



## High-Efficiency pumps for OEM-Industry

Heating, Air Condition, Cooling, Geothermal heat, Solar heat



## Catalogue Wilo- Stratos PARA

- Wilo-Stratos PARA 15/1-5; 20/1-5; 25/1-5; 30/1-5
- Wilo-Stratos PARA 15/1-7; 20/1-7; 25/1-7; 30/1-7
- Wilo-Stratos PARA 15/1-11,5; 20/1-11,5
- Wilo-Stratos PARA 25/1-8; 30/1-8
- Wilo-Stratos PARA 25/1-11; 30/1-11
- Wilo-Stratos PARA 25/1-12; 30/1-12

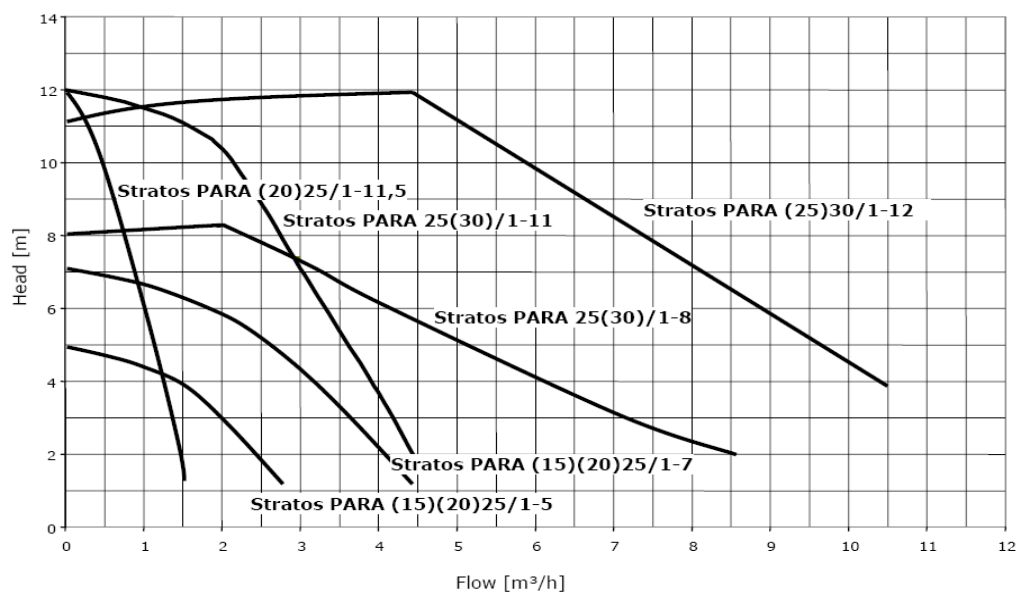
Equipment/ Function						
	Wilco-Stratos PARA					
	15/1-5 20/1-5 25/1-5 30/1-5	15/1-7 20/1-7 25/1-7 30/1-7	15/1-11,5 20/1-11,5	25/1-8 30/1-8	25/1-11 30/1-11	25/1-12 30/1-12
<b>Operating modes</b>						
Control mode (n = constant)	•	•	•	•	•	•
Δp-c for constant differential pressure	• (Hmin=1m, Hmax=5m)	• (Hmin=1m, Hmax=7m)	• (Hmin=4m, Hmax=10m)	• (Hmin=1m, Hmax=7m)	• (Hmin=2m, Hmax=10m)	• (Hmin=2m, Hmax=11m)
Δp-v for variable differential pressure	• (Hmin=1m, Hmax=5m)	• (Hmin=2m, Hmax=6m)	• (Hmin=4m, Hmax=10m)	• (Hmin=2m, Hmax=7m)	• (Hmin=4m, Hmax=10m)	• (Hmin=4m, Hmax=10m)
<b>Manual functions</b>						
Adjustment of operating mode	•	•	•	•	•	•
Adjustment of differential-pressure setpoint	•	•	•	•	•	•
<b>Automatic functions</b>						
Stepless performance adaptation as a function of operating mode	•	•	•	•	•	•
Deblocking function	•	•	•	•	•	•
Soft start	•	•	•	•	•	•
Full motor protection with integrated trip electronics	•	•	•	•	•	•
<b>External control functions</b>						
Control input "Analog In 0 ... 10 V" with cable brack funktion (remote speed setting)	•	•	•	•	•	•
Control input "Analog In 0 ... 10 V" without cable brack funktion (remote speed setting)	A	A	A	A	A	A
Control input PWM	•	•	•	-	-	-
<b>Signal and display functions</b>						
Collective fault signal SSM (floating normally closed contact)	•	•	•	•	•	•
Individual run signal SBM (floating normally opened contact)	A	A	A	-	-	A
<b>Equipment/scope of delivery</b>						
Wrench attachment point on pump body	•	•	•	•	•	•
Incl. seals for threaded connection (loose)	•	•	•	•	•	•
Incl. installation and operating instructions	•	•	•	•	•	•
Incl. thermal insulation for Heating	A	A	A	A	A	A
Inkl. KlimaForm for Cooling	A	A	A	A	A	A

- = available
- = not available
- o = optional
- A = on request

Technical Data																		
Wilostros PARA																		
	15/1-5 20/1-5 25/1-5 30/1-5			15/1-7 20/1-7 25/1-7 30/1-7			15/1-11,5 20/1-11,5			25/1-8 30/1-8		25/1-11 30/1-11		25/1-12 30/1-12				
Heating water (as per VDI 2035)	•						•						•					
Water/glycol mixtures (max. 1:1; mixtures with more than 20 % glycol content require rechecking of the pumping data)	•						•						•					
Domestic hot water for secondary and service water systems in accordance with German directive TrinkwV 2001	-						Stratos PARA-Z						-		Stratos PARA-Z			
<b>Performance</b>																		
Max. delivery head [m]	5			7			12			8		11		12				
Max. flow rate [m <sup>3</sup> /h]	3,2			4,5			1,4			8		4,5		10				
Speed range [rpm]	1200-3700			1200 - 4450			1200-4450			1400 - 3900		1400 - 4850		1400-4800				
<b>Permitted field of application</b>																		
Temperature range for use in heating, ventilation and A/C systems																		
at max. ambient temperature +25 °C [°C]	-10 to +95						-10 to +110						-10 to +110		-10 to +110			
at max. ambient temperature +40 °C [°C]	-10 to +95						-10 to +90						-10 to +90		-10 to +90			
at max. ambient temperature +50 °C [°C]	-10 to +15						-10 to +15						-10 to +15		-10 to +15			
Temperature range for use in drinking-water circulation systems	-						-						-		-			
at max. ambient temperature +40 °C [°C]	-						-						-		-			
Max. permitted total hardness in drinking-water circulation systems [°d]	-						-						-		-			
Standard version for operating pressure p <sub>max</sub> [bar]	6						6/10						6/10		6/10			
Special version for operating pressure p <sub>max</sub> [bar]	-						-						-		-			
<b>Pipe connections</b>																		
Screwed connection Rp	1/2	3/4	1	1 1/4	1/2	3/4	1	1 1/4	1/2	3/4	1	1 1/4	1	1 1/4	1	1 1/4		
Nominal connection diameter DN	15	20	25	30	15	20	25	30	15	20	25	30	25	30	25	30		
<b>Electrical connection</b>																		
Mains connection 1 ~ [V], standard version	230						230						230		230			
Mains frequency [Hz]	50/60						50/60						50/60		50/60			
<b>Motor/electronics</b>																		
Starting current, [A]	< 20A for 8ms						<= 30A for 10 ms						15-20 A for 10ms		15-20 A for 10ms			
Standby-Power consumption, W	1,44						1,44						1,44		1,44			
Electromagnetic compatibility	EN 61800 - 3						EN 61800 - 3						EN 61800 - 3		EN 61800 - 3			
Emitted interference	EN 61000-6-3						EN 61000-6-3						EN 61000-6-3		EN 61000-6-3			
Immunity to interference	EN 61000-6-2						EN 61000-6-2						EN 61000-6-2		EN 61000-6-2			
Power electronics	Frequency converter						Frequency converter						Frequency converter		Frequency converter			
Protection class	IP44						IP44						IP 44		IP 44			
Insulation class	H						H						H		H			
<b>Materials</b>																		
Pump housing	Gray cast iron (EN GJL 200)						Gray cast iron (EN GJL 200)						Gray cast iron (EN GJL 200)		Gray cast iron (EN GJL 200)			
Impeller	Noryl 1630 V (PPE/PS)						plastic (PPS-40%GF)		Plastic (PPE)		glass fiber reinforced PPS							
Shaft	Stainless steel (X46 Cr13)						Stainless steel (X46 Cr13)						Stainless steel (X46 Cr13)		Stainless steel (X46 Cr13)			
Bearing	Metal- impregnated carbon						Metal- impregnated carbon						Metal- impregnated carbon		Metal- impregnated carbon			
<b>Minimum suction head at suction branch [m]</b> for avoiding cavitation at water delivery temperature																		
50 °C	3			3			3			3		3		3				
95 °C	10			10			10			10		10		10				
110 °C	-			-			-			16		16		16				

- = available
- = not available
- \* = information at deadline was not available

**Duty Graph (n = max.)**



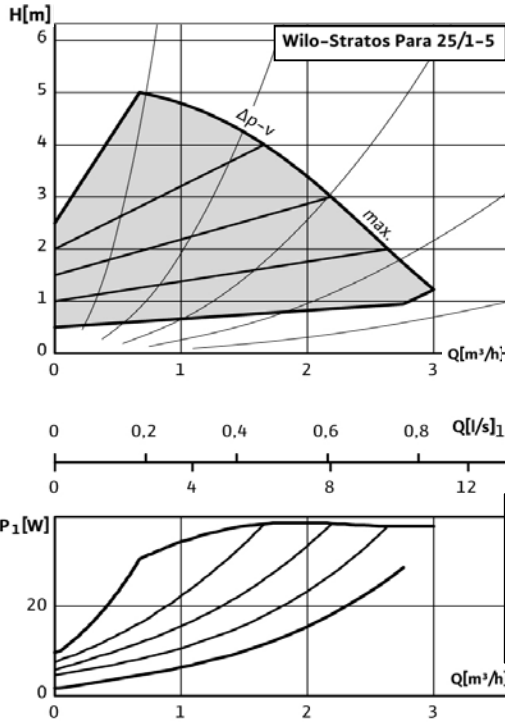
**Motor Data**

	Rated power	Speed	Power consumpt.	Current at 1~230V	Motor protection
	P2	n	P1	I	-
	[W]	[1/min]	[W]	[A]	-
Stratos PARA 15/1-5 Stratos PARA 20/1-5 Stratos PARA 25/1-5 Stratos PARA 30/1-5	25	1200 - 3700	4-38	0,06-0,33	integrated
Stratos PARA 15/1-7 Stratos PARA 20/1-7 Stratos PARA 25/1-7 Stratos PARA 30/1-7	50	1200 - 4450	5-70	0,06- 0,58	integrated
Stratos PARA 15/1-11,5 Stratos PARA 20/1-11,5	50	1200 - 4450	4,5-72	0,1-0,69	integrated
Stratos PARA 25/1-8 Stratos PARA 30/1-8	100	1400 - 3900	8 - 140	0,09 - 1,30	integrated
Stratos PARA 25/1-11 Stratos PARA 30/1-11	105	1400 - 4850	7 - 140	0,06 - 1,20	integrated
Stratos PARA 25/1-12 Stratos PARA 30/1-12	200	1400 - 4800	16-310	0,16-1,37	integrated

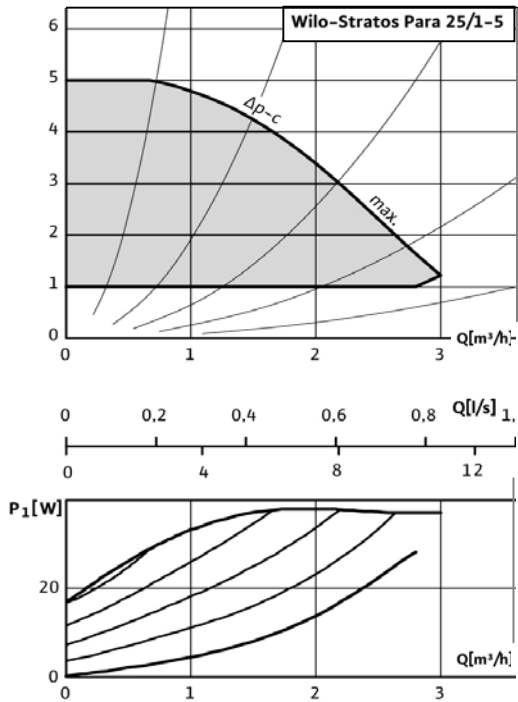
**Duty Graph**

**WILO-Stratos PARA 15(20)(25)(30)/1-5**

$\Delta p$ -constant

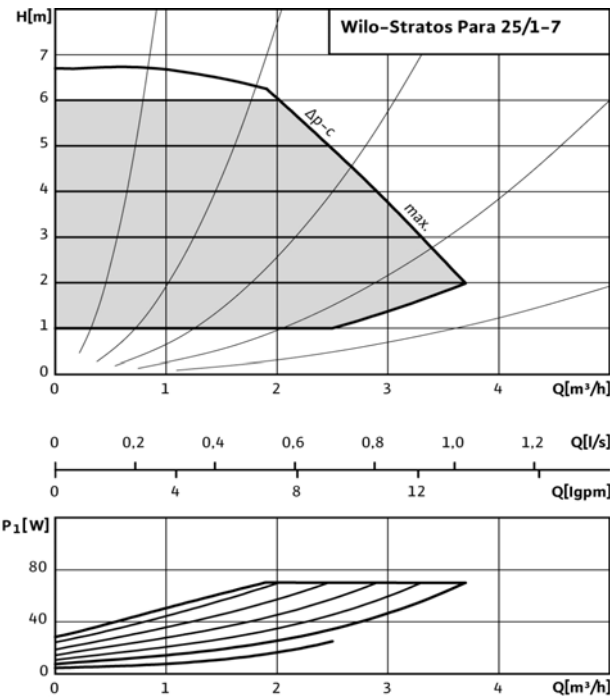


$\Delta p$ -variable

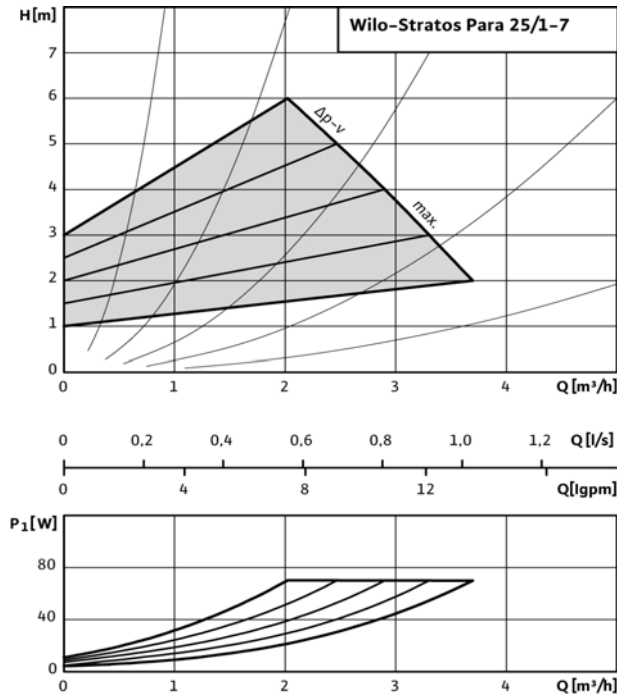


**WILO-Stratos PARA 15(20)(25)(30)/1-7**

$\Delta p$ -constant



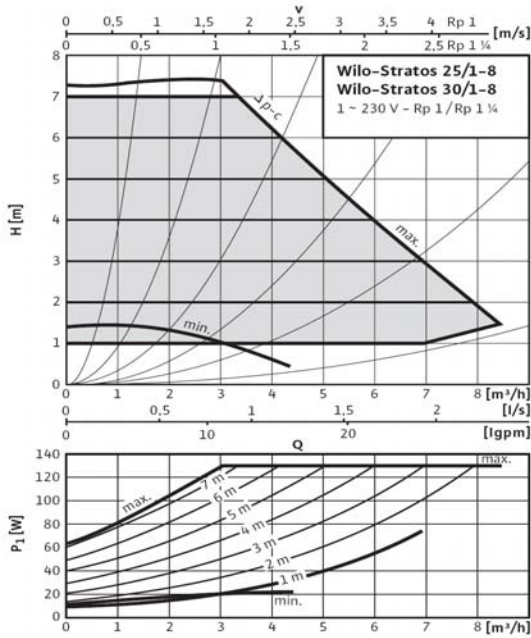
$\Delta p$ -variable



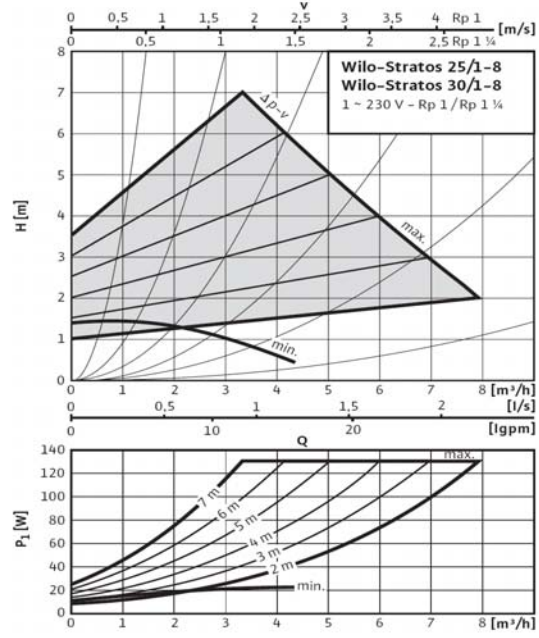
**Duty Graph**

**WILO-Stratos PARA 25(30)/1-8**

$\Delta p$ -constant

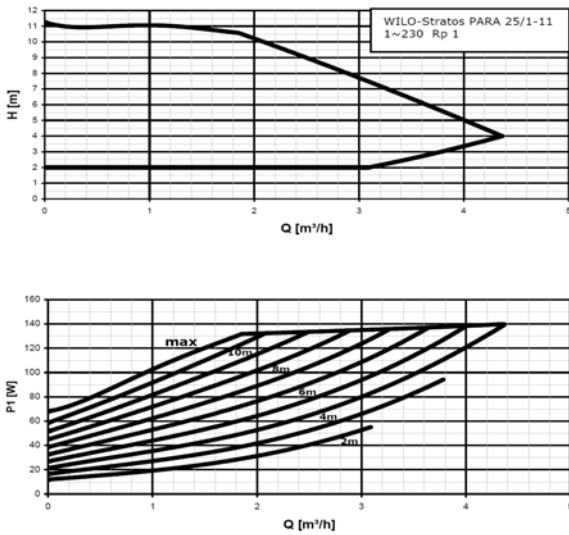


$\Delta p$ -variable

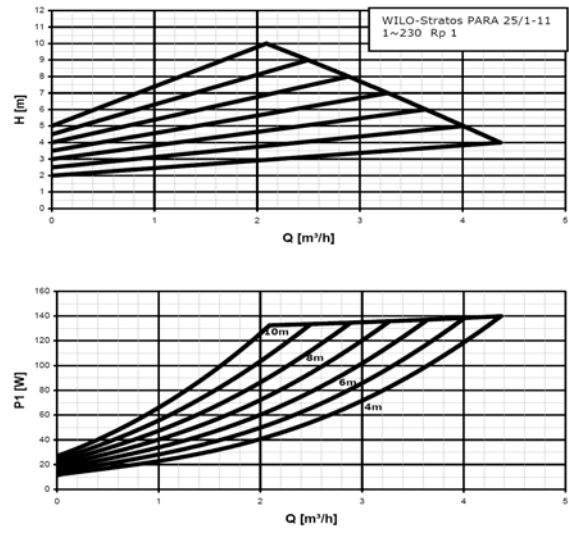


**WILO-Stratos PARA 25(30)/1-11**

$\Delta p$ -c (constant)



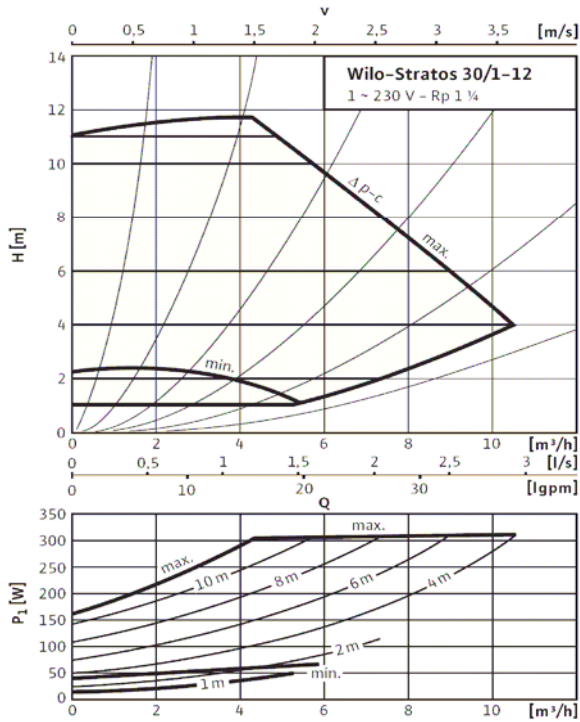
$\Delta p$ -v (variable)



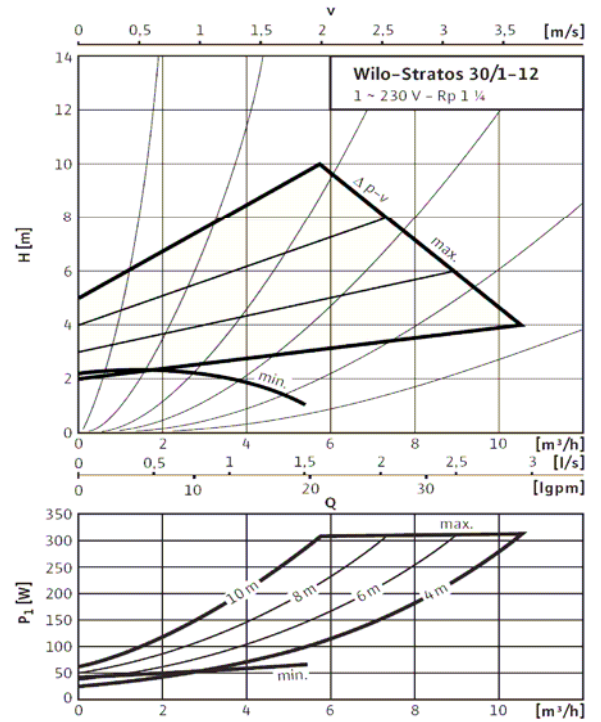
**Duty Graph**

**WILO-Stratos PARA 25(30)/1-12**

$\Delta p-c$  (constant)



$\Delta p-v$  (variable)



## Electrical Connection

### Pin assignment

- Connector is encoded!
- 3-lead cable for 230V/50Hz AC power supply, earth connected
- 4-lead cable for 0-10V and SSM
- 2-lead cable for PWM

### 1. Power supply:

Black/brown: L1, 230V/AC 50Hz  
 Blue: Neutral N  
 Green/yellow: Protective earth

### 2. Control cable for 0-10V and SSM:

Lead No 1 (brown): 0-10V GND  
 Lead No 2 (white): 0-10V Signal-characteristic below  
 Lead No 3 (blue): SSM contact (NC)  
 Lead No 4 (black): SSM contact (NC)

### 3. Control cable for PWM:

Lead No 1 (brown): PWM GND  
 Lead No 2 (white): PWM Signal-characteristic below



- The following minimum requirements are to be met if a shutdown takes place by means of an onsite network relay: **nominal current  $\geq 10$  A, nominal voltage 250 VAC.**
- Leakage current per pump  $I_{eff} \leq 3,5$  mA (as per EN 60335)

## Possible combination of the functions and equipment:

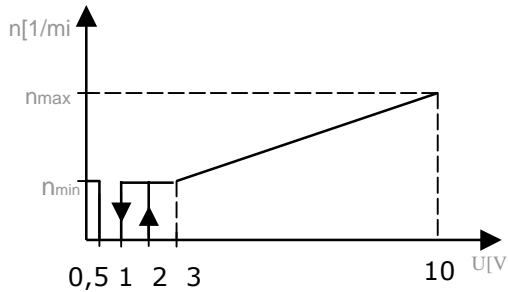
Type of pump	Stratos PARA P2=25-200 W			Stratos PARA P2<= 50W; 200 W		Stratos PARA P2=25-50 W					
	1	2	3	4	5	6	7	8	9	10	11
<b>Combination N°</b>											
<b>Operating modes</b>											
Control mode (n = constant)	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
$\Delta p$ -c for constant differential pressure	✓	✓	✓	✓	✓						
$\Delta p$ -v for variable differential pressure	✓	✓	✓	✓	✓						
<b>External control functions</b>											
Control input "Analog In 0 ... 10 V" with cable brake function	✓			✓		✓	✓				
Control input "Analog In 0 ... 10 V" without cable brake function		✓			✓			✓	✓		
Control input PWM 1										✓	
Control input PWM 2											✓
<b>Signal and display functions</b>											
Collective fault signal SSM (floating NC contact)	✓	✓				✓		✓			
Individual run signal SBM (floating NO contact)				✓	✓		✓		✓		
<b>Equipment</b>											
Control Element "red Button"	✓	✓	✓	✓	✓						
Power cable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
4-lead cable for 0-10V and SSM/SBM	✓	✓		✓	✓	✓	✓	✓	✓		
2-lead cable for PWM										✓	✓



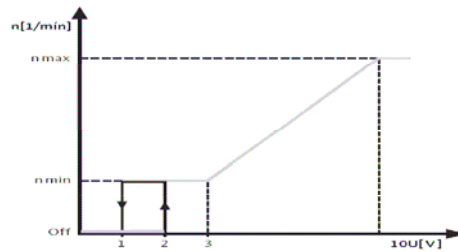


**External control functions**

**0-10 V characteristic with cable brake function**



**0-10 V characteristic without cable brake function**

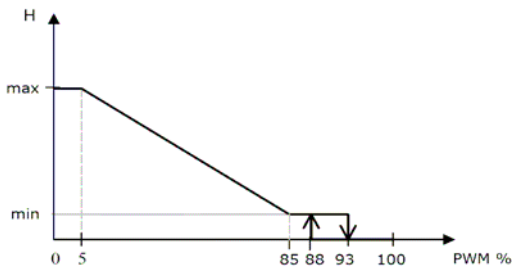


- input voltage < 1V: the pump stops
- input voltage 1V < U < 3V (running): the pump runs at min. speed
- input voltage 2V < U < 3V (starting): the pump runs at min. speed
- input voltage 3V < U < 10V: speed variation between n min and n max (linear)
- input voltage < 0,5V: cable break detected, emergency mode, the pump runs at min. speed

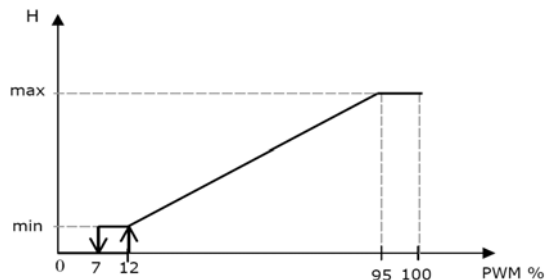
**PWM**

Signal frequency: 100 Hz-5000 Hz (1000 Hz nominal)  
Signal amplitude: 5V-15V (minimum current 5mA)  
Signal polarity: both

**PWM 1**



**PWM 2**



**Start-Up Time**

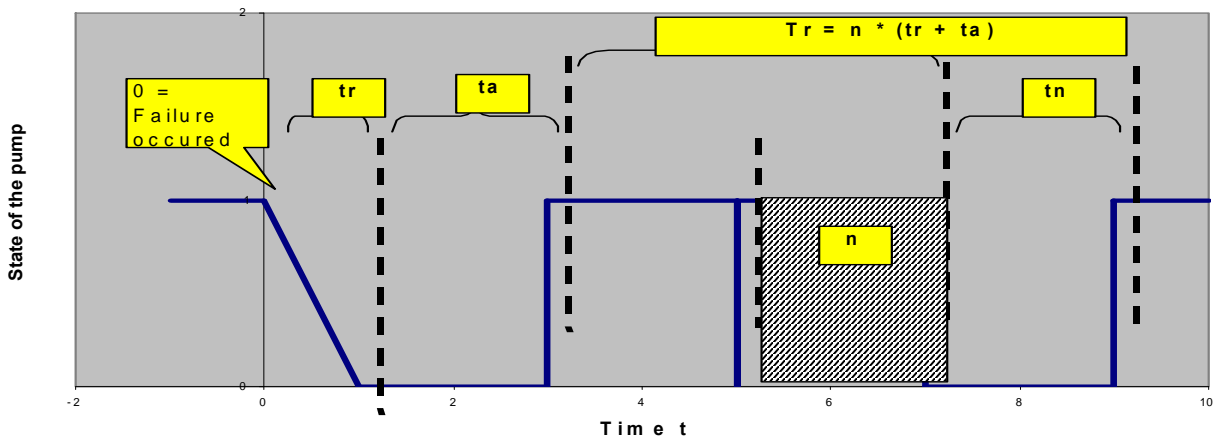
	Wilco-Stratos PARA					
	15/1-5 20/1-5 25/1-5 30/1-5	15/1-7 20/1-7 25/1-7 30/1-7	15/1-11,5 20/1-11,5	25/1-8 30/1-8	25/1-11 30/1-11	25/1-12 30/1-12
<b>Start-Up time : Power ON [sek]</b>						
0 to Min_Rpm	7	7	*	7	8	10
0 to Max_Rpm	7	7	*	7	8	10
Min_Rpm to Max_Rpm	3	4	*	2	3	5
Max_Rpm to Min_Rpm	3	4	*	5	6	*
<b>Start-Up time: Control input "Analog In 0 ... 10 V [sek]</b>						
0-10V ON : 0 to Max_Rpm	6	6	*	6	7	7
0-10V ON : 0 to Min_Rpm	1	1	*	2	3	*
<b>Start-Up time: Control input PWM, [sek] *</b>						

\* = information at deadline was not available

**Failure Matrix**

Failure	Reaction time, tr	Delay, ta	Allowed number of failures, n	Auto-reset	SSM	SBM	Comment
line undervoltage	≤20ms	≤20ms	unlimited	yes	open	closed	Off: 165V AC / On: 195V AC
line overvoltage	≤20ms	≤20ms	unlimited	yes	open	closed	Off: 265V AC / On: 245V AC
blocked pump	≤10s	30s	5	no	open	closed	
lost of sync	£10s	5s	25	no	open	closed	
overload motor	60s	30s	5	no	open	closed	
short circuit	< 6µs	30s	5	no	open	closed	I = 3 A DC
contact failure, winding failure	<10s	30s	5	no	open	closed	
Dry running	<60s	30s	5	no	open	closed	
overtemp. modul	<1s	30s	5	no	open	closed	
Cable break on extern 0-10V	<1s	<1s	unlimited	no	open	closed	Pump runs at minimum speed

Definition of the reaction time



Reaction time (tr) -

time until failure is detected

Delay (ta) -

time until pump restarts

Auto reset -

yes-> number of allowed errors has no limit ->  
-> software restarts pump after delay

no -> number if allowed erros is limited ->

-> interruption of mains is necessary to restart pump

Allowed failures -

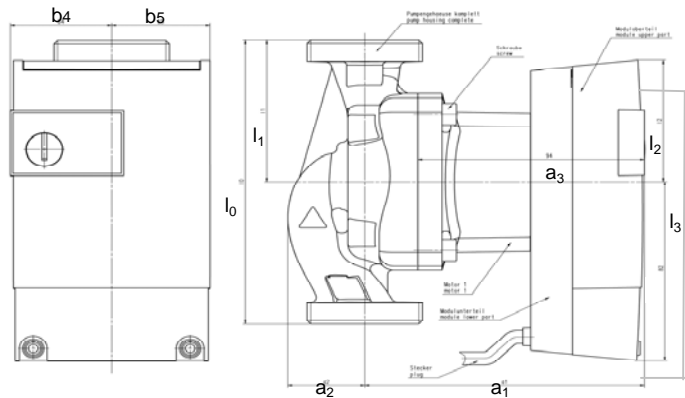
In case of limited allowed failures error counter will be reset, if no failure occurs within 2 minutes (tn).

Otherwise after the maximum allowed errors is reached, the mains has to be interrupted to restart the pump.

**Failure Handling**

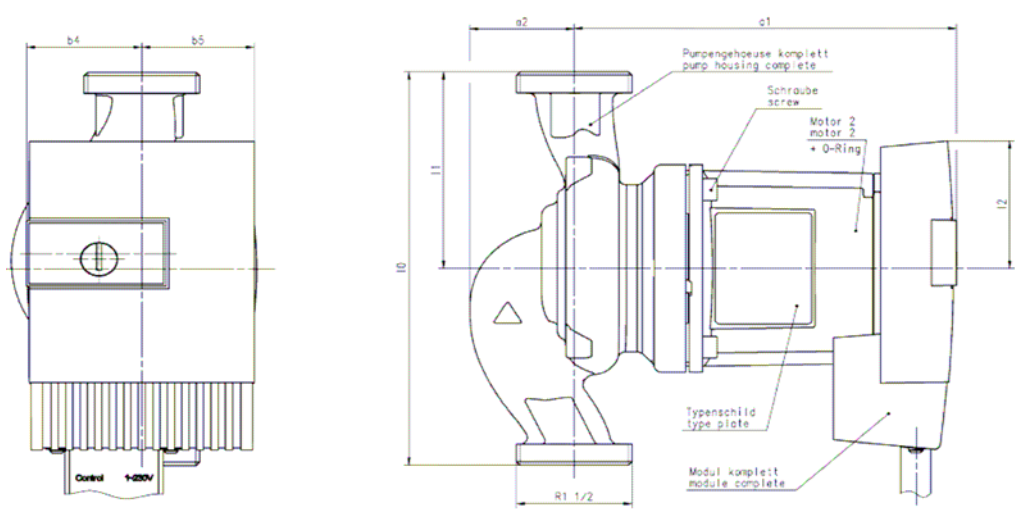
Failure	Handling	Description
Dry-Run	Motor restarts after delay. After 5 unsuccessful starts, motor will be switched off permanently	After a certain time limit under dry-run condition the motor will be switched off. After a delay of 30s it restarts. If no dry-run occurs within the next 2 minutes the internal failure counter will be reset. Otherwise the motor will be switched off permanently after 5 unsuccessful starts. This state can only be reset by turning mains supply off for longer than 30 seconds.  SSM-Relais is active as long as the internal failure counter is not zero
Overload	Motor restarts after delay. After 5 unsuccessful starts, motor will be switched off permanently	If power consumption of motor exceeds the limit for longer than 60 seconds, failure „overload“ will be set. Motor is stopped then and will be started again after a delay of 30 seconds. If no overload occurs within the next 2 minutes the internal failure counter will be reset. Otherwise the motor will be switched off permanently after 5 unsuccessful starts. This state can only be reset by turning mains supply of for longer than 30 seconds.  SSM-Relais is active as long as the internal failure counter is not zero
Mains over-/under voltage	Turn off motor, restart motor	In case of mains under-/over-voltage the motor is switched off. It restarts automatically when mains voltage is within valid limits.  SSM-Relais is active
Blocked motor	Motor restarts after delay. After 5 unsuccessful starts, motor will be switched off permanently	If motor is blocked a maximum of three restarts at intervals of 15 seconds will be done. If the motor is still blocked the motor will be switched off permanently. This state can only be reset by turning mains supply off for longer than 30 seconds. The de-blocking routine is done with every start.  SSM-Relais is active as long as the internal failure counter is not zero
Short circuit	Motor restarts after delay. After 5 unsuccessful starts, motor will be switched off permanently	After a short circuit event the motor will be switched off. After a delay of 30s it restarts. The motor will be switched off permanently after 5 short circuit events. This state can only be reset by turning mains supply of for longer than 30 seconds.  SSM-Relais is active as long as the internal failure counter is not zero
Loss of contact	Motor restarts after delay. After 5 unsuccessful starts, motor will be switched off permanently	After a loss of contact between motor and module the motor will be switched off. After a delay of 30s it restarts. The motor will be switched off permanently after 5 events. This state can only be reset by turning mains supply of for longer than 30 seconds.  SSM-Relais is active as long as the internal failure counter is not zero
Loss of synchronism	Motor restarts after delay. After 25(!) unsuccessful starts, motor will be switched off permanently	After a loss of synchronism the motor will be switched off. After a delay of 5 seconds it restarts. The motor will be switched off permanently after 25(!) events. This state can only be reset by turning mains supply of for longer than 30 seconds.  SSM-Relais is active as long as the internal failure counter is not zero  SSM- Relais aktiv

**Dimensions, weights/ Stratos PARA 30-50 W**



	Pipe connection	Thread	Pump dimensions									Weight approx.
	Rp	G	l <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>	a <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	l <sub>3</sub>	b <sub>4</sub>	b <sub>5</sub>	PN 6/10
	[mm]											[kg]
<b>Stratos PARA 30/1-5</b> <b>Stratos PARA 30/1-7</b>	1 1/4	2	<b>130</b>	<b>116</b>	<b>32</b>	<b>95</b>	<b>65</b>	<b>56</b>	<b>138</b>	42	41	<b>2,4</b>
180			116	32	94	90	56	138	<b>2,4</b>			
<b>Stratos PARA 25/1-5</b> <b>Stratos PARA 25/1-7</b>	1	1 1/2	<b>130</b>	<b>116</b>	<b>32</b>	<b>94</b>	<b>65</b>	<b>56</b>	<b>138</b>	42	41	<b>2,4</b>
180			116	32	94	90	56	138	<b>2,4</b>			
<b>Stratos PARA 20/1-5</b> <b>Stratos PARA 20/1-7</b>	3/4	1 1/4	130	116	32	94	65	56	138	42	41	<b>2,4</b>
116				32	94	90	56	138	<b>2,4</b>			
<b>Stratos PARA 15/1-5</b> <b>Stratos PARA 15/1-7</b>	1/2	1	130	116	32	94	65	56	138	42	41	<b>2,4</b>
116				32	94	65	56	138	<b>2,4</b>			
<b>Stratos PARA 20/1-11,5</b>	3/4	1 1/4	130	113	33	94	65	56	138	42	41	*
<b>Stratos PARA 15/1-11,5</b>	1/2	1		113	33	94	65	56	138			*

**Dimensions, weights/ Stratos PARA 100-200 W**



	Pipe connection	Thread	Pump dimensions									Weight approx.
	Rp	G	l <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>	l <sub>1</sub>	l <sub>2</sub>	b <sub>1</sub>	b <sub>2</sub>	b <sub>4</sub>	b <sub>5</sub>	PN 6/10
	[mm]											[kg]
<b>Stratos PARA 25/1-8</b> <b>Stratos PARA 25/1-11</b> <b>Stratos PARA 25/1-12</b>	1	1 1/2	180	158	43	90	58,4	54	47,5	47,7	46,5	3,7
150				33,8	90	58,4	48	47,5	47,7	46,5	3,3	
189				50	90	79	54	61	58	57	5,5	
<b>Stratos PARA 30/1-8</b> <b>Stratos PARA 30/1-11</b> <b>Stratos PARA 30/1-12</b>	1 1/4	2	180	158	43	90	58,4	54	47,5	47,7	46,5	3,7
150				33,8	90	58,4	48	47,5	47,7	46,5	3,3	
189				50	90	79	54	61	58	57	5,5	

\* = information at deadline was not available