IMPPUMPS®
Intelligent Motor Pumps

NMT Mini

Slovensko (SI) - Navodila za vgradnjo in uporabo
English (EN) - Installation and operating manual
Deutsch (DEU) - Installations -und Bedienungsanleitung
Italiano (IT) - Istruzioni per l'installazione e l'uso
Español (ES) - Manual de Instalación y Operación
Français (FR) - Notice de montage et d'utilisation
Hrvatski (HR) - Upute za ugradnju i uporabu
Magyar (HU) - Telepítési és üzemeltetési kézikönyv
Čeština (CZE) - Instalační návod k montáži a obsluze
Українська (UA) - Інструкція з монтажу та експлуатації
Srpski (RS) - Upustvo za instalaciju I upotrebu
Русский (РУ) - Руководство по установке и эксплуатации

7340150 v3

English (EN) Installation and operating manual

Pump curves and guarantee statement are at the end of these instructions.

Subject to alterations!

Symbols used in this manual:

Warning:
Safety precautions which, if ignored could cause personal injury or machinery damage.

Notes:

Tips that could ease pump handling.

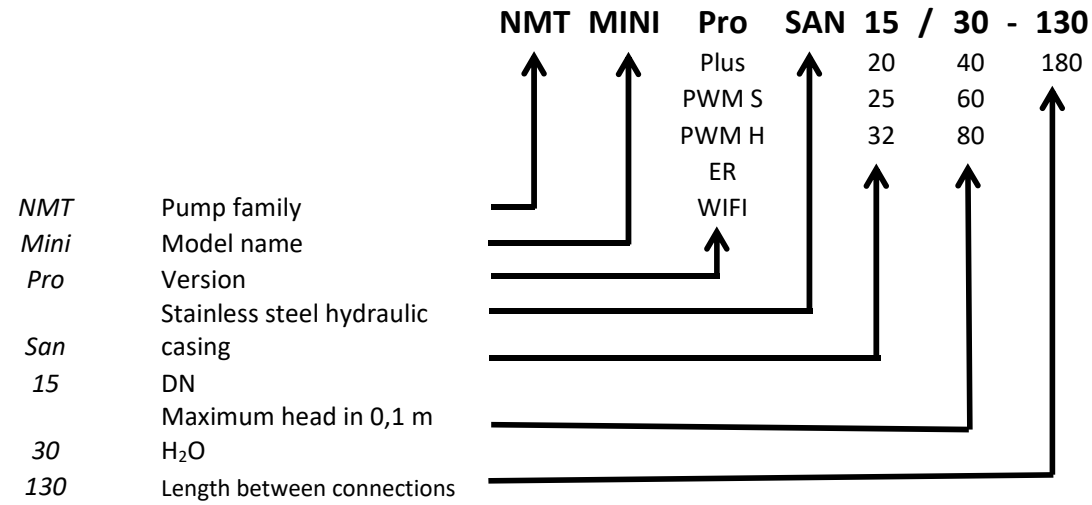
1 GENERAL INFORMATION

1.1 USES

The NMT (new motor technology) circulating pumps are used for the transfer of liquid medium within systems for hot-water heating, air-conditioning and ventilation. The pumps have been designed as single variable-speed pumping aggregates where the speed is regulated by the electronic device.

PWM S, PWM H, ER, and Wi-Fi versions have their function explained in an additional manual, found on our following webpage http://imp-pumps.com/dokumentacija/

1.2 PUMP LABELING



1.3 PUMP MAINTENANCE, SPARE PARTS, AND DECOMMISSIONING

Pumps have been designed to operate without maintenance for several years. Spare parts will be available for at least 7 years from the warranty period expiration.

This product and its components must be disposed of in an environmentally friendly manner. Use waste collection services, if this is not possible, contact the nearest IMP Pumps Service or authorized repair provider.

2 SAFETY

These instructions should be studied carefully before installing or operating the pump. They are meant to help you with the installation, use, and maintenance and increase your safety. Installation should only be performed with regards to local standards and directives. Only qualified personnel should maintain and service these products.

Failure to follow these instructions can cause damage to the user or product and can void the warranty. Safety functions are only guaranteed if the pump is installed, used and maintained as described in this manual.

- The pump can be upgraded or modified only with an agreement from the manufacturer.
- Manual must be kept near the pump.

3 TECHNICAL SPECIFICATIONS

3.1 STANDARDS AND PROTECTIONS

Pumps are made according to the following standards and protections:

Protection class:

IP44

Insulation class:

155 (F)

Motor protection:

Thermal - built in

Allowed nominal pressure

1MPa (10 bar)

3.2 PUMP MEDIUM

Pump medium can be pure water or a mixture of pure water and glycol, which is appropriate for a central heating system. Water must meet water quality standard VDI 2035. The medium must be free from aggressive or explosive additives, free from mixtures of mineral oils and solid or fibrous particles. The pump should not be used for pumping flammable, explosive media and in an explosive atmosphere.

Permanent magnet rotor inside the pump is prone to accumulating magnetic particles on its surface, which can lead to abrasion of bearings and rotor can or even blocking the rotor. Although the pump is built in a way that the effect of magnetic particles is minimal, failures of bearings, rotor cans, and blocked rotors are not a subject of claims.

To improve pump resistance to magnetite we recommend the use of magnetite filter.

- A pump should not run dry.

3.3 TEMPERATURES AND AMBIENT HUMIDITY

Permitted ambient and media temperature			
Ambient temperature [°C]	**Medium temperature [°C]**		**Relative ambient humidity**
	min.	**max**	
Up to 25	-10	110	<95 %
30	-10	100	
35	-10	90	
40	-10	80	

- The medium temperature must be higher or the same as ambient temperature so that the condensate doesn’t gather on pump surfaces.

- Operation outside recommended conditions may shorten pump lifetime and could void the warranty.
- Operation at edge conditions can shorten pump lifespan.

3.4 ELECTRICAL SPECIFICATIONS

3.4.1 CURRENT, VOLTAGE AND POWER RATINGS

Electrical ratings					
Pump	Rated voltage	P_{min} [W]	P_{max} [W]	I_{min} [A]	I_{max} [A]
NMT Mini XX/30	230 VAC ± 15 %, 47-63Hz Pumps can operate at reduced voltage with limited power (P=Imax*U)	1	15	0,05	0,15
NMT Mini XX/40			20		0,2
NMT Mini XX/60			35		0,3
NMT Mini XX/80			50		0,4

4 PUMP INSTALLATION

4.1 INSTALLATION INTO PIPELINES

The arrows on the hydraulic casing and thermal insulation indicate the direction of the medium flow. For the pump to operate with minimal vibrations and noise it should be installed into pipelines with its 1-1 axis in a horizontal position. Pipes should be without curves for at least 5-10 D (D = rated pipe diameter) from the first curve.

Desired head orientation can be achieved by rotating the pump head (allowed positions shown in figure 1. Pump head is mounted on the hydraulic casting with four screws. The pump head can be turned by unscrewing the four screws (figure 3). When reassembling care should be taken to ensure the seal fit. Failing to ensure seal fit could cause leaking of water into and damage to internal pump parts.

Pump ambient should be dry and well lit. The pump is sealed from dust and water according to its IP class.

- Misconnection or overload could cause pump shutdown or even permanent damage.
- The pump doesn't have a ventilation screw. It is ventilated together with the system. Air in the pump can cause noise, which will disappear after a short working period.

- The pump must not be used in the safety pipelines.
- Glands must be tightly screwed.
- When used in climate systems remove thermal insulation from the pump.
- The pump should not be used as a handle for welding the pipe system since it can be damaged.
- If the gasket between the electro-motor part of the pump and the console is not correctly installed, the pump will not be watertight and there is a danger of damage to the pump.
- There are openings for condensate drain on the housing of the electric motor, these must remain free (must not be thermally insulated), as this may interfere with the cooling of the engine or the discharge of condensed water (figure 2).
- Hot media poses a threat of burns. The pump motor can reach a dangerous temperature which poses danger to health.

4.2 ELECTRICAL CONNECTION

The electrical connection of the pump to the network must be done with the appropriate power cord (3G1mm^2, H05RR-F) to the enclosed connector. The manual for the connector is in the plastic bag within the pump packaging.

The pump has a built-in overcurrent fuse and protection, temperature protection and basic overvoltage protection. It doesn't need an additional thermal protection switch. Connection leads should be capable of carrying rated power and should be properly fused. Ground lead connection is essential for safety and should be connected first! Grounding is only meant for pump safety. Pipe systems should be grounded separately!

- Electrical connection of the pump should be conducted by trained and qualified personnel!
- The cable connection must be done in a manner that ensures that the cable is never in contact with the casing of the device, due to the high temperature of the casing.
- Devices for separating all phases from the power supply must be installed in the electric installation in accordance with the national installation regulations.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children shall not play with the appliance.

5 SETUP AND OPERATION

5.1 CONTROL AND FUNCTIONS

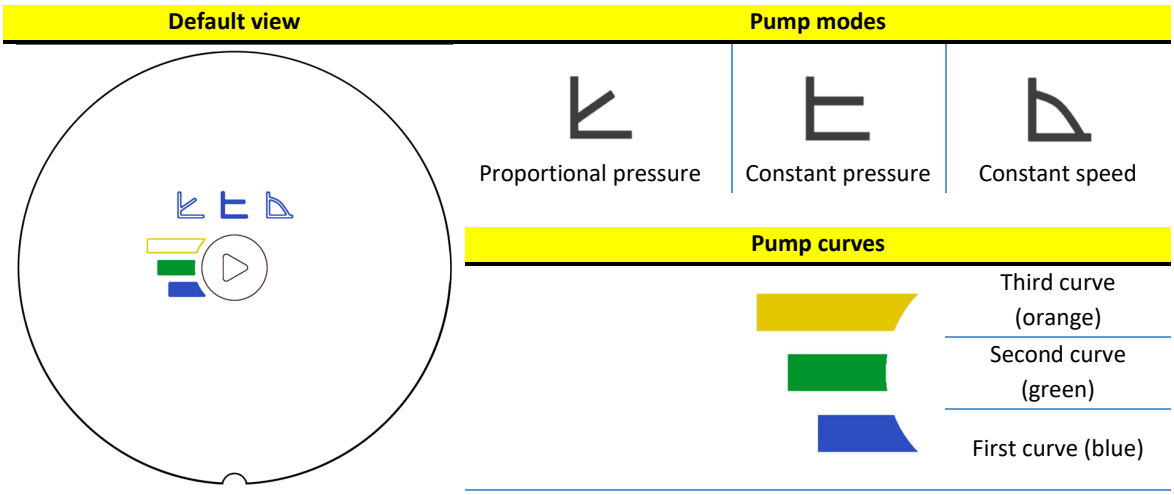
The pump can be controlled through a display panel and a button on it. The display shows current pump mode, values[1] and status (working/error). ER, PWM S/H models can be controlled with an external signal (separate manual is in the box).

5.1.1 DISPLAY

There are three different display panels, NMT Mini[2], NMT Mini Plus and NMT Mini Pro[3]. Pump curves and modes can be changed with a press of a button. If a pump curve is available, then the pump curve and mode symbols will be lit. In case that there is no pump curve available, then only the symbol for pump mode will be lit.

5.1.1.1 NMT MINI

Pumps have 3 preconfigured curves of proportional pressure, constant pressure, and fixed speed modes. The lit symbol represents the selected mode and curve.



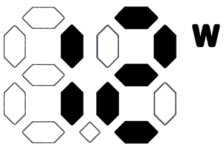
[1] Available only with Plus, Pro and WIFI model
[2] Available only with basic, ER and PWM S/H model
[3] Available only with basic, ER and PWM S/H model

5.1.1.1 NMT MINI PLUS

Pumps have 3 preconfigured curves of proportional pressure, constant pressure, and fixed speed modes. The lit symbol represents the selected mode, and curve.

The pump also shows the current power consumption. Values on the display interchange every 5 s.

Pump modes		
		
Proportional pressure	Constant pressure	Constant speed

Power display	Pump curve
	 Third curve (orange) Second curve (green) First curve (blue)

Default view

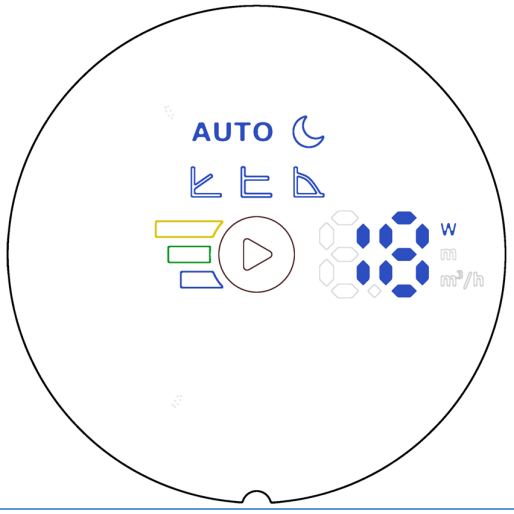

5.1.1.2 NMT MINI PRO

Pumps have 3 preconfigured curves of proportional pressure, constant pressure, fixed speed modes, auto, and night mode. The lit symbol represents the selected mode and curve.

The pump also shows the current power consumption, current pressure, and flow. Values on the display interchange every 5 s.

Pump modes				
AUTO				
Auto mode	Proportional pressure	Constant pressure	Constant speed	Night mode

Power, head and flow display	Pump curve
	 Third curve (orange) Second curve (green) First curve (blue)

Default view


5.1.2 BUTTON

A short press on the button will change the pump curve from the first to the second and then to the third curve. After the third curve is reached and the button is pressed again, the pump mode will change and the first curve will be selected. If the pump is in standby, then it will start with a short press.

A long press will turn on standby mode. In this mode, the pump will occasionally turn on, with minimal speed. The pump will blink its current mode.

Auto mode does not have any pump curve to select.

Night mode works in combination with other pump modes. After the third curve of constant speed is selected and button is pressed, night mode will be turned on together with auto mode. Every change of curve and mode until the third curve of constant speed will have night mode turned on. After that, if the button is pressed, night mode will be turned off.

5.2 OPERATION

The pump can work in different modes of regulation. Pump mode is selected depending on what kind of system the pump is working in.

Pump mode	
AUTO	**Auto mode**[1] In automatic mode, the pump automatically sets the operating pressure, depending on the hydraulic system. By doing so, the pump finds the optimal operating position. This mode is recommended for most systems. No curves are available in this mode.
	**Proportional pressure (radiator heating)** The pump maintains the pressure with relation to the current flow. The pressure is equal to the set pressure (3 preconfigured curves) at maximum power; at 0 flow it is equal to HQ % (default 60%, of the set pressure. In between, the pressure changes linearly, relative to the flow.
	**Constant pressure (underfloor heating)** The pump maintains the currently set pressure (3 preconfigured curves), from 0 flow to maximum power, where the pressure begins to drop.
	**Constant speed** The pump operates with the currently set speed (3 preconfigured curves).
	**Night mode**[2] When the pump is operating in the night mode, it automatically switches between the current mode and the night mode. Switching occurs based on the temperature of the medium. While in night mode the night mode icon is turned on and the pump operates in the chosen mode. If the pump senses drop in temperature of the medium for 15 -20 °C (in time frame of 2 hours), icon starts to blink and the pump switches to night mode. When the temperature of the medium rises, the blinking stops and the pump goes back to the previously chosen operation mode. Night mode can only work in compliment to other modes and is not a mode that can run by itself.

[1] Available only with Pro and WIFI model
[2] Available only with Pro and WIFI model

6 ERROR AND TROUBLESHOOTING

The display will show if an error occurred. Errors on the basic display will be shown as blinking curve light. Short blinks will show the error group. Errors on the advance display will be shown as two-digit number, where the first digit shows the error group, and the second digit shows a more exact description.

Error group (X)	Error description	Exact description	Possible cause and solution
1	Load errors	*10*	Low load detected. The pump is running dry.
		11	Motor overload. The motor might be faulty or a viscous medium is present.
2	Protection active	*22*	The circuit is too hot and the power was reduced to less than 2/3 of the rated power.
		23	The circuit is too hot to run and the pump has stopped.
		24	Hardware overcurrent protection triggered.
		25	Line voltage is too high.
		26	Line voltage is too low for proper operation.
3	Hot motor	*31*	Average motor current was too high, pump load is much higher than expected.
4	Electronic error	*42*	LED Fault
		44	The voltage on DC link shunt not within the expected range
		48	15 V is not present
5	Motor error	*51*	Motor does not behave as expected.
	Pump unresponsive		Disconnect and connect it back to the electrical grid!
	Pump not working		Check your electrical grid and fuse!