Pioneering for You

HVAC OEM Competence Centre

Para ST ** 8 / iPWM
Datasheet

Para ST ** 8/ iPWM

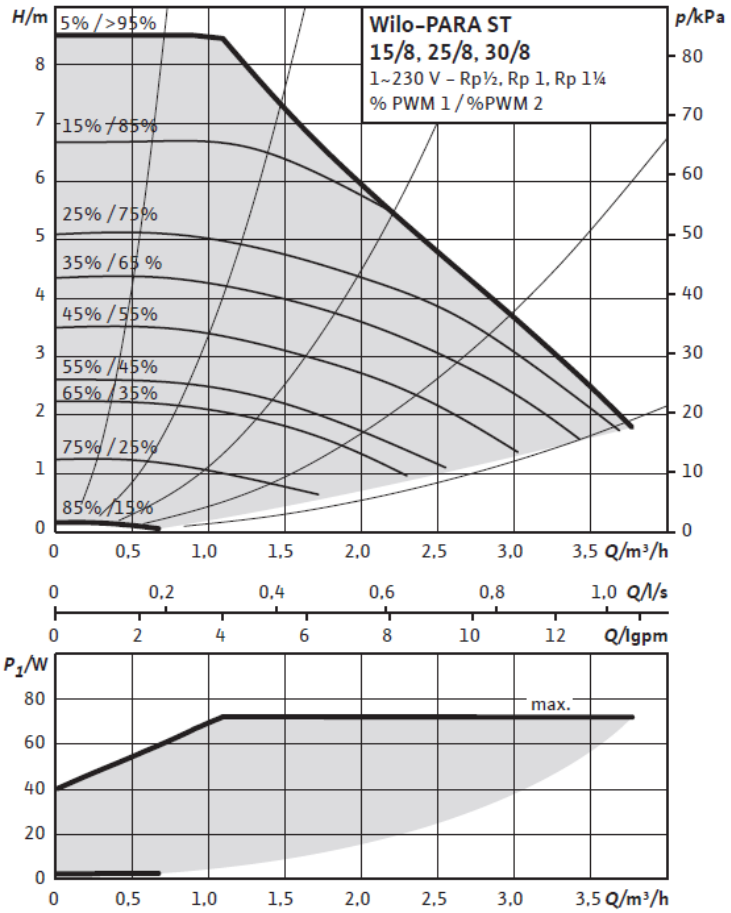
iPWM

Field of application

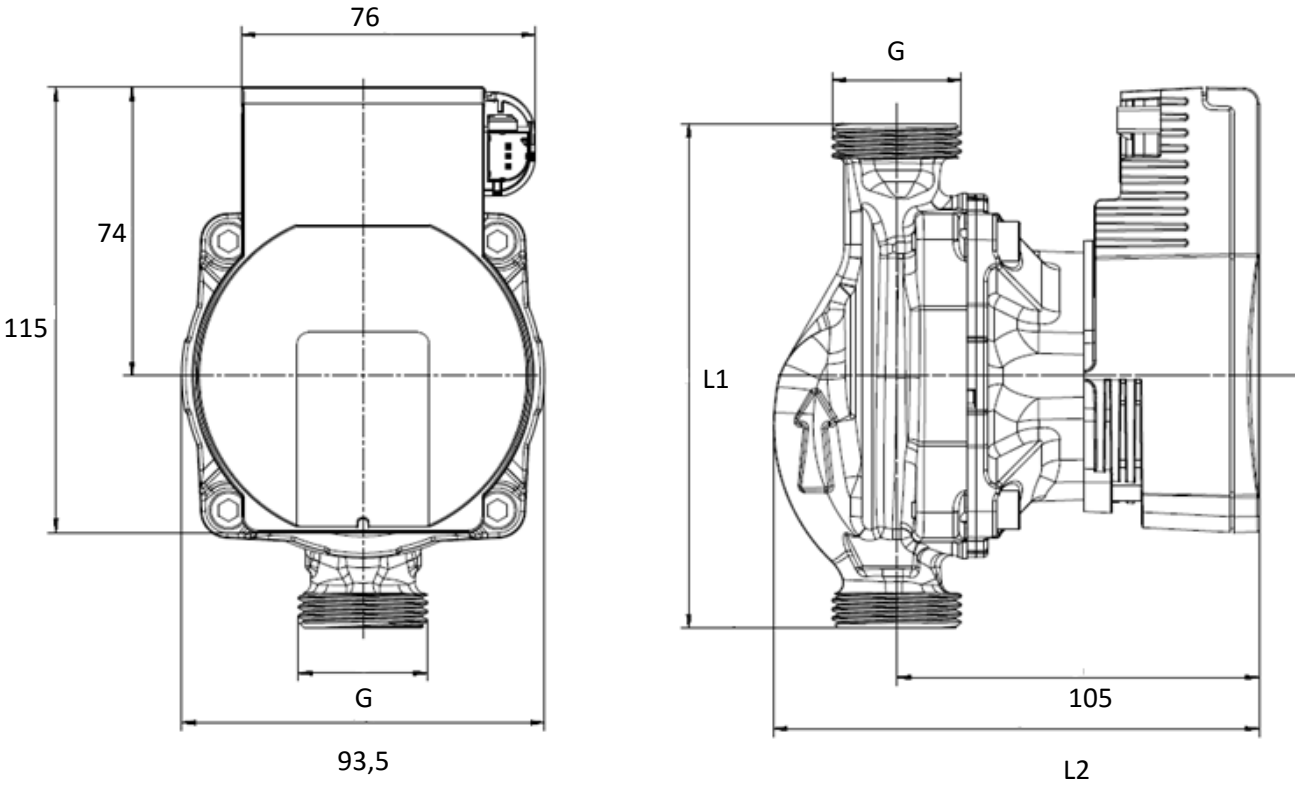
Solar thermal

Para ST 15-130 /8-75/ iPWM2-12	
WILO	High Efficiency pump for heating application
ST	Composite OEM pump housing
15	Threaded connection DN 15 (25,30: also available
130	Pump housing length 130 (180: also available)
8	8,4 = delivery head in [m] at Q = 0 m^3/h
75	Max power consumption
iPWM	The pump is controlled by an external signal PWM2, i=feedback signal
12	Control box orientation 12 o'clock (3, 6, 9 o'clock: also available)

Hydraulic operational area



Dimensions



Type	G	L1	L2	Weight
	mm	mm	mm	kg
15-130	1”	130	138	1,7
25-130	1”1/2	130	138	1,8
25-180	1”1/2	180	138	2
30-180	2”	180	138	2,1

Heating

Approved fluids (other fluids on request)	Heating water (in accordance with VDI 2035) Water-glycol mixtures (max. 1:1; above 20% admixture, the pumping data must be checked)

Power

Energy Efficiency Index (EEI)	≤ 0.21
Max. delivery head	8,4 m
Max. volume flow	4 m^3/h

Permitted field of application

Temperature range for applications in HVAC systems at max. ambient temperature. Limit values for continuous operation at maximum rated power	Of 58°C = 0 to 100°C Of 62°C = 0 to 90°C Of 66°C = 0 to 80°C Of 71°C = 0 to 70°C
Maximum static pressure	PN 10

Electrical connection

Mains connection	1~230 V +10%/-15%, 50/60 Hz (IEC 60038 standard voltage)

Motor/electronics

Low voltage directive	2014/95/EC Conform
Electromagnetic compatibility	EN 61800-3
Emitted interference	EN 61000-6-3 EN 61000-6-4
Interference resistance	EN 61000-6-2 EN 61000-6-1
Protection class	IPx4D
Insulation class	F
RoHS / REACH	Compliant but not submitted

Minimum suction head at suction port to avoid cavitation at water pumping temperature

Minimum suction head at 50/95°C	0.5/4.5 m

Motor data

Para	Speed	Power consumption 1~230 V	Current at 1~230 V	Motor protection
	n	P1	I	-
	rpm	W	A	-
ST **/8 iPWM2	500 - 4800	2-75	0.03-0.38	Integrated

Materials

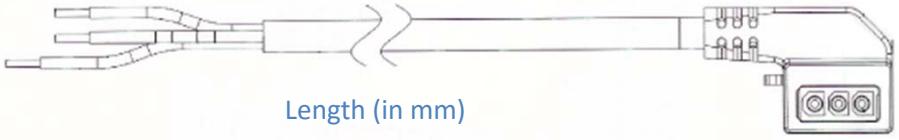
Para	Pump housing	Impeller	Pump shaft	Bearing
ST ** /8 iPWM2	Cast iron with cataphoresis treatment	PP composite with GF 40%	Stainless steel	Carbon, metal impregnated

Electrical Power connections

Integrated Molex 3-way connector

Heating

Accessories power cable



Length (in mm)

Available mains cables

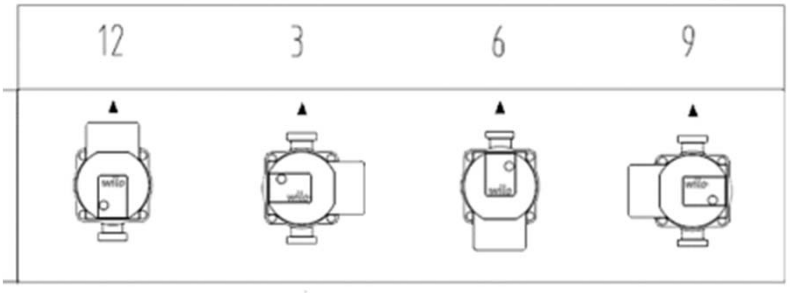
Overmoulded power connector with brass end splices and type Facon PR260 on terminal box side (deconnection possible)	cable length 500mm	4530966	**Not assembled**
	cable length 1000mm	4524578	
	cable length 1500mm	4530763	
	cable length 2000mm	4527857	

Molex 3 ways

WS8

Electrical Box orientation

▲ Flow direction

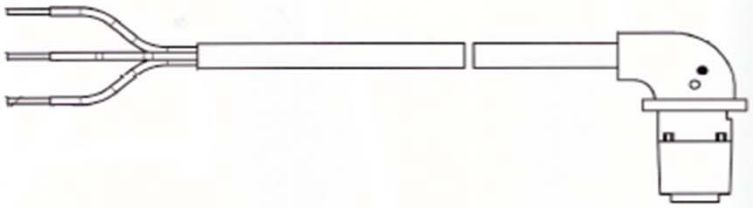


Electrical Signal connections

Front signal connection

Heating

Accessories signal cable

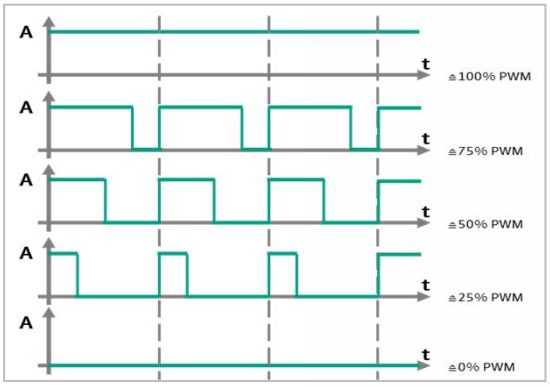


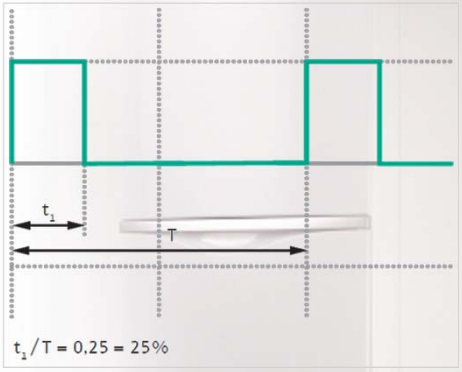
iPWM

Available mains cables			
Overmoulded signal connector with brass end splices and type Facon PR72 (3 wires) on terminal box side (deconnection possible)	cable length 500mm	4530965	**Not assembled**
	cable length 1000mm	4530663	
	cable length 1500mm	4530764	
	cable length 2000mm	4530664	

External control via a iPWM system

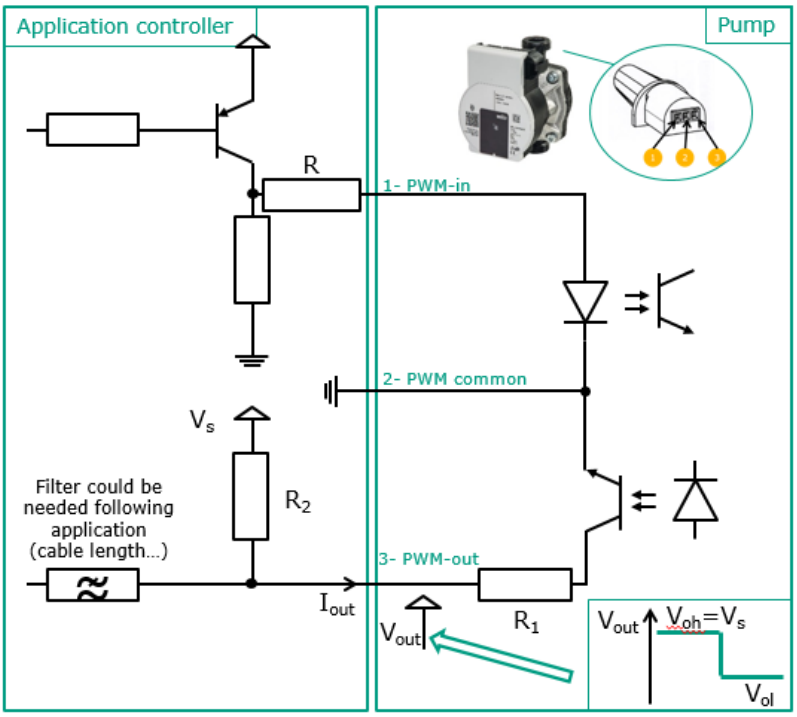
The actual / setpoint level assessment required for control is referred to a remote controller. The remote controller sends a PWM signal as an actuating variable to the Wilo-Para. The PWM signal generator gives a periodic pulse order to the pump (the duty cycle) according to DIN IEC 60469-1. The actuating variable is determined by the ratio between pulse duration and pulse period. The duty cycle is defined as a ratio without dimension, with a value of 0 ... 1 or 0 ... 100 %. This is explained in the following with ideal pulses which form a rectangular wave.





Heating

iPWM interface



PWM-in

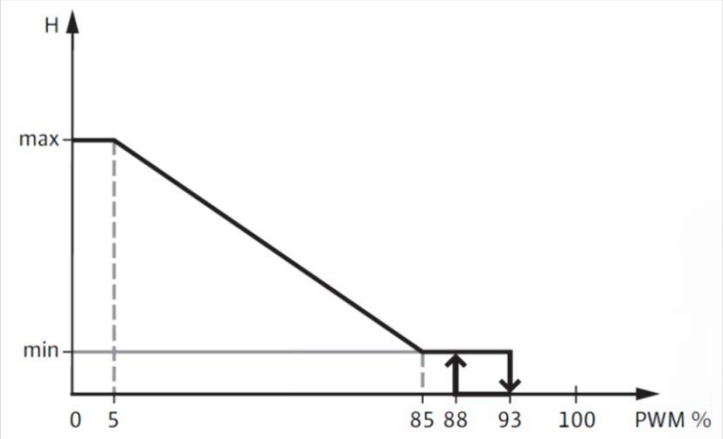
Signal frequency	100Hz-5000Hz (1000Hz nominal)
Signal amplitude:	U_{IH} = 4 - 24V U_{IL} ≤ 1V I_{IH} = 3.5 - 10mA (depending on U_{IH})
Output resistance [R]:	>50 Ω *

PWM-out

V_s	3V≤V_s≤24V
R_2	typical 4,7kΩ for V_S=5V *
Signal frequency:	75Hz +/- 2Hz
R_1	470Ω +/-5%
V_{ol} = $V_{out\ low}$	<1V for I_{out}<1mA

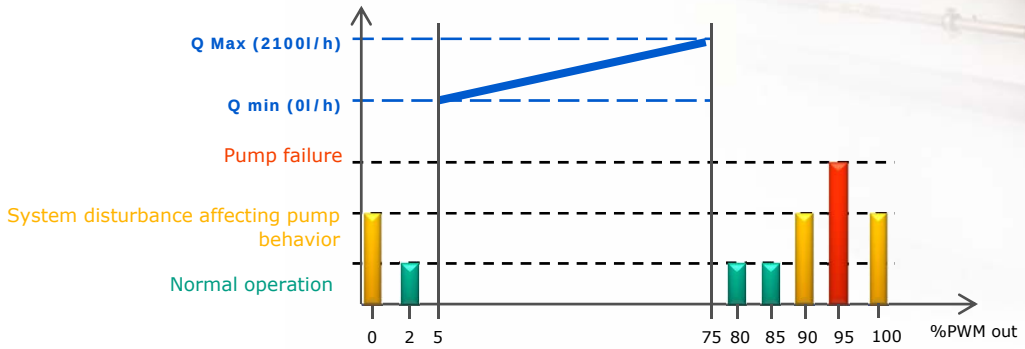
* depending on customer application

iPWM-in signal logic 1 (heating) (%)



< 5	Pump runs at maximum speed
5-85	Pump speed decreases linearly from maximum to minimum
85-93	Pump runs at minimum speed (operation)
85-88	Pump runs at minimum speed (start-up)
93-100	Pump stops (Standby)

iPWM-out signal logic (heating) (%)



% PWM-out	Status	Potential causes
0	Pump output iPWM interface damaged	iPWM interface in short circuit
2	Stand-by, pump is ready to run	/
5-75	Pump is running normally, flow information is supplied	/
80	Abnormal running mode Pump is running but not at optimal performance	- Undervoltage 160/170-194V - Self thermal protecting mode
85	Abnormal function mode Pump has stopped but is still functional	- Undervoltage <160/170V - Overvoltage - Unexpected external flow
90	Abnormal function mode Pump has stopped but is still functional Check the installation setup and medium	- Failure on another component than pump - Debris in the installation - Bad temperature setup
95	The pump has stopped due to permanent failure	- Pump blocked - Electronic module out of order
100	Problem of iPWM connection	iPWM interface in open circuit

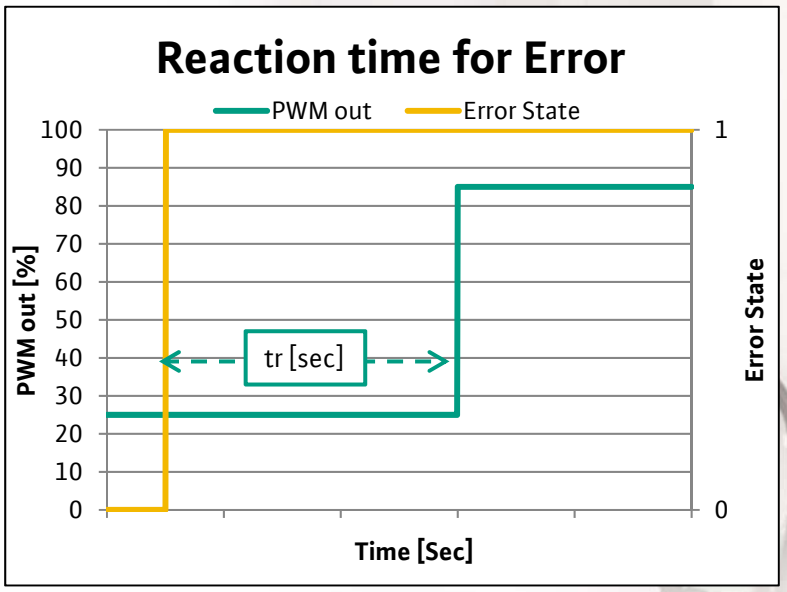
iPWM-out accuracy

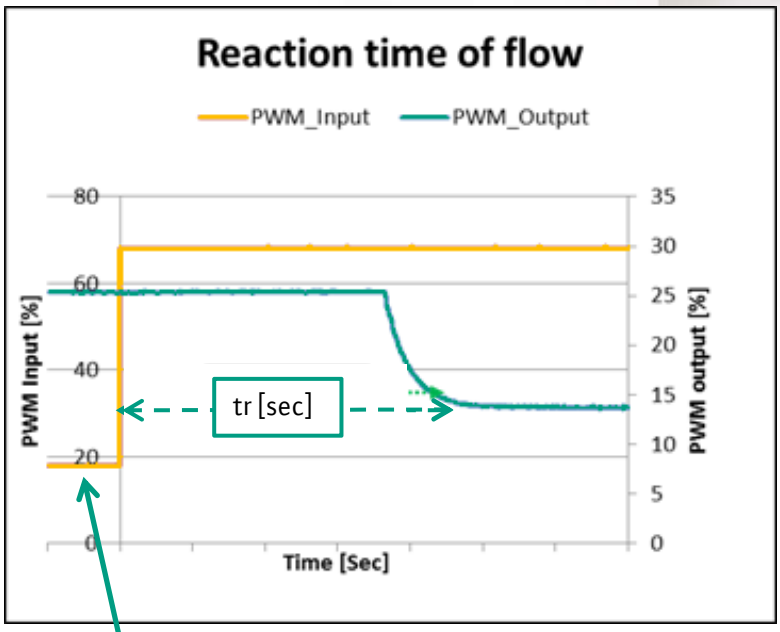
Heating circuit (water)	Accuracy on measurement (valid for rotation speed > 2000 RPM)	Resolution on iPWM output (additional to accuracy)
for Q ≤ 1400L/h	+/- 200 L/h*	10 L/h
for Q > 1400L/h	+/- 20%*	10 L/h

*temperature correction factor available on demand for refining

iPWM-out reaction time

% PWM-out	Reaction time
0	
2	5 sec
5-75	5 sec
80	60 sec
85	2 sec
90	2 sec
95	5 sec
100	





Demand of modification via iPWM-in at t=0

If the controller adjusts iPWM-in with a higher frequency than the “reaction time”, the flow data sent by iPWM-out may not be updated. However the rotation speed will change according to the demand.

wilo

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