

OPERATION MANUAL

Vacuum Press Machine **WINTER RIBEXVAC ECO**



WARNING!

***The operator must thoroughly read this manual before operation.
Keep this manual for future reference.***

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CONTENTS

- A. FOREWORD
- B. INFORMATION OF THE MANUFACTURER
- C. INFORMATION OF THE DEALER/IMPORTER
- D. DESCRIPTION OF MACHINE
- E. TECHNICAL SPECIFICATIONS
- F. DECLARATION OF CONFORMITY

- 1. GENERAL SAFETY RULES AND INSTRUCTIONS
- 2. SAFETY NOTES AND LABELS
- 2.1 WARRANTY
- 3. NOISE LEVELS
- 4. STORAGE CONDITIONS
- 5. HANDLING POSITION OF MACHINE
- 6. LAYOUT PLAN
- 7. INSTALLATION DRAWING OF MACHINE
- 8. HOSE CONNECTIONS
- 9. ELECTRIC CONNECTIONS
- 10. CONTROL PANEL
- 11. OPERATION OF MACHINE
- 11.1 ROBO MAGNETS
- 12. GENERAL MAINTENANCE OF VACUUM PUMP
- 13. TROUBLESHOOTING
- 13.1 REPLACING QUARTZ HEATERS

14. ATTACHMENTS

USER MANUAL | BECKER U.4.100 (VACUUM PUMP)

USER MANUAL | RAYTEK MI3 (DIGITAL HEATING SENSOR)

USER MANUAL | AUTONICS TZ4 L SERIES (TEMPERATURE CONTROLLER)

ELECTRIC CONTROL DIAGRAMS (AC 220 V 3 Phase 60 Hz.) & (AC 380 V 3 Phase 50 Hz.)

LIST OF COMPONENTS

A. FOREWORD

First of all thank you for choosing our product. For prolong using time of machine and if you would like to take maximum productivity please read and understand operation manual, safety notes and labels before the operation very carefully!

Please don't forget that operators common sense and discretion is as important as safety rules, labels, notes, devices and barriers.

DESCRIPTION OF PRODUCT/VACUUM PRESS MACHINE

This product is manufactured according to 2006/42 EC rules. This manual will provide operator to identify and to use the machine properly. Before operate, operator should read and understand this manual very carefully.

The manufacturer company keep the rights to change the technical details without any prior notice.

New generation RIBEX ECO Vacuum Press Machines are used for 3D lamination of PVC foils, veneer to MDF board and suitable for doors, panels in kitchens, various furniture applications, bathrooms and bedrooms. Operation principals of the machine respectively; Infrarared heaters heat the coating material progressively and vacuum pump extracts the air from material and (sanding/glueing process might be necessary before process) coat it perfectly onto it. Optional silicone membrane also allows to laminate veneers as well as the other laminating products to the MDF board. (Materials should be wood, chipwood, mdf e.t.c)

MECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Table Frame Dimensions	2435 x 1440 mm
Table Usage Area	2275 x 1230 mm
Maximum Working Thickness	90 mm
Pump Motor Power	2,2 kW
Pump Motor Speed	1450 r.p.m
Pump Extraction Capacity	105 m ³ /h
Noise Limit	68 Dba
Max. Temperature	200°C
Total Power	22,5 kW
Total Operation Time	4 – 5 Dk.
Average Net Weight	750 Kgs.
Dimensions (WxLxH)	1460 x 2620 x 1300 mm

- We reserve the right to make technical modifications without prior notice.

STANDARD PROPERTIES

- CE, ISO 9001 Certified
- Automatic temperature control
- Short processing cycle
- Independent vacuum and heat operation
- Operation window for direct monitoring
- Manual adjustment and usage
- Low cost maintenance
- Low cost quartz heaters
- Minimum wastage and time saving

1.GENERAL SAFETY RULES AND INSTRUCTIONS:

1. Operators would not like to meet any problem or risk, main safety rules should be apply.
2. ON-IS MAK is not responsible for any damages or loss due to incorrect use of the machine , deriving from failure to observe the instructions in this use and maintenance booklet and declines all responsibility for damages to persons or things.
3. Keep the machine and work area neat, clean and orderly.
4. Keep all guards and cover plates in place and all machine cabinet doors closed.
5. Never lay anything on the working surfaces of the machine, where it may foul with rotating or moving parts.
6. According to the machine lubrication instructions and the Operation Manual specified requirements, regularly pour or change the specified-designation lubricant or lub.grease.
7. Do not touch or reach over moving or rotating machine parts.
8. Operator should know all safety rules before operate the machine.
9. Ensure you know how to stop the machine before starting it.
10. Do not operate the machine in excess of its rated capacity.
11. Do not rush work.
12. Do not move guards while machine is under power.
13. Press emergency stop button immediately anything unexpected happens.
14. Be sure machine is not running when changing or installing any part on the machine.
15. Users are not allowed to modify the machine by themselves.
16. Stop machine and turn off the main switch if operator will leave near machine.
17. It is prohibited for unprofessional personel to open the electric cabinet. The electric cabinet should be opened by electricians who are familiar with electric system. The electric cabinet is equipped with power off device for opening the door. Only when you are sure that it is power,off after opening the door, can the maintaining and repairing be done.
18. Do not operate this machine unless long hair has been confined. Do not wear loose clothes, gloves, jewellery or other items which can become entangled in the tool
19. If any identification, warning or information mark on electrck equipment or machine body has been damaged or has fallen away, it should be supplied again.

20. Use equipment necessary for handling workpieces.

21. Always select the correct tool for the job.

22. Machine installing should keep away from pollution source (such as oil mist, water mist, strong vibration and shock etc.) If necessary, isolating measures should be taken to prevent the outside pollution source from influencing the operation and service.

23. Power – supply should be led in accordance with the electric requirements. The grounding requirements of the main grounding terminal of the machine should conform to the specifications of its Operation Manual.

24. Responsibilities of user enterprise – managers

- a) Any operators should be trained, and only when they are qualified for it, can they do the work.
- b) The machine surrounding should be provided with clean and safety working-area for operation and service
- c) According to this requirement of Safety Operation of the machine and the specifications described in the Operation Manual of the machine, explain the content of the Safety Warning to the operators, to let them pay attention to the safety operation rules and marks.
- d) According to the usage of the machine, regularly check if all motion- parts are under safety state when the machine working.
- e) To machine various parts, proper safety guarding units should be provided.

25. Responsibilities of operators

- a) Should operate in term with this requirements of safety operation of the machine and the requirements of the Operation Manual, preventing the danger caused by mis-operation.
- b) Once any danger happen, turn off the main power timely and report it to the relative managers. It is prohibited to operate without observing the rules and to receive the instructions violating the rules.
- c) As specified in Operation Manual, install and adjust the safety guarding unit.
- d) When not approved by relative departments, operators must not replace, dismount or damage any guard covers and guard devices at will.
- e) Operators should keep clean and safe working environment, and pay attention to the tool parts which will probably displace, fall and roll, causing dangers.

Prepare an electric panel according 3x140 A fuse 220 AC 60 Hz. to operation area. The connection cables should be 4x25 mm² TTR for 10 mt. If the distance more than 10 mt. you should use 4x35 mm² TTR Don't forget the earthing cable connection on machine.

2. SAFETY NOTES AND LABELS



This label indicates handling place of machine/additional worktable by forklift.



This label indicate attention to electric circuit/high voltage in that place. Danger of fatal injuries may cause with death.



This label earthed device board, indicates the reliable earthed device should be connected with this machine.



This label indicates hot surface. Burn hazard! Do not touch!



These labels indicate the worktable as Left or Right position installed on machine.



This label indicates that there is a safety sensor/photocell on it. Standing in front is dangerous and forbidden! Do not leave anything in front of the photocell/sensors.



Safety Rules strictly to be read/understood by user/operator before operation.



This label indicates that this area is dangerous or must be carefully maintained.



Numbers indicates descriptions of the assembly part (metal profile, rails or plastics) number. R=Right Worktable side L=Left Worktable side of the machine.

2.1 WARRANTY

Our machines are guaranteed against any possible effect in manufacturing or in material under normal use and maintenance conditions.

This guarantee has a validity of 24 (twenty four) months starting from working date and consists in a free replacement of faulty pieces.

Warranty is not extended on electric parts and components.

The warranty's validity ceases if machines have been handled by not authorized persons or firms, or if they have been used to do work not foreseen in our operating instructions.

Upon receipt of the machine it is necessary to ascertain its state, by checking the followings

- Alignment of tables
- Good order of : electric controls and their functioning,
handwheels for lifting and adjustment,
locking and adjustment of tables
safety guards

These different controls will enable you to express, if necessary, all conventional reserves with the carrier on the delivery note, on one side, and by registered letter in accordance with the law, on the other side.

We recommend not to place any objects on the working tables of the machine.

NOTE :

Transport/accomodation charges of our technicians as well as expenses in case of requirement and technical support demand are at full charge of the buyer.

3. NOISE LEVELS

S.no	Place	Average (Leq)	Max.(Lmax)
1	Operator position during work	75,18 dB	76,20 dB
2	1 meter far from operator position during work	72,44 dB	72,70 dB
3	3 meter far from operator position during work	70,36 dB	70,80 dB

The value indicated in the table represent emission levels and are not necessarily the noise levels which guarantee safe conditions in the work position. Although there is a clear relation between the emission levels and the noise levels, it is not possible to establish in certain terms whether additional safety measures are required. The factors which influence the noise emission levels in the working position include the duration of exposure, the characteristic of environment in which the machine is installed, other noise sources, for example, the number of machines or other types of machining in the surrounding areas. Furthermore, the noise levels may vary from country to country.

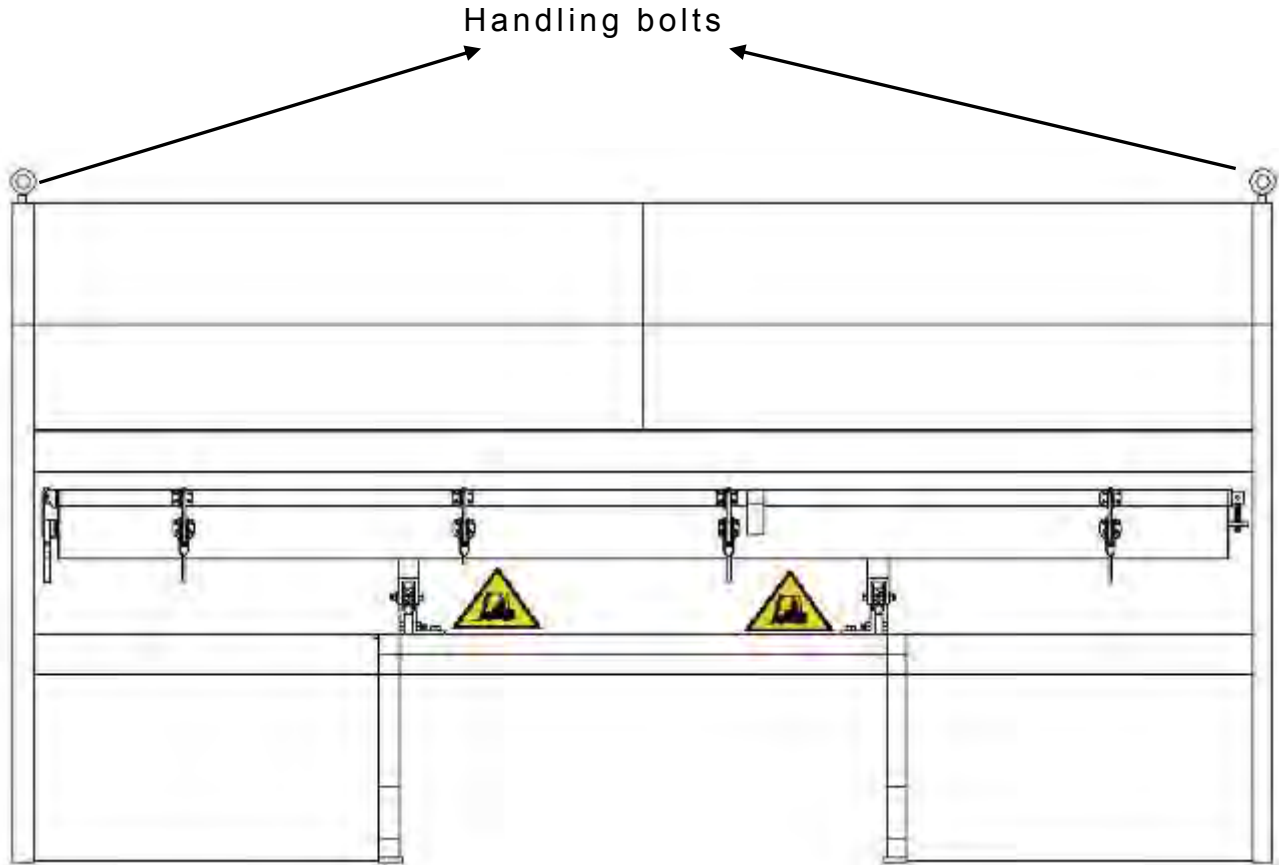
4.STORAGE CONDITIONS

For pro longing the usage of machine tool, you should obey the following rules:

1. Do not expose to direct sunlight for a long time.
2. Do not place onto wet place.
3. Do not place on areas with strong vibration or shake.

IMPORTANT NOTICE : IN ORDER TO TAKE BEST AND SUITABLE VACUUM VALUES, VACUUM PRESS MACHINES SHOULD ONLY WORK AT WORKING AREA BETWEEN 20° - 30°. MANUFACTURER CAN NOT GIVE ANY WARRANTY FOR DIFFERENT WORKING TEMPERATURES.

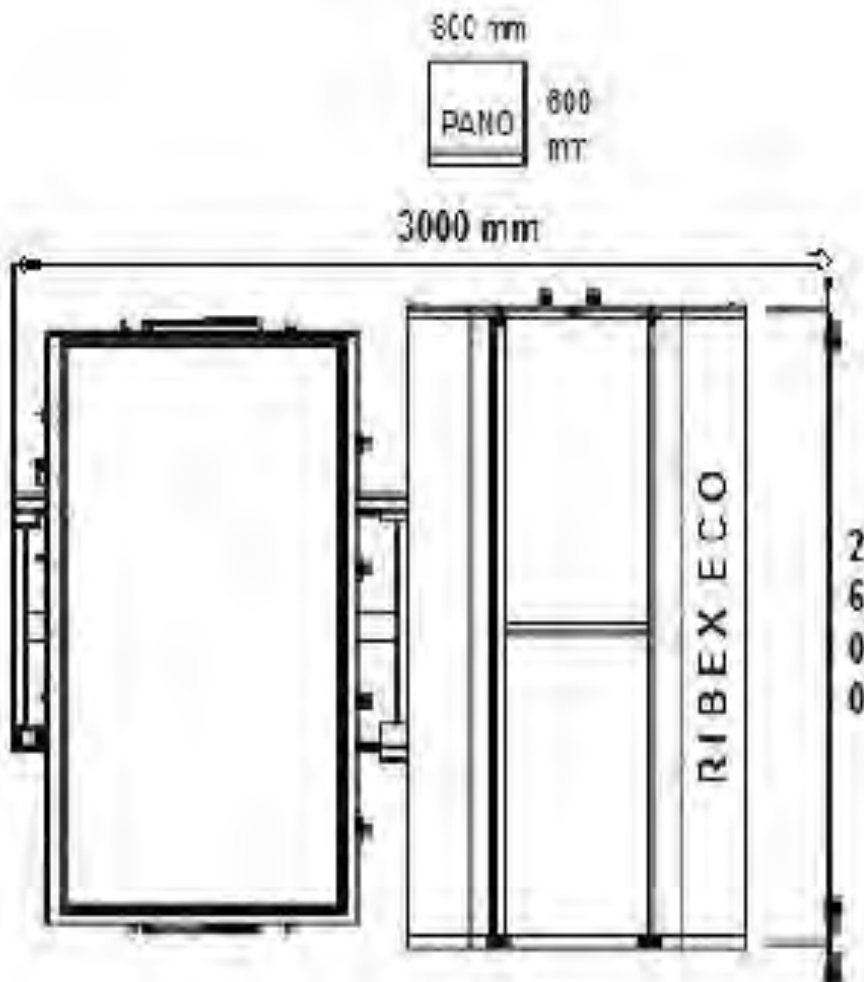
5. HANDLING POSITION OF MACHINE



1. Never overload the lifting equipment.
2. Never use damaged slings or crane hooks.
3. Position the sling correctly. The sling must not be placed around sharp edges, do not let it slide over corners or along edges.
4. Never let goods drop down and move up/down slowly and carefully.
5. Position sling correctly to ensure easy removal after use.
6. Use smooth-rounded hooks having an inside radius of not less than 50 mm.
7. Avoid placing more than one sling on the same hook.
6. Keep away from alkalis, acids and other dangerous goods.
7. Any greasy dirt on sling is not allowed.
8. Remember that vibration during transport can cause friction between sling and machine use protective sleeves on slings.

Slings to be used must be made from 100% polyester or of steel with enough strength. For lifting rough or sharp edges loads, we recommend the use of protective sleeves to protect slings from damage. All slings are coloured coded for increasing safety.

6. LAYOUT PLAN



* Ribex Vacuum Press Machine should be located on flat ground for high sensitivity. If foundation area has small height difference. Please adjust the bases height of machine. Dimensions of machine Length 3000 mm. and width 2600 mm, but working area should be width 4600 mm and length 5000 mm. to operate safe and productive.

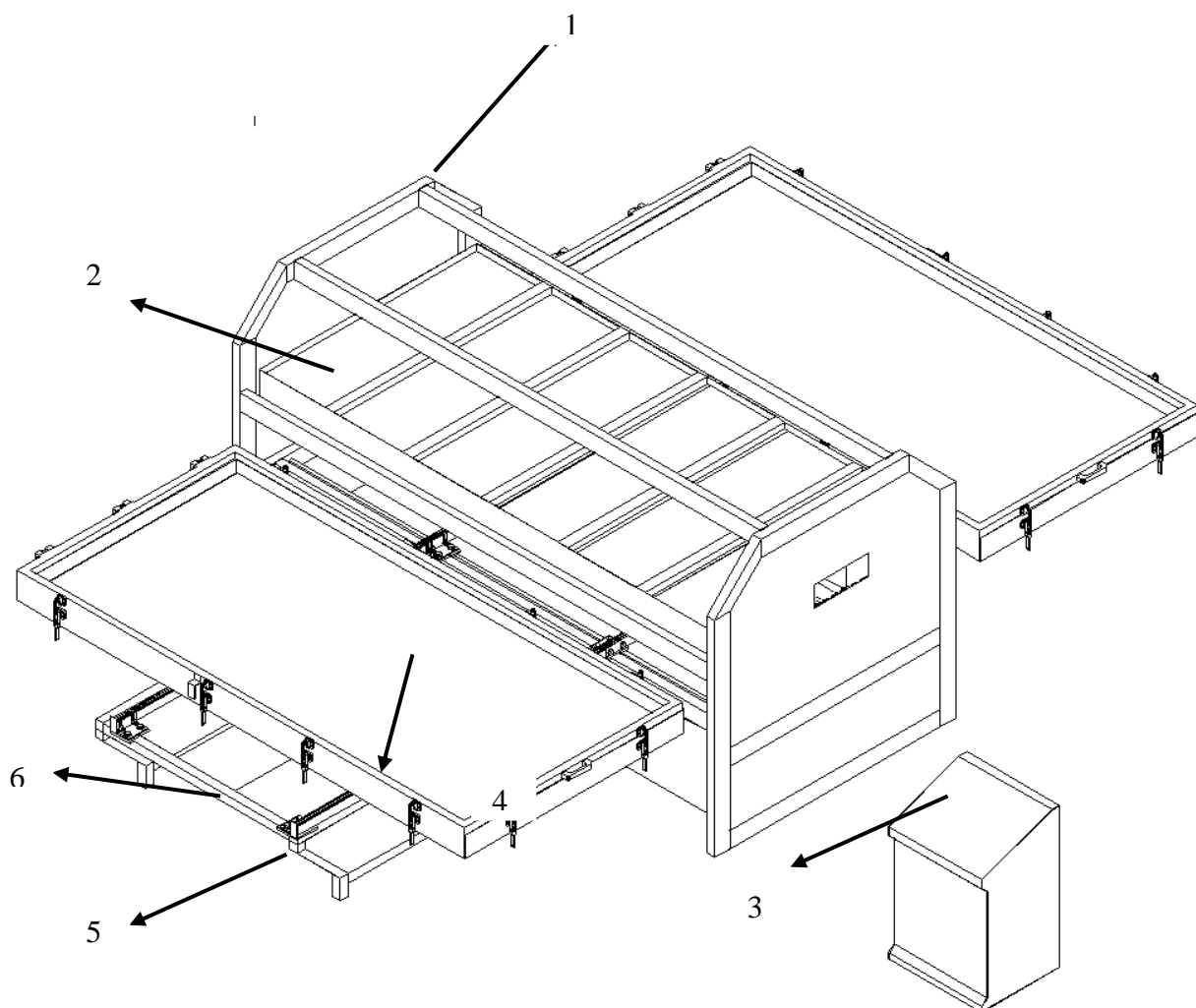
Please pay attention for avoid damage the control panel and connection cables of control panel.

Prepare an electric panel according 3x80 A fuse 380/400 AC 50/60 Hz. to operation area. The connection cables should be 4x10 mm² TTR for 10 meters. If the distance more than 10 meters you should use 4x16mm² TTR. Don't forget earthing cable connection on machine.

7. INSTALLATION DRAWING OF MACHINE

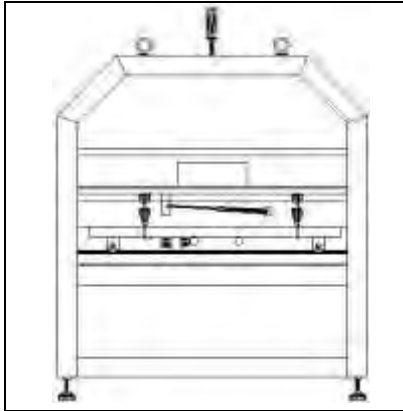
Machine parts name and drawing are as follows.

1. Main body
2. Heating plate
3. Control panel
4. Table (1 pcs)
5. Table rail
6. Table support (1 pcs)



Installation process are as follow drawings.

(1)



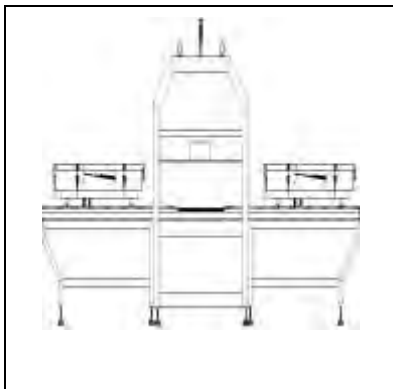
(2)



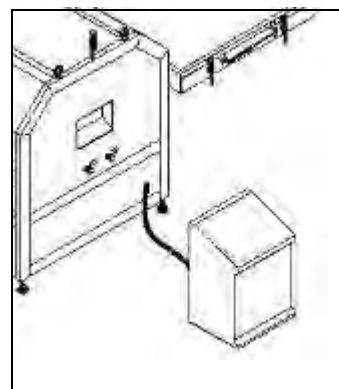
(3)



(4)



(5)





R1	L1	R4	L4
R2	L2	R5	L5
R3	L3	R6	L6

Follow ensemble numbers as above to connect parts properly.

UNLOCKING OF SAFETY PARTS



ATTENTION! Do not move the worktable without removing metal safety parts.

RIBEX ECO MACHINE BODY
After installation of work table stand



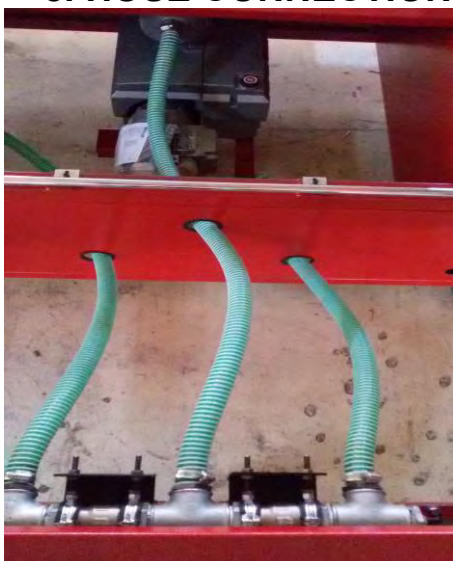
At the first installation of machine, worktable stand rails of machine must be connected into it's slot as shown below.



Under machine, there are 4 pieces of foundation leveling foot, machine must be leveling with the adjustment of these leveling bolts with the tool as shown below.



8. HOSE CONNECTIONS



Hoses which are connected with vacuum pump, are being connected with 3 vanes from the middle side. Left working table is being connected with left side of vanes and right working table is being connected with right side of vanes. Then these vanes are connected with vacuum pump.

Note : Single table vacuum pumps have vanes with twin entrance.

9. ELECTRIC CONNECTIONS

After **energy/electricity** is connected, machine starts from main electricity **ON/OFF SWITCH** as shown below:

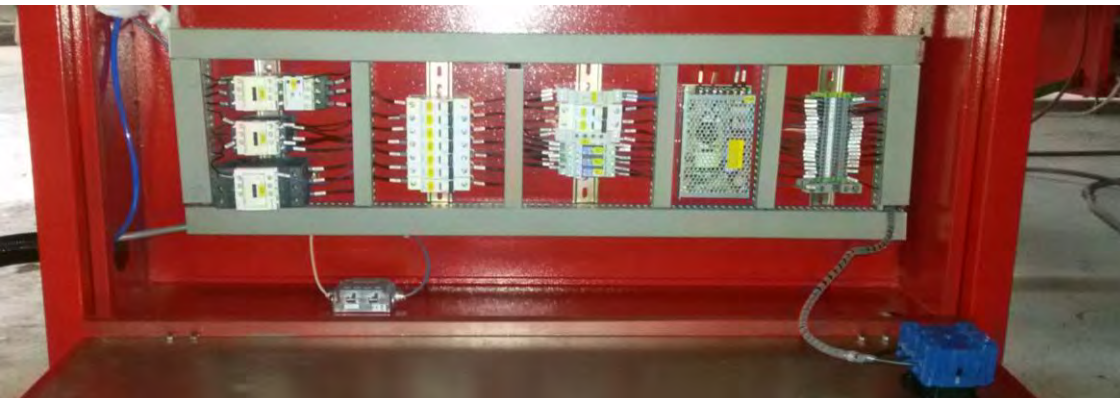


Before operating machine, please check once again and be sure that the earth connection is well connected, electrical line is properly and safe as the required power of the machine from power supply.



Main electrical board of the machine is located at the back side under the main body of machine. All electrical connections are being made from this section of machine. Open the electrical board door with the turning handle, for the connection of cables, at the right side, you will see L1,L2,L3 main electrical connections and connect 3 phase from here.

Inside main electrical board as shown below:



10. CONTROL PANEL



Only ECO-B has UP/DOWN feature.

RIBEX ECO/ECO-B CONTROL PANEL

- 1 VACUUM METER: During Vacuum process it indicates the vacuum power with Bar/Pressure unit.
- 2 VACUUM PUMP LAMP: If it's lighted up it indicates that vacuum process is active.
- 3 VACUUM PUMP START BUTTON: When it is pushed vacuum pump starts working and Vacuum Pump Light lights up.
- 4 VACUUM TIMER(ANALOG): Sets vacuum time analogue. It is deactivated automatically at the end of set time.
- 5 VACUUM PUMP STOP BUTTON: When it is pushed vacuum pump stops working and Vacuum Pump Light lights out.
- 6 POWER LAMP: Lights up when the machine is turned-on from main switch.
- 7 HEIGHT ADJUSTMENT: It allows the heating unit to lift up/down to adjust the height of working area. **(Only ECO-B model has UP/DOWN feature!)**
- 8 HEATERS LAMP (RESISTANCE): It lights up when heaters are active and lights out when heaters are deactivated.
- 9 HEATERS START BUTTON: When it is pushed heaters lamp lights up and heaters start the heating process. It continuously heats up until reaches out to maximum required/preset temperature value of temperature controller.
- 10 LAMP INDICATOR: It indicates if lamps inside of the machine are active/deactive.
- 11 HEATERS STOP BUTTON: When it is pushed it deactivate the heaters and Heaters Lamp lights out.
- 12 LAMP SWITCH (ILLUMINATION): It illuminates inside of the machine and it is activated/deactivated with this switch.
- 13 EMERGENCY STOP: Stops all functions of the machine in case of danger when pushed. By twist/pull back to it's position again after danger is eliminated.
- 14 VACUUM STEP BUTTON: When it is pushed manually vacuum pump starts working and Vacuum Pump Lamp starts lighting.

11. OPERATION OF MACHINE

- 1- Open the lid of the machine and lay on PVC on worktable, make sure to fit PVC regularly on both sides, before closing the lid, it must be well tighten and check the holes and tears on PVC carefully.



- 2- After PVC lays on worktable, as shown on picture above, PVC must be tighten between worktable and lid, then tightening clamps must be closed as shown on photo manually and should be prevent for the air flow.



- 3- PVC can be tighten with Step button and you can touch only 1 second in order to tighten PVC (it is advisable) Start the heating operation afterwards



Adjustment of temperature settings and vacuuming time is depend on PVC foil type, colour and thickness such as outside temperature and also even altitude. Working materials should be away from corners about 8 cm, and the distance between workpieces should not be lower than 7 cm from both sides.

Heating operation and vacuuming operation should be done step by step. From direct monitoring (operation window), entire operation can be easily seen.

Depends on the structure/technical specifications of glue and PVC material, vacuuming time and temperature adjustment can be adjusted easily.

Please find below some simple instructions, in order to understand about vacuum system ;

After pushing the manual worktable until completely inside of main working area:

1. We advise you to open illumination inside machine, in order to open the illumination, please turn the switch to right side.
2. Vacuuming operation should be done step by step, different material needs different vacuum pressure and temperature. Especially light colour PVC materials needs little high temperature and dark colour materials need low temperature, glue quality also effects the vacuuming operation. It should be asked before to PVC or glue manufacturer for exact activation/expansion levels/points.

11.1 ROBO MAGNETS



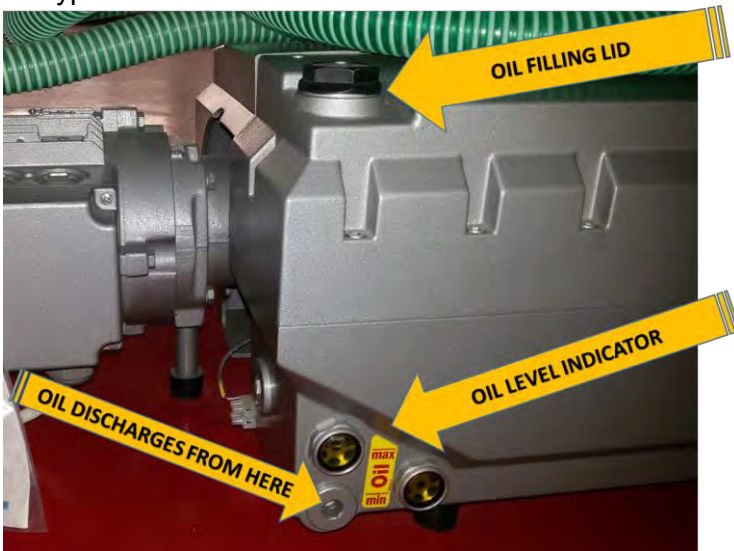
Robo magnets are designed for supporting workpieces during vacuuming operation for turning corners properly, depends on workpiece shape, it can be used one top of the other. Bottom supporter robo magnets have long life usage and easy working possibility. With bottom U shape channels, it supports vacuuming circulation during vacuuming operation.

12. GENERAL MAINTENANCE OF VACUUM PUMP

1. These vacuum pumps with its structure, does not need periodical maintenance. It is oil type vacuum pump with its 105 m³ vacuuming capacity.
2. Oil level should be always controlled by operator from oil indicator
3. Oil level from vacuum pumps should be maximum at the middle level of oil indicator.
4. Never use vacuum pumps without oil.
5. Vacuum pumps can decrease oil little less during working, It should be added with the suitable level.
6. If each day you work with machine between 8-10 hours, vacuum pump oil should be changed monthly.
7. For vacuum pumps, please put periodical maintenance and oil change card, for failure or any type of breakage, please contact with manufacturer.
8. Each 100 hours, clean vacuum air filter with air gun. Each 6 monts change it with the new one.
9. Oil discharging and oil afilling is being done as it shown undermentioned, Open the hexagon bolt for filling oil, after filling oil, it should be tigthening carefully.



Oil types are recommended as follows: Shell Corena H100 | Mobil Rarus 427 | BP Energol RC 100



13. TROUBLESHOOTING

If the pump malfunctions, try the following measures first to eliminate the trouble. If trouble persists, contact service department.

Fault	Cause / Remedy
A) Pump does not run	<ol style="list-style-type: none"> 1) Thermal switch has tripped; identify reason and activate switch. 2) Room temperature is too low; Restore room temperature to allowed range 3) Motor winding damaged; Contact service department
B) Pump cannot reach stated vacuum	<ol style="list-style-type: none"> 1) Low oil in tank; Pour up oil. 2) Oil is contaminated; Change oil 3) Discharge clogged; Check couplings at outlet.
C) Pump is noisy	<ol style="list-style-type: none"> 1) Air exhaust filter clogged; Change air exhasut filter. 2) Motor bearings damaged, Contact service department. 3) Motor coupling damaged, Contact service department. 4) Vanes worn out, Contact service department.
D) Pump runs hot	<ol style="list-style-type: none"> 1) Oil is not suitable type; Change oil 2) Poor room ventilation; Install an auxiliary ventilation. 3) Motor fan broken, Contact service department

	<p>4) Wrong power supply to motor; Check power supply</p> <p>5) Outlet clogged</p>
E) High oil consumption	<p>1) High working pressure (close to atmospheric pressure) Check oil level frequently.</p> <p>2) Pump temperature is too high</p> <p>3) Air exhaust filter damaged; Replace air exhaust filter.</p>
F) Pump does not maintain after power-off	<p>1) Check valve(if fitted) damaged; Contact service department</p>
G) Pump leaks oil	<p>1) Tank screws or knobs loosened; Tighten screws or knobs.</p> <p>2) Tank gaskets damaged; Contact service department</p> <p>3) Oil sight glass not tightened; Tighten oil sight glass.</p>
H) If vacuum pressure (suction) is not enough	<p>1) Hose connection or hose may be broken; You should change the hose. Ther reason aslo can be from clamping parts, You should change it.</p>
I) If some resistances are not working	<p>1) Maybe electrical cables are loosen or resistance/resistances breakdown. Check the cable connection of resistance or change with a new one.</p>
J) Heat rate reading error	<p>1) Heat sensor do not give any data or it give negative heat rate. May be loosen electric cables or sensor has suffered damage. First of all check the cables connection. Tigten the cables. If sensor is broken. Please contact with our company for new sensor.</p>

13.1 REPLACING QUARTZ HEATERS

For replacing a burned quartz heater first be sure there is no energy connected to take out the screw on iron part(L) and cable connection bolt thus you can put out the quartz heater and you can replace with new one. While replacing new one; first of all connect the cable afterwards you should put into place iron part.



14. ATTACHMENTS



Betriebsanleitung
 Operating Instructions
 Kullanım kılavuzu
 Instructions de service
 Istruzioni d'uso
 Handleiding
 Instrucciones para el manejo
 Manual de instruções
 Naudojimosi instrukcija
 Kasutusjuhend
 Lietošanas instrukcija
 Οδηγίες χρήσης

Driftsinstruks
 Driftsinstruktioner
 Käyttöohje
 Driftsvejledning
 Instrukcja obsługi
 Kezelési útmutató
 Návod k obsluze
 Navodilo za uporabo
 Návod na obsluhu
 El Kitabı
 Инструкция по эксплуатации

U 4.100

2006/42/EG



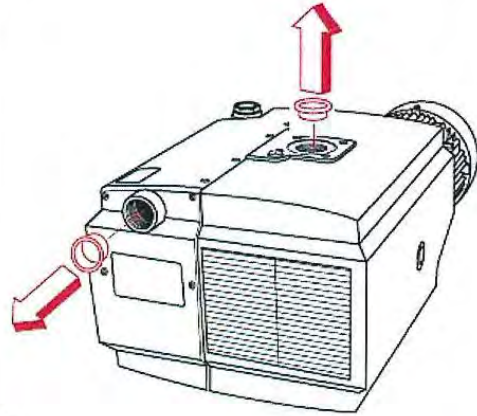
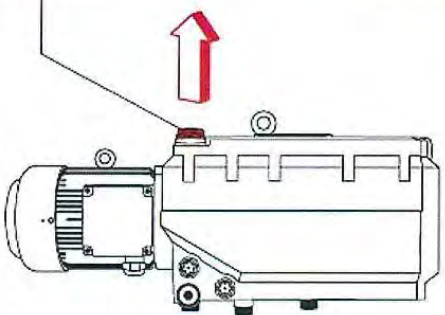
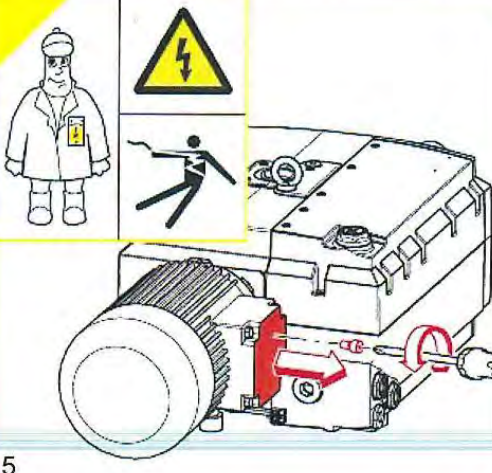
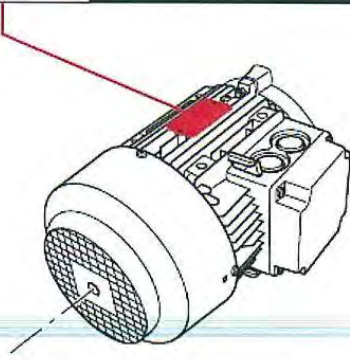
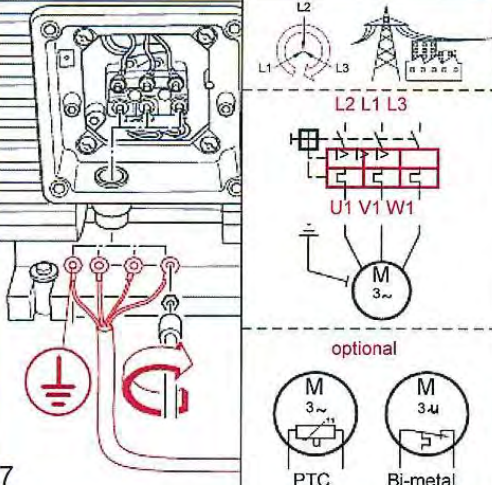


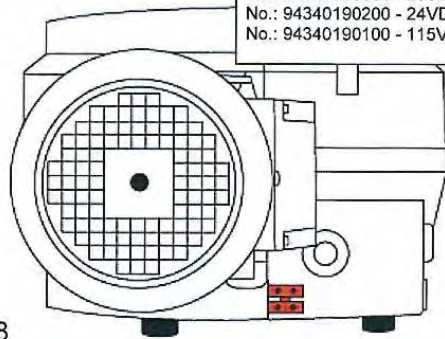


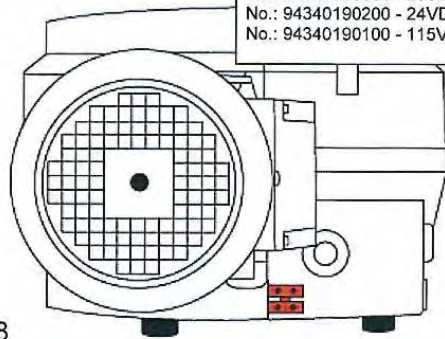


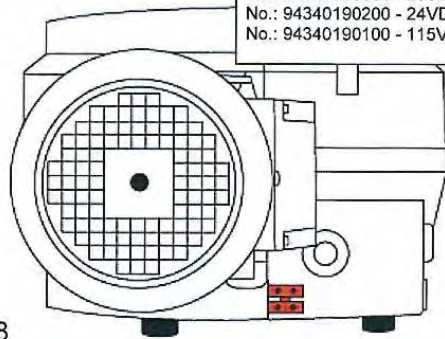
取扱説明書
 사용설명서

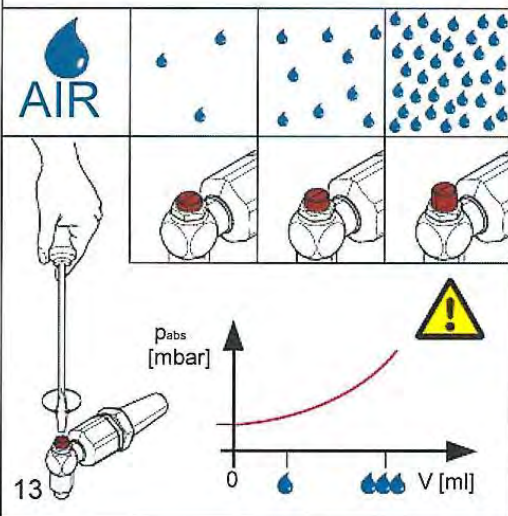
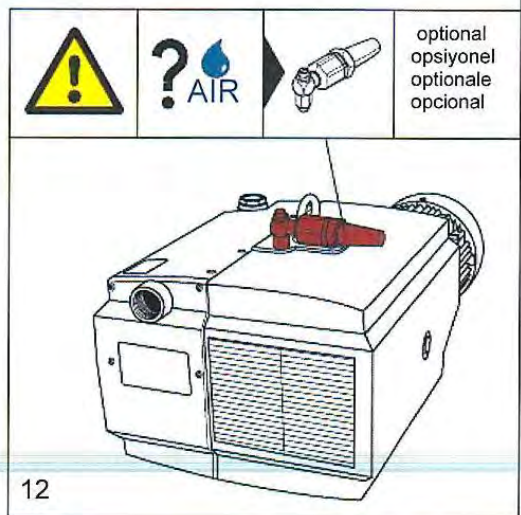
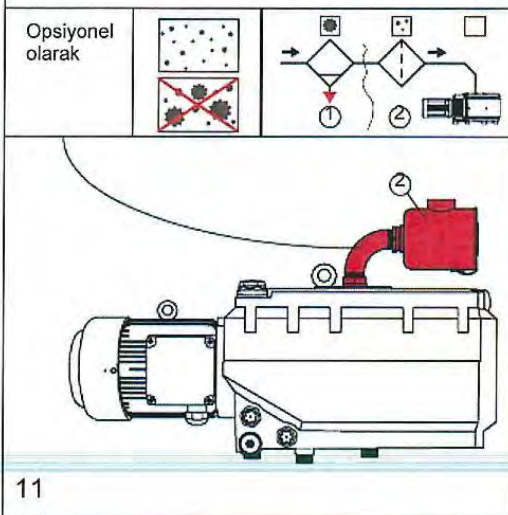
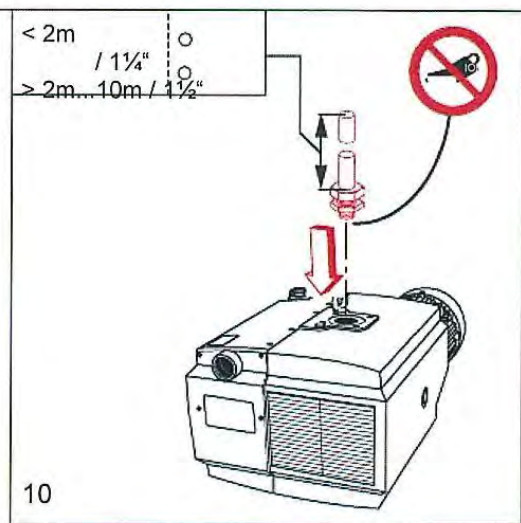
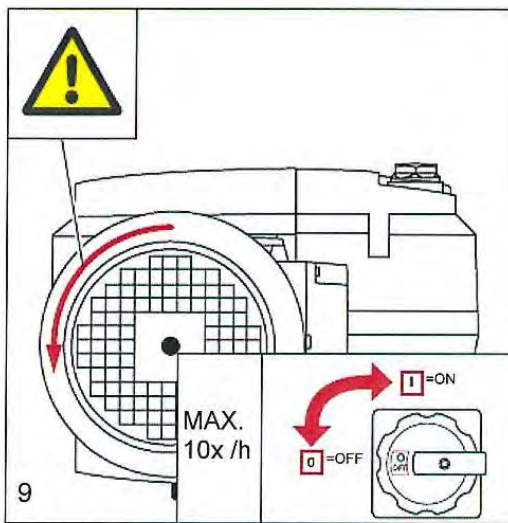
使用说明书

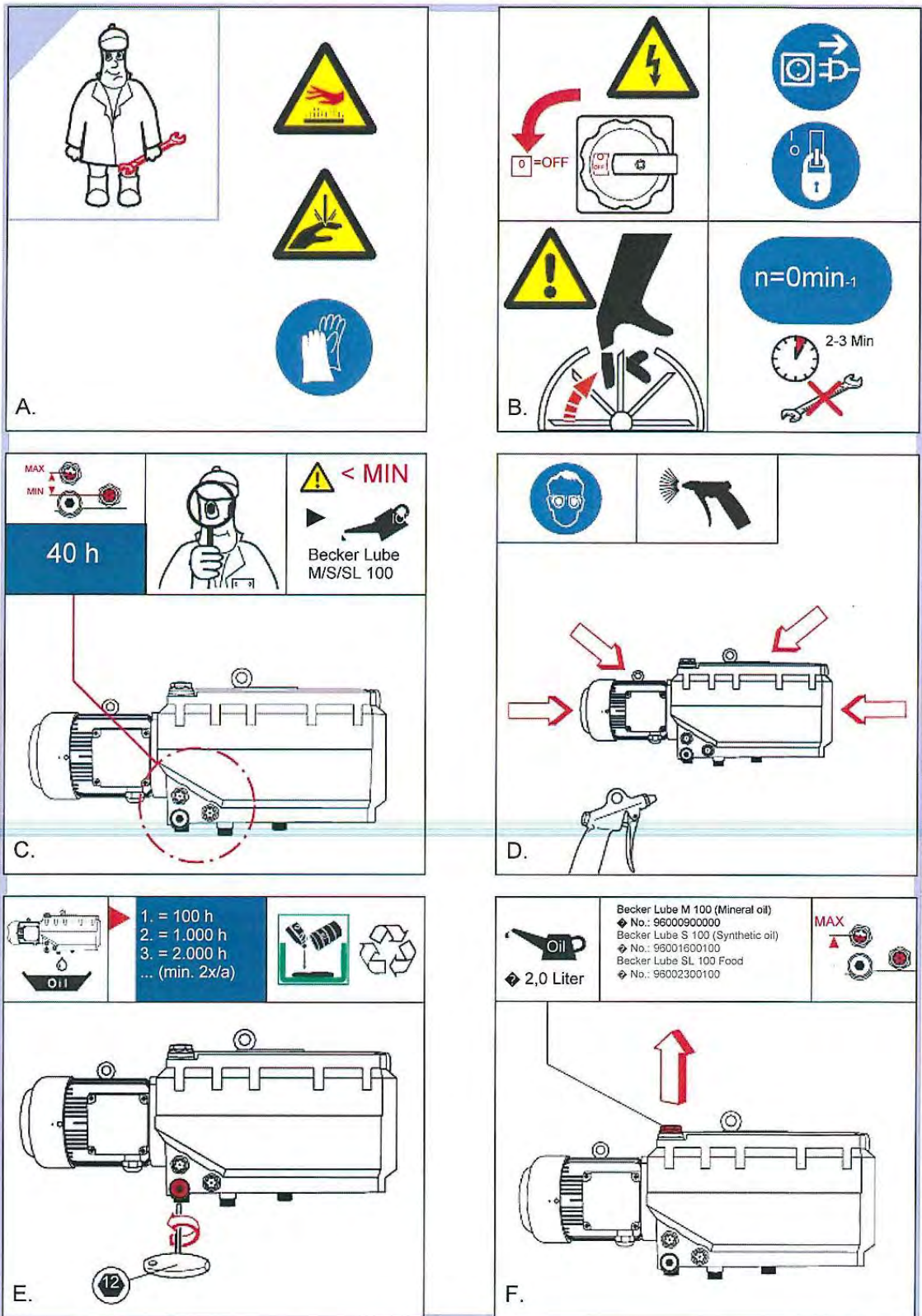


	<p>Becker Lube M/S/SL 100 ◆ 2,0 Liter</p>	<p>MAX. VACUUM</p>		<p>mbar</p>
<p>AIR HAVA</p>		<p>DIN EN ISO 3744</p>	<p>$L_{pA} = 67,5 \text{ dB(A)} - 50\text{Hz}$ $L_{pA} = 69 \text{ dB(A)} - 60\text{Hz}$ $K_{pA} = 3 \text{ dB(A)}$</p>	

<p>67,5 kg 148,8 lbs</p>		<p>A > 100mm A > 4" > 5°C/41°F</p>	<p>< 40°C/104°F</p>	<p>max. 90%</p>	<p>max. 800m</p>

 <p>2,0 Liter</p>	<p>Becker Lube 100 lük veya muhteviyatı yağ kullanılmadır Yağ doldurma yeri üst tıpada belirtildiği Şekildedir. Yağ tahliyesi alt tarafa yanda belirtildiği Şekilde yapılmaktadır.</p>	<p>MAX</p> 	 <p>4</p>				
 <p>3</p>	 <p>5</p>		 <p>6</p>				
 <p>7</p>		<table border="1"> <tr> <td data-bbox="893 1422 1021 1556">Pt 100</td> <td data-bbox="1021 1422 1418 1556">optional opsiyonel opcional</td> </tr> <tr> <td data-bbox="893 1556 1021 1935">  </td> <td data-bbox="1021 1556 1418 1935">  <p>No.: 94340190000 - 230V No.: 94340190200 - 24VDC No.: 94340190100 - 115V</p>  <p>8</p> </td> </tr> </table>		Pt 100	optional opsiyonel opcional		 <p>No.: 94340190000 - 230V No.: 94340190200 - 24VDC No.: 94340190100 - 115V</p>  <p>8</p>
Pt 100	optional opsiyonel opcional						
	 <p>No.: 94340190000 - 230V No.: 94340190200 - 24VDC No.: 94340190100 - 115V</p>  <p>8</p>						





40 - 200 h **AIR ?**

G.

1000 h

H.

2000 h

I.

Pos. 83

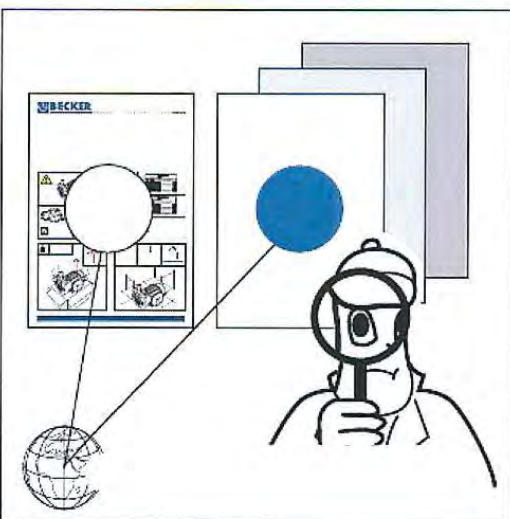
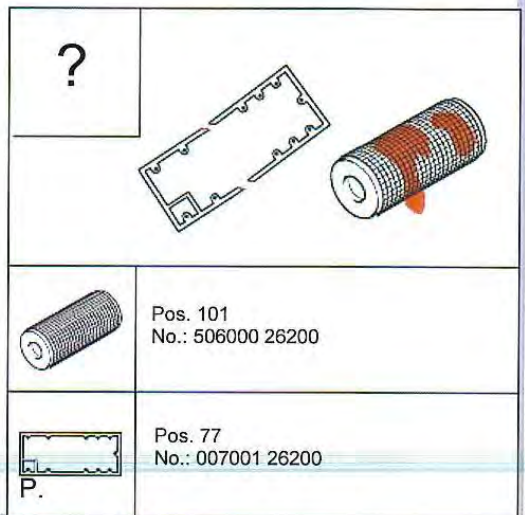
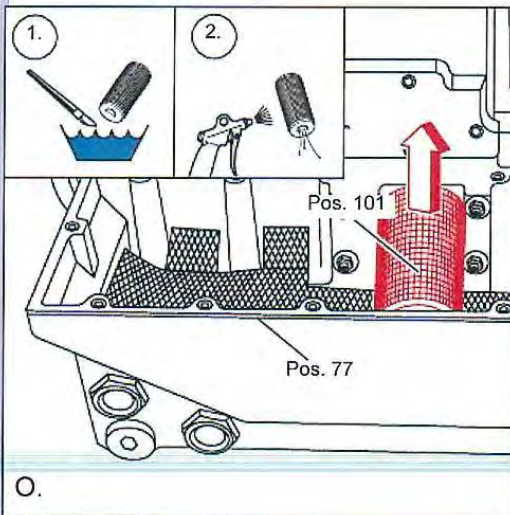
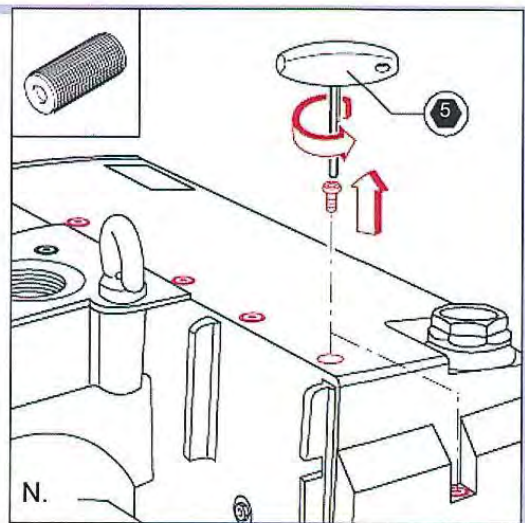
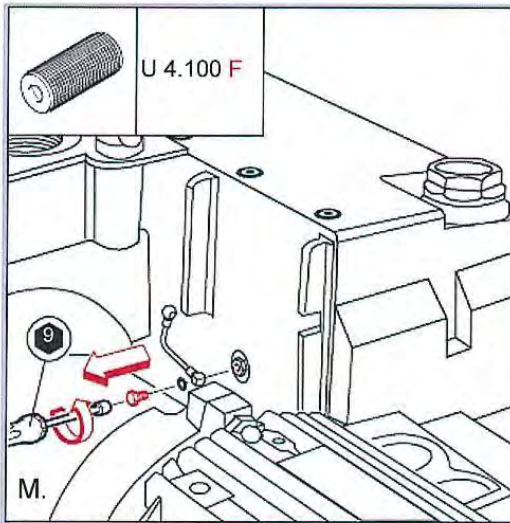
J.

Pos. 83
No.: 96541600000

K.

5000 h

L.



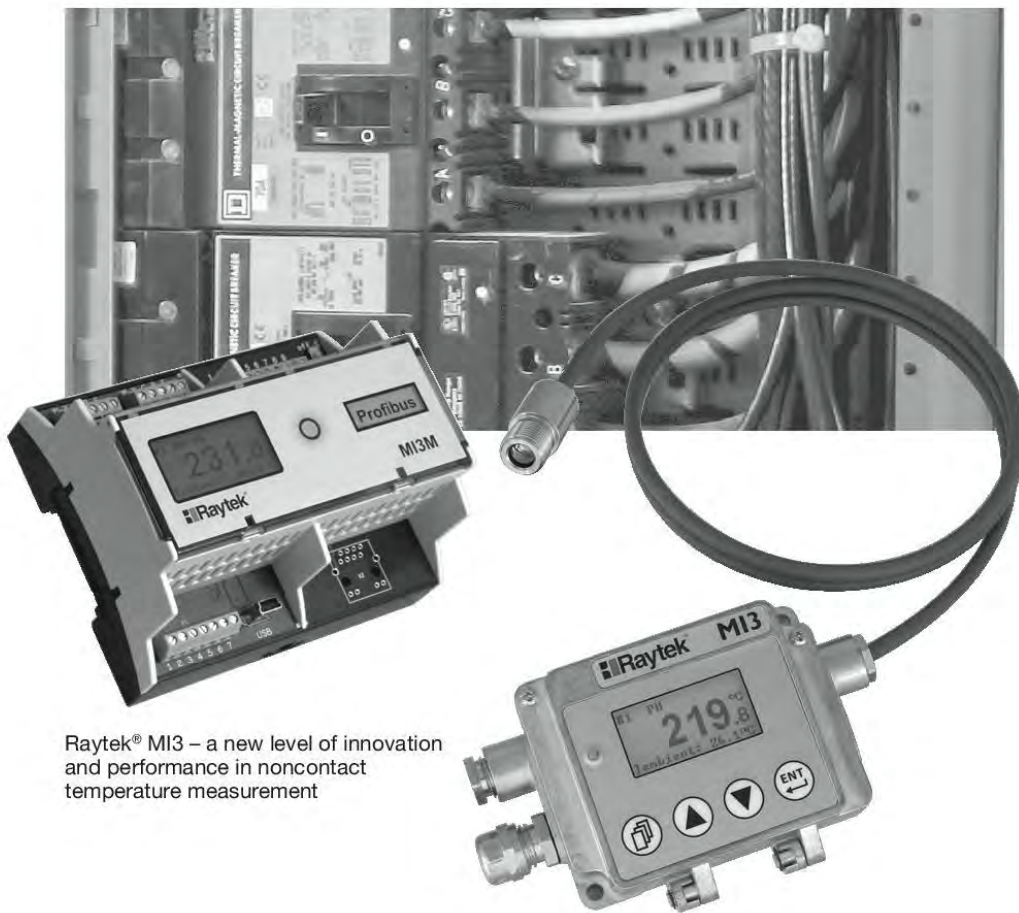
Gebr. Becker GmbH
Hölker Feld 29-31
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Tel: +49 (0)202 697-171
Fax: +49 (0)202 64 44 74

MI3

Noncontact Temperature Measurement for Industrial Applications and OEMs



Raytek® MI3 – a new level of innovation and performance in noncontact temperature measurement

Raytek®
A Fluke Company

MI3 Highlights

- Optional network communications interfaces RS485, Modbus®, Profibus, Ethernet and Profinet analog all outputs with galvanic isolation (Analog DIN 6TE variant only):
 - from power supply
 - from channel to channel
- Innovative multi-sensor design—up to 8 sensing heads/ system, each individually addressable
- Fast response times of < 20 mSec
- Rugged IP65 rated sensing heads survive ambient temperatures to 120°C (248°F) without cooling
- Intuitive user interface with high resolution LCD display for easy set-up
- Precision high resolution optics, up to 22:1
- User configurable analog outputs (0/4-20mA, 0-5/10V, type J, K, R or S t/c)
- Standard USB 2.0 digital interface for remote set-up
- Miniature sensing head fits where other sensors can't
- Isolated solid state alarm relay output
- Adjustable Emissivity, Peak Hold, Valley Hold and Averaging functions
- Datatem[®] Multi-drop and field calibration software included
- Full range of accessories
- Automatic sensing head detection—plug and play
- Built in HTTP-Server and 64 MB data logger for communication boxes with Ethernet variant

The Raytek[®] MI3 is a powerful two-piece infrared temperature measurement system with miniature sensing head and separate communications electronics. The sensor is small enough to be installed just about anywhere, yet it outperforms much larger systems. Available in either a rugged cast metal electronics enclosure, an innovative multi-channel DIN mountable enclosure, or low cost OEM configurations, the MI3 offers a host of advanced signal processing features you won't normally find in sensors costing much more.

Designed for an endless range of applications, the MI3 features a variety of sensing head options. Low temperature sensors with a measurement range of -40°C to 1000°C (-40°F to 1832°F), fast response (<20 mSec) sensors, provide an impressive array of solutions for your process needs. The rugged stainless steel sensing head ensures reliable long term performance in the harshest industrial environments. Although the MI3 sensor is small in size, it has all the performance you need—with 1% accuracy, a choice of high resolution optics up to 22:1 and user configurable I/O.

Standard features include adjustable Emissivity, Peak Hold, Valley Hold, and Averaging functions. All sensor parameters are easily adjustable on the built-in user interface keypad, or remotely with the Windows[®] 7 compatible DataTemp software via the built-in USB interface.

Advanced features further extend the power of the MI3 and include user configurable alarm output, digital "recipe" table inputs that can be easily interfaced to an external control system, an external reset input for signal processing, and external inputs for analog emissivity adjustment or reflected energy compensation. Optional RS485, Modbus®, Profibus or Analog output network interfaces simplify integration with a factory or machine control system.

The MI3's miniature size and low cost per measurement point make it ideal for installation at multiple points in your process. The MI3 is accurate, rugged, affordable, easy-to-install and operate. With the MI3, precision infrared temperature measurement is now an economical alternative.

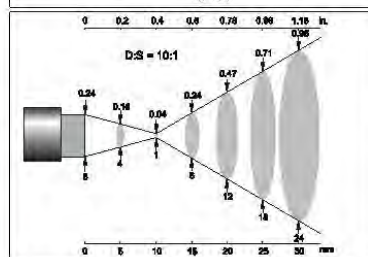
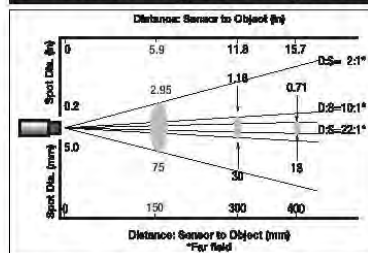
Raytek MI3 – a new level of innovation and performance in noncontact temperature measurement!

Specifications

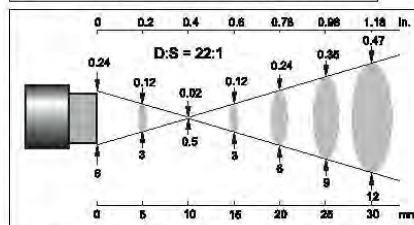
Spectral Response:	8 to 14 microns		
Optical Resolution:			
LTS	2:1, 10:1, 22:1	LTH	10:1, 22:1
LTF	10:1	G5	10:1
Temperature Range:			
LTS (2:1, 10:1)	-40°C to 600°C (-40°F to 1112°F)		
LTF (LTS 22:1)	0°C to 1000°C (32°F to 1832°F)		
LTH	-40°C to 600°C (-40°F to 1112°F)		
G5	250°C to 1650°C (482°F to 3002°F)		
System Accuracy:	±1% of reading or ±1°C, whichever is greater Thermocouple output accuracy ±1% of reading or ±2.5°C, whichever is greater		
System Repeatability:	±0.5% of reading or ±0.5°C (1°F), whichever is greater		
Temperature Coefficient:	±0.05%K per °K, or ±0.05% per °K ² Times, whichever is greater		
Temperature Resolution:	LT 0.1°C or 0.2°F *		
System Response Time:			
LTS, LTH, G5	130ms (90%)		
LTF	20ms (90%)		
Emissivity:	0.100 to 1.100 digitally adjustable Increments of .001		
Transmission:	0.100 to 1.000 digitally adjustable Increments of .001		
Signal Processing:	Peak hold, valley hold, variable averaging filter, adjustable up to 998 seconds		

*Scaled temperature dynamic range < 500°C (< 932°F)

Nominal Optical Specifications



10:1 with Close Focus Accessory



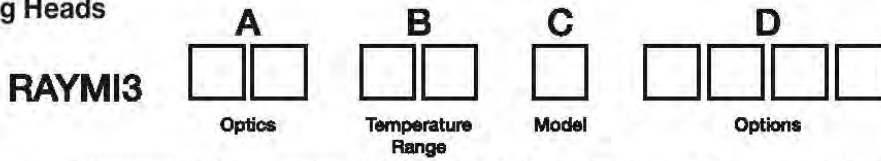
22:1 with Close Focus Accessory

D:S is the optical resolution expressed as a ratio of the distance to the measurement spot divided by the diameter of the spot.

Optical resolution for the MI3 is 2:1, 10:1, 22:1.

Nominal spot size based on 90% energy.

Sensing Heads



Each MI3 sensor system is comprised of (1) MI3 sensing head and (1) MI3COMM or MI3COMM4 communication module. The sensing head includes one mounting nut and 1m (3.3ft) cable. Longer cables up to 30 m (100ft) maximum are available and must be specified at time of order. The MI3 sensing head and MI3COMM box are ordered as separate items.

Model	Description
RAYMI3	Miniature infrared sensing head with 1 meter (3.3ft) cable
Code A	Optical Resolution
02	2:1
10	10:1
Code B	Temperature Range
LT	-40°C to 600°C (-40°F to 1112°F) Note: 0°C to 1000°C (32°F to 1832°F) for LTF and LTS 22:1 models
G5	250°C to 1650°C (482°F to 3002°F)
Code C	Model
S	Standard sensing head, 120°C (248°F) maximum ambient
F	Fast response sensing head, 20 mSec response time, 120°C (248°F) maximum ambient (10:1 head only)
H	High ambient sensing head, up to 180°C (356°F)
Code D	Options
CB3	3m (10ft) cable
CB8	8m (26ft) cable
CB15	15m (49ft) cable
CB30	30m (98ft) cable

Communication Boxes

Model	Description
RAYMI3COMM	MI3 IR thermometer communication box with USB 2.0 communications, cast zinc housing and user-interface
RAYMI3COMM4	MI3 IR thermometer communication box with USB 2.0 communications and RS-485 communication option, cast zinc housing and user-interface
RAYMI3COMM4M	MI3 IR thermometer communication box with USB 2.0 communications and Modbus communication option, cast zinc housing and user-interface
RAYMI3COMM4P	MI3 IR thermometer communication box with USB 2.0 communications and Profibus communication option, cast zinc housing and user-interface
RAYMI3MCOMM	Modular DIN mountable 4-channel IR communication box with user interface, USB 2.0 and RS485 communications
RAYMI3MCOMM4M	Modular DIN mountable 4-channel IR communication box with user interface, USB 2.0 and Modbus communications
RAYMI3MCOMM4P	Modular DIN mountable 4-channel IR communication box with user interface, USB 2.0 and Profibus communications
RAYMI3MCOMM4N	Modular DIN mountable 4-channel IR communication box with no user interface, display or RS485 interface. Includes USB 2.0 and alarm relay, only
RAYMI3MCOMM4MA	Modular DIN mountable 4-channel IR communication box with user interface, USB 2.0 and 4 galvanic isolated analog outputs
RAYMI3COMME	MI3 IR thermometer communication box with USB 2.0 communications and Ethernet communication and built in HTTP-Server option, cast zinc housing and user-interface
RAYMI3COMM4PN	MI3 IR thermometer communication box with USB 2.0 communications and Profinet communication, cast zinc housing and user-interface
RAYMI3MCOMME	Modular DIN mountable 4-channel IR communication box with user interface, USB 2.0 and Ethernet interface with built-in HTTP-Server.
RAYMI3MCOMM4PN	Modular DIN mountable 4-channel IR communication box with user interface, USB 2.0 and Profinet interface.

The Worldwide Leader in Noncontact Temperature Measurement

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Worldwide Service

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 Specifications subject to change without notice.

Electrical Specifications MI3COMM

Digital Interface	USB 2.0 (RS485, Modbus, Profibus, Ethernet and Profinet optional)
Outputs:	Scaleable 4-20mA, 0-20mA, 0-10V, 0-5V, J, K, R or S thermocouple, 0-5V head ambient output
Inputs:	Digital inputs for emissivity control, ambient background temperature compensation, trigger/hold input
Alarm Relay:	48 VAC, 300 mA, optically isolated solid state relay
Cable Length*:	1m (3.3ft) standard, 3m (10ft), 8m (26ft), 15m (50ft) and 30m (100ft) lengths available
Output Impedance (T/C output):	20 ohms
Minimum Load Impedance (mV output):	10K ohms
Maximum Loop Impedance (mV output):	500 ohms
Power Draw:	4W max
Power Supply:	8-32VDC
Environmental Rating:	IP 65 (NEMA-4)
Electronics Housing:	-10°C to 65°C (14°F to 150°F)
Storage Temperature:	-20°C to 85°C (-4°F to 185°F)
Relative Humidity:	10 to 95%, non-condensing
Electronics Weight:	270g (9.5oz)
EMI/EMC/ESD	IEC EN61326-1 1:2006

*Maximum total cable length of 30 m (98 ft) when used with XXXMI3CONNBOX Multichannel interface box

Electrical Specifications MI3COMM

Sensor Head Inputs	Maximum of 4
Digital Interface	USB 2.0 and RS485 standard, (RS485, Modbus, Profibus, Ethernet and Profinet optional)
Outputs (Analog MI3COMMMA Box)	Scaleable 4-20mA, 0-20mA, 0-10V, 0-5V, J, K, R or S thermocouple, 0-5V head ambient output galvanic isolation
Inputs:	Trigger input
Alarm Relay:	48 VAC, 300 mA, optically isolated
Cable Length*:	1m (3.3ft) standard, 3m (10ft), 8m (26ft), 15m (50ft) and 30m (100ft) lengths available
Power Draw:	4W max
Power Supply:	8-32VDC
Electronics Housing:	-10°C to 65°C (14°F to 150°F)
Storage Temperature:	-20°C to 85°C (-4°F to 185°F)
Relative Humidity:	10 to 95%, non-condensing

*Maximum total cable length of 60m (197ft)

Sensing Head Specifications

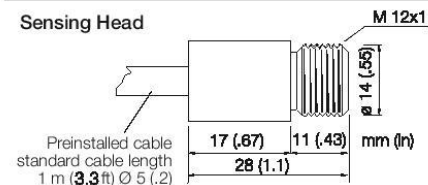
Environmental Rating:	IP 65 (NEMA-4)
Head Ambient Temperature Range:	
S and F models:	-10°C to 120°C (14°F to 248°F)
Storage Temperature:	-20°C to 85°C (-4°F to 185°F)
Relative Humidity:	10 to 95%, non-condensing
Construction:	
Sensing head	Stainless steel
Comm box (MI3)	Zinc, die-cast
DIN Comm box (MI3M)	Molded plastic
Sensing head cable	PUR halogen free, flame retardant insulation, 125°C (257°F) max. temp
Weight:	
Sensing head (w/1 m cable)	50g (1.75oz)
Shock (sensing head)	IEC 68-2-27 50g's, 11ms, 3 axis
Vibration (sensing head)	68-2-6 3g's, 10-150Hz, 3 axis
EMI/EMC/ESD	IEC EN61326-1 1:2006

Accessories

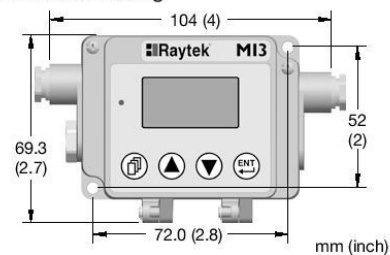
A full range of accessories for various applications and industrial environments are available. Accessories include items that may be ordered at any time and added on-site:

- (XXXSYSPS) 24 VDC, 1.2A Power supply
- (XXXMIACAB) Adjustable mounting bracket
- (XXXMIACFB) Fixed mounting bracket
- (XXXMIACMN) Sensor head mounting nut
- (XXXMIACAJ) Air purge jacket
- (XXXMIACCJ) Air cooling system with .8 m (2.6 ft) air hose or with (XXXMIACCJ1) 2.8 m (9.2 ft) air hose
- (XXXMIACRAJ, XXXMIACRAJ1) Right angle mirror
- (XXXMIACPW, XXXMI3ACPWP) Protective windows
- (XXXMI3ACCFL) Close focus lens
- (XXXMI3CONNBOX) Multi-channel sensor interface box for use with MI3COMM Box
- (XXXUSB485) USB/RS485 Adapter for boxes with RS485 interface

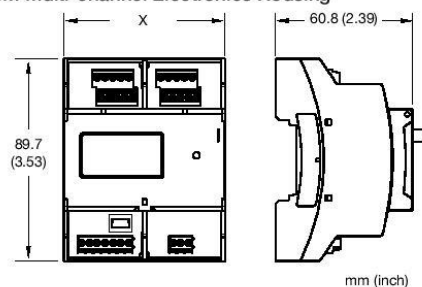
Sensor Dimensions



MI3 Electronics Housing



MI3M Multi-channel Electronics Housing



X Dimension

54 mm (2.1 in)
72 mm (2.8 in)
108 mm (4.3 in)

Models

RAYMI3COMM
RAYMI3COMM
All other models

Autonics

TEMPERATURE CONTROLLER

TZAM/TZAL SERIES

M A N U A L



: It indicates an upgraded part.

Thank you very much for selecting Autonics products. For your safety, please read the following before using.

Caution for your safety

- Please observe the cautions that follow.
Warning: Serious injury may result if handling are not followed.
Caution: Product may be damaged or injury may result if instructions are not followed.
Caution: Heavy or danger may occur under special conditions.

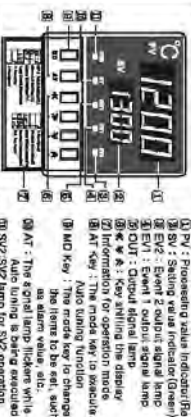
Warning

- In case of using this unit with resistive (heater) power control, medical equipment, vehicle, train, airplane, construction equipment, etc.
This unit must be installed with electric shock prevention device.
This unit must be installed on panel.
Do not connect terminals when it is power on.
Please check the number of terminal when connect power line or measurement mode.
Do not repair or disconnect when power on.
It may give an electric shock.

Caution

- This unit must not be used outdoors.
It might occur that the mark of the product or die or electric arc, etc.
When wire connection, No. 25AWG(0.5mm²) should be used and secure both on terminal block with 0.2AN x 0.8 to 0.85W x 0.8mm.
Please read the manual for the details of the connection.
It might shorten the life cycle of the product or die cause a fire.
Do not use the lead beyond rated switching capacity of relay contact.
If you use the lead beyond rated switching capacity of relay contact, the electric arc may occur and cause a fire.
If you use the lead beyond rated switching capacity of relay contact, the electric arc may occur and cause a fire.
Do not let bare wire or electric shock of the line that will result in damage to the product.
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Front panel identification



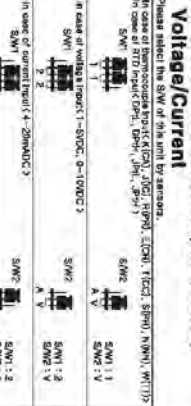
Ordering information

Table with columns for Input, Output, Power supply, and Control output, listing various model numbers and their specifications.

Specifications

Table with columns for Power supply, Power capacity, Power consumption, Input signal, Output signal, and Control method, listing technical specifications for TZAM and TZAL models.

Selection switch for input sensor/ Voltage/Current



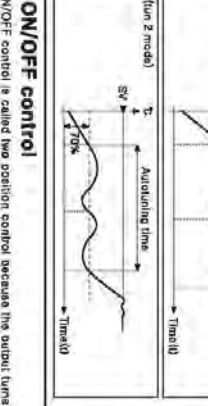
Input range for the sensor

Table listing input ranges for various sensors like Pt100, K-type thermocouples, etc., with columns for sensor type, input range, and back-EMF.

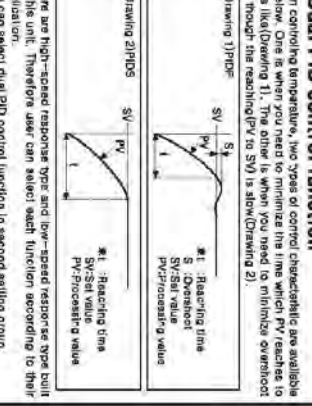
Autotuning operation

PID Autotuning function automatically measures thermal characteristics and response of the control system and then executes its value under high response and stability after calculating the time constant of PID resulted to control optimum temperature.

ON/OFF control



Dual PID control function



Control output

There are 8 kinds of main output in this unit, such as relay output, SSR output, current(4-20mA/DC), but this unit has one main output only. Therefore, please select one main output in ordering information according to your application.

Relay output

Relay output: In operation for outputting ON/OFF for main control by using relay contact. It is used for the relay contact for the main control.

SSR output: It is used for the relay contact for the main control. It is used for the relay contact for the main control.

Current output: It is used for the relay contact for the main control. It is used for the relay contact for the main control.

Voltage pulse output(SSR)
Voltage pulse output is to control SSR unit installed out of this unit. Generally the capacity of relay contact is limited. If the capacity of relay is getting bigger, the life cycle will be shortened by noise or surge.
●SSR output is 120VAC and it can use max. 30mA for load.
●Response speed of SSR is faster than relay, cause of using semiconductor.
●It can process high speed control.
●It set 1 second to 2sec. It will be good condition to control the target, regardless of semiconductor is very important in SSR.
●Therefore it is likely see 80% of rated of SSR and if SSR is damaged, it may result in a fire.

Current output(4-20mADC)
This output, called analogue output is to control the transducer(SCP unit). It can process stable control because there is no a sudden change. It outputs 4-20mADC, manipulated value is 100% at 20mADC, 0% at 4mADC. It is used with transducer and can not be used as the other application.
●This output operates through timer separated a control current circuit. Therefore current output is not changed even if the relative load is connected in advance, but if relative load is too light(over 500Ω), the current can be changed. (Please use the resistive load less than 500Ω.)
●DO not use a current output in case of using ON/OFF control.
●When current output is used, it is changing as analogue form, the manipulated value can rarely be 100% or 0%.
●Therefore LBA function is not used.
●Open OLT lamp does not operate in case of using a current output.

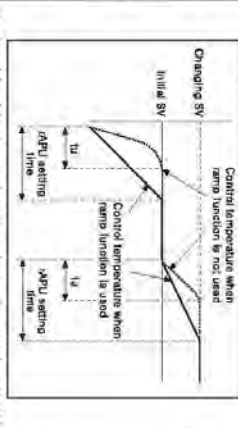
Retransmission output(4-20mADC)
Retransmission output is different with current output of control output and to retransmit current(4-20mADC) converting the measuring temperature to the recorder, PC, etc.
●But the current output can not use at over 500Ω, relative load.
●Mode of retransmission output is selected at FS-H, FS-L in the second low crest.
●When PV reach at value of FS-L, it output 4mA, when PV reach at value of FS-H, it output 20mA.
●4 to 20mADC is design as resolution of min. 15,000 divisions.

RS485 communication function
It is used for the purpose that transmitting PV to an external equipment, setting SV at the external equipment.
●It can be set at two, Adrs in second setting group.
●Bps setting : 2400, 4800, 9600(Start bit, Stop bit), Non parity)
●Addr setting : 1 to 99
●Compatible PLC : LG, Mitsubishi, CIMCON etc.

Decimal point(Dot) setting function
Decimal point is displayed as "dot" in second setting group when the input is only analog(0-10VDC, 1-5VDC, 4-20mADC).

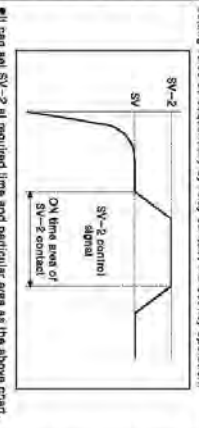
Cool/Heat function
Generally there are two ways to control temperature, one(Heat-function) is to heat when PV is getting down(lower). The other(Cool-function) is to cool when PV is getting high(higher).
●These functions are operating oppositely when it is ON/OFF control or proportional control.
●But in this case PID function will be different due to PID function constant will be decided according to control system when it is PID control.
●Cool-function and heat-function can be set at "3-2" mode in second setting group.
●Cool-function and heat-function must be set correctly according to the application, if set as opposite function, it may cause a fire.
●If set cool-function at heater, even if temperature is getting high, it will be maintained ON and it may cause a fire.)
●Avoid changing heat-function to cool-function or cool-function to heat-function on the unit is operating.
●It is impossible to operate both functions at once in the unit.
●Therefore one function should be selected only.

Ramp function
Ramp function is to delay the falling time of falling time of temperature. If you change setting value at stable value of control, it forces to rise or fall the temperature of control system during setting time at rAMP. rAMP is first setting group. If ramp is not ON in second setting group, rAMP, rAD will not be displayed in first setting group.
●Set ramp is ON in second setting group for using Ramp function.
●Set the falling time and rising time in rAMP and rAPU mode of first setting group.
●Ramp function will be operating when changing the set value at stable control status or supply the power again after the power was removed.
●rAMP function(delay of rising time)



It means delay rising temperature when change the set value at stable control status or delay the initial rising temperature as long above picture. Note) rAMP time cannot be set shorter than temperature rising time(t_u), when Ramp function is not used.
stated function(delay of falling time)
Control temperature when ramp function is not used
Control temperature when ramp function is used
Initial SV
rAMP setting time
APU setting time
APU setting time

SV-2 function
If using SV-2 function, it changes the temperature of control system to the second setting value by external relay control signal. It can change the setting value as sequentially by relay contact, without key operation.



It can set SV-2 at required time and particular area as the above chart.
●SV-2 is in first setting group.
●Application :
The control system, which has to maintain constant temperature such as oven application, if you open the door, temperature will go down. In this case if you set the second setting value higher than setting value, temperature will rise fast. Therefore, after installing a micro-switch in order to detect the door Open/Close and connect it to SV-2, the second setting value should be higher than SV1 then it controls temperature of oven efficiently.

Input correction(In-b) function
Input value is to correct deviation occurred from temperature sensor such as thermocouple, RTD. Analogue sensor etc.
●If you check the deviation of every thermo sensor properly, it can measure temperature accurately.
●Input value can be set at "first setting group".
●Use the mode after measuring deviation occurred from temperature sensor exactly. Because if measured deviation value is not corrected, resulting temperature may be too high or too low.
●Setting range of input value is -49 to +500(-50.0 to +50.0°C).
●When you set the input value value, you may need to record it, because it will be useful when performing maintenance.

Sub output(Event) function
Sub output can execute as main control output and sub function as well. There is one sub output in this unit.
●This sub output is relay "A" contact output.
●It or 2 sub output can be selected among 7 kinds of alarm mode or alarm output, when the heater fire is cut, SBA operation when the sensor error is cut, output can be attached on or automatically reset depending on the same option mode selected.
●When the sensor line of the heater line is cut, SBA or LBA output, when valve Alarm output, it is able to change Interval between ON and OFF within range of 1 to 100(0.1 to 100.0%).
●Ex) When alarm set temperature is 200°C, the output turns on when on at over 200°C, the output turns off at 199°C.
●(Above Ex) is that it set the Interval between ON and OFF as 2C.)
●selected function of Sub output in second setting group and set value of operation in first setting group.

Alarm output
The unit has output for control and sub(Alarm) output by option. The alarm output is relay output and operate regardless to output for control.)
●Alarm output operates when the temperature of target is getting higher or lower than setting value.
●In alarm mode can be selected among 7 kinds of alarm mode at EV1, EV2 in the second setting group.
●Please note below Operation chart for alarm output and option of alarm output, read to detailed operation and optional operation.

Operation chart for alarm output

RL-0	RL-1	RL-2	RL-3	RL-4	RL-5	RL-6
OFF	ON	OFF	ON	ON	OFF	ON
SV	PV	SV	PV	SV	PV	SV
100%	10%	100%	10%	100%	10%	10%
When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division
ON	OFF	ON	OFF	ON	OFF	ON
100%	10%	100%	10%	100%	10%	10%
When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division
ON	OFF	ON	OFF	ON	OFF	ON
100%	10%	100%	10%	100%	10%	10%
When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division	When set 10°C in AL, 10A, 2 in division

●The absolute value from -100 to 1000 is set in AL, 10A, 2 of the setting group.
●The absolute value from -100 to 1000 is set in AL, 10A, 2 of the setting group.
●The absolute value from -100 to 1000 is set in AL, 10A, 2 of the setting group.

Alarm option setting

Symbol	Checked or name	Function
RL-R	General alarm	No optional alarm output.
RL-b	Latch function	When alarm output turns on once, the output will be ON continuously.
RL-L	Standby sequence function	It doesn't output at the operation. When it reaches to first object value.
RL-d	Ladder 4 Standby sequence function	It operates with 4 Standby sequence function together.

Loop break alarm(LBA)
LBA function is to diagnose an abnormal temperature of the control system. If the temperature of the control system is not changed within +2.0 during setting time of LBA, the LBA output will be ON.
●When setting value(SV) is 300°C, processing value(PV) is 50°C, the unit continues 100%. In this time if there is a change of system temperature, it recognizes heater is cut off. If LBA output will be ON.
●LBA output can be selected at EV-1, EV-2 of the second setting group.
●If LBA output is not selected at even output, it will not be displayed.
●Setting range of LBA output is 1 to 999sec.
●If thermal response of the control system is slow, LBA value should be set to a high value.
●LBA output only operates when the manipulated value of the controller is 0% and 100%. So, LBA cannot be used when it is Current output.
●In case the LBA output is ON, please check the following :
●OSI - circuit or cutting of the temp. sensor.
●Abnormal condition of the equipment(Conductor, sub-wire, etc.)
●Grounding-wiring of cutting of the other cables.
●Once LBA is ON due to broken sensor, it will not output.
●Although correct sensor again.
●In this case, turn off the power, then turn on again.
●The output of LBA function is EV-1 and EV-2 output.
●If you use LBA function, SBA and alarm operation function cannot be used.

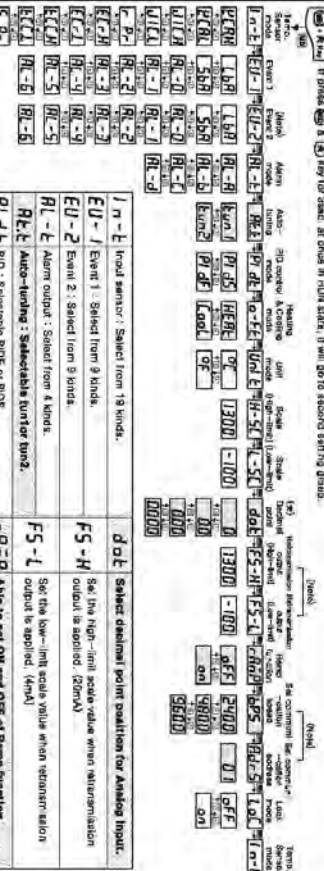
Sensor break alarm(SBA)
This function ceases the sub output is turn on when the sensor line is cut or open.
●It can easily check that the sensor line is cut or not by operating a buzzer using the relay contact.
●Set SBA mode at EV-1 or EV-2 mode in second setting group.
●If intend to use SBA function, LBA and alarm operation function cannot be used.
●The output of SBA function is EV-1 and EV-2 output.

Error display
If error is occurred while the controller is operating, it will be displayed as follows.
●"LLL" is flickering when measured input temperature is lower than input range of the sensor.
●"HHH" is flickering when measured input temperature is higher than input range of the sensor.
●"OFF" is flickering when the input sensor is not connected or its wire is cut.

●The absolute value from -100 to 1000 is set in AL, 10A, 2 of the setting group.
●The absolute value from -100 to 1000 is set in AL, 10A, 2 of the setting group.
●The absolute value from -100 to 1000 is set in AL, 10A, 2 of the setting group.

Flow chart for second setting group

If press **▲** key for data, it will go to second setting group.



Flow chart for first setting group

If press **▲** key for data, this mode changes to second flow chart.



Set SV - 2 value within input range for each sensor.

Event 1
Event 2

Loop break alarm

Alarm mode

Proportional band

Integral time

Derivative time

Control period

Hydrelimit

Manual reset

Manual ramp rising time

Manual ramp falling time

Key lock

Set internal limit for alarm output from 1 to 100% (Decimal Spec: 0.1 to 100.0%)

Set Proportional band from 0.0 to 100.0%. If setting P value as 0.0, it will be ON/OFF control.

Set integral time from 0 to 3600 sec. If setting I value as 0 sec, this function will be OFF.

Set Derivative time from 0 to 3600 sec. If setting D value as 0 sec, this function will be OFF.

Set proportional control gain from 1 to 120 sec. In case of SST output, this value should be small. (Ex: 2sec.)

Set P reset rate from 1 to 100%/Integral spec: 1 to 100.0%.

Connect the error in Input sensor from -49 to +49%

Set Manual reset value from 0.0 to 100.0%. This is for P control only, not for PID.

Set Ramp rising time from 1 to 99 min. When Ramp function is selected only.

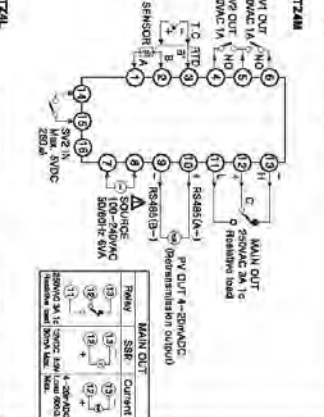
Set Ramp falling time from 1 to 99 min. When Ramp function is selected only.

This function is for locking the condition of setting value and from AT key.

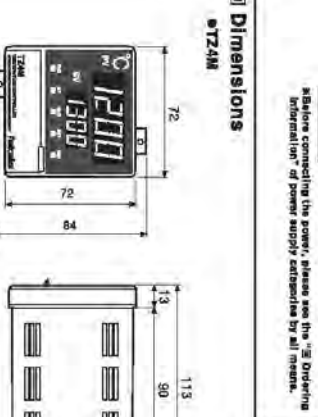
Setting ON, alarm can not be changed.

When setting ON it is not able to change setting value of first setting group and operate AT Key.

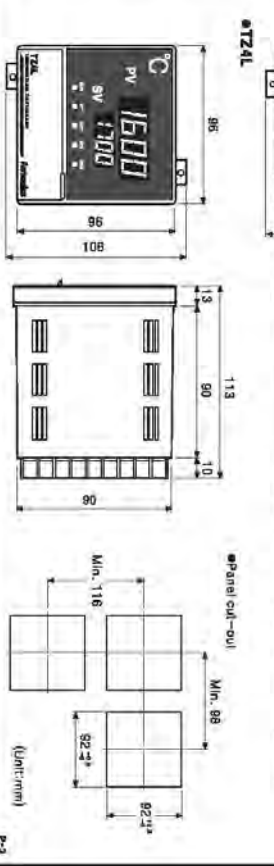
Connections

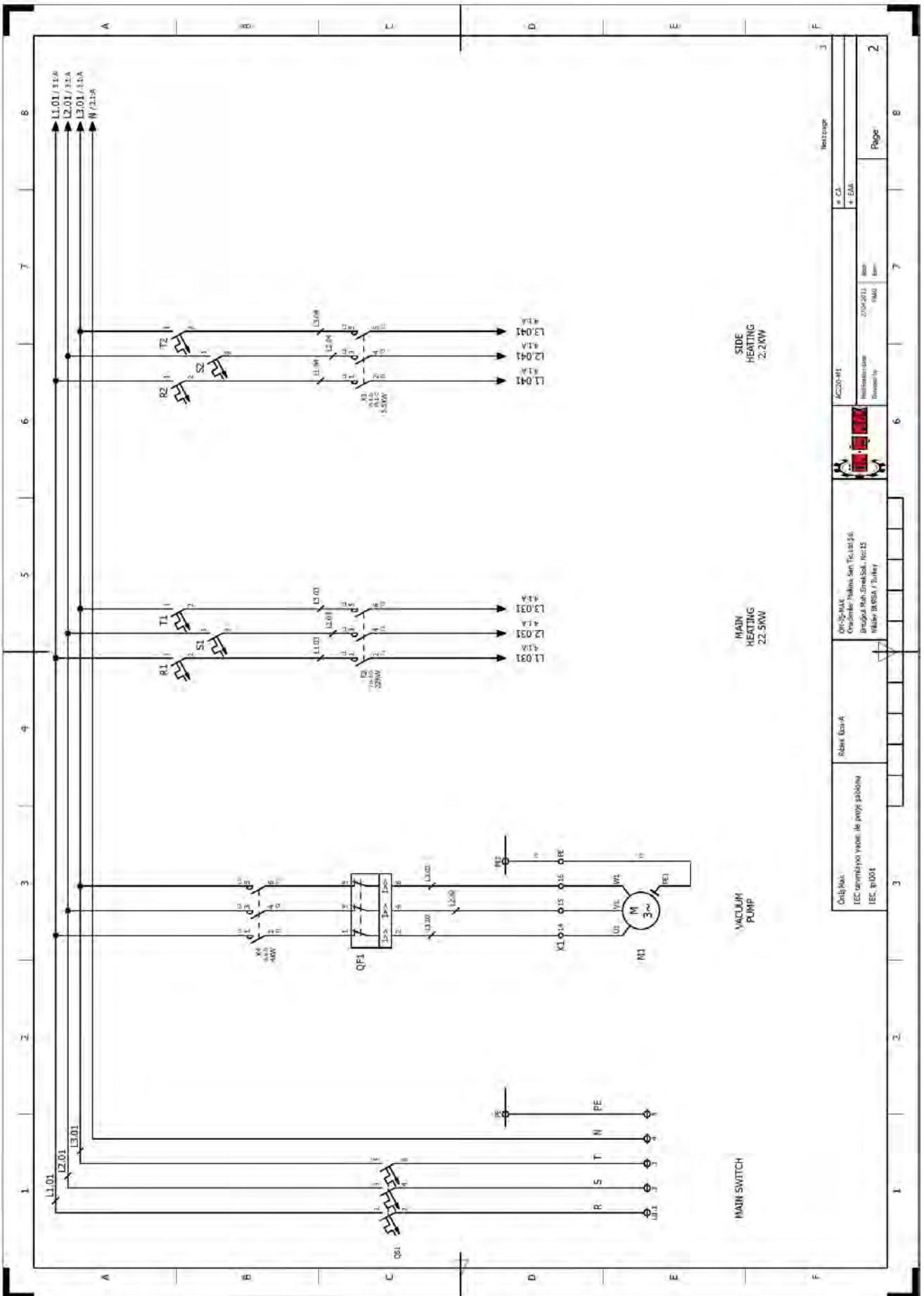


Dimensions



How to change the set value





MAIN SWITCH

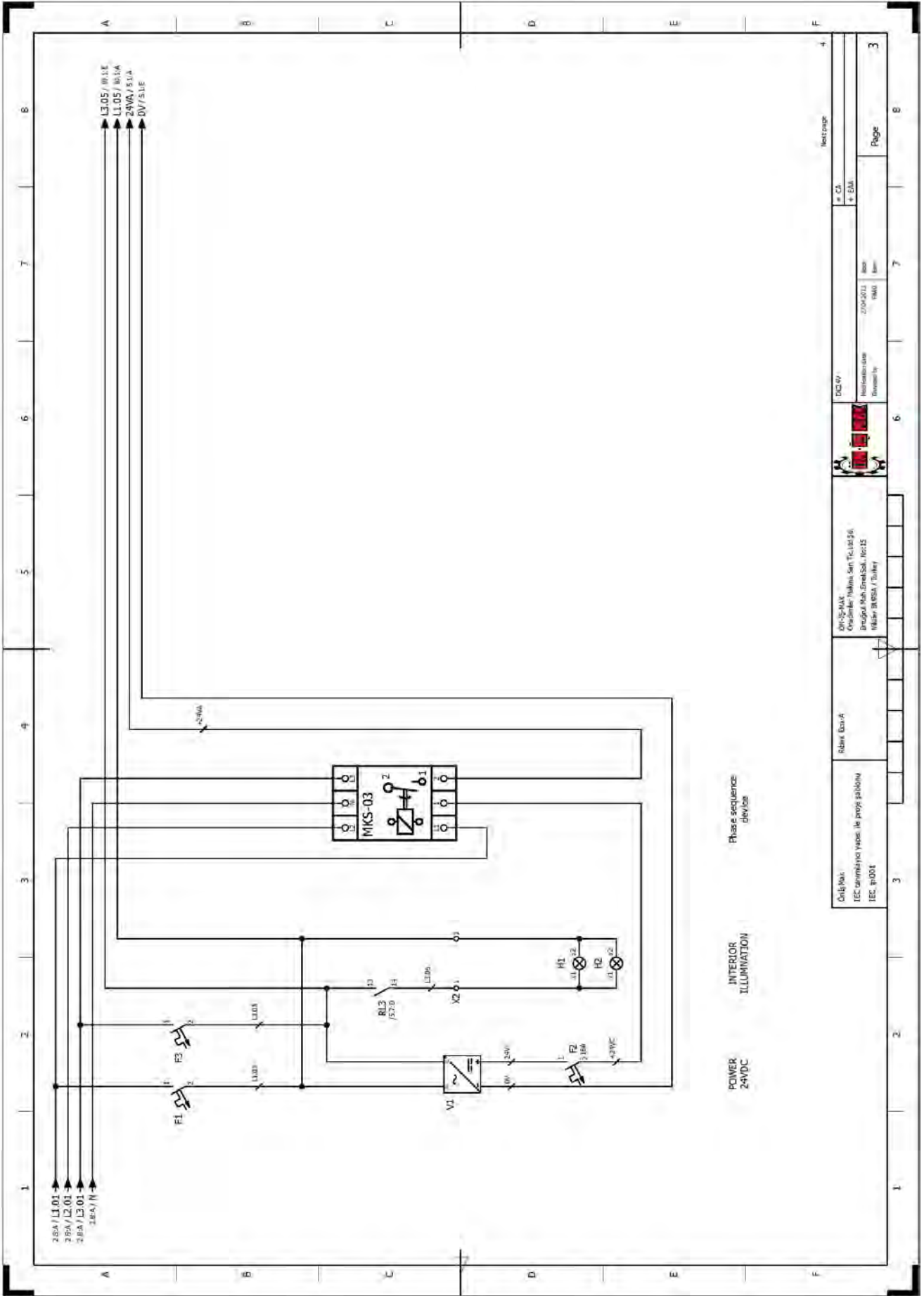
VACUUM PUMP

MAIN HEATING 22.5KW

SIDE HEATING 2.2KW

Only Main IEC komisija izpolni le projekte gradbeni IEC, št.001	R.Šušter, E.Šušter Oblikovalci: Polina Šušter, Tjaša Šušter Inženirski inštitut: Inženirski inštitut, No.15 Vojkova ulica, 1000 Ljubljana, Slovenija	ACCO-MS Notovljeni skizmi Z004/011 2004	= CA + EAM
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Drawn by P.M.	Checked by P.M.	Date 2004	Page 2
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2BA / L1.01
 2BA / L2.01
 2BA / L3.01
 2BA / N

L3.05 / N1.E
 L1.05 / N1.A
 2AV / S1.A
 DV / S1.E

MIKS-03

H1
 H2

INTERIOR ILLUMINATION

Phase sequence device

POWER 24VDC

Oniçulus
 IEC emniyetli yavaş ile motor şiddetli
 IEC IP001

Röle Ecu A

010-32-MAT
 Oniçulus Fikrini San. Tic. Ltd. Şti.
 Başoğlu Mah. Etiler Sok. No:15
 MİSİR BİRSİA / TÜRKİYE

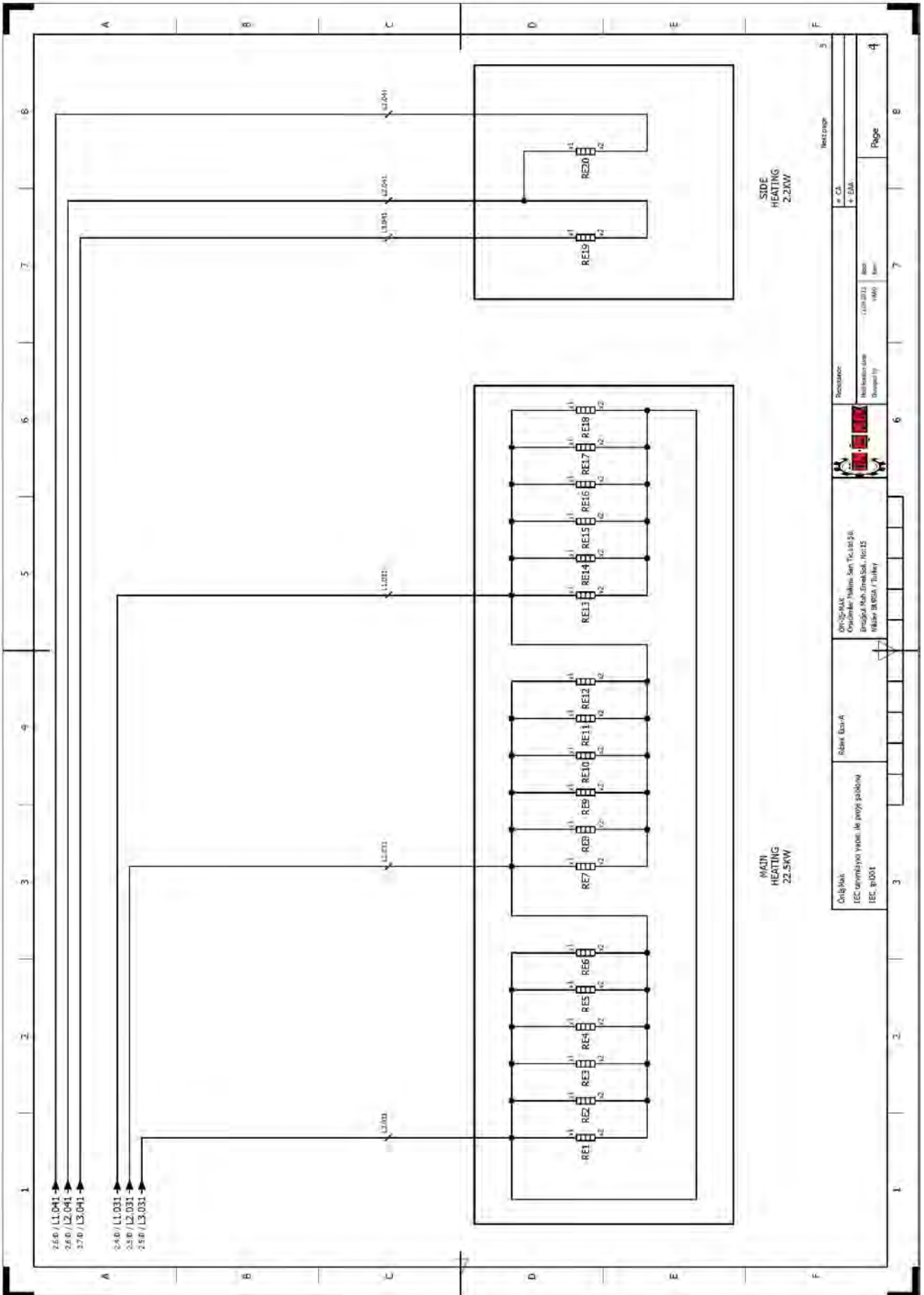


DC 0V

Not: İnceleme
 Z00-2011
 YMM

+ CA
 + EAA

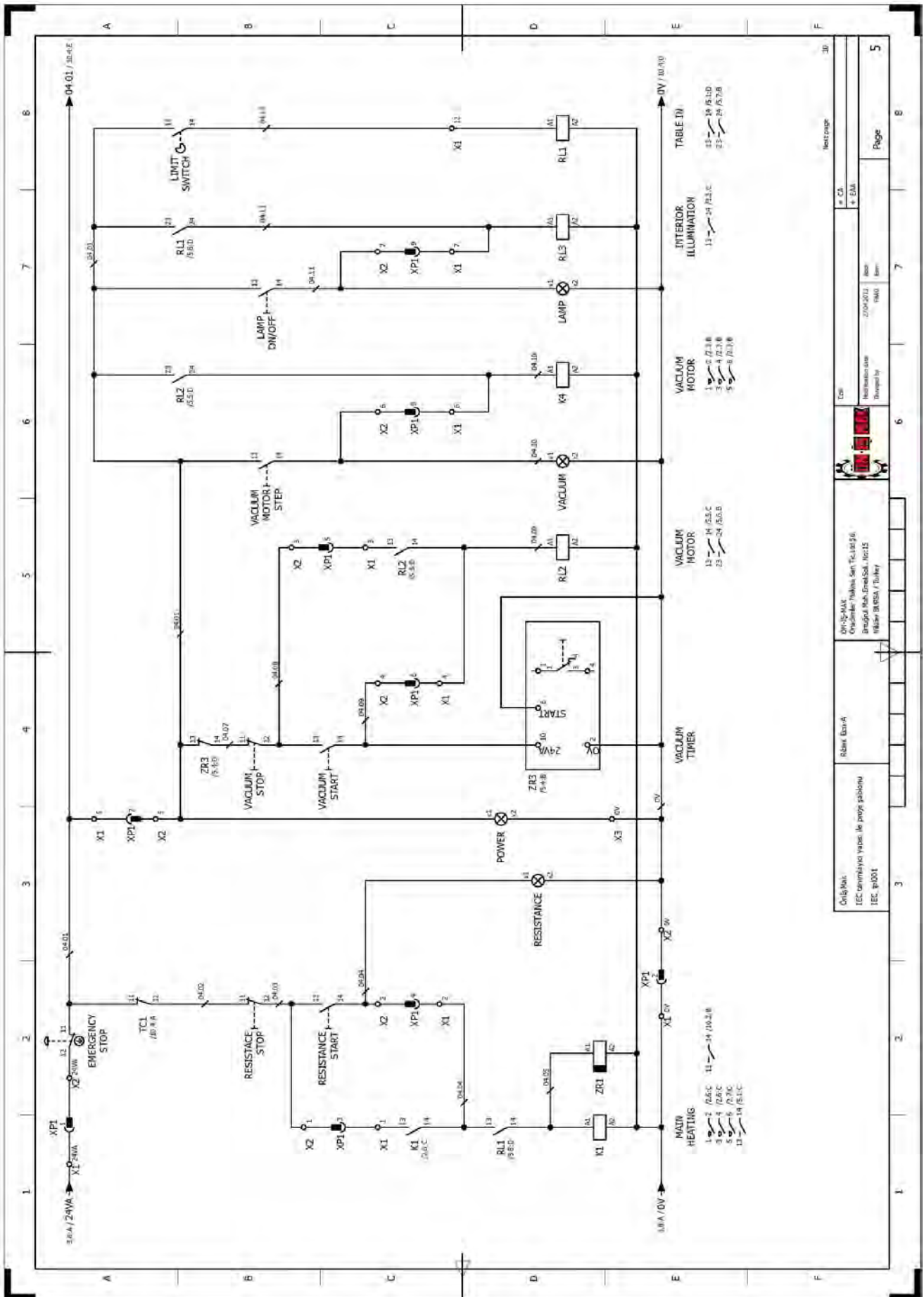
Herçeşe
 Page 3



MAIN HEATING
22.5KW

SIDE HEATING
2.2KW

Resistor:	ON-SC-MAT
Relay:	Relay Ecu/A
Manufacturer:	Onidimlar Pahlma San. Tic. Ltd. 9/6, Engizul Mah. Erzurum, No:15, 25100 ERZURUM / Turkey
Scale:	1:100 (D.L.)
Drawn by:	Y.M.
Checked by:	
Page:	4



Oniz Mas
IEC sertifikācijas iestāde, IEC projekcija
IEC, IP001

Rūmā Ebn A

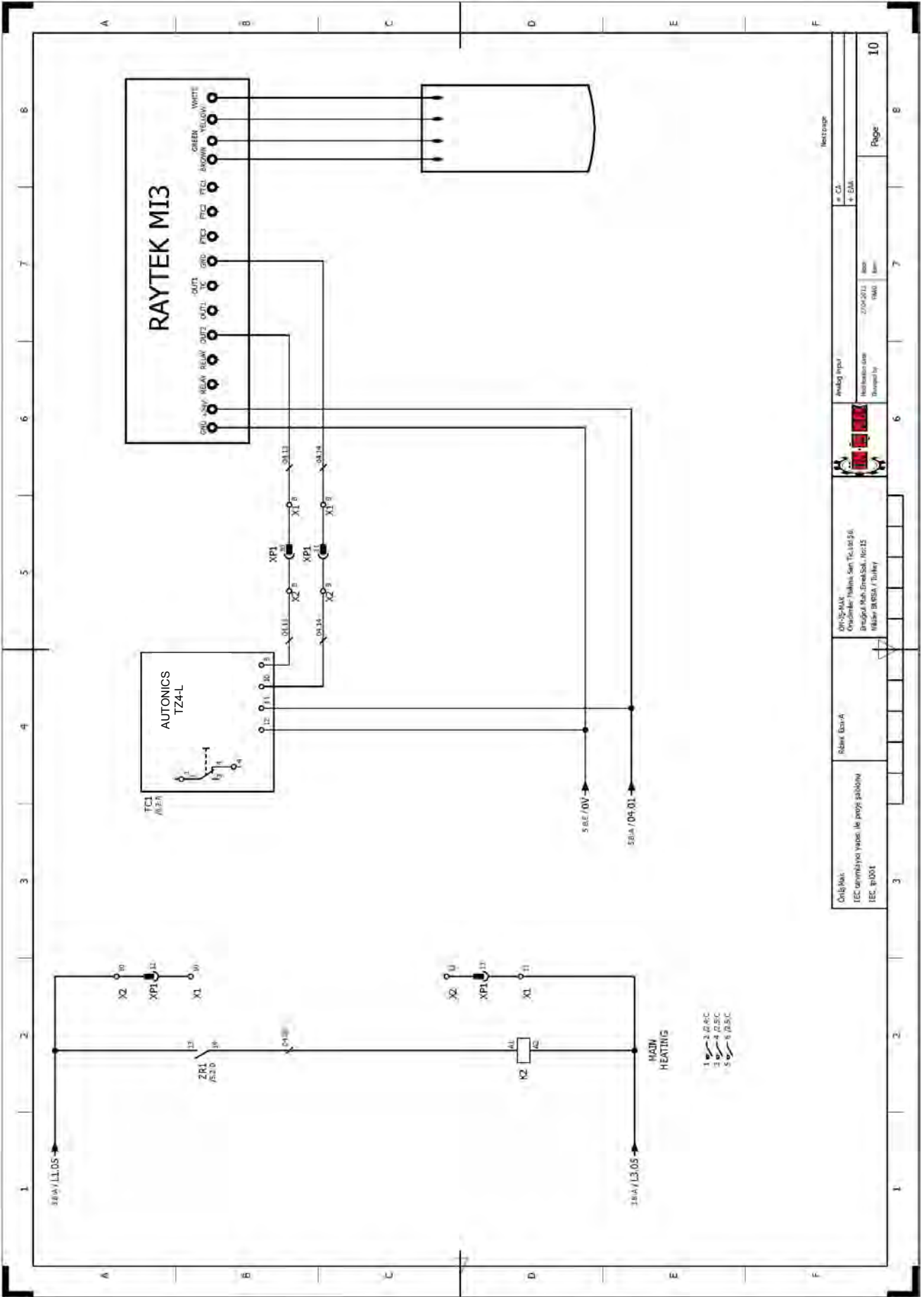
OH-3-MAX
Craquelier Tālrunis, Sen. Tēln. 145.9/6
Brazģiņai, Kāb. Ebn. 145.9/6
Vāģiņai, Kāb. Ebn. 145.9/6



Com

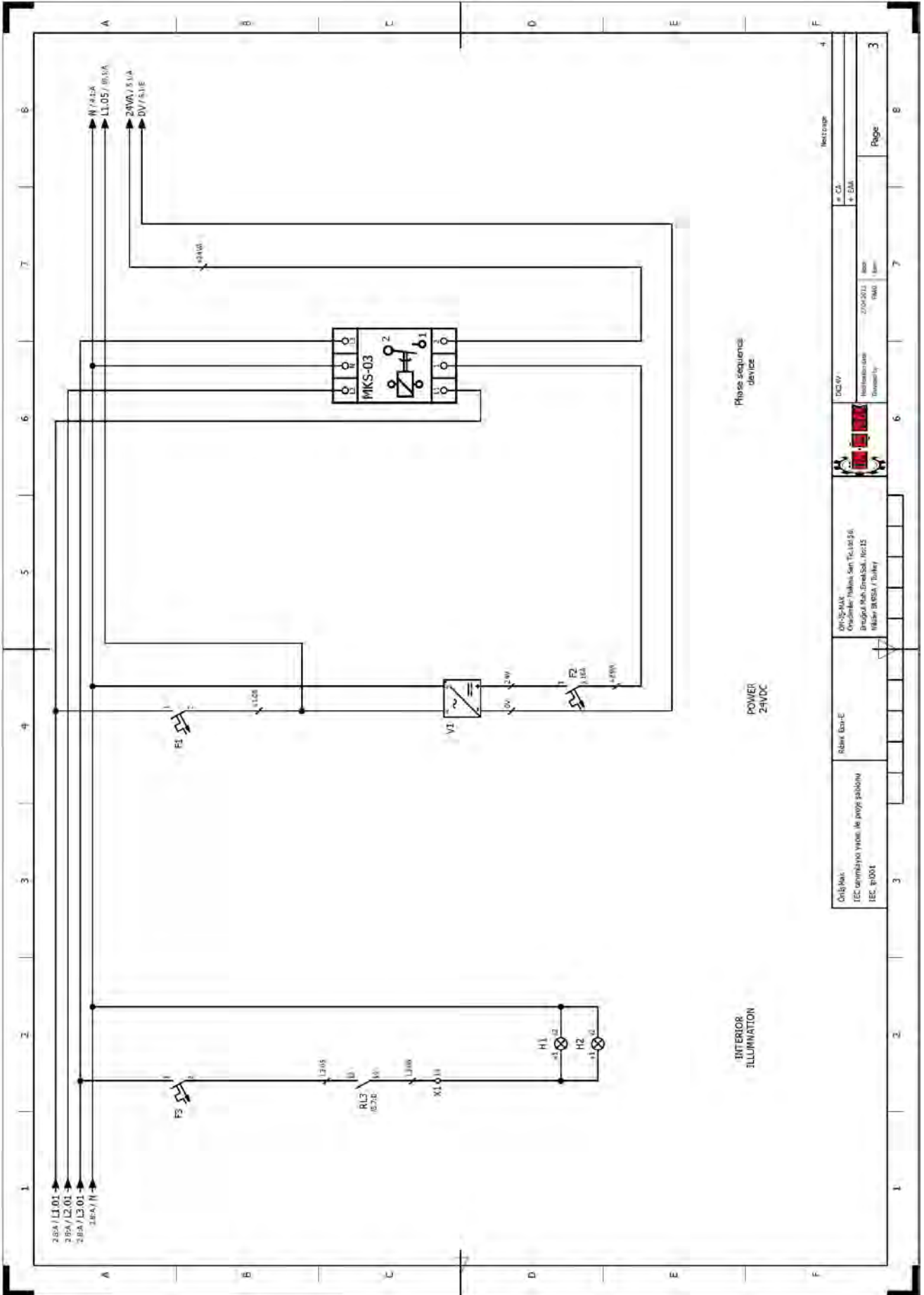
Z00-0711
IP00
IP00

+ CA
+ EBA



- 1 3.6 kW
- 2 4.2 kW
- 3 4.8 kW
- 4 5.4 kW
- 5 6.0 kW
- 6 6.6 kW

Oništvaš: IEC pripisivač yavak, le pmoš pabonu IEC, IP001	Relay, Eco/A	ON-S-MAX Oništvaš pabonu, Sem, TC, 10.5.6 Bragoča, Mah, Ernel, Sok., No: 15 MILSKA, BRISA, / Buljary	Analóg Ispu Náštvaš avak Z00-0711 VMS PMS PMS	+ CI + EDA
			Page	10



Oniy Maus
IEC sertifikatsiya yozma. Ie moyiz qabulom
IEC. 9001

RL3 0.5A

ON-S-MAX
Oniy Maus
Bragul Mah Errol Sok. No:15
Maliy BIRSA / Turkiy

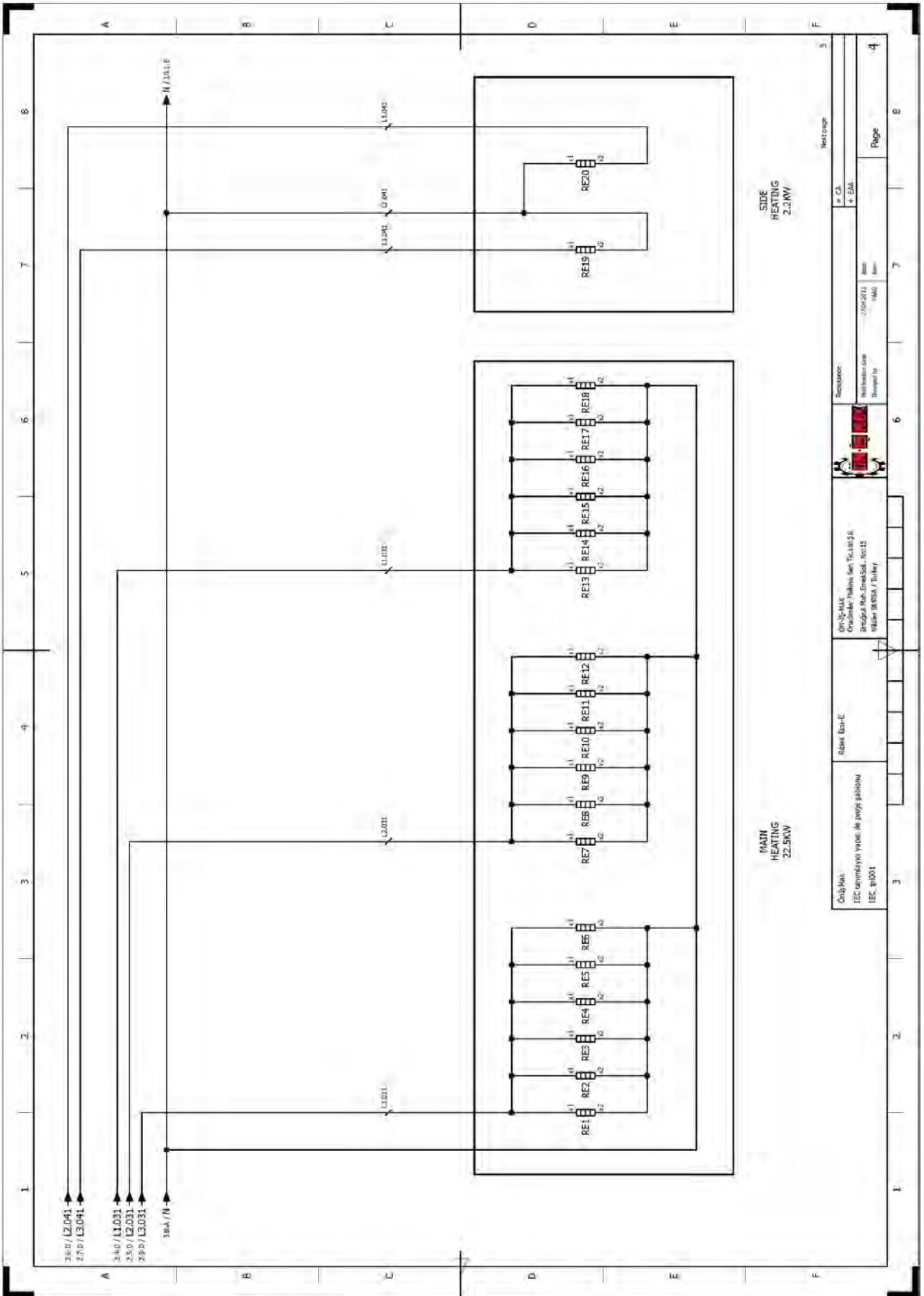


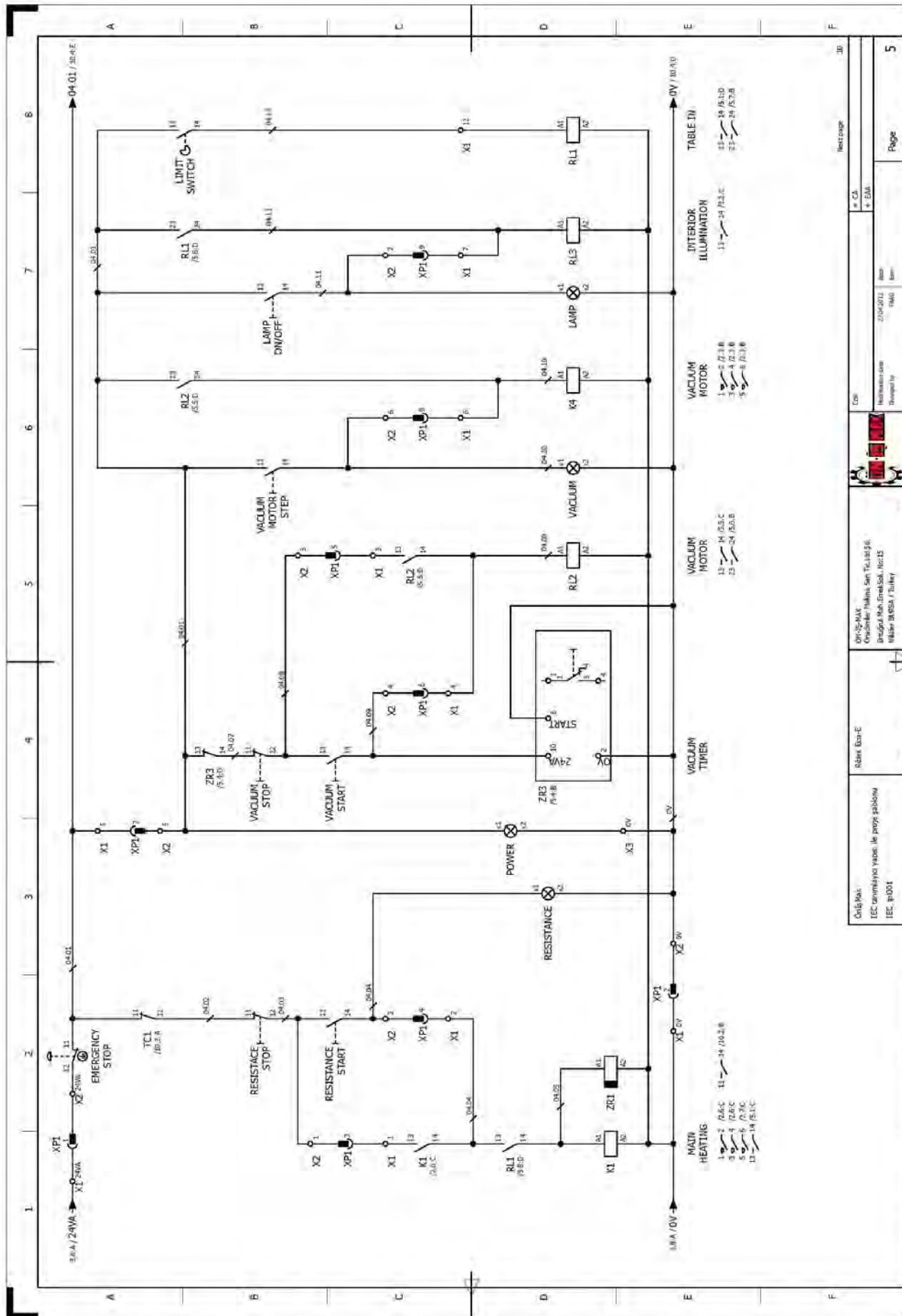
DC 0V

Not'lar: 1. 2008-2011
2008-2011
2008-2011

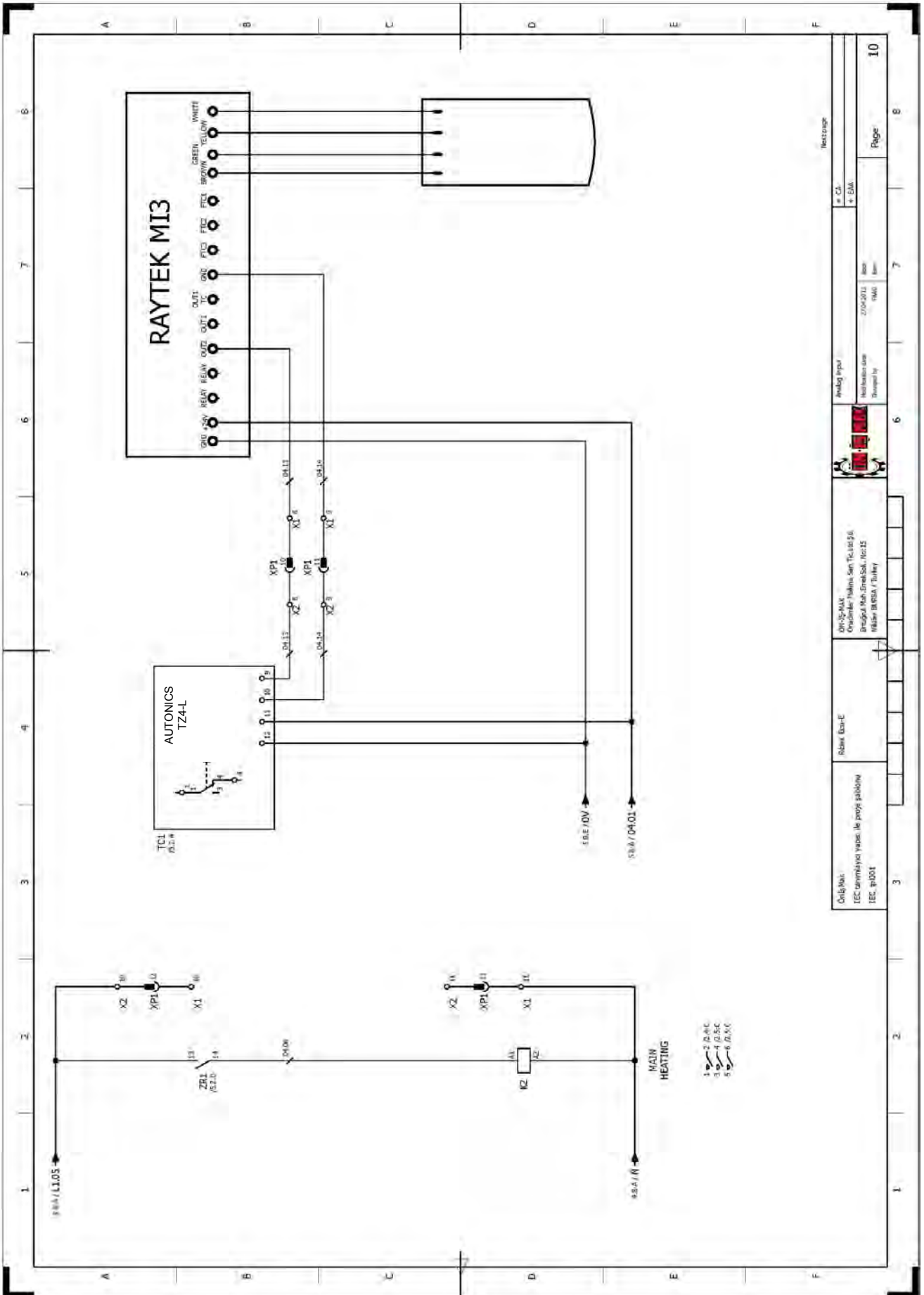
CA
+ EAA

Heritage
Page 3





011-32-MAX	240-0711	240-0711	240-0711
Original: Polim, Sen, Tc, L, B, S, B	Original: Mah, Enal, Sok, Not, 15	Original: Mah, Enal, Sok, Not, 15	Original: Mah, Enal, Sok, Not, 15
Relay: Ebn-E	Relay: B, R, S, A / T, U, l, u, y	Relay: B, R, S, A / T, U, l, u, y	Relay: B, R, S, A / T, U, l, u, y
On: 1-2 / A, B, C	On: 1-3 / A, B, C	On: 1-4 / A, B, C	On: 1-5 / A, B, C
On: 1-6 / A, B, C	On: 1-7 / A, B, C	On: 1-8 / A, B, C	On: 1-9 / A, B, C
On: 1-10 / A, B, C	On: 1-11 / A, B, C	On: 1-12 / A, B, C	On: 1-13 / A, B, C
On: 1-14 / A, B, C	On: 1-15 / A, B, C	On: 1-16 / A, B, C	On: 1-17 / A, B, C
On: 1-18 / A, B, C	On: 1-19 / A, B, C	On: 1-20 / A, B, C	On: 1-21 / A, B, C
On: 1-22 / A, B, C	On: 1-23 / A, B, C	On: 1-24 / A, B, C	On: 1-25 / A, B, C



- 1 2 A.C
- 3 4 2.5C
- 5 6 2.5C

Oništvo: IEC nemišljivo mesto, le proti plamenu IEC, IP001	Ršave: Eau-E	DN-S-MAX Ovračnik: Polim. Sen. Tč. 14.0.9.6 Brazgoti: Mah. Enthal.Sok. No:15 Vilšev: BRISA / Turley	Avlag Inpu No:14.0.9.6 Z04-07.1 VMA Bor Thermostat by	+ CI + EAA
Heritage				Page 10

LIST OF COMPONENTS

Q.NO	PRODUCT DESCRIPTION
1	INFRARED MODULE
2	INFRARED MODULE
3	BUTTONLATCH 0-1 1 NC SELECTER
4	BUTTON START YELLOW
5	BUTTON START GREEN
6	BUTTON STOP RED 1NK
7	EMERGENCY STOP BUTTON RED 40MM
8	EMERGENCY STOP STICKER
9	CONTACTOR
10	CONTACTOR
11	CONTACTOR
12	TIME RELAY
13	RELAY SOCKET 11 PINS
14	TIME RELAY
15	THERMIC MAGNETIC SWITCH (220 V 3 P 60 HZ.)
16	THERMIC MAGNETIC SWITCH (380 V 3 P 50 HZ.)
17	THERMIC MOTOR PROTECTION
18	SAFETY SWITCH
19	FINAL SWITCH
20	SIGNAL LAMB GREEN LED
21	AUTOMATS PERFORATED RAIL
22	AUTOMATS
23	AUTOMATS
24	AUTOMATS
25	CABLE NYAF
26	CABLE NYAF
27	CABLE NYAF
28	CABLE NYAF
29	CABLE NYAF BLACK
30	CABLE SILICONE
31	CABLE SILICONE
32	CABLE SILICONE
33	CABLE TTR
34	CABLE TTR
35	CABLE SHIELDED (BLENDAGED)
36	ISOLATED CABLE FERRULE
37	CABLE TIE
38	CABLE TIE
39	ISOLATED CABLE FERRULE
40	ISOLATED CABLE FERRULE (DOUBLE ENTRY)
41	ISOLATED CABLE FERRULE
42	CY ISOLATED CABLE FERRULE
43	ISOLATED CABLE FERRULE (DOUBLE ENTRY)

44	CABLE LUG
45	CABLE LUG
46	ISOLATED CABLE FERRULE
47	CABLE FERRULE DOUBLE ENTRY
48	ISOLATED CABLE FERRULE
49	CABLE FERRULE DOUBLE ENTRY
50	ISOLATED CABLE FERRULE
51	CABLE FERRULE DOUBLE ENTRY
52	CONDUIT BOLTS
53	CABLE CONDUIT
54	CABLE CONDUIT
55	CABLE CONDUIT ATTACHMENT
56	CABLE CONDUIT
57	ADHESIVE HOLDER
58	TERMINAL ROW PLASTICS 12 sections
59	TERMINAL ROW PORCELAIN 2 sections
60	TERMINAL ROW PORCELAIN Single section
61	CABLE STICKER
62	TERMINAL STICKER
63	RAIL TERMINAL ROW
64	RAIL TERMINAL ROW
65	TERMINAL NEUTR EARTH for 10
66	BULB
67	BULB CONNECTOR
68	TEMPERATURE CONTROLLER DEVICE
69	QUARTZ GLASS TUBE HEATERS
70	SILICONE MACARON CABLE PROTECTOR
71	MACARON GLASS FIBER
72	POWER SUPPLY
73	MINI RELAY
74	MINI RELAY SOCKET
75	HOSE SPIRAL