Single-phase and Three-phase Energy Meters and Energy Consumption Indicator

The New Counting Champions

Switching on the future.
The new Counting Champions

Eltako offers a complete range of energy meters for DIN-EN 60715 TH35 rail mounting from 32A up to 65A. Special attention should be paid to the power consumption of only 0.3W active power of the 32A and 65A single-phase devices.

If energy meters for DIN-EN 60715 TH35 rail mounting are not used for billing we recommend the "Economy Line" without approval. Our marking is an "E" in the type designation: WSZ12DE-32A, WSZ12E-65A, DSZ12DE-3x65A and DSZ12WDE-3x5A. All meters have an S0 interface according to DIN 43 864.

<table>
<thead>
<tr>
<th>Modular device for mounting on DIN rail EN 60715 TH35, number of modules 18mm each</th>
<th>1</th>
<th>1</th>
<th>2</th>
<th>1</th>
<th>2</th>
<th>1</th>
<th>4</th>
<th>4</th>
<th>4</th>
<th>4</th>
</tr>
</thead>
</table>

### Selection Table

**Single-phase energy meter**
- EVA12-32A
- WSZ12B-32A
- WSZ12E-65A

**Three-phase energy meter**
- AWSZ12B-65A
- WSZ12DE-32A
- WSZ12E-65A
- WZR12-32A
- DSZ12D-3x65A
- DSZ12WDE-3x65A
- DSZ12DE-3x65A
- DSZ12WDE-3x5A

**Modular device for mounting on DIN rail EN 60715 TH35, number of modules 18mm each**
- 1
- 1
- 2
- 1
- 2
- 1
- 4
- 4
- 4
- 4

**Reference current I\_\text{ref} (Limiting current I\_\text{max}) A**
- 5(32)
- 5(32)
- 10(65)
- 5(32)
- 10(65)
- 5(32)
- 10(65)
- 10(65)
- 5(6) \(^1\)
- 10(65)
- 5(6) \(^2\)

**Display drum type register digits**
- 6+1
- 6+1
- 6+1

**Display LC display digits**
- 2/4
- 5+2 \(^2\) \(6+1\)
- 2/4
- 5+2 \(^2\) \(6+1\)
- 5+2 \(^2\) \(6+1\)
- 5+2 \(^2\) \(6+1\)
- 5+2 \(^2\) \(6+1\)

**Accuracy class MID, inaccuracy ±1\%**
- B
- B
- B
- B
- B
- B
- B
- B
- B

**With return stop**
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**Display instantaneous values**
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**Indication of misconnection**
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**Low standby loss**
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**S0 interface potential free**
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\(^1\) CT operated energy meter

\(^2\) Switches over automatically from 5+2 to 6+1.
Energy Consumption Indicator EVA12 with display - smart metering

Maximum current 32A, standby loss 0.3 watt only.

Modular device for DIN-EN 60715 TH35 rail mounting.
1 module = 18 mm wide, 58mm deep.

The energy consumption indicator EVA12 uses the current between input and output to measure active energy in the same way as a single-phase energy meter. It saves the consumption parameter in a non-volatile memory.

Accuracy conforms to Class B MID (1%) like all Eltako single-phase energy meters.
The inrush current is 20mA.

In this way the energy consumption indicator reproduces exactly the reading on the billing energy meter installed at a different location in the building.

The display is subdivided into 3 segments.

- **Segment 1:**
  This display refers to the cumulative value in segment 3.
  IIII moving slowly to the right = Segment 3 shows the cumulative consumption since last reset. This is the display standard mode.

- **Segment 2:**
  Instantaneous values of energy consumption (active power) in watt (W) or kilowatt (kW).
  The display arrows on the left and right show the automatic change W and kW.

- **Segment 3:**
  Cumulative value in kWh. Display up to 9,999kWh with 3 decimal digits, from 10kWh with 1 decimal digit and from 1000kWh without decimal digit.

Press the left button MODE to scroll down the display options which are shown in segment 1: H01, D01, M01 and Y01 as described above. Finally, press MODE to show the abbreviation of the set language, e.g. GB for English, D for German and F for French.

Press the right button SELECT once within the display options to increment the indicated figure by 1. The corresponding value is indicated in segment 3. The last clock hour then becomes the hour before last, etc.

If the active language was selected with MODE, press SELECT to switch to a different language. Exit the new language setting by pressing MODE to activate the setting.

The program returns to the standard display mode automatically if MODE or SELECT are not operated for 20 seconds or if you press both buttons briefly simultaneously.

**Reset**

To start saving the values to the nearest hour, we recommend performing a reset at an opportune moment after installation. Hold down the buttons MODE and SELECT simultaneously for a further 3 seconds until RES appears in segment 1. Then press SELECT briefly to reset all memories. Afterwards the program returns automatically to standard display mode.

Technical data page F7.
Housing for operating instructions GBA12 page Z2.

EVA12-32A  Maximum current 32 A  EAN 4010312 500828  59,90 €/pc.
Single-phase Energy Meters
WSZ12B with MID approval

**WSZ12B-32A**

Maximum current 32A. Standby loss 0.3 watt only.

- Modular device for DIN-EN 60715 TH35 rail mounting.
- 1 module = 18 mm wide and 58 mm deep.
- Accuracy class B (1%). With S0 interface.

If measures active energy by means of the current between input and output. The internal power consumption of 0.3 watt active power is neither metered nor indicated.

1 phase conductor with a max. current up to 32A can be connected. The inrush current is 20mA. The meter can be read anytime without power supply.

Two N terminals for secure cross wiring of several counters.

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**WSZ12B-65A**

Maximum current 65A. Standby loss 0.3 watt only.

- Modular device for DIN-EN 60715 TH35 rail mounting.
- 2 modules = 35 mm wide and 58 mm deep.
- Accuracy class B (1%). With S0 interface.

If measures active energy by means of the current between input and output. The internal power consumption of 0.3 watt active power is neither metered nor indicated.

1 phase conductor with a max. current up to 65A can be connected. The inrush current is 40mA. The meter can be read anytime without power supply.

Two N terminals for secure cross wiring of several counters.

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A red LED indicates a power consumption or a possible wrong connection.

**Typical connection**

- Energy meter connected, no power consumption
- Energy meter correctly connected, with power consumption
- Energy meter wrongly connected, (TL–LL vice-versa connected), with or without power consumption

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Recommended retail prices excluding VAT.

**WSZ12B-32A**

- MID approval
- EAN 4010312 500507
- **129,00 €/pc.**

**WSZ12B-65A**

- MID approval
- EAN 4010312 500460
- **140,00 €/pc.**
**Single-phase Energy Meters**

**WSZ12DE-32A**

**Maximum current 32 A. Standby loss 0.3 watt only.**

- Modular device for DIN-EN 60715 TH35 rail mounting.
- 1 module = 18 mm wide and 58 mm deep.
- Accuracy class B (1%). With S0 interface.
- It measures active energy by means of the current between input and output. The internal power consumption of 0.3 watt active power is neither metered nor indicated.
- Every 30 seconds, the display switches for 5 seconds from the accumulated active power in kWh to the momentary consumption in watts.
- 1 phase conductor with a max. current up to 32 A can be connected. The inrush current is 20 mA. The display can only be read when the power supply is on. However, the consumption is saved to a non-volatile memory and is displayed immediately after power restoration.
- Two N terminals for secure cross wiring of several counters.
- The flashing decimal point is dependent on power consumption and indicates that power is being consumed. If the connection is incorrectly wired, the display shows the message ‘false’.
- The digital display has 7 digits. Two decimal places are indicated up to 99999.99 kWh. Above 100000 kWh there is only one decimal place. Assuming the maximum theoretical power consumption, the display would have a service life of more than 15 years.
- The power consumption is displayed with a decimal point.

**Typical connection**

**Technical data page F7.**

**Housing for operating instructions GBA12 page Z2.**

**WSZ12DE-32A**

without approval

EAN 4010312 501245

56,00 €/pc.

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**WSZ12E-65A**

**Maximum current 65 A. Standby loss 0.3 watt only.**

- Modular device for DIN-EN 60715 TH35 rail mounting.
- 2 modules = 35 mm wide and 58 mm deep.
- Accuracy class B (1%). With S0 interface.
- It measures active energy by means of the current between input and output. The internal power consumption of 0.3 watt active power is neither metered nor indicated.
- 1 phase conductor with a max. current up to 65 A can be connected. The inrush current is 40 mA. The meter can be read anytime without power supply.
- A red LED indicates a power consumption or a possible wrong connection.

**Typical connection**

**Technical data page F7.**

**Housing for operating instructions GBA12 page Z2.**

**WSZ12E-65A**

without approval

EAN 4010312 500651

131,30 €/pc.
Single-phase Energy Meter WZR12 with reset, without approval

**WZR12-32 A**

**Maximum current 32A, standby loss 0.3 watt only.**

Modular device for DIN-EN 60715 TH35 rail mounting.
1 module = 18mm wide, 58mm deep.

This single-phase energy meter with reset function uses the current between input and output to measure active energy and saves the consumption parameter in a non-volatile memory.

Accuracy conforms to Class B MID (1%) like all Eltako single-phase energy meters, the inrush current is 20mA.

The display is subdivided into 3 segments.

- **Segment 1:**
  This display refers to the cumulative value in segment 3.
  
  Moving slowly to the right = Segment 3 shows the cumulative consumption since last reset. This is the display standard mode.
  
  H01 = Segment 3 shows the consumption for the last hour up to H24 = 24 hours ago.
  
  D01 = Segment 3 shows the consumption for the last day up to D95 = 95 days ago.

- **Segment 2:**
  Instantaneous values of energy consumption (active power) in watt (W) or kilowatt (kW).
  The display arrows on the left and right show the automatic change W and kW.

- **Segment 3:**
  Cumulative value in kWh. Display up to 9,999 kWh with 3 decimal digits, from 10kWh with 1 decimal digit and from 1000kWh without decimal digit.

**Press the left button MODE** to scroll down the display options which are shown in segment 1: H01 and D01 as described above. Finally, press MODE to show the abbreviation of the set language, e.g. GB for English, D for German, F for French and ES for Spanish.

**Press the right button SELECT** once within the display options to increment the indicated figure by 1. The corresponding value is indicated in segment 3. The last clock hour then becomes the hour before last, etc.

If the active language was selected with MODE, press SELECT to switch to a different language. Exit the new language setting by pressing MODE to activate the setting.

The program returns to the standard display mode automatically if MODE or SELECT are not operated for 20 seconds or if you press both buttons briefly simultaneously.

**Reset**

Hold down the buttons MODE and SELECT simultaneously for 3 seconds until RES appears in segment 1. Then press SELECT briefly to reset all memories. Afterwards the program returns automatically to standard display mode.

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Three-phase Energy Meters DSZ12 with display and MID approval

**DSZ12D-3x65A**

Maximun current 3x65A. Standby loss 0.4 watt per path only.

Modular device for DIN-EN 60715 TH35 rail mounting.
4 modules = 70mm wide and 58mm deep.
Accuracy class B (1%). With S0 interface.

It measures active energy by means of the current between input and output. The internal power consumption of 0.4 watt active power per path is neither metered nor indicated.

1, 2 or 3 phase conductors with max. currents up to 65A can be connected.
The inrush current is 10mA.
The N terminal must always be connected.

The 7 segment LC display is also legible twice within a period of 2 weeks without power supply.

Power consumption is shown by a bar flashing at a rate of 100 times per kWh.

**Designed as standard for using as double-tariff meter:** Switch over to a second tariff by applying 230V to terminals E1/E2.

On the right next to the display are the keys MODE and SELECT. Press them to scroll through the menu according to the operation manual. First the **background lighting** switches on. The display then shows the total power per tariff and per resettable memory RS1 or RS2, and the instantaneous values of consumption, voltage and current per phase.

**Error message (false)**

When the phase conductor is missing or the current direction is wrong 'false' and the corresponding phase conductor are indicated on the display.

Technical data page F7.
Housing for operating instructions GBA12 page Z2.

<table>
<thead>
<tr>
<th>DSZ12D-3x65A</th>
<th>MID approval</th>
<th>EAN 4010312 501207</th>
<th>239,00 €/pc.</th>
</tr>
</thead>
</table>

**DSZ12WD-3x5A**

CT operated energy meter with settable CT ratio and MID.

Maximun current 3x5A. Standby loss 0.4 watt per path only.

Modular device for DIN-EN 60715 TH35 rail mounting.
4 modules = 70mm wide and 58mm deep.
Accuracy class B (1%). With S0 interface.

This three-phase energy meter measures active energy by means of the current between input and output. The internal power consumption of 0.4 watt active power per path is neither metered nor indicated.

1, 2 or 3 phase conductors with max. currents up to 5A can be connected.
The inrush current is 10mA.
The N terminal must always be connected.

The 7 segment LC display is also legible twice within a period of 2 weeks without power supply.

Power consumption is shown by a bar flashing at a rate of 10 times per kWh.

On the right next to the display are the keys MODE and SELECT. Press them to scroll through the menu according to the operation manual. First the **background lighting** switches on. The display then shows the total power per tariff and per resettable memory RS1 or RS2, and the instantaneous values of consumption, voltage and current per phase.

The CT ratio can also be set. It is set to 5:5 at the factory and blocked with a bridge over the terminals which are marked with 'JUMPER'. To adjust the CT ratio to the installed transformer remove the bridge and reset the energy meter according to the operation manual. Then block it again with the bridge. Adjustable current transformer ratios: 5:5, 50:5, 100:5, 150:5, 200:5, 250:5, 300:5, 400:5, 500:5, 600:5, 750:5, 1000:5, 1250:5 and 1500:5.

**Error message (false)**

When the phase conductor is missing or the current direction is wrong 'false' and the corresponding phase conductor are indicated on the display.

**Important!** Before working on the current transformers disconnect the voltage paths of the energy meters.


<table>
<thead>
<tr>
<th>DSZ12WD-3x5A</th>
<th>MID approval</th>
<th>EAN 4010312 501214</th>
<th>259,00 €/pc.</th>
</tr>
</thead>
</table>
Three-phase Energy Meters DSZ12 with display, without approval

**DSZ12DE-3x65A**

![Typical connection](image)

**Maximum current 3x65A. Standby loss 0.4 watt per path only.**

- Modular device for DIN-EN 60715 TH35 rail mounting.
- 4 modules = 70mm wide and 58mm deep.
- Accuracy class B (1%). With S0 interface.
- It measures active energy by means of the current between input and output. The internal power consumption of 0.4 watt active power per path is neither metered nor indicated.
- 1, 2 or 3 phase conductors with max. currents up to 65A can be connected.
- The inrush current is 40mA.
- The N terminal must always be connected.
- The 7 segment LC display is also legible twice within a period of 2 weeks without power supply.
- Power consumption is shown by a bar flashing at a rate of 100 times per kWh.

**Designed as standard for using as double-tariff meter:** Switch over to a second tariff by applying 230V to terminals E1/E2.

On the right next to the display are the keys MODE and SELECT. Press them to scroll through the menu according to the operation manual. First the **background lighting** switches on. The display then shows the total power per tariff and per resettable memory RS1 or RS2, and the instantaneous values of consumption, voltage and current per phase.

**Error message (false)**

When the phase conductor is missing or the current direction is wrong ‘false’ and the corresponding phase conductor are indicated on the display.


**DSZ12DE-3x65A**

without approval EAN 4010312 501221 198,20 €/pc.

**DSZ12WDE-3x5A**

![Typical connection](image)

**CT operated energy meter with settable CT ratio. Maximum current 3x5A. Standby loss 0.4 watt per path only.**

- Modular device for DIN-EN 60715 TH35 rail mounting.
- 4 modules = 70mm wide and 58mm deep.
- Accuracy class B (1%). With S0 interface.
- This three-phase energy meter measures active energy by means of the current between input and output. The internal power consumption of 0.4 watt active power per path is neither metered nor indicated.
- 1, 2 or 3 phase conductors with max. currents up to 5A can be connected.
- The inrush current is 10mA.
- The N terminal must always be connected.
- The 7 segment LC display is also legible twice within a period of 2 weeks without power supply.
- Power consumption is shown by a bar flashing at a rate of 10 times per kWh.

On the right next to the display are the keys MODE and SELECT. Press them to scroll through the menu according to the operation manual. First the **background lighting** switches on. The display then shows the total power per tariff and per resettable memory RS1 or RS2, and the instantaneous values of consumption, voltage and current per phase.

**Error message (false)**

When the phase conductor is missing or the current direction is wrong ‘false’ and the corresponding phase conductor are indicated on the display.


**DSZ12WDE-3x5A**

without approval EAN 4010312 501238 238,00 €/pc.

Recommended retail prices excluding VAT.
## Technical Data Single-phase and Three-phase Energy Meters and Energy Consumption Indicator

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated voltage</th>
<th>Reference current $I_{\text{ref}}$ (Limiting current $I_{\text{max}}$)</th>
<th>Internal consumption</th>
<th>Display active power</th>
<th>Display instantaneous values</th>
<th>Accuracy class ±1%</th>
<th>Inrush current according to accuracy class B</th>
<th>Operating temperature</th>
<th>Interface (not EVA12, WZR12)</th>
<th>Terminal cover sealable</th>
<th>Protection degree</th>
<th>Maximum conductor cross section</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSZ12B-32A EVA12-32A</td>
<td>230 V, 50Hz, -20%/+15%</td>
<td>5(32) A</td>
<td>0.3 W</td>
<td>EVA12, WSZ12DE, WZR12: active power</td>
<td>With a key you can select total active power, active power resettable, tariff 1 and tariff 2 and power, voltage and current per phase</td>
<td>B</td>
<td>20mA</td>
<td>WSZ12B: -25/+55°C</td>
<td>Pulse interface S0 according to DIN EN 62053-31, potential free by opto-coupler, max. 30V DC/20 mA and min. 5 V DC, impedance 100 ohms</td>
<td>With sealing cap PK18 or PK36. For the current path 1 sealing cap is required</td>
<td>IP50 for mounting in distribution cabinets with protection class IP51</td>
<td>6 mm$^2$</td>
</tr>
<tr>
<td>WSZ12DE-32A WZR12-32A</td>
<td>230 V, 50Hz, -20%/+15%</td>
<td>10 (65) A</td>
<td>0.3 W</td>
<td>--</td>
<td>With a key you can select total active power, active power resettable, tariff 1 and tariff 2 and power, voltage and current per phase</td>
<td>B</td>
<td>40mA</td>
<td>EVA12, WSZ12DE, WZR12: -25/+55°C</td>
<td>max. 30V DC/20 mA and min. 5 V DC, impedance 100 ohms</td>
<td>DSZ12D: Terminal cover claps DSZ12DE: With 2 sealing caps PK36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSZ12B-65 A</td>
<td>3×230/400V, 50Hz, -20%/+15%</td>
<td>3×10 (65) A</td>
<td>0.4 W per path</td>
<td>LC display</td>
<td>With a key you can select total active power, active power resettable, tariff 1 and tariff 2 and power, voltage and current per phase</td>
<td>B</td>
<td>40mA</td>
<td>-10/+55°C</td>
<td>Pulse interface S0 according to DIN EN 62053-31, potential free by opto-coupler, max. 30V DC/20 mA and min. 5 V DC, impedance 100 ohms</td>
<td>DSZ12DE-3x65 A</td>
<td>DSZ12WD: Terminal cover claps DSZ12WDE: With 2 sealing caps PK36</td>
<td></td>
</tr>
<tr>
<td>WSZ12E-65 A</td>
<td>3×230/400V, 50Hz, -20%/+15%</td>
<td>3×5(6) A</td>
<td>0.4 W per path</td>
<td>LC display 7 digits, therefrom 1 or 2 decimal places</td>
<td>With a key you can select total active power, active power resettable, tariff 1 and tariff 2 and power, voltage and current per phase</td>
<td>B</td>
<td>10mA</td>
<td>-10/+55°C</td>
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<td>DSZ12WDE-3×5A</td>
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<td>DSZ12WD: Terminal cover claps DSZ12WDE: With 2 sealing caps PK36</td>
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<tr>
<td>WZR12-32A</td>
<td>3×230/400V, 50Hz, -20%/+15%</td>
<td>3×5(6) A</td>
<td>0.4 W per path</td>
<td>LC display 7 digits, therefrom 1 or 2 decimal places</td>
<td>With a key you can select total active power, active power resettable, tariff 1 and tariff 2 and power, voltage and current per phase</td>
<td>B</td>
<td>10mA</td>
<td>-10/+55°C</td>
<td>Pulse interface S0 according to DIN EN 62053-31, potential free by opto-coupler, max. 30V DC/20 mA and min. 5 V DC, impedance 100 ohms</td>
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<td>0.4 W per path</td>
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<td>Pulse interface S0 according to DIN EN 62053-31, potential free by opto-coupler, max. 30V DC/20 mA and min. 5 V DC, impedance 100 ohms</td>
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<td>DSZ12WD: Terminal cover claps DSZ12WDE: With 2 sealing caps PK36</td>
<td></td>
</tr>
<tr>
<td>DSZ12WDE-3×5A</td>
<td>3×230/400V, 50Hz, -20%/+15%</td>
<td>3×5(6) A</td>
<td>0.4 W per path</td>
<td>LC display</td>
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<td></td>
</tr>
</tbody>
</table>

The N terminal of three-phase energy meters must be connected, if not the electronics might be destroyed.
The Measuring Instruments Directive (MID) is a new European Union (EU) directive aimed at creating a single market for measuring instruments across the EU. It came into force on 30th October 2006. This regulation means that meters which receive a MID approval can be used in any other EU country irrespective of where in the EU that approval was granted. The meters can be used for billing purposes, industrial and commercial purposes. Therefore, the MID replaces the present regulations consisting of national approval and subsequent calibration.

The MID covers a range of measuring instruments which include gas, water and active electrical energy meters. According to the directive all new types of meters must comply with the requirements of the directive as from 30 October 2006. However, all instruments approved before this date may continue to be marketed for up to 10 years.

For new types of measuring instruments the MID directive includes the following requirements:

- Compliance with standard DIN EN 50470-1-3
- Completion of conformity assessment
- Placing the product on the market
- Marking the devices in accordance with the directive
- Market surveillance

Validity of calibration, subsequent calibration and any charges will still be regulated by the national law.

**When a MID device is put into circulation, we declare the conformity with MID in the operation instructions.**

The number of the type examination certificate is also indicated there. It begins with the country code of the accredited laboratory, such as DE for Germany and CH for Switzerland.

The MID marking signifies the following:

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CE – M09 – 1259
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- Notation of the Authorities which have carried out the inspection
- Metrology marking and year of assessment of conformity
- CE approval

The year of assessment of conformity is important for the follow-up calibration. It will be renewed every year. The duration of validity of the calibration is liable to national law.

**Which accuracy classes exist?**
The MID refers to new accuracy classes which are A, B, and C. These are in accordance with the familiar ones like 2, 1, and 0.5. The ELTAKO meters have accuracy class B (= former 1 with PTB).