

Electric Pump Unit EPU

Overview for EPU02-09 pump units

TECHNICAL DATA SHEET K0014077 REVISION I DATE OF ISSUE 09 Nov 2017

Description

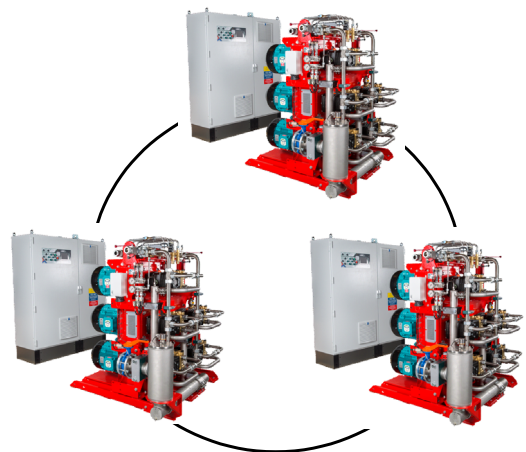
The Electric Pump Unit (EPU) is supplied as part of a HI-FOG® high-pressure water mist fire protection system. The EPU is made of a pump skid unit and a controller cabinet. The EPU controller cabinet is used to monitor, operate, and control the pump unit. The controller cabinet provides all operation and fault signals concerning the pump unit by visual and audible means. System pressure and system flow are continuously monitored.

The number of pumps in the unit can vary from 2 to 9. The motor of one pump module is connected to a Frequency Converter (FC) that can drive the pump at any required speed. The pump driven by the FC both maintains the system stand-by pressure and is a part of the automatic pressure control system. The other pumps are started directly on-line (DOL) according to the needed flow and pressure.

Networking for more capacity and flexibility

Multiple EPUs can be connected together through a piping and communication network that operates as a single water distribution system. The networking functionality enables higher capacity and more flexible system design for example to implement redundancy functions. Networking has reliable two-way communication with self-diagnostics that enables fast troubleshooting and optimized maintenance and service operations.

Up to eight (8) EPUs can be in a single network. The system's health and status can be monitored at any individual pump unit user panel. Communication network enables intelligent changeover of system control between the EPUs.



Activation

The EPU can be started automatically, manually, or remotely. The Automatic Start activates from either a system low pressure or flow signal. The Manual Start is activated from the Pump User Panel directly. The Remote Start activates either from a HI-FOG® system or from a 3rd party system signal.

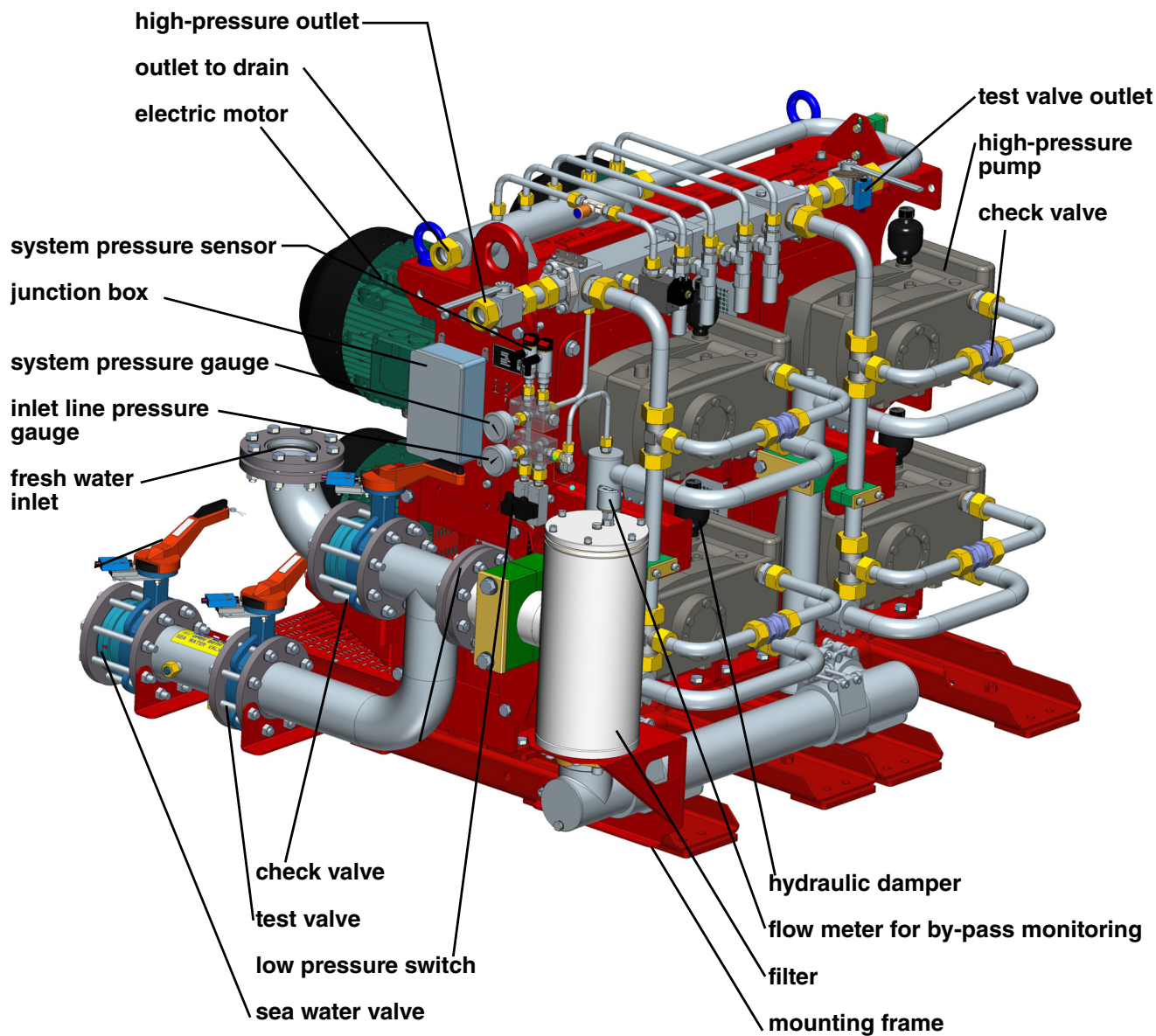
During activation, the EPU control system only starts as many motors as needed to reach the defined target working pressure.

For more information

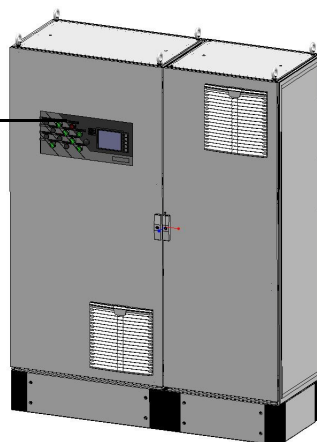
Marioff Technical Data Sheet 0002991169, EPU accessories
Marioff Technical Data Sheet 0003138932, Additional services

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Example pump unit: EPU04



Controller cabinet with Pump User Panel installed on the door.



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Order options

The following is a list of standard offering and special order options available.

All order options, standard and special, must be defined in the order separately.

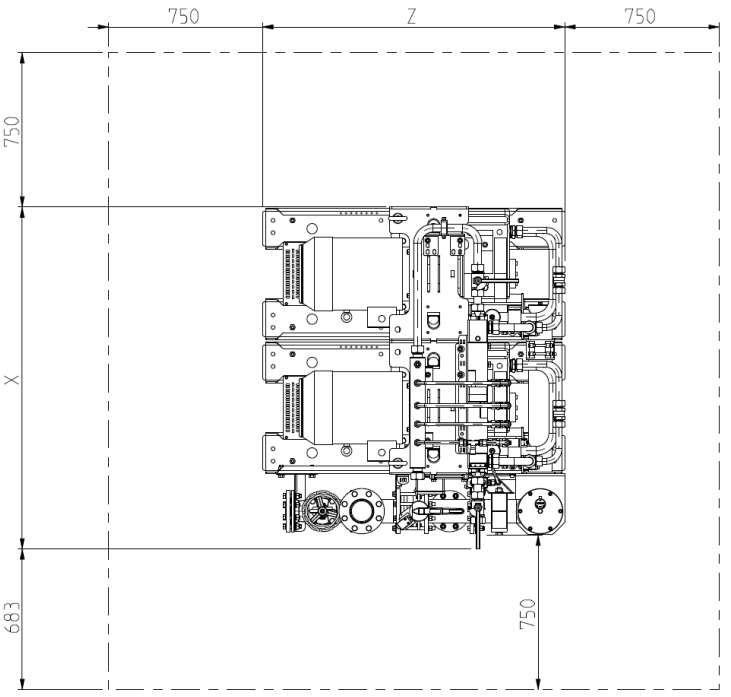
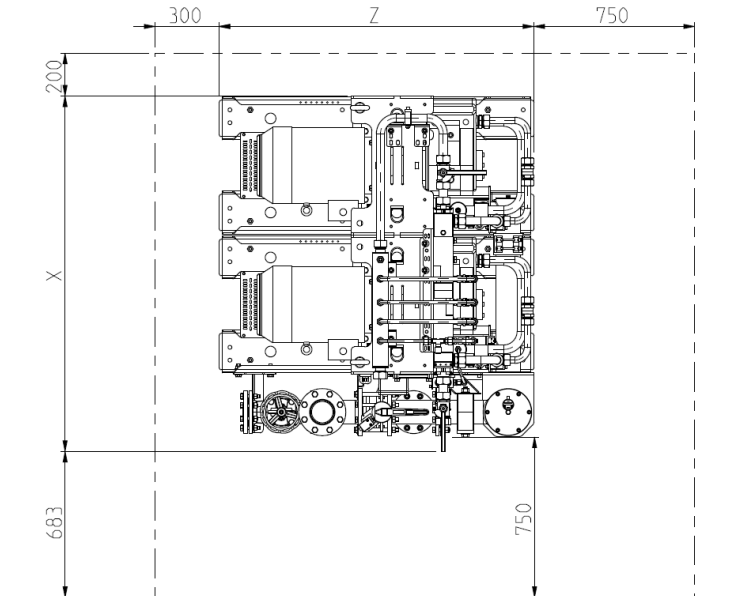
Standard EPU order options (known effect to EPU size, cost and weight)	
Number of HPP motors (including possible spare or redundant motors)	2-9 motors
Motor type	Brook Crompton (ATB)
Motor power (kW)	22,5 or 27
Feed water pump starter(s) in the control cabinet	0, 1 or 2 starters
Feed water supply type	Gravity feed or pressurized water feed
Feed water filter	Installed as attached to the unit with or without sea water valve assembly or installed separately
Power supply voltage (VAC/Hz)	380-690V/50 or 60Hz, TN-C/TN-S/IT
Number of power supplies	Single supply or double supply with two (2) power supplies with automatic switchover function
Motor start type	DOL soft starter or frequency converter
Cabinet and pump skid unit color	Option A: RAL color or Munsell color for default painted parts Option B: high gloss/Awlgrip required for default painted parts
Classification requirements	General, VNIPO, ABS, LR, RINA, BV
Pump User Panel language	English, German, French, Italian, Spanish, Finnish, Russian



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EPU pump unit

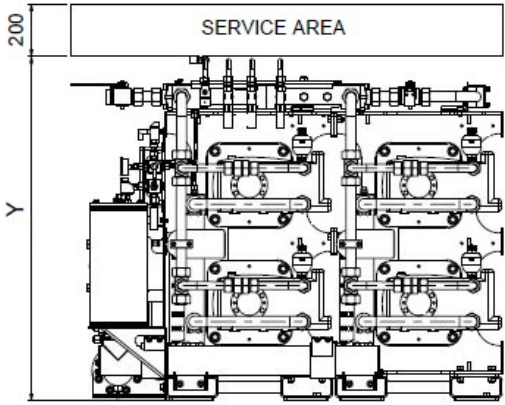
Pump skid width (mm), X in figure below	1105 - 2450
Pump skid length (mm), Z in figure below	1470
Pump skid height (mm), Y in figure below	1319 - 1719
Pump skid color	Red RAL3020 (Marioff red)
Ambient conditions for operation	+4°C to +45°C, relative humidity max 96%
<p>Installation area recommendations around the unit (mm)</p>	
<p>Service area requirements around the unit (mm)</p>	



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<p>Service area requirements above the unit (mm)</p>	
<p>Dry mass (kg ± 10%) with ATB standard motors, marine</p> <p>Marine example unit has two power supplies, internal Feed Water Pump (FWP) starter, filter with sea water valve assembly at the unit and DOL.</p>	<p>900 - 3400</p>
<p>Dry mass (kg ± 10%) with ATB standard motors, land</p> <p>Land example unit has one power supply, gravity feed, no filter and DOL.</p>	<p>800 - 3300</p>

EPU controller cabinet

Length (mm)	500
Width (mm)	1400
Height without plinth (mm)	1400 - 2000
Plinth height (mm)	200
Dry mass (kg ± 10%)	350 - 550
Ambient conditions for transportation and storage	0°C to +45°C, maximum exposure time 24/7, humidity max 96%
Ambient conditions for operation	0°C to +45°C, relative humidity max 96%
Max ambient altitude (m)	1000
Service area requirements (mm)	800 in front of the control cabinet doors.
Color	Grey RAL7035
Enclosure class	IP55
Electromagnetic compatibility	C2 (IEC 61800-3)
Cable entries	Cabinet bottom

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Description of input and output values

Target pressure can be selected based on EPU capacity table.

Flow values depend on how many main motors the unit has, if a feed water pump is used or not, and the pump's power supply (50 or 60 Hz). Spare or redundant motors have no effect on the flow.

Water output pressure and flow	
Output at 130 - 140 bar (lpm)	170 - 850
Output at 100 - 110 bar (lpm)	220 - 1020
Output at 70 - 80 bar (lpm)	290 - 1330
Drain capacity needed (lpm)	200 - 1300
Typical unit activation target pressure (bar)	80 - 140
Max. pressure (Safety setting) (bar)	90 - 150
Typical stand-by pressure (bar)	25

Water inlet/outlet	
Fresh water inlet type and dimension	DN100 DIN2642 flange or DN125 DIN2642 flange
High pressure outlet type and dimension	Ø38S DIN2353 or SAE 2" 200 bar
Test outlet and bypass outlet type and dimension	Ø38S DIN2353 or SAE 2 1/2"
Sea water inlet	DN100 DIN2642 flange
Water inlet pressure (with integrated filter)	2 - 10 bar or 4 - 10 bar
Sea water inlet pressure	2 - 10 bar or 4 - 10 bar

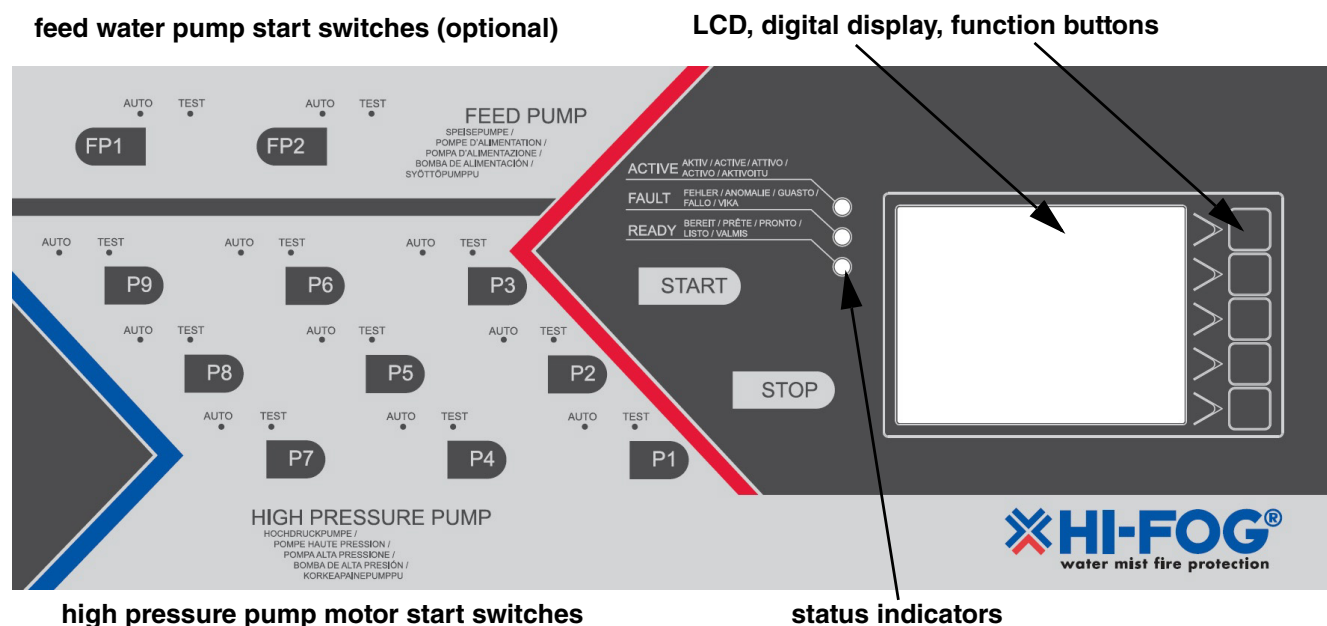
Electric signal input/output	
Digital outputs	max. 48VAC / 30VDC, 2A, NO/NC, Passive
Digital inputs	24VDC, Active
Analog outputs	4-20mA, Active



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Pump User Panel (PUP)



Description of the graphical user interface

The EPU has a graphical user interface called Pump User Panel (PUP) installed on the controller cabinet door. The standard PUP is in English and its features are manual start/stop operations, status indications and alarm indications. With the PUP you can, for example, get daily logs on the system pressure, monitor power status and examine system alarm history.

The following are the standard operations, functions and indications available. All options must be defined when ordering. The PUP and help texts are available in different languages (see table on page 3).

Basic operations	
Manual functions	Manual operations
EPU status information	Motor start switches for maintenance and testing
Alarm list and alarm help information	Pump Unit manual start
Event history with possibility to upload to USB memory	Pump Unit manual stop
Detailed EPU status indications including pressure trend view	Buzzer acknowledge/Alarm reset
Maintenance view including reminder	Lamp test

Basic alarms	
Main supply status (1/0) and health alarms (VAC)	Output pressure alarms (over pressure, indication fault)
Auxiliary voltage circuit health (230VAC/24VDC)	Water inlet alarms (inlet low pressure, filter by-pass)
Circuit breaker open	Hand valve(s) in wrong position
Motor-specific control fault	Line guard* alarms *) line guard means cable break and short circuit monitoring



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Standard alarm options	
Feed water pump control fault	Emergency supply status (1/0) and health alarms (VAC)
Alarms for configurable digital inputs (4 pcs)	Nitrogen backup unit low pressure
Alarms for configurable valve monitoring (3 pcs)	

Basic status indications	
Pump unit activated	Motor running (ON/OFF)
Stabilization in progress	Motor current measurement (A)
Pump unit in stand-by	Main supply (ON/OFF)
Pump unit stand-by pumping	Main supply voltage measurement (V)
Pump unit fault	
Standard status indication options	
Emergency supply (ON/OFF)	Feed water pump running (ON/OFF)
Emergency supply voltage measurement (V)	Feed water pump current measurement (A)

Optional indications and operation requests from external system(s), digital inputs	
Pump unit start (Line guard*) (up to 2 pcs) *) line guard means cable break and short circuit monitoring Potential free contacts required from the source. DO NOT use transistor output towards EPU.	Configurable valve limit switch monitoring inputs (up to 3 pcs)
Water tank low (Line guard*) (up to 2 pcs) *) line guard means cable break and short circuit monitoring Potential free contacts required from the source. DO NOT use transistor output towards EPU.	Configurable digital inputs (up to 4 pcs)
Pump unit stop	Tank level switches (L/H)
Alarm reset	Nitrogen unit low pressure
Emergency start cabinet status and fault	

Basic indications and operations for external systems	
Power supply fault	Start feed water pump
Pump unit fault (up to 2 pcs)	Control system fault
Pump unit disabled	Out of water
System activated	Stabilization in progress
Pump unit flow (stand-by pumping)	System reset (up to 2 pcs)
Pump unit running (up to 2 pcs)	Phase loss
System pressure (up to 2 pcs), analog	
Optional indications and operations for external systems	
Feed water valve control	Configurable outputs (up to 4 pcs)
Nitrogen release valve control	



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