High-Efficiency pumps for OEM-Industry

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

25-50W

100W

200W

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						
	Wilo-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
Operating modes						
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)
Manual functions						
Adjustment of operating mode	•	•	•	•	•	•
Adjustment of differential-pressure setpoint	•	•	•	•	•	•
Automatic functions						
Stepless performance adaptation as a function of operating mode	•	•	•	•	•	•
Deblocking function	•	•	•	•	•	•
Soft start	•	•	•	•	•	•
Full motor protection with integrated trip electronics	•	•	•	•	•	•
External control functions						
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	•	•	•	–	–	–
Signal and display functions						
Collective fault signal SSM (floating normally closed contact)	•	•	•	•	•	•
Individual run signal SBM (floating normally opened contact)	A	A	A	–	–	A
Equipment/scope of delivery						
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. ClimaForm for Cooling	A	A	A	A	A	A

• = available

– = not available

o = optional

A = on request

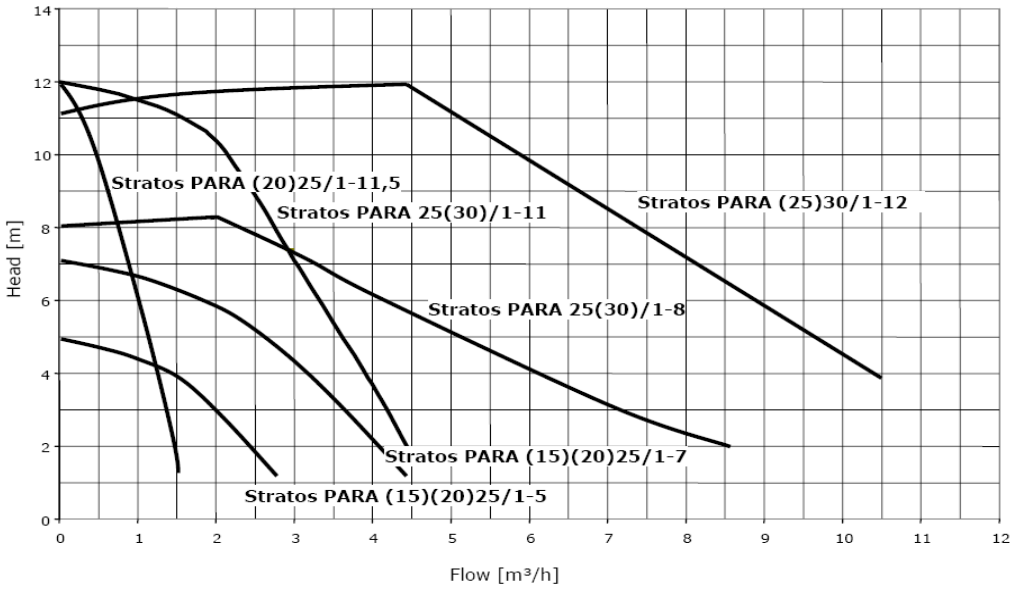
Technical Data																
	Wilo-Stratos PARA															
	15/1-5 20/1-5 25/1-5 30/1-5				15/1-7 20/1-7 25/1-7 30/1-7				15/1-11,5 20/1-11,5		25/1-8 30/1-8		25/1-11 30/1-11		25/1-12 30/1-12	
Heating water (as per VDI 2035)	•				•				•		•		•		•	
Water/glycol mixtures (max. 1:1; mixtures with more 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
Performance																
Max. delivery head [m]	5				7				12		8		11		12	
Max. flow rate [m3/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	
Permitted field of application																
Temperature range for use in heating, ventilation and A/C systems at max. ambient temperature +25 °C [°C] at max. ambient temperature +40 °C [°C] at max. ambient temperature +50 °C [°C]	-10 to +95 -10 to +95 -10 to +15										-10 to +110 -10 to +90 -10 to +15				-10 to +110 -10 to +90 -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 pmax [bar]	6										6/10				6/10	
Special version for operating pressure pmax [bar]	–										–				–	
Pipe connections																
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
Electrical connection																
Mains connection 1 ~ [V], standard version	230										230				230	
Mains frequency [Hz]	50/60										50/60				50/60	
Motor/electronics																
Starting current, [A]	< 20A for 8ms										<= 30A for 10 ms				15-20 A for 10ms	
Standby-Power consuption, W	1,44										1,44				1,44	
Electromagnetic compatibility	EN 61800 - 3										EN 61800 - 3				EN 61800 - 3	
Emitted interference	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	
Power electronics	Frequency converter										Frequency converter				Frequency converter	
Protection class	IP44										IP44				IP 44	
Insulation class	H										H				H	
Materials																
Pump housing	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)	
Bearing	Metal- impregnated carbon										Metal- impregnated carbon				Metal- impregnated carbon	
Minimum suction head at suction branch [m] for avoiding cavitation at water delivery temperature																
50 °C	3				3				3		3				3	
95 °C	10				10				10		10				10	
110 °C	-				-				-		16				16	

• = available

– = not available

* = infotmation at deadline was not availible

Duty Graph (n = max.)



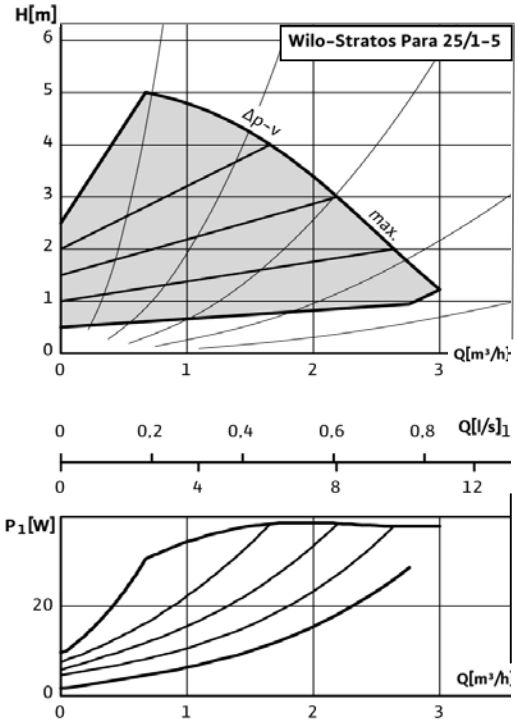
Motor Data

	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

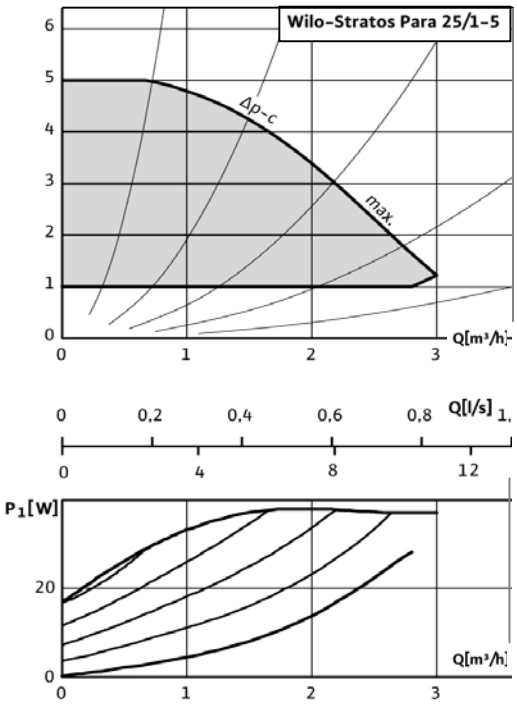
Duty Graph

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

Δp-constant

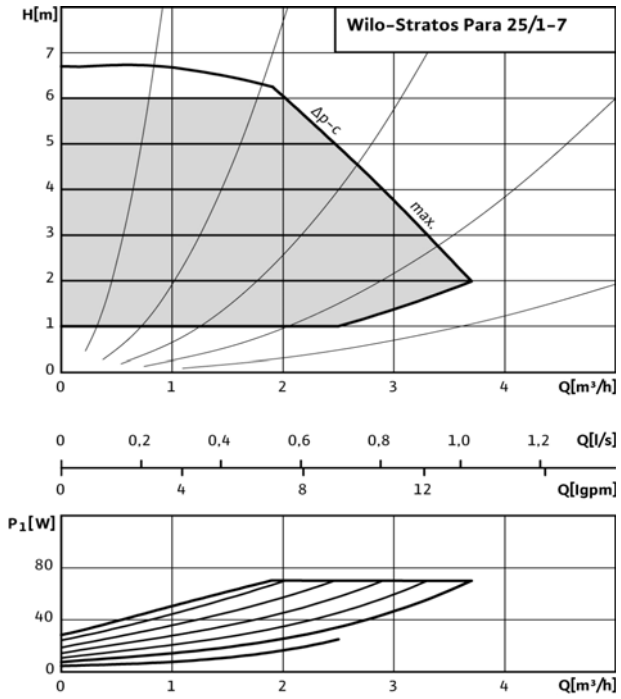


Δp-variable

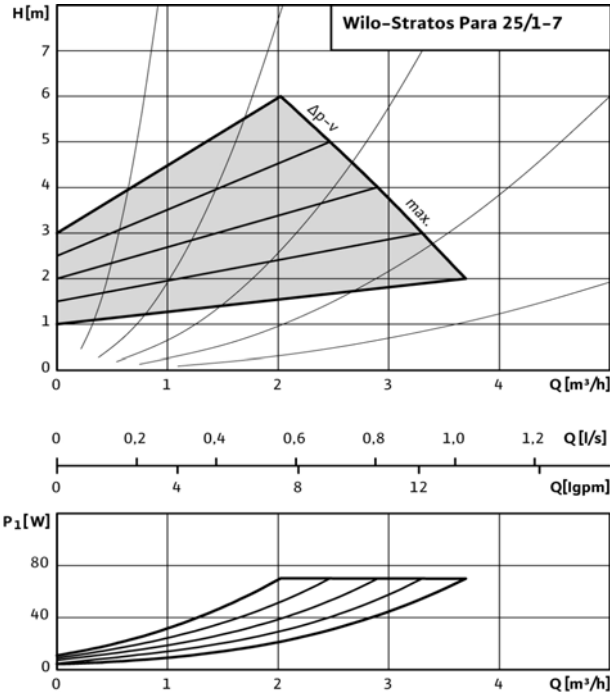


WILO-Stratos PARA 15(20)(25)(30)/1-7

Δp-constant



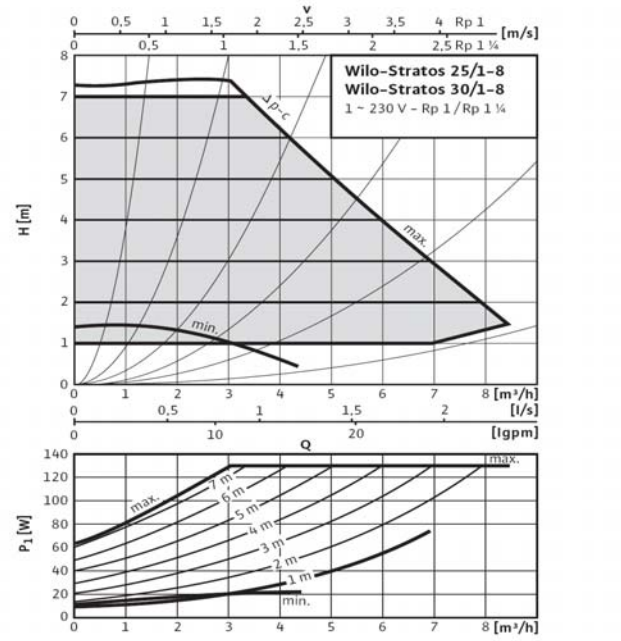
Δp-variable



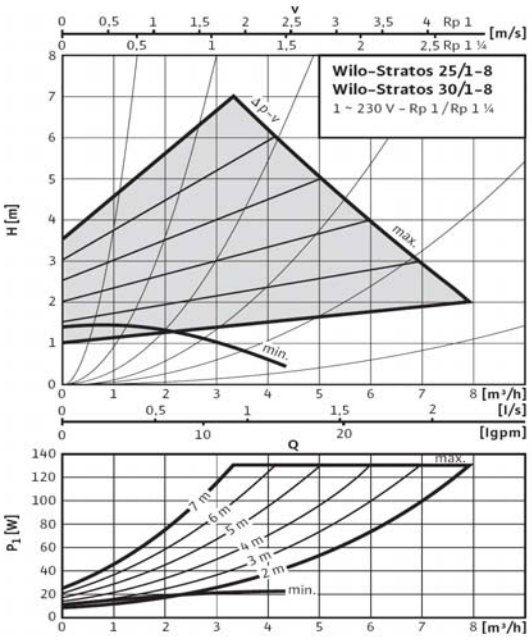
Duty Graph

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

Δp-constant

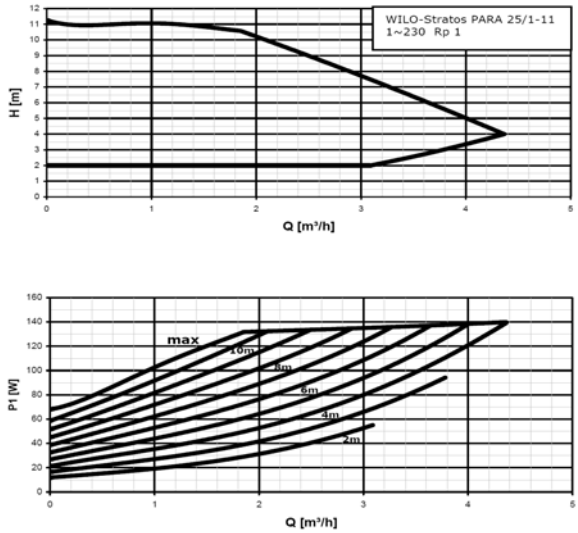


Δp-variable

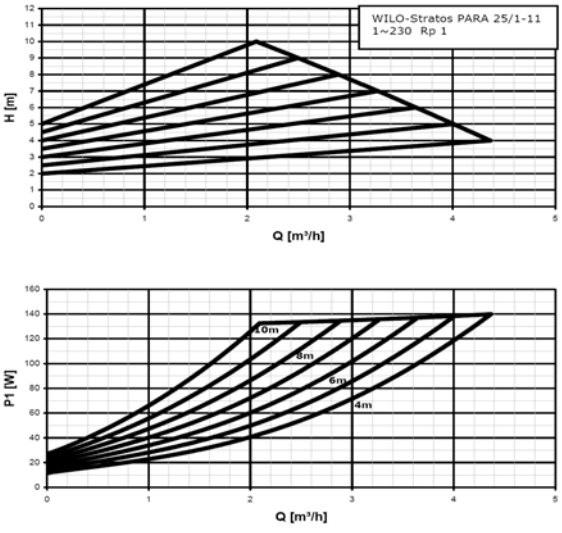


WILO-Stratos PARA 25(30)/1-11

Δp-c (constant)



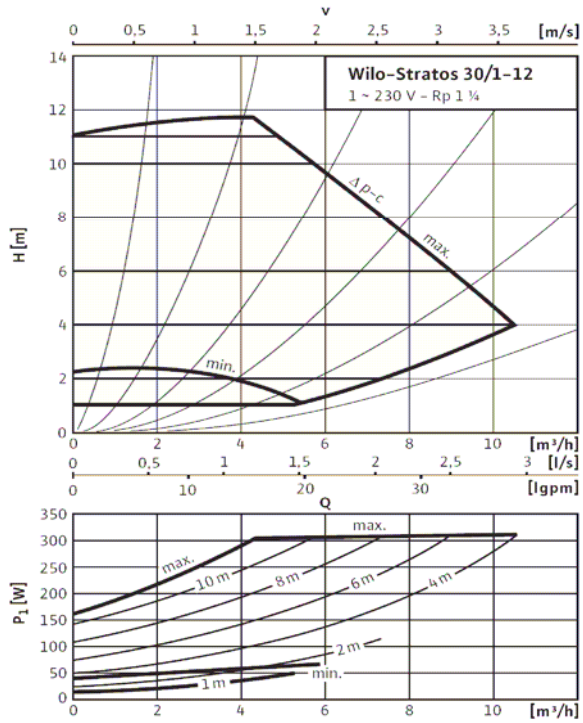
Δp-v (variable)



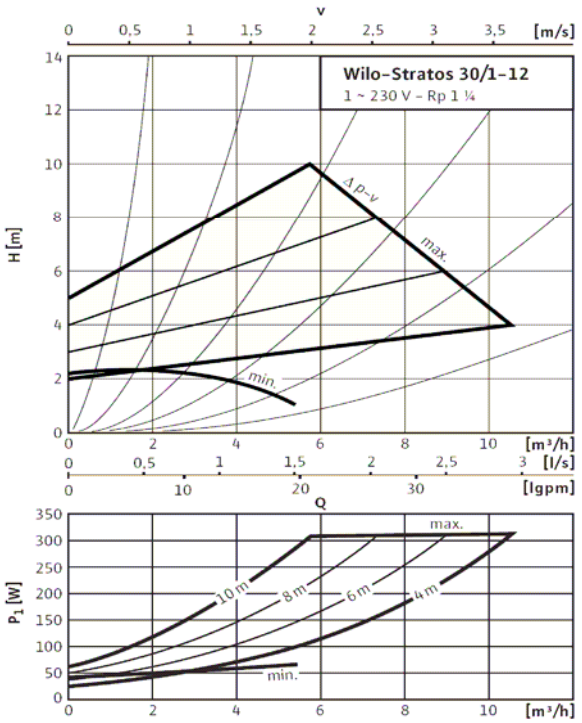
Duty Graph

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

Δp-c (constant)



Δp-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

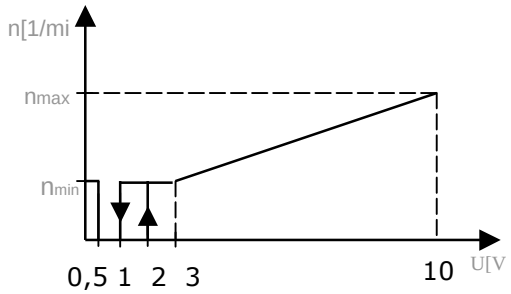
- The following minimum requirements are to be met if a shutdown takes place by means of an onsite network relay: **nominal current ≧10 A, nominal voltage 250 VAC.**
- Leakage current per pump I_{eff} <=3,5 mA (as per EN 60335)

Possible combination of the functions and equipment:

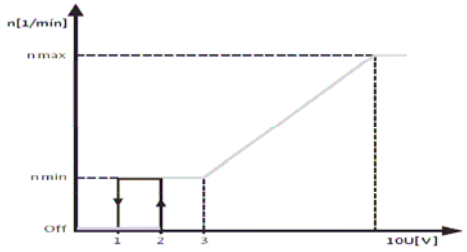
Type of pump	**Stratos PARA P2=25-200 W**			**Stratos PARA P2<= 50W; 200 W**		**Stratos PARA P2=25-50 W**					
Combination N°	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Operating modes											
Control mode (n = constant)	√	√		√	√	√	√	√	√	√	√
Δp-c for constant differential pressure	√	√	√	√	√						
Δp-v for variable differential pressure	√	√	√	√	√						
External control functions											
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											√
Signal and display functions											
Collective fault signal SSM (floating NC contact)	√	√				√		√			
Individual run signal SBM (floating NO contact)				√	√		√		√		
Equipment											
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

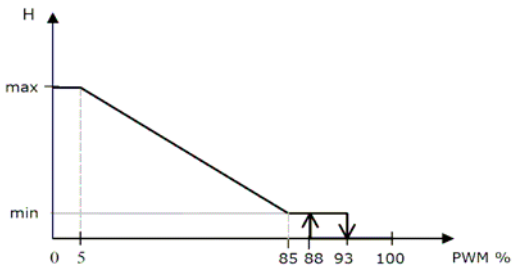


- input voltage < 1V: the pump stops
- input voltage 1V<U<3V (running): the pump runs at min. speed
- input voltage 2V<U<3V (starting): the pump runs at min. speed
- input voltage 3V<U<10V: speed variation between n min and n max (linear)
- *input voltage <0,5V: cable break detected, emergency mode,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

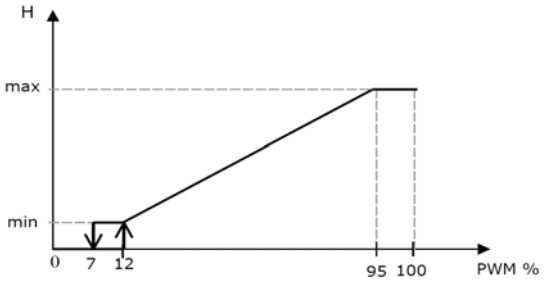
PWM

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

PWM 1



PWM 2



Start-Up Time

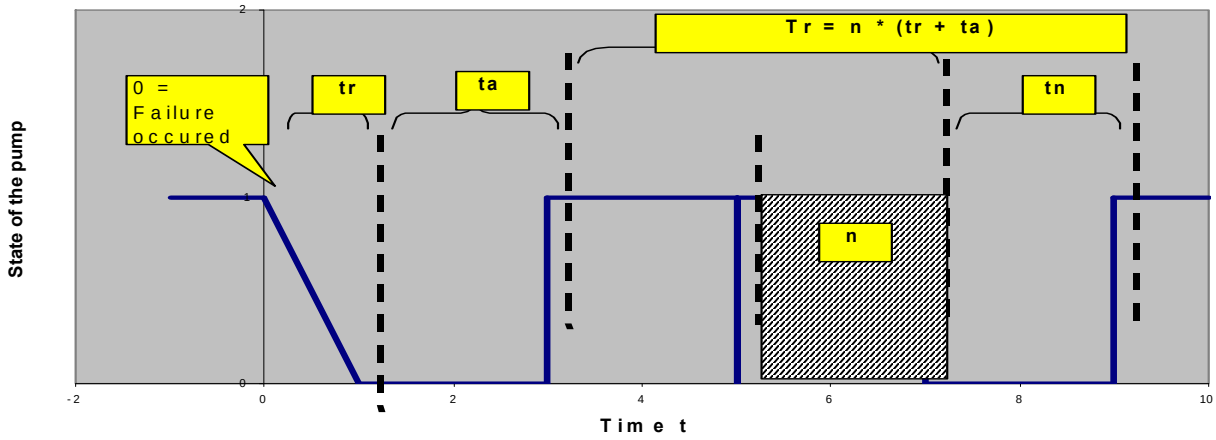
	Wilo-Stratos PARA					
	15/1-5 20/1-5 25/1-5 30/1-5	**15/1-7 20/1-7 25/1-7 30/1-7**	**15/1-11,5 20/1-11,5**	**25/1-8 30/1-8**	**25/1-11 30/1-11**	**25/1-12 30/1-12**
Start-Up time : Power ON [sek]						
0 to Min_Rpm	7	7	*	7	8	10
0 to Max_Rpm	7	7	*	7	8	10
Min_Rpm to Max_Rpm	3	4	*	2	3	5
Max_Rpm to Min_Rpm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

* = infotmation at deadline was not availible

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

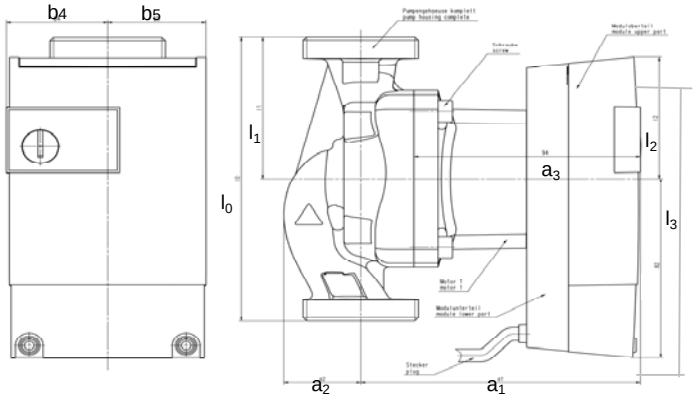
no -> number if allowed erros is limited ->
-> interruption of mains is necessary to restart pump

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

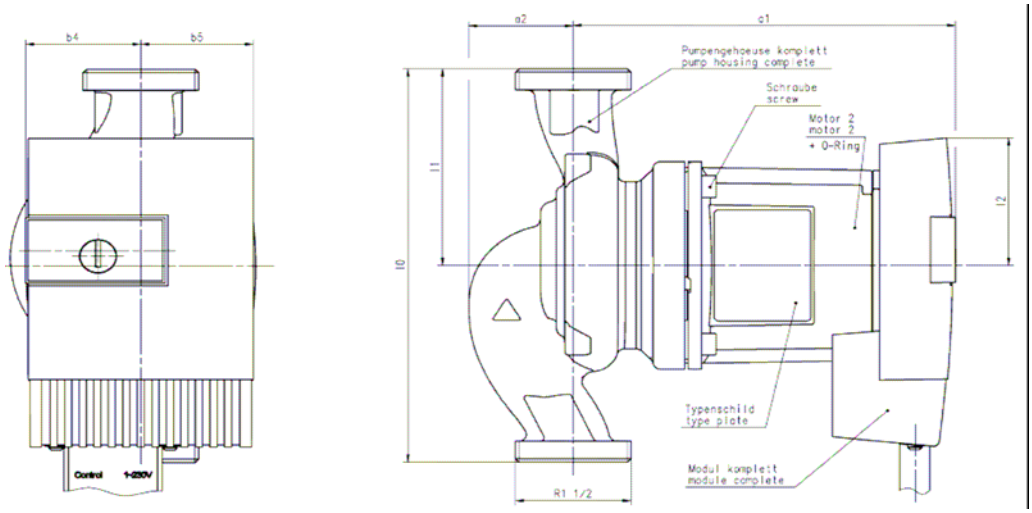
Failure	Handling	Description
Dry-Run	Motor restarts after delay. After 5 unsuccessful starts, motor will be switched off permanently	After a certain time limit under dry-run condition the motor will be switched off. After a delay of 30s it restarts. If no dry-run occurs within the next 2 minutes the 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_0	a_1	a_2	a_2	l_1	l_2	l_3	b_4	b_5	PN 6/10
			[mm]									[kg]
Stratos PARA 30/1-5	1 1/4	2	**130**	**116**	**32**	**95**	**65**	**56**	**138**	**42**	**41**	**2,4**
Stratos PARA 30/1-7			180	116	32	94	90	56	138			**2,4**
Stratos PARA 25/1-5	**1**	**1 1/2**	**130**	**116**	**32**	**94**	**65**	**56**	**138**	**42**	**41**	**2,4**
Stratos PARA 25/1-7			180	116	32	94	90	56	138			**2,4**
Stratos PARA 20/1-5	3/4	1 1/4	130	116	32	94	65	56	138	42	41	**2,4**
Stratos PARA 20/1-7				116	32	94	90	56	138			**2,4**
Stratos PARA 15/1-5	1/2	1	130	116	32	94	65	56	138	42	41	**2,4**
Stratos PARA 15/1-7				116	32	94	65	56	138			**2,4**
Stratos PARA 20/1-11,5	3/4	1 1/4	130	113	33	94	65	56	138	42	41	*
Stratos PARA 15/1-11,5	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_0	a_1	a_2	l_1	l_2	b_1	b_2	b_4	b_5	PN 6/10
			[mm]									[kg]
Stratos PARA 25/1-8	1	1 1/2	180	158	43	90	58,4	54	47,5	47,7	46,5	3,7
Stratos PARA 25/1-11				150	33,8	90	58,4	48	47,5	47,7	46,5	3,3
Stratos PARA 25/1-12				189	50	90	79	54	61	58	57	5,5
Stratos PARA 30/1-8	1 1/4	2	180	158	43	90	58,4	54	47,5	47,7	46,5	3,7
Stratos PARA 30/1-11				150	33,8	90	58,4	48	47,5	47,7	46,5	3,3
Stratos PARA 30/1-12				189	50	90	79	54	61	58	57	5,5

* = infotmation at deadline was not availible