EN

INDUCTION HEATER

DHI45C

INDUSTRY

Operating and maintenance manual

DAWELL CZ
INDUSTRIAL HEATING TOOLS

CONTENTS

1 INTRODUCTION

Dear Customer, thank you for your trust and Purchase of product from DAWELL CZ s.r.o. We believe that you will be fully satisfied with our product and taht you will keep your favor in the future as well. In case of any questions or comments do not hesistate to Contact us either on on our website or Contact your sales representative directly.
The first use of the device is the purpose of this legal step instructions, which the user confirms their free will, that this instruction properly studied, fully understand its meaning and familiar with all the risks.

ATTENTION! Do not attempt to place (or use) the Equipment before you become familiar the entire operating instructions. Keep the instructions for future use.

2 SAFETY INSTRUCTIONS

2.1 GENERAL USE WHEN USING DHI45C INDUSTRY

Symbols shown in this Manual warn and identify potential hazards when handling the device.

- Do not leave DHI4F unattended while it is turned on. Always deactivate DHI-45C INDUSTRY with the master switch when not using it for heating!
- Make sure the power supply unit has sufficient air supply for cooling
- Make sure the ventilation openings are clean and free of dust and dirt, to not preclude flow of cooling air.
- Do not attempt to repair your DHI4F. The device contains no user-reparable components.
- The user is responsible for the system installation and use in accordance with instructions shown in this Manual. The supplier is not liable for any damage due to inexpert use and operation.
- **Only persons older than 15 years, properly trained and with adequate qualification can operate the equipment. Do not use the equipment when under the influence of drugs, alcohol or medication.**
- Keep persons standing around and animals at a safe distance while working with the device, including while the heated material is cooling down.
- Avoid working in rain, water and humid environments. Keep the working area well ventilated and dry, clean and well lit.

SYMBOL	EXPLANATION
	**DANGER!** Denotes a dangerous situation that will result in a death or serious injury. The potential risks are shown under the following symbols, or explained in the text.
	Before plugging in your DHI4F, make sure the socket voltage matches that on the product plate. If the socket voltage does not match that shown on the type plate, it can result in a serious hazard and damage to your DHI-45C INDUSTRY.
	**IMPORTANT!** Read this Manual carefully to gain information about the device features. Inappropriate handling may cause injuries to persons and damage to the device.

NOTICE: This equipment is not designed for use in residential environments and may not provide adequate protection of radio reception in such environments.

2.2 INFORMATION SYMBOLS

The symbols shown below will guide you through this Manual and warn you of potential risks.
If you see the symbol, be careful! Follow the instructions shown below to avoid the dangers.
Read all the safety notifications and follow the instruction shown below.

You will find more safety instructions in bellow.

SYMBOL	EXPLANATION
	Risk of death by electrocution.
	CAUTION! Hot surface! Risk of burns!
	CAUTION! Risk of electric shock!
	Risk of fire.
	Electromagnetic field risk.
	Do not use cardiac pacemakers, implanted devices and watches or other metal objects.
	Always use! Protective goggles, protective masks and protective gloves.

2.3 SYMBOLS INDICATED HEALTH RISKS

2.3.1	ELECTRIC SHOCK
	**CAUTION!** Never remove casing and do any activity with the induction heater unless you have first disconnected the plug from the socket. **Then wait at least 1-2 minutes after unplugging it.** DO NOT OPERATE THE EQUIPMENT IN RAIN AND IN MOIST ENVIRONMENTS. **CAUTION! Any and all interference with the electrical section may only be made by persons with adequate electrical engineering qualification. Any unauthorised servicing work poses the risk of electric shock.**

2.3.2 CAUTION!	HOT SURFACE
	**CAUTION! Do not touch any objects located near the induction heater unless you have checked that it has cooled down.** Do not touch the induction coil if it is activated and the strong magnetic field and heating are turned on. **ALWAYS wear protective gloves or other protections when handling the device as there is a risk of burns. Protective equipment is specified in text bellow**.

2.3.3	RISK OF FIRE
	DO NOT OPERATE THE EQUIPMENT IN ENVIRONMENTS WITH AN EXPLOSION HAZARD! Do not overheat parts. Do not heat materials above their melting point; in such cases, there is a risk of being spilled with hot metal and burns. Be careful about fire if the device is kept near one. Keep inflammable substances outside the working area. Do not put the device on, over or near inflammable surfaces. Do not use the machine if it is near objects that may contain inflammable particles of dust, gas, vapour or liquids. After completion of work with the device, check the area to make sure everything is secure and there is no risk of sparks, flames and fire.

2.4 SYMBOLS WARNING WHILE HANDLING THE DEVICE

2.4.1	SAFETY EQUIPMENT WHEN WORKING WITH THE DEVICE
	Always wear protective goggles or face mask when using the DHI-45C INDUSTRY.
	Use of the device may produce dangerous waste gases from burning of old paints, lubricants, sealants, glues, etc. These exhausts may be toxic. Always use adequate protective masks or respirators.
	Always use protective gloves with adequate thermal resistance when working with the device. The high temperatures produced by using the DHI-45C INDUSTRY may cause serious burns on contact with the heated part.

2.4.2	ELECTROMAGNETIC EFFECTS
	The electromagnetic field (EMF) may affect implanted medical devices. The device is not intended to be used by users of cardiac pacemakers or other implanted medical devices. While working, maintain a safe distance between body parts and the heated inductor, as specified in its instructions for use. Short-term tissue exposure to high-intensity time-variable magnetic field may lead to tissue warming by the induced current. Long-term exposure to high-intensity time-variable magnetic field may lead to -undesirable effects on nerve activity -fatigue -headaches -blood cell production disorders
	Persons with other metallic or electronic surgical implants are not allowed to work with the DHI-45C INDUSTRY and have to keep a safe distance of at least 1 m from the device. When working with the DHI45C INDUSTRY, do not wear any metal objects such as jewels, rings, watches, necklaces, identification plates, belt buckles, piercing or clothes with metal components such as metal rivets, buttons, zip fasteners, etc. The device can heat these metal objects very fast and thus cause serious burns or even ignition of clothes!

! Users of these devices should immediately consult their medical doctor to avoid potential troubles connected with them while handling the device.

3 PERIODIC INSPECTION AND MAINTENANCE

Scheduling device maintenance has to consider the degree and circumstances of device use. Considerate use and preventive maintenance help prevent needless defects and malfunctions. Perform checks as per standards and law in force. Only workers with adequate electrical engineering qualifications may carry out any jobs on the device.

WARNING! Any handling of the power supply, including maintenance, requires its disconnection from the power line. To prevent injuries, always disconnect the power cable and wait at least 2 minutes before removing the casing. Discharge the capacitor circuits before any further work.

Periodic maintenance includes cleaning the device every half a year:

1. Disconnect the device plug from the socket and wait about 2 minutes (the capacitors inside the device will discharge). Then remove the upper device casing.
2. Clean all dirty power electric connections and tighten any loose ones.
3. Clean the internal device parts (coolers in particular) to remove dust and dirt – for example using a soft brush and vacuum cleaner.
4. The upper casing has to be earthed – remember to connect the yellow-and-green earthing wire before screwing it on.
5. After maintenance, carry out safety measurements as per standards in force.

Note: Never use solvents or thinners (e.g., acetone), because they may damage insulation, plastic parts and lettering on the front panel!!

4 STORAGE

The device has to be stored in a clean and dry room. Protect the device from rain and direct sunshine and freeze.

After heating completion, leave the device switched on for 10 more minutes – it will be cooled down by fans until it is cold, then it deactivates the fans. After that, turn it off using the master switch and disconnect it from the power line.

If you disconnect the device immediately, leave it and all the working coils to cool down for at least 15 minutes.

5 WARRANTY PROVISION

1. Unless otherwise specified, the warranty period for devices is set by the manufacturer at 12 months from the date of sale to the buyer. The induction burner is subject to a 6month warranty period. Consumables such as extenders, coils, etc. are subject to a 3month warranty period.
2. When making a claim for warranty repair, the warranty certificate has to be shown; it is only valid if it bears the date of sale, serial number, stamp of the shop and the seller's signature, confirming proper demonstration and explanation of the device features.
3. The warranty period will be extended by the time for which the device is in warranty repair. If the repair finds no defects falling under the warranty, the device owner shall pay the costs of the servicing technician's work.
4. The warranty servicing covers defects occurring during the warranty period demonstrably due to flawed design, flawed workmanship or inappropriate material. Such defects will be repaired by the manufacturer free of charge. Complaints shall be made by the user with the device manufacturer; the place of performance is the manufacturer's registered office.
5. The warranty does not cover defects caused by inexpert handling, overloading, use of wrong accessories, or interventions by unauthorised persons, natural wear and tear, or damage during transport. Recognised defects exclude damage occurring due to inadequate care of neglected maintenance, non-adherence to rules specified in the Manual, using the device for purposes for which it is not intended, and overloading the device, albeit temporarily.
6. The warranty expires if the user makes any unpermitted modifications or changes to the device, connects the device wrongly, or has used the device in contravention of technical requirements.
7. The manufacturer is under no circumstances liable for subsequent damage caused by using the device. This warranty does not under any circumstances constitute the manufacturer's liability in excess of the price of the device.
8. Device maintenance and repairs have to use exclusively original parts supplied by the manufacturer in accordance with their respective instructions for use.

6 COMMISIONING

6.1 UNPACKING AND FIRST START

1. Unpack the device and any accessories supplied and check that they are in good order and the device and the accessories are not damaged. If you find any defects, do not continue!
2. Leave the device to acclimatise for 15 minutes.
3. Remove the sealing ring located under the coolant tank filling hole lid tab. Pull to remove the lid tab and take out the sealing O-ring. Then push the tab, including the foam gasket, back into the tank lid. Keep the O-ring for potential future use if sending the machine via a parcel service.
4. If the focusing head is not attached to the grip by default, screw it on.
5. Fill the device with the coolant supplied with the device via the filling hole.
6. Connect the device to a 230 V socket and turn it on using the switch at the back of the device.
7. The cooling circuit venting is activated automatically, and the letters “FIL” flash on the display during this. The coolant level decreases noticeably during the filling.
8. After completion of the venting, turn the device off and add the coolant so that the coolant level is at the upper edge of the gauge at the back of the device (about 1 cm below the top of the tank).
9. Turn on the device and let the venting proceed. If the level does not sink, the device is filled and vented correctly. Repeat the procedure as needed.

6.2 COOLANT REFILLING

Check and refill the coolant before each device starting. Use the original coolant only! **DO NOT USE WATER!**
The device has integrated coolant level inspection. In case the coolant runs out, the device stops heating and displays the error message “E##”. In that case, refill the coolant in the tank as described above.

7 REPLACEABLE HEATING INDUCTOR EXTENDERS

The DHI45C INDUSTRY induction heater device comes with a basic focusing heating inductor. The other accessories are listed in Chapter Spare and consumption parts.
Correct and safe functioning of the device requires the use of only original heating inductors, extenders, adaptors and other accessories in accordance with their respective instructions for use.
The lifetime of each type of heating inductor and accessory is shown in its instructions for use along with inspection and maintenance frequencies.

7.1 HEATING INDUCTOR EXTENDER REPLACEMENT PROCEDURE

1. Turn off the device using the switch at the back of the device.
2. Make sure the coolant tank is safely closed.
3. Grasp the grip so that it is in a vertical position with the extender facing upwards, at leat 20 cm above the power supply unit. Maintain this position through the entire replacement procedure.
4. Unscrew the heating inductor extender by rotating it counterclockwise until it is released.
5. Make sure the threads and contact surfaces of both the grip and the extender are clean and free of signs of corrosion.

6. Mount the new complete extender by freely rotating it clockwise until the outer contact surface of the extender makes permanent contact.
7. Turn on the device and, after an initial venting of the cooling circuit, check the coolant level and add coolant if necessary.
8. Make a visual check of the tightness of the extender-grip connection and any other connections of the new extender. If there is a coolant leak, safe use of the device is no longer possible.
9. Check the conductivity of the connection by briefly activating the device without any heating inductor load.

- If the device display shows the output power, everything is alright.
  If it shows „A.Fr“, the contact between the contact surfaces is incorrect. In that case, safe use of the device is no longer possible.

8 ABOUT THE DEVICE AND HEATING

8.1 SUPPORTED TECHNOLOGIES

DHCS3 - Dawell Heating Control System 3
Technology developed by Dawell enabling controlled heating with multiple-pass real-time control of various parameters, which is the heart of the device features. The heating can thus be controlled in various modes, increasing its applicability and versatility. It can be used in grids with poorer switchgear, where it does not trip circuit breakers etc.

BIPT – Boost Induction Power Technology
Enables increasing output power for better and faster material heating. This technology finds application primarily in open coils and heating various types of material.

DIPA - Dynamic Induction Power Adjust
Automatic optimum setting of required power for achieving max. efficiency, speed and long-term heating in dependence on other heating parameters.

QST-Quiet Cooling Technology
An adaptive mode optimising cooling for quiet operation or maximum power output.

URC- Universal Remote Control
Support to universal remote device control, both analog and digital, or using a data bus, enabling easy integration into production processes.

ACMS-Automatic Check And Monitor System
Combines features that check and verify device functionality and condition after activation, and a feature that constantly supervises and monitors the heating running and parameters for maximum device safety and reliability.

DFU-Device Firmware Update
Enables updating the firmware.

8.2 HEATING MODES AND THEIR APPLICATION

The heater has available three different heating modes :

1. Field of burner (CF) power mode

In this mode, the induction heater maintains the same intensity of the magnetic field regardless of the coil surrounding conditions. The heater behaves similarly to a gas burner, where the set field intensity matches the flame power. The amount of introduced heat is then easily controlled by moving the burner nearer or further from the material, similarly to flame heating. The advantage is that it is easier to control the introduced heat as needed and, most importantly, it allows finer and sensitive heating, e.g., in car repairs (warming window edges when removing windows, bodywork plates for easier removal of stickers, rubber parts, etc.).

Advantages:

- Power control by moving nearer or further.
- Fine heating.
- Lower loss in heating, particularly for open coils or when moving focus coil away from material.

2. Control power mode (CP)

In this mode, the device tries to deliver and maintain the set amount of introduced heat or energy to the material. The advantage is thus the controlled amount of heat introduced to the material, which combined with timing enables relatively accurate heating to a set temperature, e.g., for repeated pre-heating in production, etc.
The disadvantage of this mode that when moved further from the material, the device significantly increases the power output to maintain the heat delivery level to the material, thus increasing the loss and resulting in a faster device overheating. The efficiency is reduced as well.

Advantages:

- The device automatically maintains the set amount of heat introduced to the material, thus heating the material accurately.

Drawback:

- The disadvantage is the great increase in the induction output when moved away from the material or with inappropriately chosen coil, resulting in high heating load and quick temperature increase, reducing in turn the load factor and rapidly overheating the device.
- The efficiency is reduced.

8.3 CONTROLLED HEATING

Using the heating timer

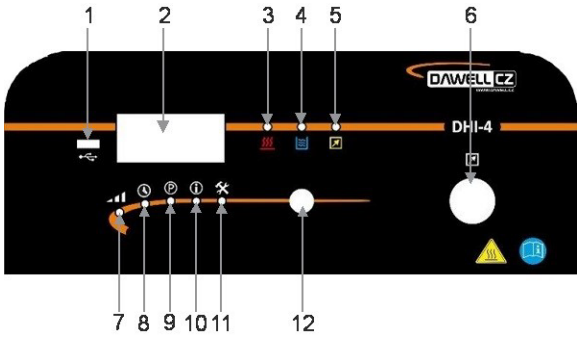
The device has an integrated heating timer for easy setting of desired heating time, which combined with the controlled power mode enables relatively accurate and repeatable heating with controlled heat introduction, i.e., heating to a set temperature.

9 REMOTE CONTROL AND INTEGRATION INTO PRODUCTION PROCESS

The device has a universal remote control system that enables its easy integration into automated production processes or facilitated work in small batch production. The device can be controlled using a foot pedal, switch contact, analog signal both based on voltage and current coil, and provides logical outputs informing about the system status. In the highest class, it support full control via a digital data bus, enabling both full control and complete system monitoring.

10 DEVICE CONTROLS

10.1 DESCRIPTION OF DEVICE COMPONENTS



Pos.	Description	Pos.	Description	Pos.	Description
1	USB connector	**5**	Indicator REMOTE	**9**	Indicator PROGRAMME
2	Display	**6**	Remote control connector	**10**	Indicator INFO
3	Heating indicator	**7**	Control indicator	**11**	Indicator SETTING
4	Cooling and overheating indicator	**8**	Indicator TIMER	**12**	Encoder

Pos.	Descripton
1	Display
2	Encoder
3	Remote control connector
4	Handle
5	Coolant reservoir cap
6	LED ilumination
7	Input control button ind. torch
8	Control cable
9	Induction torch cable
10	Induction focus head
11	Handle of induction torch
12	Cooling vents
13	Induction torch holder

Position	Description
14	Main switch
15	Coolant level indicator
16	Power cord
17	Production label

Heating indicator lamp

- Indicates heating status.

	Indicator lamp	Status
	Green	Heating in progress
	Yellow	Warning – limited heating output
	Red	Heating error – overloading
	Red, flashing	Heating error – wrong coil

Cooling and overheating indicator lamp

	Indicator lamp	Status
	Green	Cooling in progress
	Green, flashing	Only water circuit active, venting
	Yellow	Warning – near overheating
	Red	Cooling error – no coolant or hose squeezed

REMOTE indicator lamp

	Indicator lamp	Status
	Green	Remote control activated

10.2 ACTIVATING THE DEVICE

- Check the coolant level and refill if necessary.
- Connect the device to a socket and turn it on using the switch at the back of the device.
- The device autodiagnostic test (self-test) is initiated automatically and the cooling circuit is vented; the letters “FIL” flash on the display during this“.
- If the device detects lack of coolant, it displays the error message E12: In that case, refill the coolant in the tank.
- If everything is in order, the device switches to standby.

10.3 STANDBY

This is the initial device status, which allows turning the encoder to set the desired heating power or temperature, depending on the mode selected:

- Controlled power mode (CP), indicator lamp glows red – the user sets the desired heating power in % of maximum heating power and the device automatically adjusts the required parameters to maintain the set power.
- Controlled magnetic field mode (CF), indicator lamp glows green – the user sets the desired field intensity in % of maximum field intensity and the device automatically maintains the set field intensity.

The indicator lamp starts flashing during the heating and the display shows the current readings of power output in kW.
The desired heating mode can be set in the settings or switched by pressing and holding down the encoder – the display shows the corresponding mode name CP/CF and the indicator lamp changes colour.
Press the encoder to move to further device parameter settings, such as the heating timer, etc.
Note: If the power is controlled remotely, the letters “rc” are displayed for 3 sec when turning the encoder.

	Indicator lamp	Status
	Red	Heating power setting in %, mode CP
	Red, flashing	Power reading in kW during the heating
	Green	Magnetic field intensity setting in %, mode CF
	Green, flashing	Power reading in kW during the heating

10.4 HEATING TIMER

The timer makes it possible to automatically stop heating after a set amount of time, enabling accurate dosing of energy (heat) introduced to the material, e.g., for spot or repeated heating to a set temperature.
Press the encoder repeatedly until the TIMER indicator lamp glows red. Turn to set the desired heating time in seconds or deactivate the timer by selecting “OFF“.
If the timer is set, then the indicator lamp glows green when the heating starts, and if the heating is stopped by the timer, the indicator lamp starts flashing green and the display shows the letters “OFF” once the button is released. Releasing the button stops the heating immediately.
Note: If heating is started in the timer settings, the display will show the remaining heating time (remaining heating time countdown).

Note: Press the encoder to enter pre-heating/program settings (see following chapter). To exit to power settings immediately, press and hold down the encoder.

	Indicator lamp	Status
	Red	Heating time settings
	Green, flashing	Latest reading
	Red, flashing	Current reading during the heating

10.5 INFO

Info enables display of basic information about the heating process and the device. It thus facilitates selection or optimisation of induction coils for the material to be heated, removal of any problems, etc.

If you wish to display Info, press the encoder repeatedly until the indicator lamp ⓘ glows red 🔴. Turn the encoder to select the parameter to display and press to confirm. The display shows the latest reading (indicator lamp glows green 🟢), or shows the current reading during the heating (indicator lamp flashes green 🟢).
Press again to return to parameter selection, and you can select another one. If you wish to exit the Info display and continue to further settings, select "---" in the parameters and press to confirm. To exit to power settings immediately, press and hold down the encoder.

The following parameters are available in Info:

Description	Display	Value unit
Return / exit	---	---
Power transmitted	P	0.01 kW
Output power	Po	0.01 kVA
Power faktor	PF	1 %
Frequency	FrE	0.1 kHz
Input current	OC	0.1 A
Output current	IC	0.1 A
Vstupní napětí	VOL	Vrms
Limitation	OL	--- = no limitation po = max. power transmitted ic = max. input current oc = max. output current dut = max. inverter duty tE = temperature
Errors	Err	Error history

Note: see annex for a list of errors.

P – Power transmitted

Shows the current device power output in Watt, which approximately (after deducting loss in cable and heating head) matches the power or energy introduced to the material being heated. It is thus a parameter directly related to heating speed and temperature. This transmitted power increases with growing bond (decreasing gap) between the heating coil and the material.

Po – output power

Related to inverter output power and shown in VA (volt-amperes). It is the so-called apparent power. It is directly related to the power or intensity of the magnetic field that the heating coil produces. When the bond between the induction coil and material decreases, or when heating less magnetic or non-ferrous metal materials, this output power has to increase in order to maintain the same amount of energy or heat introduced to the material, increasing the loss in turn. Increasing output power can achieve higher transmitted power, enabling heating of non-ferrous metals, for example.

PF – Power Factor

This indicates the relative quality of the heating induction circuit and is directly related to the bond between the induction coil and the material, making this parameter very useful for selecting the optimal coil. The closer the number to 100 %, the higher the efficiency of heating energy transmission to the material, and vice versa. Generally speaking, if PF=100 %, all the energy goes straight into the material and the heating has maximum

efficiency. With lower PF, only a part of the energy is transmitted into the material and part oscillates in the coil.
The PF is the highest with a focus adapter, applied tightly to a thick material. Moving away from the material quickly reduces the PF. For open coils, the more accurately the coil sits on the material and the smaller the gap between the coil and the material, the higher the PF and the more efficient the heating. The recommended gap is approx. 2-5 mm. With smaller gaps, heat from the material being heated is transmitted into the coil, resulting in a faster device overheating.

Frequency „FrE“
The current heating frequency, which should be within 25-40 kHz with a correctly selected coil, depending on the load and the material being heated. If it deviates significantly, the device displays a warning, meaning that the user should use a more appropriate coil. If the frequency exceeds the limit values, the device turns itself off and reports an error.

Output current
Indicates the current delivered by the inverter to the resonance circuit in Amperes.

Input current
Indicates the current consumption from the power line in Amperes.

Input voltage
This is the current power line voltage in Volts.

Cooling temperature
Indicates the average temperature of device components in degrees Celsius.

Limitation
Indicates power or parameter limitation, if any, during the heating. For example, if the user sets the desired power to 3.5 kW using an inappropriate coil, the device will not only display a low power factor (PF), it will also indicate a duty-type limitation at the output, meaning that the inverter cannot deliver any more energy. Alternatively, if the user sets a current limit at the input to, say 10 A, the device reports that the power is limited by the input current. If heating proceeds correctly and in the optimum band, the device will always display “---”, meaning that the device is not limited by anything.

The heating is limited:

- „---„ = no limitation, heating proceeds optimally
- „po“ = by maximum device power
- „ic“ = by maximum input current
- „oc“ = by maximum inverter output current
- „dut“ = by maximum inverter output voltage
- „tE“ = by max. temperature

Errors
Shows a history of the latest errors that have occurred in the device. Turning the encoder clockwise shows the full error history progressively.

10.6 SETTING

Allows setting the heating parameters.

Press the encoder repeatedly until the 🛠 indicator lamp glows red 🔴. Then turn the encoder to select the parameter to display or set and press to confirm. The indicator lamp glows green 🟢. Now you can turn the encoder to set the desired parameter value. Press the encoder to confirm the setting; this will return you to selection of another parameter, or select "---" to go to the next setting. To exit to power settings immediately, press and hold down the encoder.

The indicator lamp has to following statuses:

	Indicator lamp	Status
🔴	Red	Parameter selection
🟢	Green	Value settings

The following parameters can be set:

Name	Display	Value
Return / exit	---	---
Heating mode	REG	CF = constant magnetic field / current CP = constant heating power
Remote control	rc	OFF PEd = on/off control, power set on device PEA = analog, current coil (0-5 V/10 V)
Input Current Limit	ic.L	6.0 max. – 16.5 A = limitation on maximum input current
Max. output power	Po.L	2.0 max. – 4.5 kVA; defaultm is 4 kVA
Cooling	CoL	Lo = silent mode (workshops, short-term capacity) Std = standard mode Hi = max. capacity / does not switch off
Water Fill	FIL	no yes = activates filling and venting
Factory setting	FAC	no YES = load factory setting
Unlock code	UnL	Servicing menu code, to unlock features ...
Firmware	Fir	Display firmware version

„HC" Heating mode

Enables selection of desired heating mode – see chapter Heating modes. The following options are available:

- CF = control based on desired magnetic field intensity
- CP = control to desired heating power

„Po L" maximum output power

Allows you to select the maximum inverter output power, which is convenient for small coils, limited by maximum power or current. This enables use of specialised, small or wire coils, which would otherwise overheat.

The other advantage is the possibility of limiting the max. power to the minimum required, which in combination with the CP power control mode significantly reduces device overheating and increases the heating efficiency.

„ic.L“ Power Line Current Limit
Enables limitation of current consumed from the power line, which permits trouble-free use of the device in grids with poorer switchgear, e.g., in repairs, construction industry, workshops, etc.

„FIL“ Coolant filling and venting
Used for manual activation of venting and coolant filling.

„CoL“ Cooling settings
Used for selecting the preferred cooling mode. The following options are available:

- Lo – silent mode, where the user prefers quieter cooling and does not mind higher grip temperature. It is convenient for small workshops and production floors that require silence.
- Std, standard – optimum choice between the silent mode and maximum power, suitable for general use.
- Hi – maximum capacity mode, increasing the cooling intensity at the expense of noise. The advantages are lower grip temperature and maximum power. It finds application in more demanding uses.

„RC“ Remote Control
Remote device control settings. The following options are available:

- PEd - pedal = heating is activated by stepping on a pedal, with power set on the device.
- PEA – analog pedal = heating is activated and power adjusted by a pedal, or heating activation and deactivation is controlled by analog signal 0-5 V, or 0-10 V or a current coil 20mA.
-

FAC „Factory setting“
Reverts to factory settings.

Firmware
Displays the current device firmware version.

Unlock code
Allows unlocking some device settings and features by entering a code.

11 REMOTE CONTROL

Activates remove device control via an RMT connector.

Signal	Type	Description
INPUT	Analog	Control signal
OUT ERROR	OC / DIG	Closed on error
OUT HEATING	OC / DIG	Closed during active heating

Note: The output signals are not active if DIG remote control is used.

Connector pinning

Pin	Analog IO		Digital IO
1		Common/GND	
2		Input	
3	OUTA = HEAT		MODBUS / RS485B
4	OUTB = OK		MODBUS / RS485A
5		12 V	

12 LIST OF ERRORS MESSAGES

Error	Description
1	Undervoltage
2	Overvoltage
3	Input overcurrent
4, 5	Output overcurrent
6	Overload
7, 8	Frequency – min / max
9, 10, 11	Resonance circuit and frequency control error
12	Out of coolant
13	Hose squeezed or clogged
14 – 18	Device overheating
19	Wrong grid frequency
20-256	Device servicing errors

13 TECHNICAL PARAMETERS

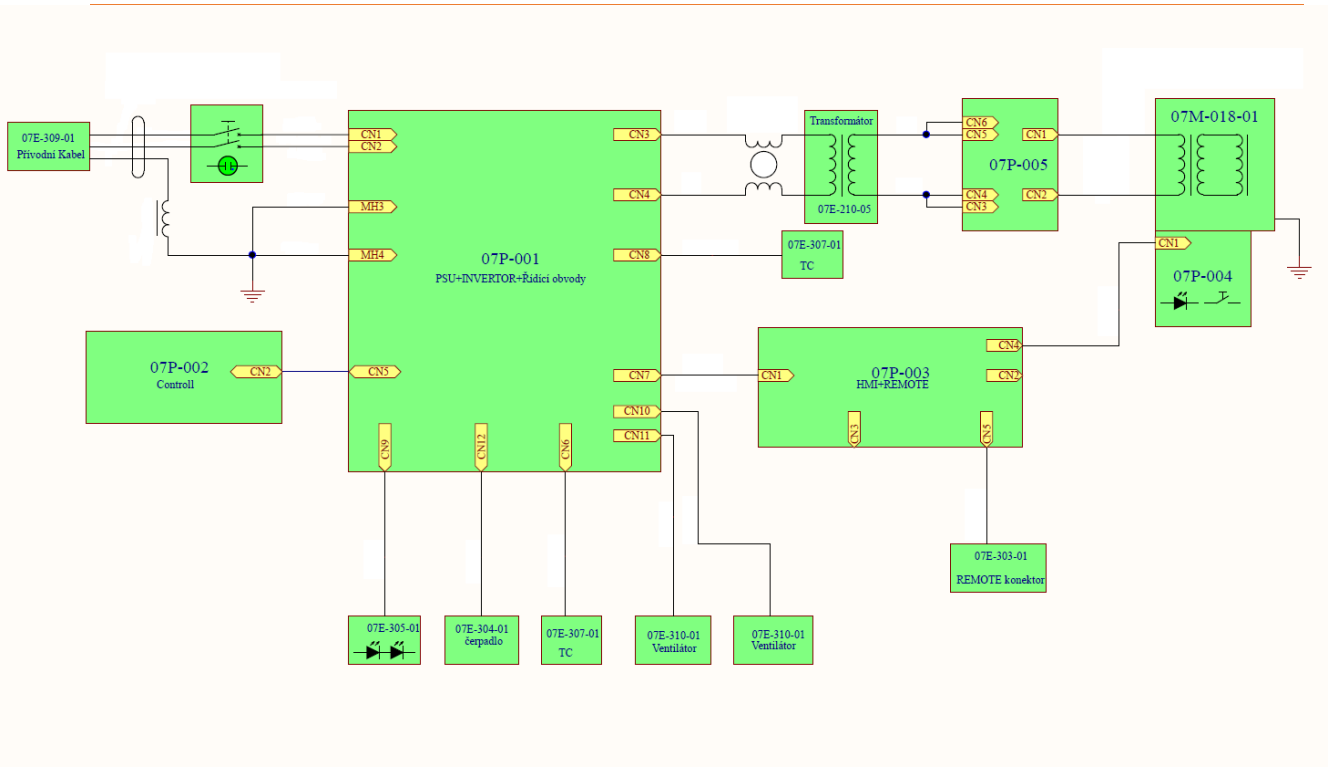
		DHI-45C INDUSTRY	Unit
Order codes		07-012	
Power requirements	V1	230 (180-265)	V
Frequency	F1	50/60	Hz
Power consumption	I1	16	A
Protection	IP	IP22	-
Working frequency	F2	18-60	kHz
Power control (CP mode)		10-100 % z Pmax, fluent	%
Field control (CF mode)		30-100 % z Imax, fluent	%
Lenght of induction torch		2	m
Input power	P1 max	3,7	kW
Output induction power	P2 max	5	kVA
PF for 100 % power		>0,7	-
Dimensions		240x200x440	mm
Weight		13.5	kg
Coolant content		2.5	l

The device is classified for electromagnetic compatibility under the standard ČSN EN 55011 ed.4 : 2017 as a class A, category 2 device.

“Class A device is a device suitable for use in all places except those that belong to residential environments and those that are directly connected to a low-voltage power supply grid supplying power to buildings used for residential purposes.”

“Category 2 devices are devices in which high-frequency energy within the frequency range from 9 kHz to 400 GHz is intentionally produced and used.”

14 ELECTRIC SCHEME



15 USED DEVICE DISPOSAL

These devices are built using materials that contain no toxic substances or poisonous to the user. Dispose of the discarded device using a collection point intended for collection of used electric equipment. Do not dispose of the used device as ordinary waste.

The company is registered in the ASEKOL collective system (under manufacturer registration no. 04499/16-ECZ) and finances handling of electrical waste itself. This symbol on products and/or in accompanying documentation means that used electrical and electronic products must not be added to ordinary municipal waste.

16 SPARE AND CONSUMPTION PARTS

Pos.	Code	Description
1	82-002	Round coil
2	82-008	Double turn coil
3	82-007	„U“ coil
	91-002	Remote control
	91-003	Coolant liquid (3 l)