

Wilo-Star E 21
EC Motor-Driven High-Efficiency, wet-rotor, HW boiler circulator

Engineering Specification

Submittal Data Sheet

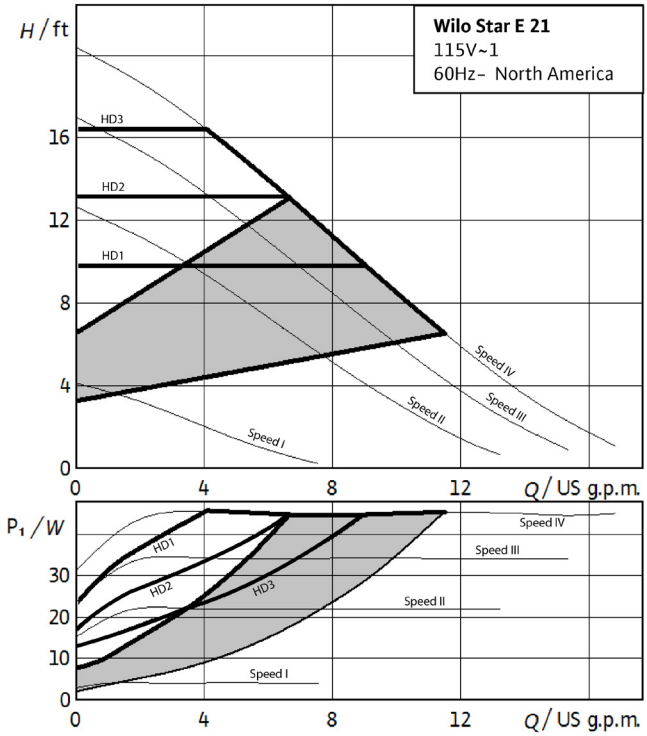
Wilo Star E 21– EC Motor Driven, High-Efficiency, Wet-Rotor, Circulator

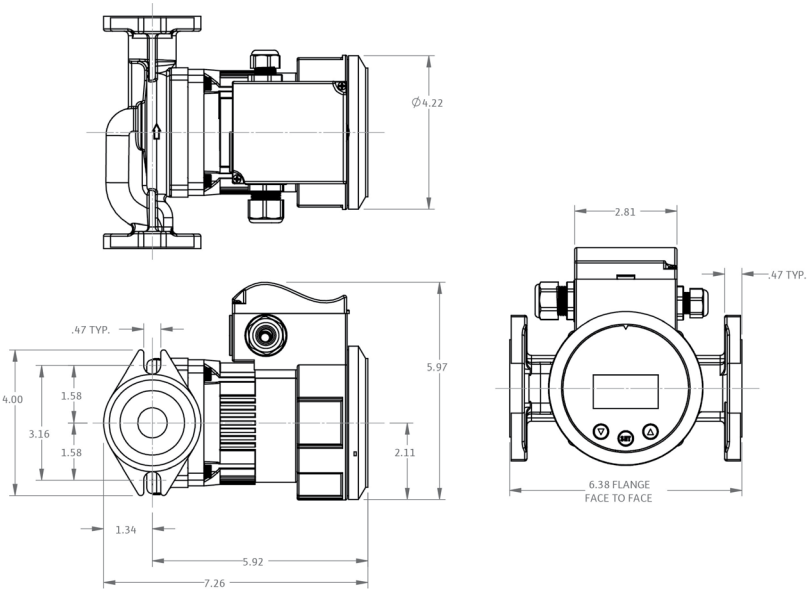
Star E 21



Project:	
Engineer:	
Contractor:	
Submitted By:	Date:
Approved By:	Date:

Tag #	Model	Check Valve	Speed	Flow	Head	Phase	Voltage	Cycle
	Star E 21					1	115	60Hz





Technical Data

CEI	0.41
Max. Temp. Range	36°F to 230°F (2°C to 110°C)
Ambient Temp. Range	0°F to 104°F (–17°C to 43°C)
Electrical Connections	1~115
Max. Working Pressure	145 PSI (10 BAR)
Min. Inlet Pressure 185°F (85°C)	0.725 PSI
Min. Inlet Pressure 194°F (90°C)	4.1 PSI
Min. Inlet Pressure 230°F (110°C)	14.5 PSI

Materials of Construction

Impeller	Engineered Composite PA66+30% GF
Shaft	Ceramic
Bearing	Ceramic
Pump Housing	Cast Iron HT200
Stator Housing	Cast Aluminum ALSI9CU3
Check Valve (Included but optional)	Plastic Composite

Applications

- Heating Systems
- Cooling Systems
- Solar Systems
- Water/Glycol up to 50%
- Geothermal Systems

Motor Data

Horsepower	Watts	FLA
HP	**W**	**Amps**
.06	5.2 – 45	.08 – 0.6

Approval Stamp

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PART 1 GENERAL

1.01 SECTION INCLUDES

A. High-Efficiency, electronically commutated motor-driven circulator pump shall be a Wilo-Star E 21 as manufactured by Wilo.
B. Furnish and install a residential HW, closed-loop circulator with a capacity as indicated in the plans.

1.02 RELATED SECTIONS

A. 23 53 13 – Boiler Feedwater Pumps.
B. 23 09 13 – Instrumentation and Control Devices for HVAC.
C. 25 14 00 – Integrated Automation Local Control Units.

1.03 REFERENCES

A. ETL – Edison Testing Laboratories
B. DOE – US Department of Energy
C. CEI – Circulator Efficiency Index
D. NEC – National Electrical Code.
E. ANSI – American National Standards Institute.
F. ISO – International Standards Organization.
G. ECM – Electronically Commutated Motor

1.04 SUBMITTALS

A. Submittal data sheet(s).
B. Dimensional print(s).
C. Installation, operation, and maintenance manual.

1.05 QUALITY ASSURANCE

A. Shall be third-party evaluated and tested by Intertek to comply to Motor-Operated Water Pumps [UL 778:2016 Ed.6+R:29Jun2021] and Liquid Pumps [CSA C22.2#108:2014 Ed.5]
B. The circulator shall be rated for 36°F to 230°F fluid temperatures.
C. The circulator shall be able to circulate up to a 50% propylene or ethylene-glycol / 50% water mixture.
D. The circulator shall have a rated ambient air temperature range of 0°F - 104°F.
E. The circulator shall have a rated maximum pressure of 145 PSI.
F. The Department of Energy rating number for the Circulator Efficiency Index (CEI) shall be clearly displayed on the electrical enclosure of the pump.
G. The circulator's date of manufacture shall be stickered to the front of the box.

1.06 WARRANTY

A. Provide manufacturer's standard warranty against defects in materials and workmanship.
    1. Warranty Period: The Wilo-Star E 21 circulator shall be free of defects in materials and workmanship for a period of two (2) years from the date of purchase.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with these specifications, the following manufacturers shall be acceptable:
    1. Wilo high-efficiency, electronically commutated, wet-rotor motor-driven circulator pump as manufactured by Wilo.
    2. Pre-approved equal.

2.02 COMPONENTS

A. Pump housing
    1. Shall be constructed of cast iron HT 200 with cataphoresis coating.
    2. Shall be provided with a two-bolt, oval flange.
    3. Shall have a flange-to-flange spacing of 6-3/8 inches (162 mm).

B. Pump shaft
    1. Shall be constructed from ceramic.

C. Pump bearings
    1. Shall be constructed from ceramic.

D. Impeller
    1. Shall be constructed of engineered composite PA66+30% GF.

E. Stator housing
    1. Shall be constructed of cast aluminum ALSI9CU3

F. Motor
    1. Shall be, an electronically commutated, synchronous permanent magnet, wet-rotor motor.
    2. Shall have a protection class of IP42.
    3. Shall produce motor efficiencies greater than, or equal to, IE4.
    4. Shall be rated for 115, single phase, voltage.
    5. Shall have a FLA rating of .65A

G. Control interface
    1. Shall allow for quick access to the main parameters using LCD display with three press buttons:
        a. Up arrow
        b. Down arrow
        c. Set Button

H. Control modes
    1. Shall offer four control modes:
        a. Constant speed control with four selectable speeds
        b. HD (Head defined) control with three proportional settings
        c. Differential temperature control
        d. Auto-Mode control
        e. Set Point Heat Mode
        f. Set Point Cool Mode
        g. Boiler Protection Mode

I. (External Components)[1]
    1. (Differential Temperature sensor)
    2. (Optional check valve shall be made of plastic composite material (recommended for parallel pumping applications))

PART 3 EXECUTION

3.01 INSTALLATION

A. Install equipment in accordance with the manufacturer's instructions as written in the Installation and Operation Manual (IOM).
B. Power wiring, as required, shall be the responsibility of the electrical contractor. All wiring shall be performed per manufacturer’s instructions and in accordance with applicable state and local codes.
C. Unit shall be a Wilo-Star E 21 as manufactured by Wilo.

END OF SECTION

[1] Components in parenthesis indicate an optional item.