Thank you for selecting our HOTPLATES.

We are sure that you will be completely satisfied with the performance of this new unit entering your laboratory. We invite you to read carefully this user manual and to keep it close to the instrument for convenient and fast consulting. For any possible clarification or any request for assistance please contact either our local Representative or:

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HOTPLATES EH & EG SERIES

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1. INTRODUCTION

SPECIFICATION

The series of EH and EG temperature controllable, digital hotplate are electric heating instruments specially designed for laboratory application. It’s a good choice for heating digestion, evaporation and acid distillation and fully satisfies the heating requirements of different laboratories.

<table>
<thead>
<tr>
<th>Model</th>
<th>Power</th>
<th>Type</th>
<th>Temp. range</th>
<th>Heating area</th>
<th>Temp. control mode</th>
<th>Temp. stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>EH20A Plus</td>
<td>2000W</td>
<td>corrosion-resistant</td>
<td>Ambient -200 °C</td>
<td>40L×30Wcm</td>
<td>switch (digital display)</td>
<td>± 5 °C</td>
</tr>
<tr>
<td>EH20B</td>
<td>2000W</td>
<td>corrosion-resistant</td>
<td>Ambient -200 °C</td>
<td>40L×30Wcm</td>
<td>PID (digital display)</td>
<td>± 1 °C</td>
</tr>
<tr>
<td>EH20D</td>
<td>2000W</td>
<td>corrosion-resistant</td>
<td>Ambient -200 °C</td>
<td>40L×30Wcm</td>
<td>PID (digital display)</td>
<td>± 0.2 °C</td>
</tr>
<tr>
<td>EH35A Plus</td>
<td>2000W</td>
<td>high temperature</td>
<td>Ambient -350 °C</td>
<td>40L×30Wcm</td>
<td>switch (digital display)</td>
<td>± 5 °C</td>
</tr>
<tr>
<td>EH35B</td>
<td>2000W</td>
<td>high temperature</td>
<td>Ambient -350 °C</td>
<td>40L×30Wcm</td>
<td>PID (digital display)</td>
<td>± 2 °C</td>
</tr>
<tr>
<td>EH45A Plus</td>
<td>2800W</td>
<td>Graphite</td>
<td>Ambient -450 °C</td>
<td>36L×27Wcm</td>
<td>switch (digital display)</td>
<td>± 5 °C</td>
</tr>
<tr>
<td>EH45B</td>
<td>2800W</td>
<td>Graphite with ceramic coating</td>
<td>Ambient -450 °C</td>
<td>36L×27Wcm</td>
<td>PID (digital display)</td>
<td>± 2 °C</td>
</tr>
<tr>
<td>EH45C</td>
<td>2800W</td>
<td>Graphite with ceramic coating</td>
<td>Ambient -450 °C</td>
<td>36L×27Wcm</td>
<td>PID (digital display)</td>
<td>± 2 °C</td>
</tr>
<tr>
<td>Model</td>
<td>Power</td>
<td>Type</td>
<td>Temp. range</td>
<td>Heating area</td>
<td>Temp. control mode</td>
<td>Temp. stability</td>
</tr>
<tr>
<td>-------------</td>
<td>-------</td>
<td>-----------------------------</td>
<td>--------------------</td>
<td>--------------</td>
<td>--------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>EG20A Plus</td>
<td>3000W</td>
<td>corrosion-resistant</td>
<td>Ambient -200 °C</td>
<td>60L×40Wcm</td>
<td>switch (digital display)</td>
<td>± 5 °C</td>
</tr>
<tr>
<td>EG20B</td>
<td>3000W</td>
<td>corrosion-resistant</td>
<td>Ambient -200 °C</td>
<td>60L×40Wcm</td>
<td>PID (digital display)</td>
<td>± 2 °C</td>
</tr>
<tr>
<td>EG35A Plus</td>
<td>3000W</td>
<td>high temperature</td>
<td>Ambient -350 °C</td>
<td>60L×40Wcm</td>
<td>switch (digital display)</td>
<td>± 5 °C</td>
</tr>
<tr>
<td>EG35B</td>
<td>3000W</td>
<td>high temperature</td>
<td>Ambient -350 °C</td>
<td>60L×40Wcm</td>
<td>PID (digital display)</td>
<td>± 2 °C</td>
</tr>
<tr>
<td>EG37A Plus</td>
<td>3200W</td>
<td>Graphite</td>
<td>Ambient -370 °C</td>
<td>54L×36Wcm</td>
<td>switch (digital display)</td>
<td>± 5 °C</td>
</tr>
<tr>
<td>EG37B</td>
<td>3200W</td>
<td>Graphite</td>
<td>Ambient -370 °C</td>
<td>54L×36Wcm</td>
<td>PID (digital display)</td>
<td>± 2 °C</td>
</tr>
<tr>
<td>EG37C</td>
<td>3200W</td>
<td>Graphite with Teflon coating</td>
<td>Ambient -370 °C</td>
<td>54L×36Wcm</td>
<td>PID (digital display)</td>
<td>± 2 °C</td>
</tr>
</tbody>
</table>

**EG series**

**NOTE:** the temperature stability is tested in standard operating mode.
EH SERIES

EH20A Plus/EH35A Plus/EH45APlus

The control panel consists of the following keys:

- Heating Surface
- Switch
- Temperature Controller

EH20B/EH35B/EH45B/EH45C

The control panel consists of the following keys:

- Heating surface
- Switch
- Control key-press
- LCD display

EH20D

The control panel consists of the following keys:

- Heating surface
- Switch
- Indicator light of working status
- LED display & Temperature Controller
**EG SERIES**

**EG20A Plus/EG35A Plus/EG37A Plus**

The control panel consists of the following keys:

- **Heating surface**
- **Temperature controller**
- **Switch**
- **LCD display**
- **Temperature control key**

The control panel consists of the following keys:

- **Heating surface**
- **Switch**
- **LCD display**
- **Temperature control key**

**Graph of Temperature Control**

![Graph of Temperature Control](image_url)
2. SAFETY RULES

General Information

Please read carefully this user manual before starting to use the instrument and follow its prescriptions with the utmost care. This User Manual is part of the delivery, hence must be always kept together with the instrument on its working place. It is imperative that every person operating with this system has read and fully understood this manual. The non-observance of the instructions contained herein or improper use may involve damages/injuries that are not covered by product liability.

Electrical safety

The instrument has to be used within the rated voltage. Prior to use, please check if the wire is aged. In case of aged wires, please contact the after-sales service for inspection. It is forbidden to disassemble the instrument and to connect internal circuit parts, in order to avoid a short circuit or open circuit.

Fire safety

Numerous reagents are flammable and explosive. When the solvent vapor concentration reaches a certain level, it would be flammable and could cause fire. The instrument should be kept away from the sources of ignition and high temperature places. If there is solvent pungent smell, carefully check whether there is gas or liquid leakage, and turn off the power.

Chemical safety

The instrument is an instrument for organic chemical sample pretreatment. The involved chemical solvents have harmful effects on the human health. Despite the instrument is fully closed and features full vent design, it is recommended to pay attention to the personal safety during the use. Regular check of liquid waste barrels as well as working conditions of the vent fan are required to avoid the risk of leakage caused by corrosion and to avoid the formation of organic solvent vapors affecting operators’ health. If there is a fault, please contact the after-sales service.
3. INSTALLATION

The unit should be located in a clean environment where ambient temperature is between 10°C and 35°C (50°F to 94°F).

Never place the unit in a location where excessive heat, moisture or corrosive materials are present.

The unit provides extra protection against the risk of electrical shock by grounding appropriate metal parts. The extra protection may not function unless the power cord is connected to a properly grounded outlet. It is the user’s responsibility to assure a proper ground connection is provided.
4. OPERATION PROCEDURE

WHAT TO OPERATE EH20A Plus/EH35A Plus/EH45Plus

Controller

① PV window: displays the actual temperature and parameter name
② SV window: displays the temperature setpoint, alarm and value of parameters
③ Temperature increase key
④ Temperature decrease key
⑤ Transposition key (Self-tuning start key)
⑥ Parameter set key
⑦ LED display
  OP1--Output
  AU1--Auxiliary alarm no.1
  AU2--Auxiliary alarm no.2
  PRG--Program Running

Temperature Control

Under basic display status, the temperature can be set by pressing  
,  or .  is the transposition key. Press  to decrease the value and  to increase the value, at the same time the transposition point will be flashing. Press and hold  or  to decrease or increase the value quickly.

NOTE: the function menu includes self-calibration, unlock parameter setup, etc. They are factory set parameters. Please do not change these parameters if not necessary. If you want to change them, please kindly contact the Labtech Service Team.
HOW TO OPERATE EH20B/EH35B/EH45B/EH45C

Control Panel

**SET** Set or check temperature, holding time and other parameters.
**SHIFT/AT** In set interface, the key is a digital transposition key. In other interface, press and hold the key for 6 seconds to enter or quit auto-calibration system.
**DEC/RERUN** In set interface, press the key to decrease value, press and hold it to speed up the value decrease. In other interface, press and hold the key for 3 seconds can rerun the system after finishing the heating method.
**INC/LED** In set interface, press the key to increase value, press and hold it to speed up the value increase. In another interface, press the key to backlight on/off.

Temperature Control

Switch on the unit and the LCD will display “8888” for 3 seconds then enter into normal interface.

*How to set temperature and holding time on setpoint?*
Press SET key to enter the temperature set interface, SP will be displayed on the upper line, then the temperature can be set up via △ ▽.
Press SET key again to enter the holding time set interface, ST will be displayed on the upper line, then the desired holding time can be set on the setpoint. Press SET key again to save and quit the set interface.
The lower line of the LCD screen displays the total running time. When the requested temperature reaches the setpoint, the timer starts and the second signal of time flashes. The screen will display End when the holding time is over, also the beeper will keep buzzing for 30s. Press and hold ⊖ to rerun the unit.

**Note: the holding time can be set from 00:01 to 99:59.**
**Set the holding time to 0, the lower line of the LCD screen will display the setpoint temperature and the hotplate will keep the heating state.**

When the unit is overheating, the buzzer will sound and ALM will be displayed on the LCD screen. If the overheating state is caused by the temperature set operation, there will be no
buzz and only ALM be displayed on the screen. Pressing any key can stop the buzzer. In parameter set interface, the screen will turn to normal interface automatically when there is no operation in 1 minute.

If “---” appears in the upper line of the LCD screen, there must be a malfunction of the temperature sensor or the controller itself, therefore please contact the Labtech Service Team.

**Note:** during operation, if the temperature is higher than 10°C in comparison to the setpoint and still rising, please switch off the unit immediately and contact the Labtech Service Team.

**HOW TO OPERATE EH20D**

**Controller**

Press the SEL key one time to turn on the SV indicator, that’s come to temperature setpoint menu.

Press ▲ and ▼ to adjust the temperature.

Press the SEL key one time to exit the temperature setpoint menu and the SV indicator light will turn off.

Press and hold the SEL key to enter the function menu of the D controller. After entering the menu, press and hold the SEL key until the real temperature appears and loose the SEL key to exit the function menu.
NOTE: the function menu includes self-calibration, unlock parameter setup, etc. They are factory set parameters. Please do not change these parameters if not necessary. If you want to change them, please kindly contact the Labtech Service Team.

HOW TO OPERATE EG20A Plus/EG35A Plus/EG37APlus

Controller

1. PV window: displays the actual temperature and parameter name
2. SV window: displays the temperature setpoint, alarm, and value of parameters
3. Temperature increase key
4. Temperature decrease key
5. Transposition key (Self-calibration start key)
6. Parameter set key
7. LED display
   - OP1--Output
   - AU1--Auxiliary alarm no.1
   - AU2--Auxiliary alarm no.2
   - PRG--Program Running

Temperature Control

Under basic display status, the temperature can be set by pressing ◀️, ▼ or ▲. ◀️ is transposition key. Press ▼ to decrease the value and ▲ to increase the value, at the same time the transposition point will be flashing. Press and hold ▼ or ▲ to decrease or increase the value quickly.

NOTE: the function menu including self-calibration, unlock parameter setup, etc. They are factory set parameters. Please do not change these parameters if not necessary. If you want to change them, please kindly contact the Labtech Service Team.
Controller

**SET** Set or check temperature, holding time and other parameters.

**SHIFT/AT** in set interface, the key is a digital transposition key. In other interface, press and hold the key for 6 seconds to enter or quit the auto-calibration system.

**DEC/RERUN** In set interface, press the key to decrease value, press and hold it to speed up the value decrease. In other interface, press and hold the key for 3 seconds can rerun the system after finishing the heating method.

**INC/LED** In set interface, press the key to increase value, press and hold it to speed up the value increase. In another interface, press the key to backlight on/off.

Temperature Control

Switch ON the unit and the LCD will display “8888” for 3 seconds then enter into normal interface.

*How to set temperature and holding time on setpoint*

Press the SET key to enter the temperature set interface, SP will be displayed on the upper line then the temperature can be set via ▼ ▼  ▲

Press the SET key again to enter the holding time set interface, ST will be displayed on the upper line then the desired holding time can be set on the setpoint. Press the SET key again to save and quit the set interface.

The lower line of the LCD screen displays the total running time. When the actual temperature is up to the setpoint, the timer starts and the second signal of time flashes. The screen will display End when the holding time is over also the beeper will keep buzzing for 30s. Press and hold ▲ to rerun the unit.

**Note:** the holding time can be set from 00:01 to 99:59.

Set the holding time to 0, the lower line of LCD screen will display the setpoint temperature and the hotplate will keep the heating state.

When the unit is overheating, the buzzer will alarm and ALM will be displayed on the LCD screen. If the overheating state is caused by the temperature set operation, there will be no buzz and only ALM be displayed on the screen.

Press any key can stop the buzzer.

In parameter set interface, the screen will turn to normal interface automatically when thre is no operation in 1 minute.

If “---” appears on the upper line of the LCD screen, there must be a malfunction of the temperature sensor or the controller itself, therefore please contact the Labtech Service Team.
Note: during operation, if the temperature is higher than 10°C in comparison to the setpoint and still rising, please switch off the unit immediately and contact the Labtech Service Team.
5. SOLVENTS TABLE

<table>
<thead>
<tr>
<th>Solvent</th>
<th>Formula</th>
<th>Molar mass in g/mol</th>
<th>Evaporation energy in J/g</th>
<th>Boiling point at 101/3 mbar</th>
<th>Density at boiling point in g/cm³</th>
<th>Vacuum in mbar for boiling point at 40 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetone</td>
<td>C₂H₅O</td>
<td>58.1</td>
<td>553</td>
<td>56</td>
<td>0.790</td>
<td>556</td>
</tr>
<tr>
<td>n-amyl alcohol, n-pentanol</td>
<td>C₅H₁₂O</td>
<td>88.1</td>
<td>595</td>
<td>37</td>
<td>0.814</td>
<td>11</td>
</tr>
<tr>
<td>Benzene</td>
<td>C₆H₆</td>
<td>78.1</td>
<td>548</td>
<td>80</td>
<td>0.877</td>
<td>236</td>
</tr>
<tr>
<td>n-butanol</td>
<td>C₄H₁₀</td>
<td>74.1</td>
<td>620</td>
<td>118</td>
<td>0.810</td>
<td>25</td>
</tr>
<tr>
<td>tert. butanol (2-methyl-2-propanol)</td>
<td>C₄H₁₀O</td>
<td>74.1</td>
<td>590</td>
<td>82</td>
<td>0.789</td>
<td>130</td>
</tr>
<tr>
<td>Chlorobenzene</td>
<td>C₆H₅Cl</td>
<td>112.6</td>
<td>377</td>
<td>132</td>
<td>1.106</td>
<td>36</td>
</tr>
<tr>
<td>Chloroform</td>
<td>CHCl₃</td>
<td>119.4</td>
<td>264</td>
<td>62</td>
<td>1.483</td>
<td>474</td>
</tr>
<tr>
<td>Cyclohexane</td>
<td>C₆H₁₂</td>
<td>84.0</td>
<td>389</td>
<td>81</td>
<td>0.779</td>
<td>235</td>
</tr>
<tr>
<td>Diethylether</td>
<td>C₄H₁₀O</td>
<td>74.0</td>
<td>369</td>
<td>35</td>
<td>0.714</td>
<td>850</td>
</tr>
<tr>
<td>1,2-dichloroethane</td>
<td>C₂H₅Cl₂</td>
<td>99.0</td>
<td>335</td>
<td>84</td>
<td>1.255</td>
<td>210</td>
</tr>
<tr>
<td>1,2-dichloroethylene (cis)</td>
<td>C₂H₅Cl₂</td>
<td>97.0</td>
<td>322</td>
<td>60</td>
<td>1.284</td>
<td>479</td>
</tr>
<tr>
<td>1,2-dichloroethylene (trans)</td>
<td>C₂H₅Cl₂</td>
<td>97.0</td>
<td>314</td>
<td>48</td>
<td>1.257</td>
<td>751</td>
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<tr>
<td>Diisopropyl ether</td>
<td>C₅H₁₁O</td>
<td>102.0</td>
<td>318</td>
<td>68</td>
<td>0.724</td>
<td>375</td>
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<tr>
<td>Dioxane</td>
<td>C₄H₆O₂</td>
<td>88.1</td>
<td>406</td>
<td>101</td>
<td>1.034</td>
<td>107</td>
</tr>
<tr>
<td>DMF (dimethyl formamide)</td>
<td>C₃H₆NO</td>
<td>73.1</td>
<td>153</td>
<td>82</td>
<td>0.940</td>
<td>11</td>
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<tr>
<td>Acetic acid</td>
<td>C₂H₄O₂</td>
<td>60.0</td>
<td>695</td>
<td>118</td>
<td>1.049</td>
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<td>Ethanol</td>
<td>C₂H₅O</td>
<td>46.0</td>
<td>879</td>
<td>79</td>
<td>0.789</td>
<td>175</td>
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<tr>
<td>Ethyl acetate</td>
<td>C₄H₉O₂</td>
<td>88.1</td>
<td>364</td>
<td>77</td>
<td>0.900</td>
<td>240</td>
</tr>
<tr>
<td>Heptane</td>
<td>C₇H₁₆</td>
<td>100.2</td>
<td>373</td>
<td>98</td>
<td>0.684</td>
<td>120</td>
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<tr>
<td>Hexane</td>
<td>C₆H₁₂</td>
<td>86.2</td>
<td>368</td>
<td>89</td>
<td>0.660</td>
<td>360</td>
</tr>
<tr>
<td>Isopropyl alcohol</td>
<td>C₃H₇O</td>
<td>60.1</td>
<td>699</td>
<td>82</td>
<td>0.786</td>
<td>137</td>
</tr>
<tr>
<td>Isoamyl alcohol (3-methyl-1-butanol)</td>
<td>C₅H₁₂O</td>
<td>88.1</td>
<td>595</td>
<td>129</td>
<td>0.809</td>
<td>14</td>
</tr>
<tr>
<td>Methyl ethyl ketone</td>
<td>C₅H₁₀O</td>
<td>72.1</td>
<td>473</td>
<td>80</td>
<td>0.805</td>
<td>243</td>
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<tr>
<td>Methanol</td>
<td>C₅H₁₀</td>
<td>72.1</td>
<td>1227</td>
<td>65</td>
<td>0.791</td>
<td>337</td>
</tr>
<tr>
<td>Methylenecarbonate</td>
<td>C₂H₄Cl₂</td>
<td>84.9</td>
<td>373</td>
<td>40</td>
<td>1.327</td>
<td>850</td>
</tr>
<tr>
<td>Pentane</td>
<td>C₅H₁₀</td>
<td>72.1</td>
<td>361</td>
<td>36</td>
<td>0.626</td>
<td>850</td>
</tr>
<tr>
<td>n-propyl alcohol</td>
<td>C₃H₇O</td>
<td>60.1</td>
<td>787</td>
<td>97</td>
<td>0.804</td>
<td>67</td>
</tr>
<tr>
<td>Pentachloroethane</td>
<td>C₅H₅Cl₂</td>
<td>202.3</td>
<td>261</td>
<td>162</td>
<td>1.680</td>
<td>13</td>
</tr>
<tr>
<td>1,1,2,2-tetra-chloroethane</td>
<td>C₅H₅Cl₂</td>
<td>167.9</td>
<td>247</td>
<td>146</td>
<td>1.595</td>
<td>20</td>
</tr>
<tr>
<td>Tetrachlorocarbon</td>
<td>CCl₄</td>
<td>153.8</td>
<td>226</td>
<td>77</td>
<td>1.594</td>
<td>271</td>
</tr>
<tr>
<td>1,1,1-trichloroethane</td>
<td>C₅H₅Cl₂</td>
<td>133.4</td>
<td>251</td>
<td>74</td>
<td>1.339</td>
<td>300</td>
</tr>
<tr>
<td>Tetra-chloro-ethylene</td>
<td>C₄Cl₄</td>
<td>165.8</td>
<td>234</td>
<td>121</td>
<td>1.623</td>
<td>53</td>
</tr>
<tr>
<td>THF (tetrahydrofuran)</td>
<td>C₄H₈O</td>
<td>72.1</td>
<td>67</td>
<td>889</td>
<td>0.889</td>
<td>374</td>
</tr>
<tr>
<td>Toluene</td>
<td>C₇H₈O</td>
<td>92.2</td>
<td>427</td>
<td>111</td>
<td>0.867</td>
<td>77</td>
</tr>
<tr>
<td>Tetrachloroethylene</td>
<td>C₅H₅Cl₂</td>
<td>131.3</td>
<td>264</td>
<td>87</td>
<td>1.464</td>
<td>183</td>
</tr>
<tr>
<td>Water</td>
<td>H₂O</td>
<td>18.0</td>
<td>2251</td>
<td>100</td>
<td>1.000</td>
<td>72</td>
</tr>
<tr>
<td>Xylene (mixture)</td>
<td>C₈H₁₀</td>
<td>106.2</td>
<td>369</td>
<td>25</td>
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<td>o-xylene</td>
<td>C₈H₁₀</td>
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<td>m-xylene</td>
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<td>p-xylene</td>
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<td>106.2</td>
<td>138</td>
<td>0.861</td>
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</table>
6. SERVICE

The LABTECH worldwide technical support network consists of highly trained Field Service Engineers, Technical Support Specialists and Service Coordinators who are ready to quickly assist customers with answers and solutions to service needs and application questions. For any possible clarification or any request for assistance please contact either our local Representative or:

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