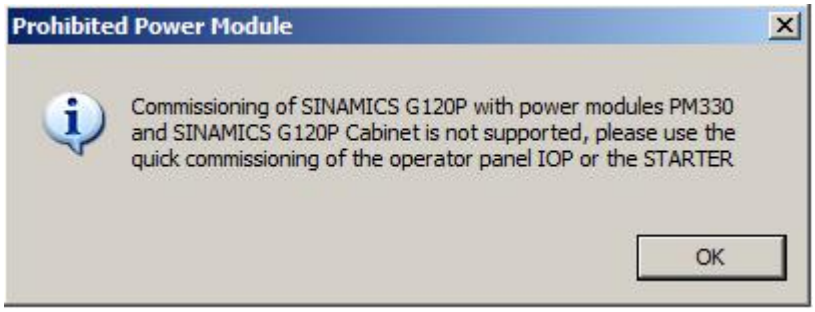

Fig. 4-7: Message, prohibited power module

4.2.4 Query, scope of the parameterization

A selection can be made as to whether the complete parameterization is run through or whether only set points and other inputs should be subsequently changed.

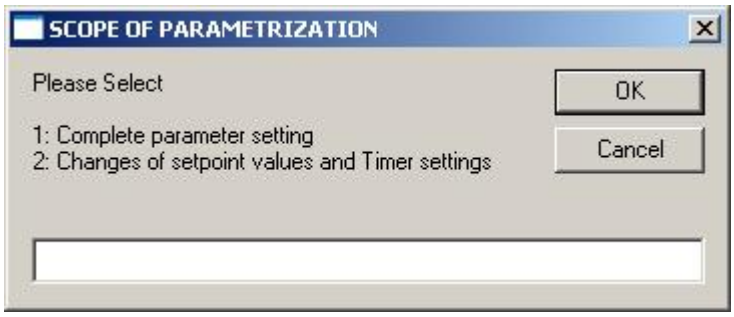

Fig. 4-8: Selection screen form, scope of parameterization

CAUTION **Make sure that no On-Signal at DI-0 is active!**

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To finish the parameterization successful, make sure that there is no On-signal at DI-0.

Figure 4-9

In order that set points can be subsequently displayed and entered so that they are correctly technologically scaled/normalized, the maximum pressure is entered in p2900[0]. To identify the application macro, an identifier is entered into p2901[0]. Using this identifier, the script can identify that a basic parameterization was already performed.

Fig. 4-10: Message stating that the basic parameterization has not been performed

4.2.5 Factory setting

The parameterization using the script assumes that the inverter parameters are set to the values of the factory setting. Because of this the fully parameterization can only start, if factory setting is performed.

After that in a number of parameters settings will be done. At CU230P-2 DP and CU230P-2 PN the connections from control word will be removed.

Parameter	Value	Comment
p0015	0	Macro drive unit
p0844[0], [1]	1	No coast-down / coast-down (OFF2)
p0848[0], [1]	1	No fast-stop/fast-stop (OFF-3)
p0852[0], [1]	1	Enable operation/inhibit operation
p0854[0], [1]	1	Control by PLC/no control by PLC
p1140[0], [1]	1	Enable ramp-function generator
p1141[0], [1]	1	Continue ramp-function generator
p1142[0], [1]	1	Enable set point
p1035[0]	0	Motorized potentiometer set point raise
p1036[0]	0	Motorized potentiometer lower set point
p1055[0], [1]	0	Jog bit 0
p1056[0], [1]	0	Jog bit 1
p1070[0]	0	Main set point
p1070[1]	0	Main set point
p1113[0], [1]	0	Set point inversion
p2103[0], [1]	0	Acknowledge faults

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4.2.6 Quick commissioning

For the quick commissioning, a square-law V/f characteristic for the fans as well as a low overload factor are entered. After this, the system prompts you to enter the rated supply voltage, the rated current, the rated power and rated frequency as well as the rated speed. Depending on the motorstandard the powerfactor or the efficiency factor will be prompted. This completes the quick commissioning.

Parameter	Value	Comment
P0205	1	Load cycle with low overload
P0300[0]	1	Selects induction motor, rotary
P100	**□□□□**	**Motorstandard**
P0304[0]	**□□□□**	**Enter rated motor voltage**
P0305[0]	**□□□□**	**Enter rated motor current**
P0307[0]	**□□□□**	**Enter rated motor power**
P0308[0], P0309[0]	**□□□□**	**Rated motor power factor or Rated motor efficiency**
P0310[0]	**□□□□**	**Enter rated motor frequency**
P0311[0]	**□□□□**	**Enter rated motor speed**
P1300[0]	2	V/f characteristic with parabolic characteristic
p3900[0]	3	Completion of quick commissioning

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4.2.7 Motor temperature sensing

The query allows you to select between either no sensor, PTC or KTY84. As a result of the quick commissioning, the motor over temperature is specified; for deviations, parameter p0604 can be changed.

Parameter	Value	Comment
p0601[0]	0 1 2	No sensor PTC KTY84
p0604[0]	**□□□□**	**Enter alarm threshold, motor over temperature**

4.2.8 Calculating the minimum speed

The minimum speed is set to 20% of the maximum frequency. Other values can be set.

Parameter	Value	Comment
p1080[0]	**□□□□**	**Enter a minimum speed**

4.3 Selecting the closed-loop control type

3 closed-loop control versions are possible to control (closed-loop) the exhaust air:

- Closed-loop air quality control (the fan draws in the feed air depending on the CO2 content in the connected room or area)
- Closed-loop temperature control (the fan cools the connected room/area with increased air flow rate)
- Closed-loop pressure control (the fan ensures a constant pressure in the feeder ducts)

4.3.1 Closed-loop temperature control

For closed-loop temperature control, the fan ensures a flow rate depending on the room/area temperature. The higher the temperature actual value increases above the required set point, the fan speed increases to increase the air flow to cool down the air.

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Application

For closed-loop temperature control, parameter p2901[0] is set temporary to a value of 1. Because of this the script identifies that the configuration is a closed-loop temperature control.

Parameter	Value	Comment
p2901[0]	1	Identifier, not finished closed-loop temperature control

Pre-connecting the PID controller

A fixed set point is used as step-in for the PID controller. The control sense for the closed-loop temperature control is inverse, i.e. the drive operates for as long as the actual value is greater than the set point, (actual value – set point = fan speed). If the actual value is equal to or also lower than the set point, the drive operates at the minimum speed and may be switched-off as a result of the Hibernation Mode. To invert the sense of the controller, Parameter p2306 will be set to 1.

Parameter	Value	Comment
p2253[0]	r2224	Fixed set points are used
p2306	1	Technology controller fault signal inversion

Actual value sensor setting

It is possible to connect sensors with a voltage output or current output as well as Ni1000 and Pt1000 resistance thermometers.

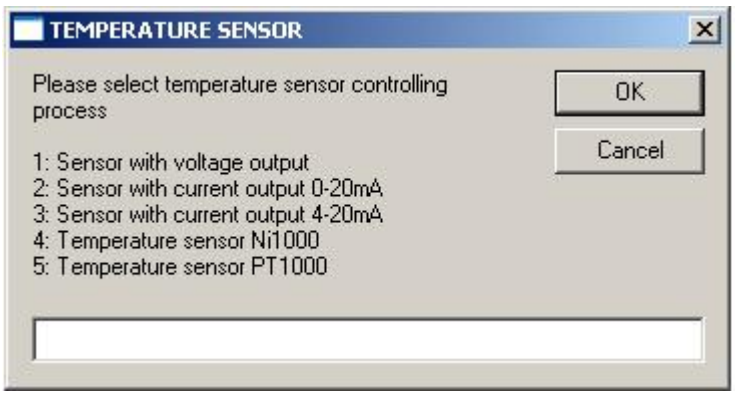

Fig. 4-11: Selection screen form, actual value sensor for the closed-loop temperature control

For sensors with a voltage output, the maximum voltage can also be entered, which is then normalized (scaled) to 100% in the set point channel (e.g. sensors with 5V output voltage are generally used). Sensors with voltage and current output are connected at analogy input AI1, Ni1000 and Pt1000 resistance thermometers are directly connected at analogue input AI2.

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Sensor with voltage output

Parameter	Value	Comment
p0756[1]	0	Voltage input, unipolar (0 … 10V)
p0759[1]	□□□□	**Enter the max. output voltage**

Sensor with current output 0 … 20mA

Parameter	Value	Comment
p0756[1]	2	Current input, unipolar (0 … 20mA)

Sensor with current output 4 … 20mA

Parameter	Value	Comment
p0756[1]	3	Voltage input, unipolar (4 … 20mA)

Technology standardization (Sensor with voltage/current output)

For sensors with voltage and current output the technological standardization is performed as followed. The maximum and minimum temperature that can be measured must be entered to normalize (scale) the technology values. The maximum value is saved in p2900[0] and the ratio of both in p758[1]; the set points refer to this value. An actual value smoothing of 100ms is specified using parameter p2265. The actual value is connected from analogue input AI1.

Parameter	Value	Comment
p2900[0]	**□□□□**	**Enter the maximum temperature that can be measured**
p758[1]	**□□□□**	**Ratio of min. to max. Temp.**
p2265	0.1	Time constant, actual value filter
p2264	r755[1]	Actual value from analogue input AI1

Ni1000 resistance thermometer

Parameter	Value	Comment
p0756[2]	6	Ni1000 temperature sensor
p2900[0]	100	Maximum temperature that can be measured
p2265	0.1	Time constant, actual value filter
p2264	r755[2]	Actual value from analogue input AI2

By selecting analogue input AI2 for the resistance thermometer, the inverter performs a normalization 100% = 100 Degrees Celsius. The set point is limited to 100 Degrees Celsius.

Note Switch AI2 must be set to TEMP at the front of the CU230P-2 module.

Pt1000 resistance thermometer

Parameter	Value	Comment
p0756[2]	7	Ni1000 temperature sensor
p2900[0]	100	Maximum temperature that can be measured
p2265	0.1	Time constant, actual value filter
p2264	r755[2]	Actual value from analogue input AI2

By selecting analogue input AI2 for the resistance thermometer, the inverter performs a normalization 100% = 100 Degrees Celsius. The set point is limited to 100 Degrees Celsius.

Note Switch AI2 must be set to TEMP at the front of the CU230P-2 module.

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Technological unit

The technological unit p595 will be set to [°C]. The Reference quantity p596 from the technological unit will be set to the same as maximum temperature p2900.

Parameter	Value	Comment
p595	4 [°C]	Selecting technological units
p596	max temperature	Reference quantity, technological units

4.3.2 Closed-loop pressure control

For closed-loop pressure control, the fan controls the flow rate depending on the air pressure in the air feed or in the connected room or area. The control sense is inverse, i.e. as the fan speed increases, the flow rate increases and in turn, the air pressure decreases.

Application

For closed-loop pressure control, parameter p2901[0] is set temporary to a value of 2. Because of this the script identifies that the configuration is a closed-loop pressure control.

Parameter	Value	Comment
p2901[0]	2	Identifier, not finished closed-loop pressure control

Pre-connecting the PID controller

A fixed set point is used as step-in for the PID controller.

Parameter	Value	Comment
p2253[0]	r2224	Fixed set points are used

Actual value sensor setting

Sensors with voltage output or current output can be connected.

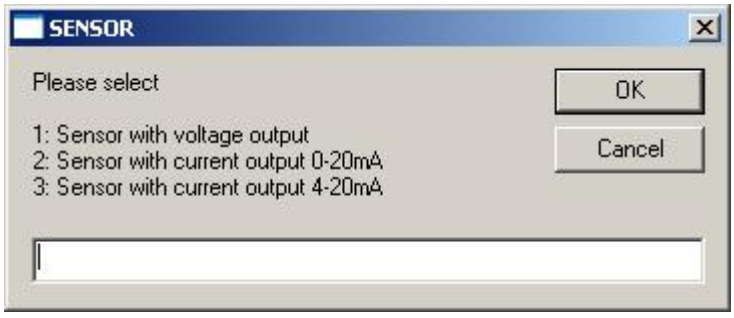

Fig. 4-12: Selection screen form, actual value sensor for the closed-loop temperature control

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For sensors with a voltage output, the maximum voltage can also be entered, which is then normalized (scaled) to 100% in the set point channel (e.g. sensors with 5V output voltage are generally used). Sensors with voltage and current output are connected at analogue input AI1.

Sensor with voltage output

Parameter	Value	Comment
p0756[1]	0	Voltage input, unipolar (0 … 10V)
p0759[1]	**□□□□**	**Enter the max. output voltage**

Sensor with current output 0 … 20mA

Parameter	Value	Comment
p0756[1]	2	Current input, unipolar (0 … 20mA)

Sensor with current output 4 … 20mA

Parameter	Value	Comment
p0756[1]	3	Current input, unipolar (4 … 20mA)

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Technology standardization

The maximum pressure that can be measured in Pa must be entered to normalize (scale) the technology values. The value must be saved in p2900[0]; the set points refer to this value. An actual value smoothing of 100ms is specified using parameter p2265. The actual value is connected from analogue input AI1.

Parameter	Value	Comment
p2900[0]	**□□□□**	**Enters the maximum pressure that can be measured**
p2265	0.1	Time constant, actual value filter
p2264	r755[1]	Actual value from analogue input AI1

Technological unit

The technological unit p595 will be set to [Pa]. The Reference quantity p596 from the technological unit will be set to the same as maximum air pressure p2900.

Parameter	Value	Comment
p595	5 [Pa]	Selecting technological units
p596	max air pressure	Reference quantity, technological units

4.3.3 Closed-loop air quality control

For the closed-loop air quality control, the fan controls the flow rate depending on the CO2/VOC content in the connected room or area. The control sense is inverse, i.e. with increasing fan speed and flow rate, the fan reduces the amount of pollutants in the air.

Application

For closed-loop air quality control, parameter p2901[0] is set temporary to a value of 3. Because of this the script identifies that the configuration is a closed-loop air quality control.

Parameter	Value	Comment
p2901[0]	3	Identifier, not finished closed-loop air quality control

Pre-connecting the PID controller

A fixed set point is used as set point for the PID controller. The control sense for the closed-loop temperature control is inverse, i.e. the drive operates for as long as the actual value is greater than the set point, (actual value – set point = fan speed). If the actual value is equal to or also lower than the set point, the drive operates at the minimum speed and may be switched-off as a result of the Hibernation Mode. To invert the sense of the controller, Parameter p2306 will be set to 1.

Parameter	Value	Comment
p2253[0]	r2224	Using fixed value effective
p2306	1	Technology controller fault signal inversion

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Actual value sensor setting

Sensors with voltage output or current output can be connected.

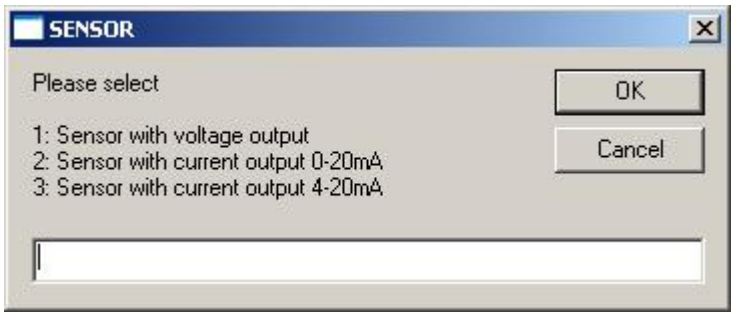

Fig. 4-13: Selection screen form, actual value sensor for the closed-loop temperature control

For sensors with a voltage output, the maximum voltage can also be entered, which is then normalized (scaled) to 100% in the set point channel (e.g. sensors with 5V output voltage are generally used). Sensors with voltage and current output are connected at analogue input AI1.

Sensor with voltage output

Parameter	Value	Comment
p0756[1]	0	Voltage input, unipolar (0 … 10V)
p0759[1]	**□□□□**	**Enter the max. output voltage**

Sensor with current output 0 … 20mA

Parameter	Value	Comment
p0756[1]	2	Current input, unipolar (0 … 20mA)

Sensor with current output 4 … 20mA

Parameter	Value	Comment
p0756[1]	3	Voltage input, unipolar (4 … 20mA)

Technology standardization

The maximum CO2 content that can be measured in ppm must be entered to normalize (scale) the technology values. The value must be saved in p2900[0]; the set points refer to this value. An actual value smoothing of 100ms is specified using parameter p2265. The actual value is connected from analogue input AI1.

Parameter	Value	Comment
p2900[0]	**□□□□**	**Enters the maximum pressure that can be measured**
p2265	0.1	Time constant, actual value filter
p2264	r755[1]	Actual value from analogue input AI1

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4.3.4 Configuration of the PID controller

The PID controller is interconnected as main set point. Fans are only operated with a positive direction of rotation. This is the reason that the PID controller limiting is set from 0% to 100%. Three windows are opened one after the other to input the gain factor, the integral time as well as the derivative action time.

Parameter	Value	Comment
p2200[0]	1	Enables the PID controller
p2251	0	Technology controller as main set point
p2297	p2291	Value, positive limit
p2298	p2292	Value, negative limit
p2280	**□□□□**	**Enter the proportional gain**
p2285	**□□□□**	**Enter the integral time**
p2274	**□□□□**	**Enter the differentiating time**

4.3.5 Query - starting behaviour

A distinction can be made between immediately enabling the PID controller when switching-on the drive and soft starting; in this case, the PID controller output is opened using an up ramp that can be set.

Parameter	Value	Comment
p2293	**□□□□**	**Technology controller, ramp-up/ramp-down time in sec**

4.3.6 Automatic restart

It is possible to select an automatic restart after power failure.

Parameter	Value	Comment
p1210	4	Restart after power failure

NOTE This value can only be changed in a status without faults, because of this an automatic fault acknowledge is performed. If the fault message is still active a warning message will appear and the script will go on without activating this function.

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4.3.7 Flying restart

It is possible to combine the restart after power failure with the flying restart. Search in the set point direction is preset (default setting).

Parameter	Value	Comment
p1200	4	Flying restart active (search in the set point direction)

4.3.8 Hibernation Mode

The Hibernation Mode ensures that the inverter switches itself off if the actual value is greater than the set point for a specific time. The PID controller also remains active with the inverter switched-off. The delay time can be set as to how long the fan operates at the minimum frequency before it is switched off. The restart value is used to set the accuracy with which the inverter is switched-on again if the actual value again drops below the set point. Low setting values in the range of several percent result in a quite narrow switch-in bandwidth; high setting values in the range greater than 10% mean that the actual value drops more before the drive is switched-in again.

Parameter	Value	Comment
p2398	1	Hibernation Mode activated
p2391[0]	**□□□□**	**Enter the hibernation delay time**
p2392	**□□□□**	**Enter the hibernation restart value**

4.3.9 Essential Service Mode

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In the Essential Service Mode (ESM), the motor must operate for as long as possible, for example in the case of a fire, to keep the evacuation routes open by extracting smoke.

Contrary to normal operation, when faults develop, the inverter does not shut down, but responds as follows

- Faults that do not immediately result in the destruction of the inverter or the motor:
  - The inverter ignores these faults, and continues to operate in the "essential service mode"
- Faults/errors, which cannot be ignored, and demand a restart, for example software errors:
  - The inverter automatically restarts and attempts to acknowledge the existing fault/error using this function.

WARNING

Loss of warranty for an inverter operated in the essential service mode

If you activate the essential service mode, then all warranty claims are null and void with reference to the inverter.

The essential service mode is an exceptional state, and is not suitable for continuous operation.

Please note that the essential service mode can result in exceptionally high temperatures, including open fire, as well as emissions of light, noise, particles, gases, etc. can occur inside and outside the inverter.

The Essential Service Mode is selected via digital input DI1. The drive will be switched on independently from the other inputs. A maximum speed or fixed set point can be used for the speed set point.

Parameter	Wert	Kommentar
p3880	r722.0	DI1 enable Essential Service Mode
p3881	1	Set point source fixed speed set point 15 (p1015)
p1015	**□□□□**	**fixed set point**

4.3.10 Set point input

The set point is entered in technological values.

- Closed-loop temperature control, Degrees Celsius
- Closed-loop pressure control, Pa
- Closed-loop air quality control, ppm

The value is entered as fixed set point. If a value is entered, which is greater than the maximum possible actual value, then value is rejected - and the input screen form is redisplayed. Values with the unit [ppm] will be normalized to 100%. It is possible to only select one set point; using the timer, a changeover can then be made between two set points in a time-controlled fashion. If there is a gap between the timers where no set point is active, the drive will be switched off in this time.

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One set point

Parameter	Value	Comment
p2201[0]	**□□□□**	**Technology controller, fixed value 1**
p2216	1	Fixed value direct selection
p840[0]	r722.0	DI0 - Drive ON/OFF
p2220[0]	1	Fixed value selection, bit 0

Set point change

Parameter	Value	Comment
p2201[0]	**□□□□**	**Technology controller, fixed value 1**
p2202[0]	**□**	**Technology controller, fixed value 2**
p2216	1	Fixed value direct selection
p8410[0]	1	Activation, weekday time switch 1
p8410[1]	1	Activation, weekday time switch 1
p8410[2]	1	Activation, weekday time switch 1
p8410[3]	1	Activation, weekday time switch 1
p8410[4]	1	Activation, weekday time switch 1
p8410[5]	1	Activation, weekday time switch 1
p8410[6]	1	Activation, weekday time switch 1
p8420[0]	1	Activation, weekday time switch 2
p8420[1]	1	Activation, weekday time switch 2
p8420[2]	1	Activation, weekday time switch 2
p8420[3]	1	Activation, weekday time switch 2
p8420[4]	1	Activation, weekday time switch 2
p8420[5]	1	Activation, weekday time switch 2
p8420[6]	1	Activation, weekday time switch 2
p8411[0]	**□□□□**	**Switch-on time, time switch - 1 hour**
p8411[1]	**□□□□**	**Switch-on time, time switch - 1 minute**
p8412[0]	**□□□□**	**Switch-off time, time switch - 1 hour**
p8412[1]	**□□□□**	**Switch-off time, time switch - 1 minute**
p8421[0]	**□□□□**	**Switch-on time, time switch - 2 hours**
p8421[1]	**□□□□**	**Switch-on time, time switch - 2 minutes**
p8422[0]	**□□□□**	**Switch-off time, time switch - 2 hours**
p8422[1]	**□□□□**	**Switch-off time, time switch - 2 minutes**
p20030[0]	r722.0	AND 0 Input, Input I0 – DI0
p20030[1]	r2225.0	AND 0 Input, Input I1 – Fixed value active
p20030[2]	1	AND 0 Input, Input I2 – 1
p20030[3]	1	AND 0 Input, Input I3 – 1
p20032	5	AND 0 Run time group
p840[0]	r20031	On/Off1
p2220[0]	r8413.0	Selection, fixed value 1 using time switch 1
p2221[0]	r8423.0	Selection, fixed value 2 using time switch 2

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4.3.11 Automatic mode

In the automatic mode, the fan is operated with closed-loop control using the PID controller depending on the required control version; the set points are saved as fixed set points. Depending on the selection, the drive operates with the Hibernation Mode

Parameter	Value	Comment
p20030[0]	r722.0	DI0 - AND 0 Input Drive on (time-dependent)
p2106[0]	r722.1	DI1 – Enable Essential Service Mode (ESM)
p2104[0]	r722.2	DI2 - Fault acknowledgement
p810	r722.5	DI5 - CDS0/1 changeover

4.3.12 Manual mode

The drive can be switched over from the automatic into the manual mode using DI5. In the manual mode, the PID controller is not operational, with DI3 and DI4, the motorized potentiometer, which is used as set point source, is controlled either higher or lower. The initial value of the motorized potentiometer is set to the minimum frequency, the maximum value to the maximum frequency.

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Parameter	Value	Comment
p840[1]	r722.0	DI0 - Drive ON/OFF
p2106[1]	r722.1	DI1 - Enable Essential Service Mode (ESM)
p2104[1]	r722.2	DI2 - Fault acknowledgement
p1035[1]	r722.3	DI3 - Set point, increase (raise)
p1036[1]	r722.4	DI4 - Set point, decrease (lower)
p810[1]	r722.5	DI5 - CDS0/1 changeover
p2200[1]	0	Inhibit PID controller
p1070[1]	1050	Main set point MOP
p1038[1]	p1080[0]	Motorized potentiometer, minimum speed
p1037[1]	p1082[0]	Motorized potentiometer, maximum speed
p1040[1]	p1080[0]	Start speed, motorized potentiometer

4.3.13 Setting of the application identifier

The identifier of the application identifier is completed in p2901 as a sign of the finished script. The application identifier is the addition of 110, the common identifier of the air extract and the already in p2901 existing identifier of the closed-loop control type.

Parameter	Value	Comment
p2901[1]	111 112 113	closed-loop temperature control closed-loop pressure control closed-loop air quality control

4.3.14 Setting the time and the date

The internal real-time clock is set to the time and date of the PC.

Parameter	Value	Comment
p8400[0]	□□□□	RTC time, hour
p8400[1]	□□□□	RTC time, minute
p8400[2]	□□□□	RTC time, second
p8401[0]	□□□□	RTC date, day
p8401[1]	□□□□	RTC date, month
p8401[2]	□□□□	RTC date, year

Fig. 4-14: Message, system time was set

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4.3.15 Copying RAM to ROM

When parameterization has been completed, data is backed-up by copying from RAM to ROM.

Fig. 4-15: Message, save parameterization

4.3.16 Applying the script

After the complete parameterization has been performed, a message is displayed indicating that the script has been successfully applied. This completes parameterization.

After full parameterization some changes only become effective after a Power On.

Fig. 4-16: Application of the script

5 Contact

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6 History

Tabelle 6-1

Version	Datum	Änderung
V1.0	07/2013	First Edition
V1.1	04/2014	Vectorcontrol for PM330 added
V1.2	11/2014	Power module interrogation

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