

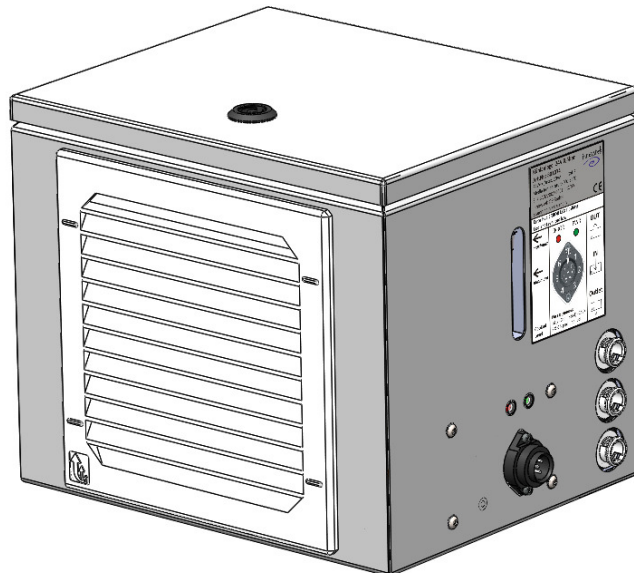
Installation and maintenance manual

Cooling system Type D24-24V/0,35bar

Scope of the installation and maintenance manual

This Installation and maintenance manual covers the following cooling system:

Productcode: 801074 Kühlanlage Typ D24-Direktkühlanlage 24V / 0,35bar



Read the installation and maintenance manual before starting.

Keep and make available these installation and maintenance manual for further use!

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Warning notes and symbols:



WARNING

Work on electrical systems may only be performed by experts. The relevant local safety regulations are to be observed.



WARNING

There are hot components behind the covers.

When the covers are removed for maintenance or repair work, make sure not to touch these components!



WARNING

Wear protective gloves when you reach into this area. (Sharp fins – danger of injury!).



WARNING

Do not reach within the range of rotation of the fan blade. Danger of injuries when the fan blade starts to rotate. Before you open the front cover, the plant must be switched off by means of the master switch and must be secured against inadvertent switching on.



WARNING

During a maintenance process and when working with the coolant, the usual precautions when handling chemicals must be observed. InnovatekProtect is harmful if swallowed. Avoid inhalation of vapors / spray.

Hand protection: Chemical-resistant protective gloves (EN 374) recommended: nitrile rubber (NBR), Protective index 6, For more information see separate safety.

Foreword

This Installation and maintenance manual is designed to familiarize the user with the machine / unit and its designated use.

This manual contains important notes which are to be observed during the installation, operation and maintenance of the unit, in order to guarantee safe, proper and economical use of the system.

The operating manual must always be available wherever the machine / unit is in use.

This manual must be read and applied by any person in charge of carrying out work with and on the machine / unit, such as

- operation, including setting up, troubleshooting in the course of work, evacuation of production waste, care and disposal of fuels and consumables
- installation, set-up, wiring
- maintenance (serving, inspection, repair)
- transport

In addition to the operating manual and to the mandatory rules and regulations for accident prevention and environmental protection in the country and place of use of the machine / unit, the generally recognized technical rules for safe and proper working must also be observed.



WARNING

The marking for transport and stocking indicated on the packaging have to be observed under all circumstances

NOTE

Please check the type of manual (see Annex A, Type List) against the label on you device.



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Safety / Prevention of accidents

General notes

This installation and maintenance manual contains basic notes to be observed for startup, operation and maintenance. Read before starting up the unit.

The manufacturer declines any responsibility for damage and breakdowns resulting from a failure to observe this operating manual.

Qualification and training of personnel

The personnel for operation, maintenance, inspection and assembly must be adequately qualified for the work concerned. The user must clearly specify the sphere of responsibility, competence and supervision of the personnel.

Dangers when the notes on safety are ignored

Ignoring the safety regulations can have a harmful effect on persons or cause damage to the system or environment. Ignoring the safety regulations may cause a loss of claim for damages.

Safety - conscious working

Observe the notes and safety given in the manual, the national rules for prevention of accidents in force, as well as any internal instructions by the user for working, operation and safety.

Notes on safety for the user / operator

Any guard preventing accidental contact of moving parts must not be removed when the machine / unit is running. Take appropriate steps to preclude any hazard by electric power. (For relevant details see the rules of the VDE and the local energy supply companies).



WARNING

Mechanical, pneumatic, hydraulic or electrical components of the unit must in no case be overridden or changed.

The employer shall instruct the insured person on

- the dangers when handling refrigerating plants and cooling
- the safety regulations
- the conduct in the case of accidents and failures and the Steps to be taken in such cases

before they start their work for the first time and at reasonable intervals, however, at least once a year.

Notes on safety for maintenance, inspection and assembly work

On principle, cleaning and maintenance of the machine / unit must be carried out with the machine / unit at standstill only. The procedure for shutdown of the unit given in the

operating manual must be observed without fail. Immediately after completing the work all safety and guarding devices must be replaced and / or put into service again.

Unauthorised modification or use of spare parts

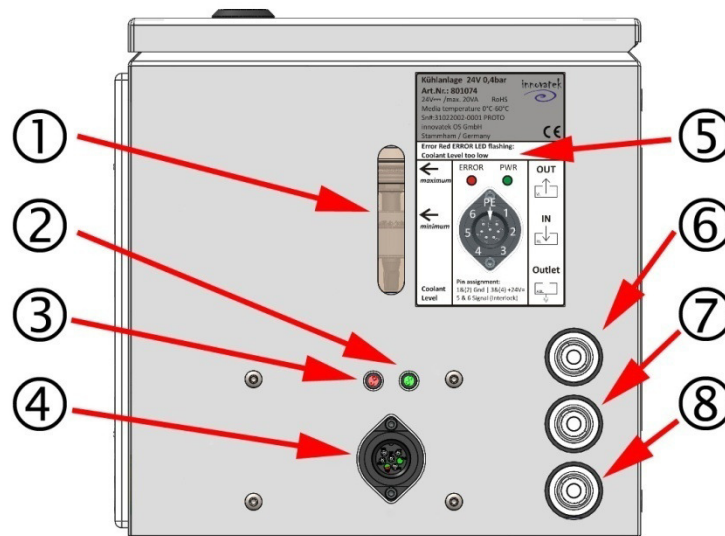
Modification of or changes to the machine / unit are only permitted after previous consultation of the manufacturer. Original spare parts and accessories authorised by the manufacturer serve for ensuring safety. The use of any other parts may make the liability for the ensuing consequences invalid.

Handling of coolant

The coolant can irritate skin and mucous membranes. In presence of open flame or hot surfaces, coolant can decompose and form toxic decomposition products.

Equipment must be transported in a way that they cannot be damaged as a result of internal transportation and traffic operations.

Description of the Front Panel



- 1 Viewport level indicator
- 2 Power LED – On during operation
- 3 Error LED – Flashes at low fluid level
- 4 Power connector (Hirschmann CA-Series 10 A/AC/DC Pole: 6 + PE Type 932 326-100)
- 5 Label
- 6 Outlet – Cooling water connection CPC NS2 coupling (female)
- 7 Inlet – Cooling water connection CPC NS2 coupling (female)
- 8 Drain port – Drain cooling water discharge CPC NS2 coupling (female)

Pinout Power Connector

- 1 – Ground
 - 2 – not used
 - 3 – +24VDC
 - 4 – not used
 - 5 – Signal
 - 6 – Signal (Opens on error)
- Centrally located - PE
protective conductor



Overview and Basics

The cooling system type "D24 Direct cooling system 24V / 0,35 bar" is a powerful liquid cooling system in a compact size. The device is a direct cooling system through which the cooling water is cooled down by the surrounding air. A cooling below room temperature is not possible.

The components of the cooling system are completely integrated in the housing. All connections and terminals for power supply, etc. are mounted for easy access on the front side of the device. The cooling water connections are NS2 couplings (female) equipped with drip-free CPC connectors, so that the system can be quickly and safely connected to the cooling circuit. An integrated air filter protects the system from dust. The integrated status LEDs indicates normal operation or a possible lack of water. The filling up of the system is simple and easy as the fill opening is located of the top of the coolant tank.

Transportation

The machine / unit may be transported in the original packing only until the first startup. Notify the manufacturer immediately if you detect any damage. When the machine / unit is given another place in a plant, all connections of the machine / unit must be disconnected. Any dislocating of the machine / unit must be done in such a way that damage is excluded.

Should there be damage despite these notes, have the machine / unit inspected and/or repaired, if required, by an expert before you start it again.



Unpacking and handling

A visual inspection must be performed before and during unpacking in order to discover any damage that might have occurred during transportation.

Please watch out for loose parts, dents, scratches etc.

Any damage is to be reported immediately to the transport company (Note „Terms concerning instances of damage“). More over ZVEI's "Standard supply terms and conditions" in the relevant latest version apply.

Before the packaging material is disposed of, it is necessary to check whether there are any loose functional parts still in it.

To permit claims under the guarantee to be processed, we request precise information on the defect (possibly a photo) and a statement of the description of the devices' serial number.

To protect the device from damage, it must only be transported and stored in its operating orientation. Failure to observe this will result in the guarantee becoming void.

Scope of delivery

Please before you start the setup, check the package contents. The following items should be included:

- The basic system
Item No.: 801074 Cooling System Type D24-direct cooling system 24V / 0,35 bar
- Cabinet Key
- Manual / Documentation

Other accessories are not included.

Installation / Start Up

Installation

The location of the unit should be selected in such a way that it will always be easily accessible for the operating personnel and that it is not subjected to extreme heat, e.g. near a heating Protect the unit against humidity. If the unit is to be installed in areas where there is danger of frost, it must be specially equipped for such an installation.

The cooling system is designed to be installed on a firm, flat surface or for attaching to a suitable wall. It is important to ensure that the cooling vents are on the right and left of the housing is not closed or moved, and the suction is free. The cooling water hoses and the power cable must be laid without kinks and with enough space.

When mounting the system on a suitable wall or plant the 4 rear mounting points are to be used (4x M8 socket.).



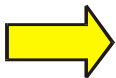
ATTENTION

The maximum screw in depth in the 8 x M8 threaded inserts in the body is **15mm**. Note length screws!



ATTENTION

Before you install the unit outdoors or in areas where there is danger of frost, contact the Manufacturer.



ATTENTION

The cooling air must be able to circulate freely. Any air intake and outlet channels must provide their own suction i.e. they must contain compensation bellows. The fitting of air-conducting device has to be agreed with the manufacturer..

Startup preparation

The start up of the cooling system is easy and simple completed within minutes. However, the following instructions and assembly steps must be observed:

Preparation

All hydraulic and electrical supply lines must be connected correctly before use as described below.

Hydraulic connection

First, the cooling system must be connected to the cooling circuit. To do this the cooling circuit needs to be connected to the inlet and outlet connector on the front panel of the cooling system (also see description of the front panel)

The Connections are CPC NS2 couplings which have a bayonet locking.

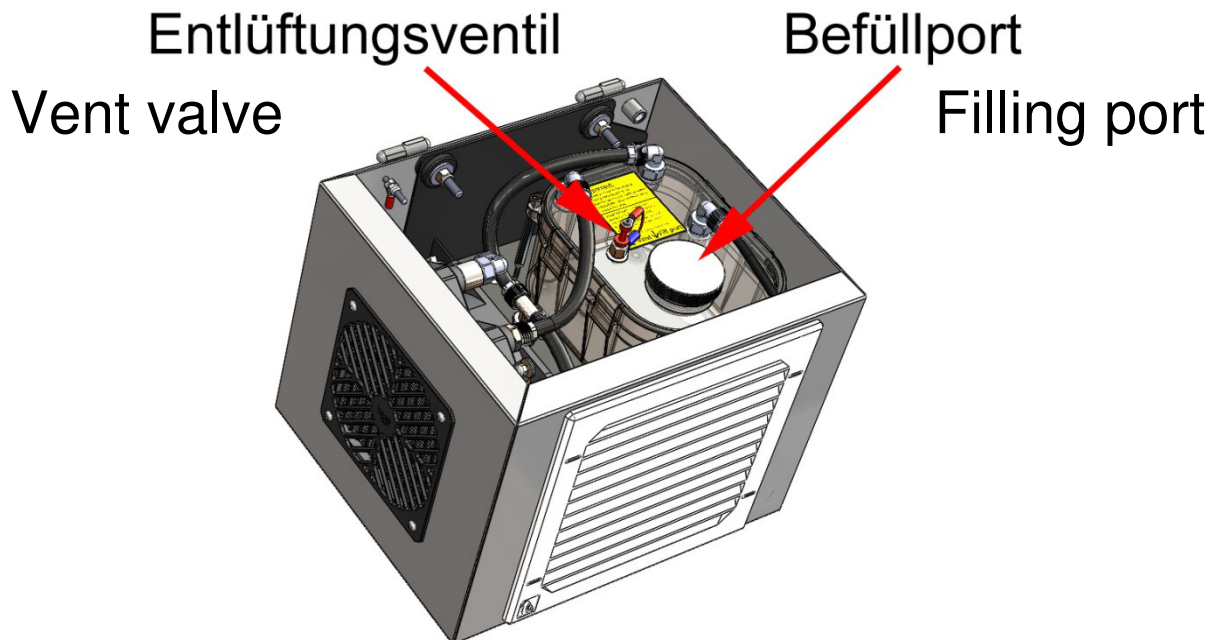
The coolant hoses must be pressed in first and then locked by turning to the right. Make sure that the locking lugs are securely latched.



ATTENTION

Between the cooling unit and all the heatsinks which are connected to the cooling system must be an equipotential (electrically conductive connection) provided!

Filling and venting



As a second step, the ventilation system of the plant must be enabled and the coolant tank must be filled (*before* starting the pump). To do this, open the top cover of the system with a cabinet key (included).

For this purpose, the "vent" marked purge valve must be opened by pulling out the lock pin upwards - while pressing the red locking ring down simultaneously. The pin is fixed against loss to the system and can remain in the system.

Then open the filling port (labeled "fill port") and fill in the coolant innovatek Protect into the cooling system until the coolant has reached the maximum level according to the level indicator.



WARNING

Use only recommended coolant (InnovatekProtect application mix)! (See details on the coolant)



WARNING

Use only clean coolant. Do not bring any dirt into the tank.

Startup

Connect main power supply:



As a rule, work on the electrical system must be carried out by expert personnel; the valid wiring diagram and the VDE

WARNING

guidelines must be observed.

Compare the mains voltage at side with the nameplate of the unit.

The cooling system is now connected to the power supply and thus the pump starts. The connector is coded and secured against rotation. Please attach and lock the plug completely.

Once the system is connected to the operating voltage, the coolant pump is started.

Please watch the level in the coolant tank *with the pump running* and fill up new coolant until the level no longer sinks.

This process may need to be repeated several times until the level in the tank remains constant.

Once the level remains constant few minutes, the refill port can be closed again. The tank capacity is about 0.8 Liters.



WARNING

The device must be operated only with the housing closed.



ATTENTION

After a short operating time should be checked whether media must be replenished.

Please check whether the cooling water hoses and fittings are tight.

Finally, check whether:

- the hoses are properly routed and installed in accordance with the labeling
- the system is filled and vented
- maximum coolant level is reached
- the pump is in operation

Note: Any air cushions in the cooling system will affect the cooling performance negatively. In order to remove air cushions allow the system to pump a few minutes. Please check the whether the external tubing is tight and tighten the screws if necessary to.

The cooling system is now filled and ready for use.

Operation

The operation of the cooling system is simple and uncomplicated. Normally during operation, no intervention is required. After setting up the system (usually done at the factory) the system is completely self-sufficient and independent. Only the coolant level in the reservoir and the degree of contamination of the air filter should be checked according to the maintenance plan.

Error code

The cooling system has a level monitoring and reports a too low level in the coolant tank by flashing the Error LED and by opening the error switch output.

- During operation:
 - ⇒ Power LED (gn) is on
 - ⇒ Error LED (rt) is off
- Coolant level too low:
 - ⇒ Power LED (gn) is on
 - ⇒ Error LED (rt) is flashing

Service and maintenance

Inspection

When the mechanical parts are running irregularly or when there are strange noises, switch off the machine / unit.

The cooling system requires very little maintenance and is constructed service-friendly. During operation, only the following maintenance work must be done.

Testing and maintenance of the airways:

When	What to do	Where
monthly	check	Air filter
monthly	check	Lamellae of heat exchanger

For maintenance of the coolant, there are two approaches. During regular operation you can choose one of the following options.



Option A)

When	What to do	Where
<i>First time:</i> after 2 years <i>Afterwards:</i> yearly	Check with cooling water test kit	coolant pH / concentration
As required	Replacement of coolant	Refilling Port
As required	Filling up of coolant	Refilling Port

Option B)

When	What to do	Where
Every 2 years	Replacement of coolant	Refilling Port

Shutdown of the unit

If the unit some time out of service, we recommend the primary medium drained off. Frost damage is excluded from all liability.

Troubleshooting

Lack of coolant

You will notice a lack of coolant by a marked drop in the cooling capacity. If this is the case, there is a leak in the cooling circuit

Excessive coolant temperature

During operation, the cooling unit is running into a reliable condition. Possible causes for a deviation are:

- Heat input too high => the refrigerating capacity at this operating point (Annex range of usability – Technical data)
- At high extern water temperature
- Water level too low

General malfunction

No pump power

This fault may be due to the following causes:

- Pump not vented (=> Start-up)
- Back pressure in the primary too high
- Water level in tank below minimum

For waste and recycling

The environmental requirements for recovery, recycling and disposal of materials and the refrigeration unit must be respected in accordance with

DIN EN 378 and ROHS Directives. For this purpose, the operator should be responsible.

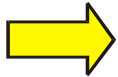
Electric connection



WARNING

As a rule, work on the electrical system must be carried out by expert personnel; the valid wiring diagram and the VDE guidelines must be observed. Make the unit dead.

Scrapping



ATTENTION

All components of the unit must be disposed of according to the applicable rules and regulations.

Coolant



ATTENTION

The coolant must be disposed of in accordance with the relevant rules and regulations.

Contact

In case of any questions please contact:



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Technical data

Electrical Wiring and hydraulic diagram are available if required as a separate file.

Specification cooling system Typ D24-Direktkühlanlage 24V / 0,35bar

Product code 801074 Kühlanlage Typ D24-Direktkühlanlage 24V / 0,35bar

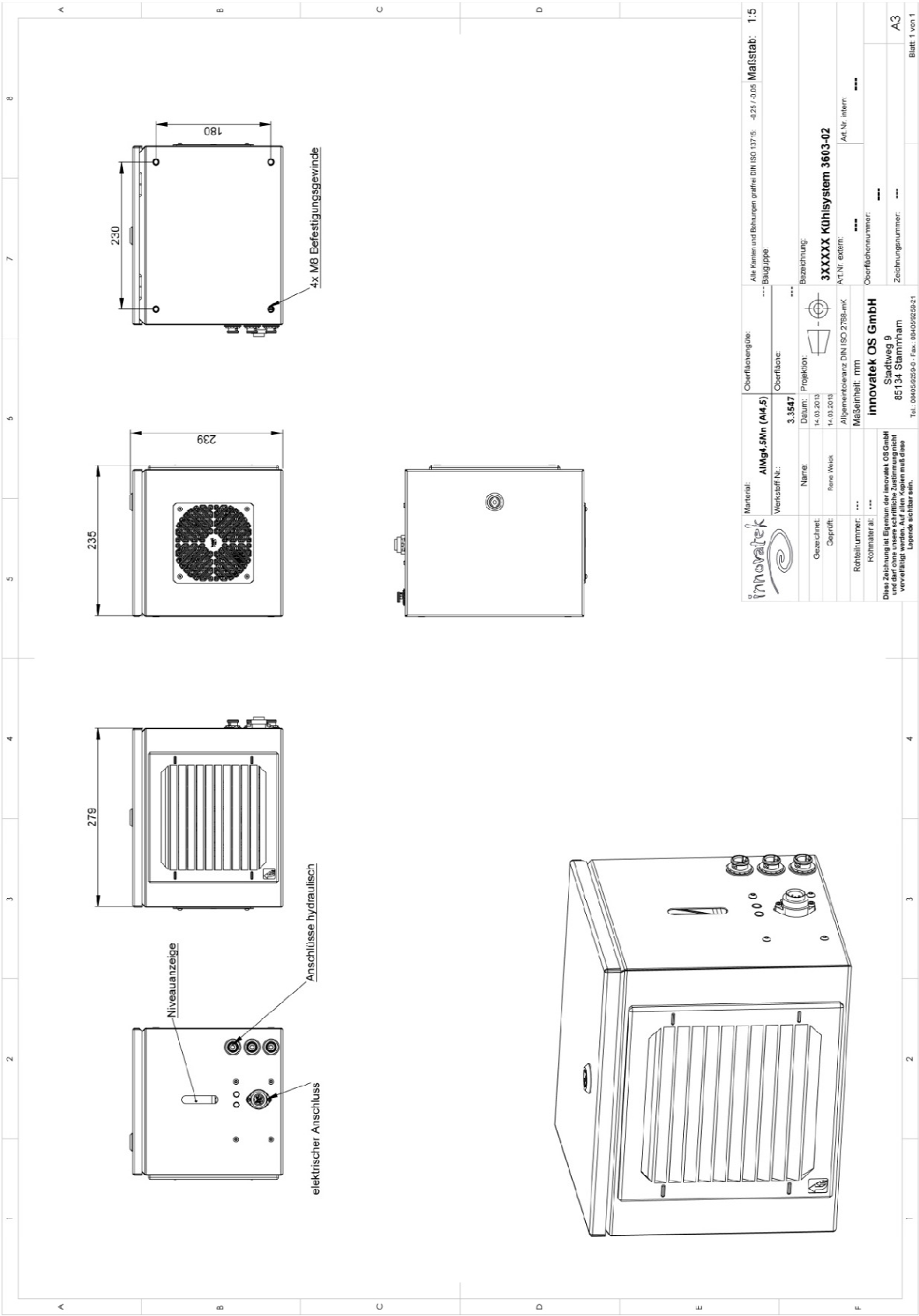
Survey:

Type of system:	watercooling system 24V= (24V 0,5A)
Operating Environment:	+10 °C to 55 °C
Storage temperature:	0 °C to 60 °C
Maximum cooling water temperature:	60 °C
Rear Cooling:	Air cooled (direct cooling)
Recommended coolant:	InnovatekProtect iP 25%
	Demin. Water 75%
Hydraulic connections:	Inlet and Outlet CPC NS2 coupling (fem)
	Drain CPC NS2 coupling (fem)
Cooling power:	850W (at Delta T 38K)
	22 °C ambient to 60 °C water
Thermal resistance of the system:	~ 0.045 K / W
Media tank volume:	0.8 liters ~ (1.2 liters total volume)
Flow pressure, external:	350 mbar
External capacity:	max. 5Liter/min
Power supply to the unit:	24V =
Electric interface:	Connector Hirschmann CA Series Nominal current: 10 A / AC / DC poles: 6 + PE Type 932326-100
Power consumption:	15W
Dimensions:	290 x 235 x 240mm (LxWxH)
Weight:	about 8.8 kg (empty)
Loudness:	about 39 db (A)
Other:	Automatic vent system, Air filter G2 Drain coupling self-locking (CPC NS2 f) Level switch in the tank Level monitoring with signal output and visual display



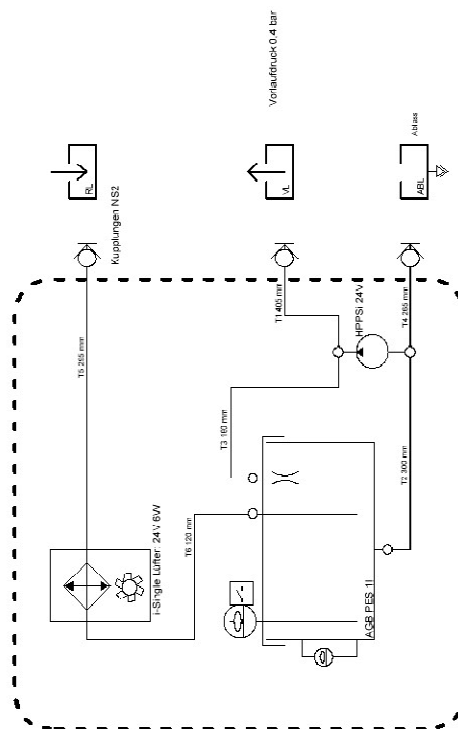
Dated:
01.10.2013 Rev.1.2


Drawing:



Dated:
01.10.2013 Rev.1.2

Hydraulics:



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