

DAIKIN

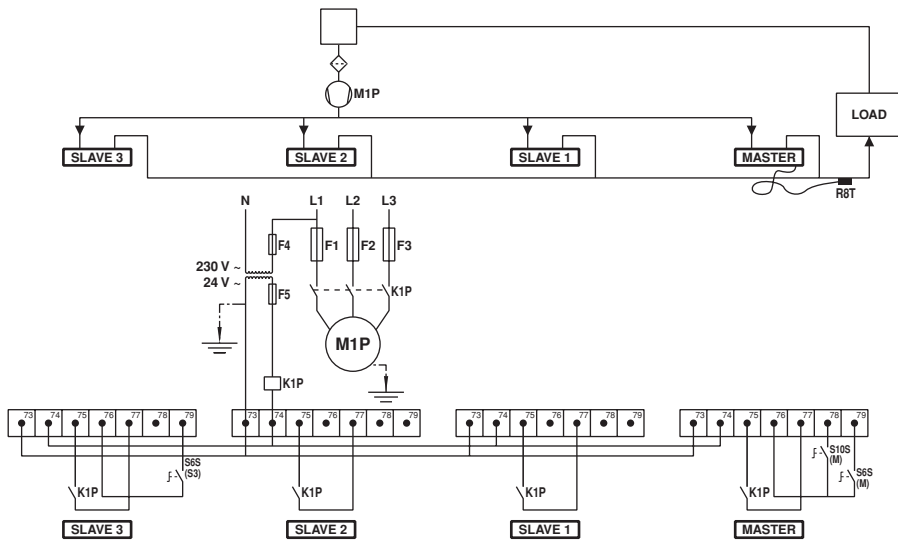


INSTALLATION MANUAL

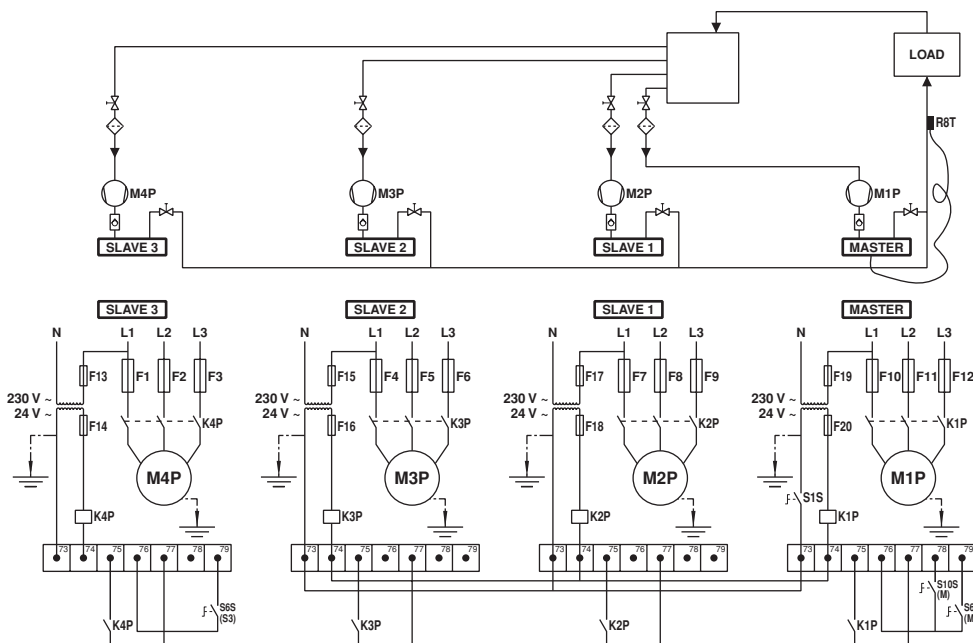
Condenserless water-cooled water chillers



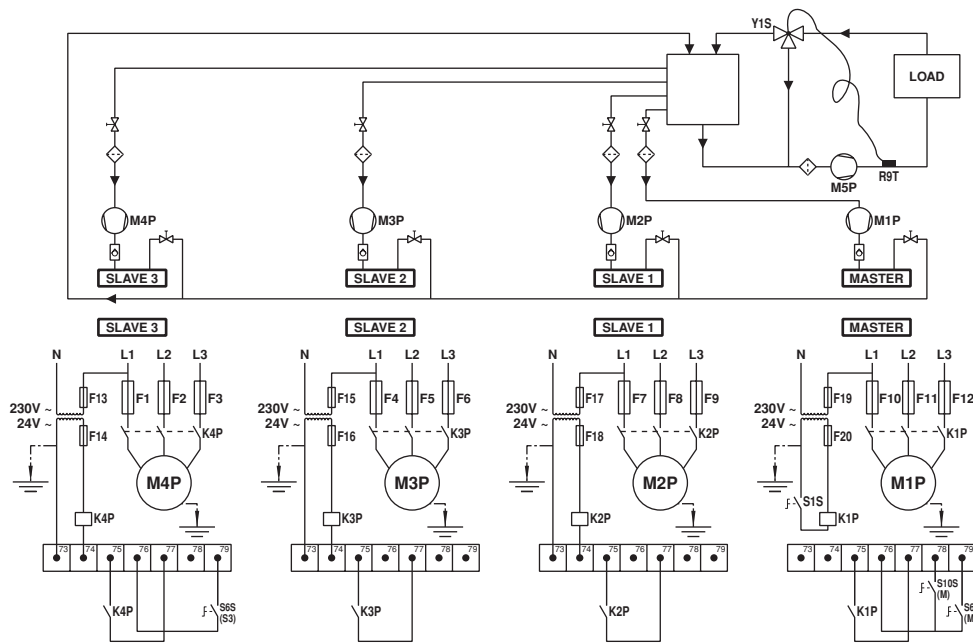
EWLD120MBYNN
EWLD170MBYNN
EWLD240MBYNN
EWLD260MBYNN
EWLD340MBYNN
EWLD400MBYNN
EWLD480MBYNN
EWLD500MBYNN
EWLD540MBYNN



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Thank you for purchasing this Daikin air conditioner.



READ THIS MANUAL ATTENTIVELY BEFORE STARTING UP THE UNIT. DO NOT THROW IT AWAY. KEEP IT IN YOUR FILES FOR FUTURE REFERENCE.

IMPROPER INSTALLATION OR ATTACHMENT OF EQUIPMENT OR ACCESSORIES COULD RESULT IN ELECTRIC SHOCK, SHORT-CIRCUIT, LEAKS, FIRE OR OTHER DAMAGE TO THE EQUIPMENT. THE UNIT MUST BE INSTALLED BY A PROFESSIONAL.

IF UNSURE OF INSTALLATION PROCEDURES OR USE, ALWAYS CONTACT YOUR DAIKIN DEALER FOR ADVICE AND INFORMATION.

INTRODUCTION

The EWLD units can be combined with Daikin fan coil units or air handling units for air conditioning purposes. They can also be used for supplying chilled water for process cooling.

The present installation manual describes the procedures for unpacking, installing and connecting the EWLD units.

Technical specifications⁽¹⁾

Model EWLD	120	170	240
Dimensions HxWxD (mm)	1014x2672x930		
Weight			
• machine weight (kg)	891	1110	1342
• operation weight (kg)	907	1130	1369
Connections			
• chilled water inlet and outlet (inch)	3"OD (76 mm OD)		3" (88.9 mm OD)
• remote condenser connection			
discharge (inch)	2"1/8	2"1/8	2"1/8
liquid (inch)	7/8"	1"1/8	1"3/8

Model EWLD	260	340	400
Dimensions HxWxD (mm)	1014x2672x930	2000x2672x930	
Weight			
• machine weight (kg)	1428	2220	2452
• operation weight (kg)	1462	2260	2497
Connections			
• chilled water inlet and outlet (inch)	3" (88.9 mm OD)		2x 3" (88.9 mm OD)
• remote condenser connection			
discharge (inch)	2"5/8	2x 2"1/8	2x 2"1/8
liquid (inch)	1"3/8	2x 1"1/8	1"1/8+1"3/8

Model EWLD	480	500	540
Dimensions HxWxD (mm)	2000x2672x930		
Weight			
• machine weight (kg)	2684	2770	2856
• operation weight (kg)	2738	2831	2924
Connections			
• chilled water inlet and outlet (inch)	2x 3" (88.9 mm OD)		
• remote condenser connection			
discharge (inch)	2x 2"1/8	2"1/8+2"5/8	2x 2"5/8
liquid (inch)	2x 1"3/8	2x 1"3/8	2x 1"3/8

Electrical specifications⁽¹⁾

Model EWLD	120~540
Power circuit	
• Phase	3~
• Frequency (Hz)	50
• Voltage (V)	400
• Voltage tolerance (%)	±10

Options and features⁽¹⁾

Options

- Suction stop valve
- Ampere and voltmeter
- Main isolator switch
- Dual pressure relief valve on the condenser
- Low noise operation
- BMS Connection (MODBUS/J-BUS, BACNET, LON)

Features

- Evaporator heater tape
- Glycol application for leaving evaporator water down to -10°C
- Daikin Integrated Chiller Network (DICN)
- Liquid line solenoid valve
- Sight glass with moisture indication

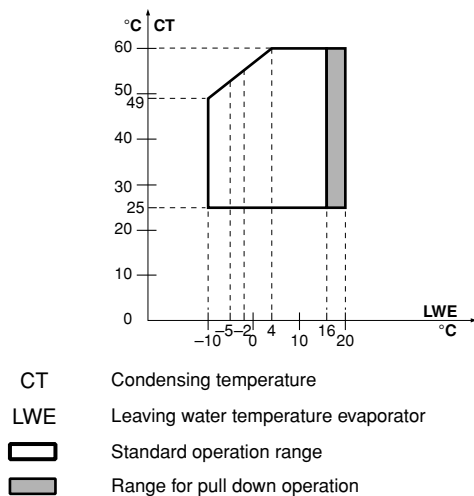
(1) Refer to the operation manual or engineering data book for the complete list of specifications, options and features.

- Voltage free contacts
 - general operation/pumpcontact
 - alarm
 - operation circuit 1
 - operation circuit 2 (only for EWLD340~540)
- Changeable voltage free contacts
 - 100% unit signal
 - second evaporator pump
 - free cooling contact
- Changeable remote inputs
 - remote start/stop
 - dual setpoint
 - enable/disable capacity limitation circuit 1⁽²⁾
 - enable/disable capacity limitation circuit 2 (only for EWLD340~540)⁽²⁾
- Changeable analog input
 - setpoint signal (stand alone unit or slave 1 unit in a DICN system) 0/1 V, 0/10 V, 0/20 mA or 4/20 mA
 - evaporator outlet water sensor of a DICN system (only on master unit)
- Multiple language selection
- Schedule timer
- Floating setpoint
- Fan control (see operation manual and wiring diagram)

Standard supplied accessories

- Filter kit for installation in front of the evaporator water inlet.

OPERATION RANGE



MAIN COMPONENTS (refer to the outlook diagram supplied with the unit)

- 1 Compressor (M1C)
- 2 Evaporator
- 3 Switchbox
- 4 Compressor switchbox
- 5 Charge valve
- 6 High pressure switch
- 7 Drier
- 8 Chilled water in
- 9 Chilled water out

(2) Can be used for night set back and/or peak power limitation: A kWh-gauge is connected to a voltage free contact. If the contact is enabled, circuit 1/2 will be limited to a preset capacity step.

- 10 Entering water temperature sensor (R3T)
- 11 Leaving water temperature sensor (R4T)
- 12 Discharge stopvalve
- 13 Digital display controller
- 14 Emergency Stop (S5E)
- 15 Power supply intake
- 16 Field wiring intake
- 17 Eyebolts for lifting
- 18 Transportbeam
- 19 Ballvalve liquid pipe
- 20 Main isolator switch (optional - S13S)

SELECTION OF LOCATION

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

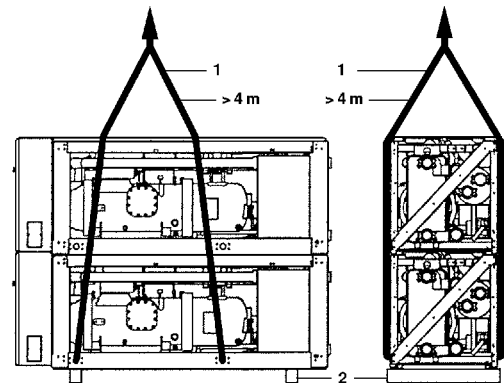
The units are designed for indoor installation and should be installed in a location that meets the following requirements:

- 1 The foundation is strong enough to support the weight of the unit and the floor is flat to prevent vibration and noise generation.
- 2 The space around the unit is adequate for servicing.
- 3 There is no danger of fire due to leakage of inflammable gas.
- 4 Select the location of the unit in such a way that the sound generated by the unit does not disturb anyone.
- 5 Ensure that water cannot cause any damage to the location in case it drips out of the unit.

NOTE Pull-down operation is restricted to one hour maximum.

INSPECTING AND HANDLING THE UNIT

At delivery, the unit should be checked and any damage should be reported immediately to the carrier claims agent.



When handling the unit, take into account the following:

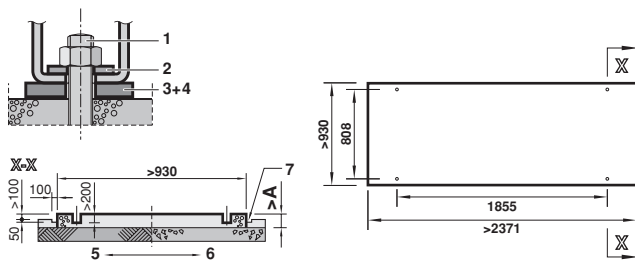
- 1 Lift the unit preferably with a crane and belts in accordance with the instructions on the unit. The length of the ropes (1) to be used for lifting are 4 m minimum each.
- 2 The unit is shipped with wooden beams (2) under it, these have to be removed before installation.

NOTE Try to reduce the drilling in the unit to a minimum. If drilling is impreventable, remove the iron filling thoroughly in order to prevent surface rust!

UNPACKING AND PLACING THE UNIT

- 1 Remove the wooden beams from the unit.
- 2 Install vibration mountings in case of an installation where noise and vibration might be an impediment.
- 3 Set the unit on a solid and level foundation.

The unit should be installed on a solid base. It is recommended to fix the unit on a concrete base with anchor bolts.



- 1 Anchor bolt
- 2 Washer
- 3 Rubber plate
- 4 Row cork or rubber sheet
- 5 Ground
- 6 Concrete floor
- 7 Ditch

- Fix anchor bolts into the concrete foundation. When finally fixing the unit by means of these anchor bolts, make sure that the washers for channel DIN434, and both field supplied rubber plates and field supplied raw cork or rubber sheets for better vibration protection, are installed as indicated.

- The concrete foundation should approximately be 100 mm higher than the floor level for ease of plumbing work and better drain.

Model	Anchor bolt		
	A	Size	Qty
EWLD120+170	300	M20x200	4
EWLD240+260	350	M20x200	4
EWLD340-540	350	M20x270	4

- Make sure that the foundation surface is even and flat.

NOTE



- The measurement tabulated is based on the fact the base is made in the ground or on a concrete floor. In case the base is made on a rigid floor, it is possible to include thickness of concrete floor in that of the base.
- In case a base is made on concrete floor, make sure to provide a ditch as shown. It is important to extract drainage regardless of whether a base is made in the ground or on the concrete floor (ditch-sewerage).
- Ingredient ratio of the concrete is: cement 1, sand 2 and gravel 3. Insert iron bars of Ø10 at every interval of 300 mm. The edge of the concrete base should be planed.

IMPORTANT INFORMATION REGARDING THE REFRIGERANT USED

This product is factory charged with N2.

The refrigerant system will be charged with fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent gases into the atmosphere.

Refrigerant type: R134a

GWP⁽¹⁾ value: 1300

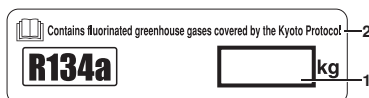
⁽¹⁾ GWP = global warming potential

Please fill in with indelible ink,

- the total refrigerant charge

on the refrigerant charge label supplied with the product.

The filled out label must be adhered in the proximity of the product charging port (e.g. onto the inside of the service cover).



- 1 total refrigerant charge
- 2 Contains fluorinated greenhouse gases covered by the Kyoto Protocol

CONNECTING THE REFRIGERANT CIRCUIT



The units are equipped with a refrigerant inlet (discharge side) and a refrigerant outlet (liquid side) for the connection to a remote condenser. This circuit must be provided by a licensed technician and must comply with all relevant European and national regulations.

Precautions when handling piping

If air, moisture or dust gets in the refrigerant circuit, problems may occur. Therefore, always take into account the following when connecting the refrigerant piping:

1. Use clean and dry pipes only.
2. Hold the pipe end downwards when removing burrs.
3. Cover the pipe end when inserting it through a wall so that no dust and dirt enter.

Connecting the refrigerant circuit

The discharge and liquid line must be welded directly to the remote condenser piping. For use of the correct pipe diameter see table below:

Model	connection (inch)	
	discharge	liquid
EWLD120	2"1/8	7/8"
EWLD170	2"1/8	1"1/8
EWLD240	2"1/8	1"3/8
EWLD260	2"5/8	1"3/8
EWLD340	2x 2"1/8	2x 1"1/8
EWLD400	2x 2"1/8	1"1/8+1"3/8
EWLD480	2x 2"1/8	2x 1"3/8
EWLD500	2"1/8+2"5/8	2x 1"3/8
EWLD540	2x 2"5/8	2x 1"3/8



Make sure the pipes are filled with N₂ during welding in order to protect the pipes against soot.

There should be no blockage (stopvalve, solenoid valve) between the remote condenser and the provided liquid injection of the compressor.

Leak test and vacuum drying

The units were checked for leaks by the manufacturer.

After connection of the piping, a leak test must be performed and the air in the refrigerant piping must be evacuated to a value of 4 mbars absolute by means of a vacuum pump.



Do not purge the air with refrigerants. Use a vacuum pump to vacuum the installation.

Charging the unit

First perform a rough refrigerant charge according to the table:

refrigerant charge (kg)	
40 HP	$33 + (\text{VRC} - 40) \times 0.4 + \text{LLP} \times 0.3$
60 HP	$67 + (\text{VRC} - 61) \times 0.4 + \text{LLP} \times 0.5$
80 HP	$74 + (\text{VRC} - 91) \times 0.4 + \text{LLP} \times 0.7$
100 HP	$70 + (\text{VRC} - 91) \times 0.4 + \text{LLP} \times 0.7$

VRC=volume of remote condenser (l)
LLP=length of liquid pipe (m)



- Make sure that compressor load does not exceed 40% during rough charging of the unit.
- You therefore best control the capacity on your controller yourself by activating manual control mode using the CONTROL SETTINGS screen of the user settings menu.

Next perform a fine-tuning



For fine-tuning of the refrigerant charge, the compressor must operate at full load (100%).

- If the liquid-line sightglass is showing seal after the rough charging (due to possible different conditions), add 10% refrigerant charge weight.
- If the liquid-line sightglass is showing some gas-bubbles, the rough refrigerant charge is sufficient by fine-tuning the additional 10% refrigerant charge weight.
- If the liquid-line sightglass is showing flash gas, then charge until one of the previous situations occur. Then fine-tune with the additional 10% refrigerant charge weight. The unit must have the time to stabilize which means that this charging has to be done in a smooth way.

NOTE



Take care for contamination of the remote condenser in order to avoid blocking of the system. It is impossible for Daikin to control the contamination of the "foreign" condenser of the installer. The unit has a strict contamination level.

NOTE



Use the liquid line check valve for charging refrigerant.

PREPARING, CHECKING AND CONNECTING THE WATER CIRCUIT

The units are equipped with a water inlet and water outlet for connection to a chilled water circuit. This circuit must be provided by a licensed technician and must comply with all relevant European and national regulations.

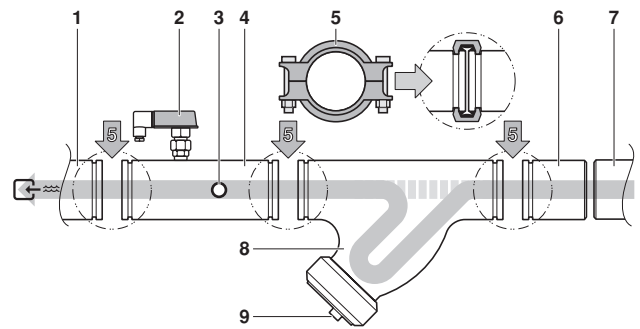


If air or dirt gets in the water circuit, problems may occur. Therefore, always take into account the following when connecting the water circuit:

1. Use clean pipes only.
2. Hold the pipe end downwards when removing burrs.
3. Cover the pipe end when inserting it through a wall so that no dust and dirt enter

1 Preparing the unit for connection to the water circuit

A box containing Victaulic® couplings and a filter is delivered with the unit.



- 1 Water inlet of the evaporator
- 2 Flowswitch
- 3 Inlet water sensor
- 4 Water inlet pipe containing the flowswitch and the water inlet temperature sensor
- 5 Victaulic® coupling
- 6 Counter pipe
- 7 Field water piping circuit
- 8 Filter
- 9 Filter end cap

As not to damage the parts of the units during transport, the water inlet pipe with the flowswitch and the water inlet temperature sensor and the water outlet pipe with the outlet water temperature sensor, are not factory mounted.

- Connecting the water inlet pipe containing the flowswitch and inlet water temperature sensor: (not for EWLD120)
The water inlet pipe containing the flowswitch and inlet water temperature sensor is mounted on the side of the water inlet of the evaporator(s) and is pre-insulated.

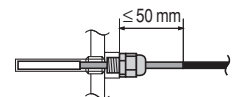
Cut the tie wraps and fix the pipe with the supplied Victaulic® couplings to the evaporator inlet(s).

- Connecting the water outlet pipe containing the outlet water temperature sensor: (not for EWLD120)

The water outlet pipe containing the outlet water temperature sensor is mounted on the side of the water outlet of the evaporator and is pre-insulated.

Cut the tie wraps and fix the pipe(s) with the supplied Victaulic® couplings to the evaporator outlet(s).

- After installation of the water inlet and outlet pipes and as a general rule for other units, it is recommended to check the insertion depth of the water temperature sensors into the connection pipes prior to operation (see figure).



- Connecting the filter



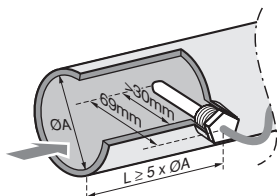
- The filter kit supplied with the unit must be installed in front of the evaporator water inlet by means of the supplied Victaulic® couplings as shown in the figure. The filter has holes of diameter 1.0 mm and secures the evaporator against clogging.

- Improper installation of the supplied filter will result in severe damage of the equipment (freezing of the evaporator)

A field supplied blow down port for flushing fluid and accumulated material from inside the filter can be connected on the filter end cap.

- Connecting the counter pipes
Weld the supplied counter pipes to the ends of the water circuit and connect to the unit with the provided Victaulic® couplings.

- 2 Drain taps must be provided at all low points of the system to permit complete drainage of the circuit during maintenance or in case of shut down. The drain plug is provided to drain the condenser. When doing this, also remove the air plugs (refer to the outlook diagram).
- 3 Air vents must be provided at all high points of the system. The vents should be located at points which are easily accessible for servicing.
- 4 Shut-off valves should be provided at the unit so that normal servicing can be accomplished without draining the system.
- 5 Vibration eliminators in all water piping connected to the chiller are recommended to avoid straining the piping and transmitting vibration and noise.
- 6 For units in a DICN configuration with common leaving water control, be sure to foresee an insertion hole for the additional water temperature sensor. Sensor and sensor holder are optional parts.
The insertion hole shall be 1/4" GAS female thread and should be located in the mixed waterflow of the chillers.
Make sure that the sensortip is in the waterflow and that you have a length of straight pipe (L) of at least 10x the pipe diameter (A) before the sensor.



Choose the position of insertion in a way that the cable length of the sensor (12 m) is long enough to be attached to the master PCB.

WATER CHARGE, FLOW AND QUALITY

To assure proper operation of the unit, the water flow through the evaporator must be within the operation range as specified in the table below and a minimum water volume is required in the system.

	Minimum water flow	Maximum water flow
EWLD120	175 l/min	700 l/min
EWLD170	265 l/min	1070 l/min
EWLD240	350 l/min	1400 l/min
EWLD260	400 l/min	1600 l/min
EWLD340	525 l/min	2100 l/min
EWLD400	625 l/min	2500 l/min
EWLD480	700 l/min	2800 l/min
EWLD500	750 l/min	3000 l/min
EWLD540	800 l/min	3200 l/min

The minimum water volume v [l] in the system must fulfill the criteria below:

$$v > (Q/2) \times t / (C \times \Delta T)$$

- Q highest cooling capacity of the unit in lowest capacity step within the range of application (kW)
- t antirecycling timer of unit (AREC)/2(s)=300 s
- C specific heat capacity of the fluidum (kJ/kg°C)=4.186 kJ/kg°C for water
- ΔT temperature difference between starting and stopping of the compressor.
 $\Delta T = a + 2b + c$
(for designation of a, b and c, refer to the operation manual)

NOTE



For units in a DICN configuration, the minimum required water volume in the system must equal the biggest required minimum volume of every individual chiller in the system.

The water quality must be in accordance with the specifications listed in the table below.

		circulating water	supply water	tendency if out of criteria
Items to be controlled				
pH	at 25°C	6.8~8.0	6.8~8.0	corrosion+scale
Electrical conductivity	[mS/m] at 25°C	<40	<30	corrosion+scale
Chloride ion	[mg Cl ⁻ /l]	<50	<50	corrosion
Sulfate ion	[mg SO ₄ ²⁻ /l]	<50	<50	corrosion
M-alkalinity (pH4.8)	[mg CaCO ₃ /l]	<50	<50	scale
Total hardness	[mg CaCO ₃ /l]	<70	<70	scale
Calcium hardness	[mg CaCO ₃ /l]	<50	<50	scale
Silica ion	[mg SiO ₂ /l]	<30	<30	scale
Items to be referred to				
Iron	[mg Fe/l]	<1.0	<0.3	corrosion+scale
Copper	[mg Cu/l]	<1.0	<0.1	corrosion
Sulfide ion	[mg S ²⁻ /l]	not detectable	not detectable	corrosion
Ammonium ion	[mg NH ₄ ⁺ /l]	<1.0	<0.1	corrosion
Remaining chloride	[mg Cl/l]	<0.3	<0.3	corrosion
Free carbide	[mg CO ₂ /l]	<4.0	<4.0	corrosion
Stability index		—	—	corrosion+scale



The water pressure should not exceed the maximum working pressure of 10 bar.

NOTE



Provide adequate safeguards in the water circuit to make sure that the water pressure will never exceed the maximum allowable working pressure.

WATER PIPING INSULATION

The complete water circuit, inclusive all piping, must be insulated to prevent condensation and reduction of the cooling capacity.

Protect the water piping against water freezing during winter period (e.g. by using a glycol solution or heater tape).

REFRIGERANT PIPING INSULATION

To prevent burning injuries by accidental touching the hot (max 135°C) discharge pipe, it must be insulated thoroughly.

A minimum of insulation to protect the liquid pipe from damage is advisable.

DISCHARGE FROM PRESSURE RELIEF DEVICES

Discharge of the refrigerant into installation area has to be in accordance with local regulations. If required it is possible to connect a 1" pipe to each pressure relief valve on the condenser.

Cross section and length of the discharge line must comply with local codes.



All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.

The field wiring must be carried out in accordance with the wiring diagram supplied with the unit and the instructions given below.

Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.

NOTE



Verify on the wiring diagram all electrical actions mentioned below, in order to understand the operation of the unit more deeply.

Parts table

F1,2,3U.....	Main fuses for the unit
H1,4P.....	Indication lamp general operation
H2,5P.....	Indication lamp alarm
H3,6P.....	Indication lamp operation compressor
L1,2,3.....	Main supply terminals
PE.....	Main earth terminal
S6S.....	Changeable input 1
S8L.....	Flowswitch
S9L.....	Contact that closes if the pump is working
S10S.....	Changeable input 2
S11S.....	Changeable input 3
S12S.....	Changeable input 4
S13S.....	Main isolator switch
- - -.....	Field wiring

Power circuit and cable requirements

- The electrical power supply to the unit should be arranged so that it can be switched on or off independently of the electrical supply to other items of the plant and equipment in general.
- A power circuit must be provided for connection of the unit. This circuit must be protected with the required safety devices, i.e. a circuit breaker, a slow blow fuse on each phase and an earth leak detector. Recommended fuses are mentioned on the wiring diagram supplied with the unit.
For a system with chillers in a DICN configuration, be sure to provide a separate power circuit for every chiller.



Switch off the main isolator switch before making any connections (switch off the circuit breaker, remove or switch off the fuses).

Connection of the watercooled water chiller power supply

- Using the appropriate cable, connect the power circuit to the L1, L2 and L3 terminals of the unit.
In case the option "main isolator switch" is installed on the unit, the power circuit must be connected to the terminals 2,4 and 6 of the main isolator switch.
- Connect the earth conductor (yellow/green) to the earthing terminal PE.



A pump interlock contact must be installed **in series with the contact of the flowswitch(es)** to prevent the unit from operating without water flow. A terminal is provided in the switch box for the electrical connection of the interlock contact.

For units in a DICN configuration, every chiller can either have an individual circulation pump or 1 pump can discharge water in a distributor that leads water to several chillers.

In both cases, all units must be equipped with an interlock contact!

NOTE



Normally the unit will not operate if there is no flow thanks to the standard installed flowswitch.

But as to have a double safety, you **must** install the pump interlock contact in series with the contact of the flowswitch.

Operating the unit without flow will result in very severe damage to the unit (freezing of the evaporator)

■ Voltage free contacts

The controller is provided with some voltage free contacts to indicate the status of the unit. These voltage free contacts can be wired as described on the wiring diagram. The maximum allowable current is 4 A.

■ Remote inputs

Besides the voltage free contacts, there are also possibilities to install remote inputs.

They can be installed as shown on the wiring diagram.

For units in DICN configuration, note the following:

- Switch for remote on/off:

Units with status **NORMAL** or **STANDBY** will be controlled by the remote on/off switch connected to the chiller defined as **MASTER**.

Units with status **DISCONNECT ON/OFF** are controlled by the switch connected to them.

See also operation manual: "Selecting local or remote on/off control".

- Remote dual setpoint switch:

The remote dual setpoint switch should only be connected to the chiller defined as **MASTER**.

However in case the master drops out because of e.g. a power supply failure, it might be interesting to have the dual temperature switch installed to the other units as well.

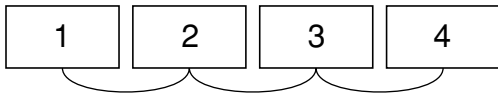
- Note:

For wiring examples, refer to the separate manual "Installation examples for a DICN configuration".

Connection and setup of a DICN system

(See Annex I, "Installation examples for a DICN configuration" on page 10)

For a system with chillers in a DICN configuration, the chillers have to be connected as shown in the figure below.



Make the connection as shown on the wiring diagram using an AWG20/22 shielded cable, made up of a twisted pair plus shield.

Pay attention to the polarity! TX+ on one chiller must be connected to TX+ on another chiller. The same for TX- and GND.

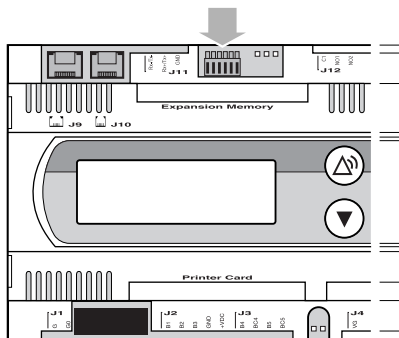
Setting the addresses on the digital controller

Set the addresses on the PCB by means of DIP-switches according to the drawing below:



Any unit can be master, slave 1, slave 2 or slave 3.

Where to find the DIP-switches of the digital controller



Important

Be sure to attach — in case of common leaving water control — the optional temperature sensor.

Cable for remote digital controller

See remote digital controller in the operation manual.

- 1 A remote digital controller can be connected to the PCB inside the unit by means of a 6-ray cable and a connector located on the rear side of the remote digital controller in case you prefer to operate the unit from a distance. You are allowed to use a cable of up to 600 metres (EWLD120~260) or 300 metres (EWLD340~540). Specifications of the cable: 6-ray telephone cable with a maximum cable resistance of 0.1 Ω /m.
- 2 For units in a DICN configuration, the digital controllers of the units can be installed remotely at a distance of up to 50 metres by using a 6-ray telephone cable with a maximum cable resistance of 0.1 Ω /m.

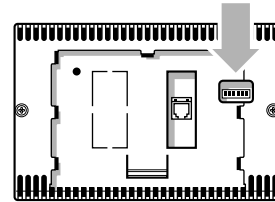
Setting the addresses on the remote digital controller

When a remote digital controller is used, the address has to be set by means of DIP-switches according to the drawing below:



Any unit can be master, slave 1, slave 2, slave 3...

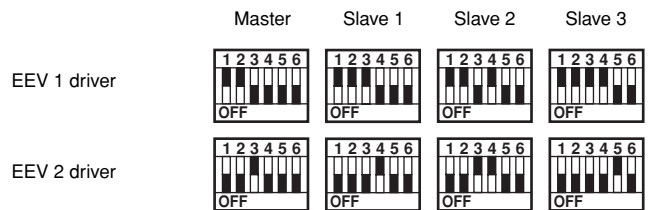
Where to find the DIP-switches of the remote digital controller



To avoid damage to the controllers liquid crystals during winter time, do not shut off the main power supply.

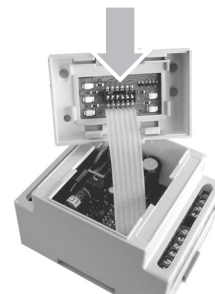
Setting the addresses on the EEV drivers

When EEV drivers are used, the addresses has to be set by means of DIP-switches according to the drawing below:



Any unit can be master, slave 1, slave 2, slave 3...

Where to find the DIP-switches of the EEV drivers



BEFORE STARTING



The unit should not be started, not even for a very short period of time, before the following pre-commissioning checklist is filled out completely.

tick ✓ when checked	standard steps to go through before starting the unit
<input type="checkbox"/>	1 Check for external damage
<input type="checkbox"/>	2 Open all shut-off valves indicated by a red label: "OPEN THIS VALVE BEFORE OPERATION". (Open the liquid line, discharge and suction (if provided) stop valves completely.)
<input type="checkbox"/>	3 Install mainfuses, earth leak detector and mainswitch . Recommended fuses: aM according to IEC standard 269-2. <i>Refer to the wiring diagram for size.</i>
<input type="checkbox"/>	4 Supply the main voltage and check if it is within the allowable $\pm 10\%$ limits of the nameplate rating. The electrical main power supply should be arranged so, that it can be switched on or off independently of the electrical supply to other items of the plant and equipment in general. <i>Refer to the wiring diagram, terminals L1, L2 and L3.</i>
<input type="checkbox"/>	5 Supply water to the evaporator and verify if waterflow is within the limits as given in the table under "Water charge, flow and quality" on page 5.
<input type="checkbox"/>	6 The piping must be completely purged . See also chapter "Preparing, checking and connecting the water circuit" on page 4.
<input type="checkbox"/>	7 Connect the pump contact(s) in series with the contact of the flowswitch(es), so that the unit can only come in operation when the waterpumps are running and the water flow is sufficient. For DICN configurations, every chiller shall have its own flowswitch and shall be interlocked with the pump from which it gets the flow.
<input type="checkbox"/>	8 Check the oil level in the compressors.
<input type="checkbox"/>	9 Install the filter kit(s) supplied with the unit in front of the evaporator(s) water inlet.
<input type="checkbox"/>	10 Check that all the water sensors are correctly fixed into the heat exchanger (see also the sticker attached to the heat exchanger).

NOTE



- It is necessary to read the operation manual delivered with the unit before operating the unit. It will contribute to understand the operation of the unit and its electronic controller.
- Close all switch box doors after installation of the unit.

I do confirm having executed and checked all the above mentioned items.

Date

Sign

Keep for future reference.

CUSTOMIZATION IN THE SERVICE MENU



All customized settings must be done by a licensed technician.

To change a setting in the service menu:

- Enter the usersettings menu as indicated in the operation manual and press the ∇ key to go to the last screen to enter the service menu (this is only possible if the unit is off).
- Enter the correct password using the ∇ and \triangleleft keys. The password can be found in the service manual.
- Press \rightarrow to confirm the password and enter the service menu.
- Go to the screen which contains the parameter to be modified by using the ∇ and \triangleleft keys.
- Position the cursor behind the parameter to be modified using the \rightarrow key.
- Select the appropriate setting using the ∇ and \triangleleft keys.
- Press \rightarrow to confirm the modification. When the modification has been confirmed, the cursor switches to the next parameter which can now be configured.
- Place the cursor in the top left corner of the screen when you are finished changing the parameters on this screen.
- Repeat from instruction 4 onwards to modify other parameters.

Setting of the minimum outlet water temperature

It is possible to change the minimum outlet water temperature (MIN. OUTWATER) in the service menu. Before lowering the minimum outlet water temperature:

- Make sure that sufficient glycol is added to the water system according to the table.
- Make sure that the low pressure safety is lowered according to the table.

	minimum outlet water (MIN. OUTWATER)			
	2°C	0°C	-5°C	-10°C
Weight of ethylene glycol (%)	10	20	30	40
Weight of propylene glycol (%)	15	25	35	40
Low pressure setting (bar)	0.8	0.6	0.2	0.2



Improper setting of the minimum outlet water temperature can result in severe damage of the equipment.

Defining a unit in a setup of a DICN system

Change the setting of MS OPTION to Y on each unit.

Setting the password for safety reset

To avoid resetting of safeties by unqualified persons, the user password is asked by default when resetting a safety.

This password however can be changed to SERVICE PASSWORD or to NONE.

NOTE



Since inadequate resetting of safeties can damage the machine, it is advised to keep the default setting of USER PASSWORD.

Setting of compressor running hours

When the displayed running hours do not comply with the actual running hours of the compressor it is possible to change the running hours to comply.

Defining of the changeable digital/analog inputs and outputs

Besides locked inputs and outputs there are a number of changeable inputs and outputs of which the function can be chosen from several possibilities.

Possible functions for changeable digital inputs are:

- NONE: no function is appointed to the changeable digital input.
- STATUS: no function is appointed to the changeable digital input, but the input status can be read in the "input/output" menu.
- DUAL SETPOINT: to switch between setpoints.
- REMOTE ON/OFF: to remotely switch the unit on or off.
- CAP. LIM 1/2/3/4: to limit the capacity of the unit to the entered values.

Possible functions for the changeable digital output are:

- NONE (OPEN): no function is appointed to the changeable digital output.
- 1 (CLOSED): no function is appointed to the changeable digital output, but the output is closed.
- 2ND EVAP PUMP: can be used to steer a second evaporator pump.
- 100% CAPACITY: indicates when the unit is working at 100%.
- FREE COOLING: to control a 3-way water valve when the unit is working in free cooling state.

Possible configurations for the changeable analog input are:

- NONE: no function is appointed to the changeable analog input.
- SETP. SIGN. 0/1V:
- SETP. SIGN. 0/10V:
- SETP. SIGN. 0/20mA:
- SETP. SIGN. 4/20mA:

This allows the user to define a setpoint in function of an analog input as mentioned above. Refer to "Defining the setpoint signal setting" on page 9.

- MS OUTL WATER E: to control the leaving water temperature of a DICN system.

Defining the setpoint signal setting

The setpoint signal is used to change the setpoint by an external analog input signal on a stand alone unit or on Slave 1 in a DICN system.

Example

in setpoints menu

```

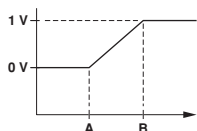
> INLSETP1 E: 12.0°C
  INLSETP2 E: 12.0°C
  OUTLSETP1 E: 07.0°C
  OUTLSETP2 E: 07.0°C
  
```

in service menu

```

-> CHANG. INP/OUTPUTS
-> AI1: SETP. SIGN: 0/1V
  MAX SETP. DIF: 5.0°C
  
```

Remark: MAX SETP. DIF is only available when input SETP. SIGN (0/1V, 0/10V, 0/20mA or 4/20mA) is selected.



Result

A at 0 V → 12.0°C

B at 1 V → 12.0°C + 5.0°C = 17.0°C

Display in readout menu

INLSETP1 E: 12.0°C

INLSETP1 E: 17.0°C

Setting of the probe offset

It is possible to enter a correction value for certain measured temperatures (inlet water evaporator temperature and mixed outlet water evaporator temperature). This in order to correct a possible measurement fault. The default value of the probe offset, is equal to 0.

Steering the pump manually

There is the possibility to turn the pump on or off manually. This means that when the unit is off the pump can also be turned on at any time to check the pump.

Defining the BMS settings

The BMS parameters allowing communication between the unit and the supervisory system can be modified with the BMS SETTINGS and the BMSBOARD SETTINGS screen of the service menu. The BMS parameters are:

BMS SETTINGS screen:

- BMS CONTROL ALLOWED: if set to Y (yes), the unit can be commanded and configured from a supervisory system. If set to N (no), the supervisory system can only read out values but cannot modify them.
- BMS ADDR. PCB: used to address the PCB.
- PROTOCOL: indicates the communication protocol. If the optional gateway is used to connect the units to a supervisory system, the protocol is CAREL.

BMSBOARD SETTINGS screen:

- SER. BOARD: indicates the type of serial connection. The default is set to RS485.
- BAUD RATE: indicates the speed of communication. The default setting of 19200 bps must be used when the optional gateway is connected.

Defining the thermostat settings

Defining the thermostat settings for inlet and outlet water temperature of a, b and c can only be set in the service menu.

```

-> STEPL SERVICE MENU
  A: 0.8 B: 0.5 C: 0.2°C
  INLDIFF: 0.5°C
  
```

To define the thermostat settings of the inlet water temperature.

HOW TO CONTINUE

After installation and connection of the packaged water-cooled water chiller, the complete system should be checked and tested as described in "Checks before initial start-up" in the operation manual supplied with the unit.

Fill out the brief operation instructions form and fix it visibly near the operating site of the refrigeration system.

ANNEX I

Installation examples for a DICN configuration

INTRODUCTION

This annex introduces 3 installation examples to help you set up your Daikin Integrated Chiller Network or DICN configuration.

Defining a unit in a setup of a DICN system

Change the setting of MS_OPTION to Y on each unit.

EXAMPLES

Field wiring and wiring parts table



All field wiring and components must be installed by a licensed electrician and must comply with relevant European and national regulations.

The field wiring must be carried out in accordance with the wiring diagram supplied with the unit and instructions given below.

Be sure to use a dedicated power circuit. Never use a power supply shared by another appliance.

All customized settings must be done by a licensed technician.

—————	Field wiring
- - - - -	Earth wiring
●	Terminal on the unit
F1~F20	Fuses
K1P~K4P	Pump contact
L1,L2,L3,N	Main supply terminals
M1P~M5P	Pump motor
R8T	Sensor for common leaving water in a DICN system (EKCLWS)
R9T	Sensor for secondary circuit
S1S	Manual switch for pump of master unit
S6S (M,S3)	Remote start/stop switch
S8L (M,S1,S2,S3)	Flowswitch
S10S	Dual setpoint selection switch
Y1S	3-way valve

Example 1: Single ring system with 1 pump

Figure 1 shows the system configuration, field wiring and terminals for field wiring of this example.

Purpose

Purpose of this system is to deliver a constant water flow at a constant temperature to a particular load. One unit, slave 3 (S3), is kept as a standby unit.

Setup

- The system is controlled on leaving water temperature. It is required to install the additional sensor R8T (EKCLWS) in the mixed water outlet and to connect it to the PCB of the master unit.
- The pump keeps running as long as 1 of the units is ON. After switching OFF all units, the pump runs for a time indicated by the PUMPLAG setting.
- Slave 3 (S3) is configured to operate when its remote start/stop switch S6S (S3) is pushed by the operator.
- Slave 1 (S1), slave 2 (S2) and the master unit (M) are switched ON or OFF using the remote start/stop switch S6S (M) which is connected to the master unit.
- The setpoint can be switched from OUTLETSETP1 to OUTLETSETP2 using the dual setpoint selection switch S10S which is connected to the master unit.

NOTE



- K*P can also be a 24 V DC or 230 V AC contactor.
- The additional sensor R8T (EKCLWS) must be connected directly to the PCB of the master unit.

Parameter settings of the units

Usersettings menu:

	Slave 3	Slave 2	Slave 1	Master
MODE:	DISCONNECT	NORMAL	NORMAL	NORMAL
PUMP ON IF:	UNIT ON	UNIT ON	UNIT ON	UNIT ON

Changeable inputs/outputs must be defined as follows:

Service setting menu:

	Slave 3	Slave 2	Slave 1	Master
Terminal 76-78 S10S DI1	NONE	NONE	NONE	DUAL SETPOINT
Terminal 76-79 S6S DI2	REMOTE ON/OFF	NONE	NONE	REMOTE ON/OFF
Terminal 76-85 DI3	NONE	NONE	NONE	NONE
Terminal 76-86 DI4	NONE	NONE	NONE	NONE
Terminal 8T+8T- R8T AI1	NONE	NONE	NONE	MS OUTL WATER E

Remark

Slave 3 can be configured to start up automatically if:

- 1 of the other units is in alarm or;
- all other units are running on full capacity and the setpoint is not reached yet.

To have your slave 3 unit act this way, set its mode to STANDBY. In this case, S6S (S3) has no function.

Example 2: Single ring system with separate pumps

Figure 2 shows the system configuration, field wiring and terminals for field wiring of this example.

Purpose

Purpose of this system is to deliver a constant water flow at a constant temperature to a particular load. One unit, slave 3 (S3), is kept as a standby unit.

Setup

- The system is controlled on leaving water temperature. It is required to install the additional sensor R8T (EKCLWS) in the mixed water outlet and to connect it to the PCB of the master unit.
- Pump 1, pump 2 and pump 3 keep running as long as the master unit, slave 1 or slave 2 are ON. Pump 4 only starts running if slave 3 is switched ON. After switching OFF the units, the pump runs for a time indicated by the PUMPLAG setting.
- Slave 3 (S3) is configured to operate when its remote start/stop switch S6S (S3) is pushed by the operator.
- Slave 1 (S1), slave 2 (S2) and the master unit (M) are switched ON or OFF using the remote start/stop switch S6S (M) which is connected to the master unit.
- The setpoint can be switched from OUTLETSETP1 to OUTLETSETP2 using the dual setpoint selection switch S10S which is connected to the master unit.

NOTE



- K*P can also be a 24 V DC or 230 V AC contactor.
- The additional sensor R8T (EKCLWS) must be connected directly to the PCB of the master unit.

Parameter settings of the units

Usersettings menu:

	Slave 3	Slave 2	Slave 1	Master
MODE:	DISCONNECT ON/OFF	NORMAL	NORMAL	NORMAL
PUMP ON IF:	UNIT ON	UNIT ON	UNIT ON	UNIT ON

Changeable inputs/outputs must be defined as follows:

Service setting menu:

	Slave 3	Slave 2	Slave 1	Master
Terminal 76-78 S10S DI1	NONE	NONE	NONE	DUAL SETPOINT
Terminal 76-79 S6S DI2	REMOTE ON/OFF	NONE	NONE	REMOTE ON/OFF
Terminal 76-85 DI3	NONE	NONE	NONE	NONE
Terminal 76-86 DI4	NONE	NONE	NONE	NONE
Terminal 8T+8T- R8T AI1	NONE	NONE	NONE	MS OUTL WATER E

Remark

Slave 3 can be configured to start up automatically if:

- 1 of the other units is in alarm or;
- all other units are running on full capacity and the setpoint is not reached yet.

To have your slave 3 unit act this way, set its mode to STANDBY. In this case, S6S (S3) has no function.

Example 3: Double ring system with several pumps

Figure 3 shows the system configuration, field wiring and terminals for field wiring of this example.

Purpose

Purpose of this system is to keep a buffer at a constant temperature and to feed a load from this buffer. One unit, slave 3 (S3), is kept as a standby unit.

Setup

- The system is controlled on entering water temperature.
- The pumps of the slave units only run when their compressor is running (energy saving). the pump runs for a time indicated by the PUMPLAG setting.
- The pump of the master unit must run continuously so as to sense the correct temperature.
- Slave 3 (S3) is configured to operate when its remote start/stop switch S6S (S3) is pushed by the operator.
- Slave 1 (S1), slave 2 (S2) and the master unit (M) are switched ON or OFF using the remote start/stop switch S6S (M) which is connected to the master unit.
- The setpoint can be switched from INLETSETP1 to INLETSETP2 using the dual setpoint selection switch S10S which is connected to the master unit.

NOTE



K*P can also be a 24 V DC or 230 V AC contactor.

Parameter settings of the units

Usersettings menu:

	Slave 3	Slave 2	Slave 1	Master
MODE:	DISCONNECT ON/OFF	NORMAL	NORMAL	NORMAL
PUMP ON IF:	COMPR ON	COMPR ON	COMPR ON	COMPR ON

Changeable inputs/outputs must be defined as follows:

Service setting menu:

	Slave 3	Slave 2	Slave 1	Master
Terminal 76-78 S10S DI1	NONE	NONE	NONE	DUAL SETPOINT
Terminal 76-79 S6S DI2	REMOTE ON/OFF	NONE	NONE	REMOTE ON/OFF
Terminal 76-85 DI3	NONE	NONE	NONE	NONE
Terminal 76-86 DI4	NONE	NONE	NONE	NONE
Terminal 8T+8T- R8T AI1	NONE	NONE	NONE	NONE

Remark

Slave 3 can be configured to start up automatically if:

- 1 of the other units is in alarm or;
- all other units are running on full capacity and the setpoint is not reached yet.

To have your slave 3 unit act this way, set its mode to STANDBY. In this case, S6S (S3) has no function.



BRIEF OPERATION INSTRUCTIONS EWLD-MBYNN Condenserless water-cooled water chiller

Equipment supplier: _____

Service department: _____

.....
.....
.....

.....
.....
.....

Phone:.....

Phone:.....

EQUIPMENT TECHNICAL DATA

Manufacturer	: DAIKIN EUROPE	Power supply (V/Ph/Hz/A)	:.....
Model	:	Maximum high pressure	:.....20 bar
Serial Number	:	Charging weight (kg) R134a	:.....
Year of construction	:		

START-UP AND SHUT DOWN

- ▶ Start-up by switching on the circuit breaker of the power circuit. The operation of the water chiller is then controlled by the Digital Display Controller.
- ▶ Shut-down by switching off the controller and the circuit breaker of the power circuit.

WARNINGS

Emergency shut down : Switch off the **circuit breaker** located on


.....

.....

Air inlet and outlet : Always keep the air inlet and outlet free to obtain the maximum cooling capacity and to prevent damage to the installation.

Refrigerant charge : Use refrigerant R134a only.

First aid : In case of injuries or accidents immediately inform:



- ▶ **Company management** : **Phone**
- ▶ **Emergency physician** : **Phone**
- ▶ **Fire service** : **Phone**



