**Features:**

- 3 phase True RMS (Voltage, current)
- 3 phase power (Active, reactive, apparent) Energy (Active, reactive, apparent) Import, Export
- Programmable CT/PT Primary/Secondary
- CT Polarity Error Detection
- Single Pulse Output
- Single Phase Network with Phase Selection
- Modbus RTU Communication (RS485) (Option)
- Coordinate axis define the working domain
- Max Demand for Power (Active, apparent), Current
- Set up relay output (I, P, S)
- Phase Sequence Detection

**Technical Specifications****DISPLAY**

Display	4 rows, LCD with Backlight
Digits	4 (Lowest 8 digits for energy display)
Coordinate axis	Mode import/ export
Define the working	Capacitance/ inductance

**Input Specifications**

Electrical Connection	3P4W, 3P3W, 1P2W
Input Voltage Range	30V-300V ( $V_{LN}$ ) 57.7-518V ( $V_{LL}$ )
Input Current Range	5A AC (Min 7.5mA – Max 6A)
Frequency	45-65Hz
Display Scrolling	Automatic(fast, normal, slow), Manual
Power Consumption	<8VA
Display Reset	Programmable (For energy, max demand) timer
Resolution	10W, 10Var, 10VA, 1mV, 1mA. PF=0.001
Accuracy	Voltage( $V_{LN}$ , $V_{LL}$ ) $\pm 0.2\%$ of FS, current $\pm 0.2\%$ of FS Power factor: $\pm 0.001$ , Frequency: $0.1\%V_{LN} > 30V$ , $V_{LL} > 57.7V$ Power (Active 0.2%, Reactive 0.5%, Apparent 1%) Energy (Wh class 0.5) (VArh, Vah class1) IEC-62052-11 và 62053-21
Memory Retention	10 years (For energy)
Measuring Parameters	Voltage (L-L, L-N) ((Individual/Average) Current (Individual / Average), Frequency, Power Factor (Individual / average) Active, Reactive & Apparent Power (Individual / Total), Active, Reactive & Apparent Energy (Individual/ total – Import/Export), Demand( Max current import/export, Active (individual/ total – import/Export) Apparent(individual/ total – import/Export) Load hour (Import/ export/ total), counter on/off supply meter. Phase Sequence Detection (phase angle between voltage with voltage) (phase angle between voltage with current,

**Output Specifications**

Communication Interface and protocol	RS485 and MODBUS RTU
Pulse Output	Max voltage 24VDC
Width pulse	Range 1 là $T \geq 160ms$ , $T_p = 80ms$ , Range 2 là $10ms \leq T < 160ms$ , $T_p = T/2$ (Depend on power and number pules)
Relay output	5A-250VAC, COM-NO-NC (programable)

**Supply Specifications**

Auxiliary Supply	90-270VAC/DC, 8VA
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**Resettable Parameters**

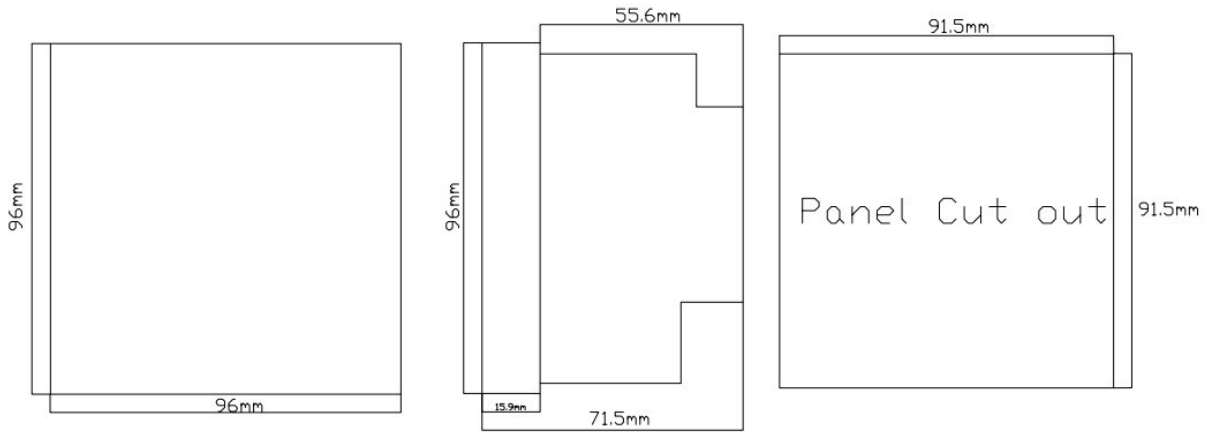
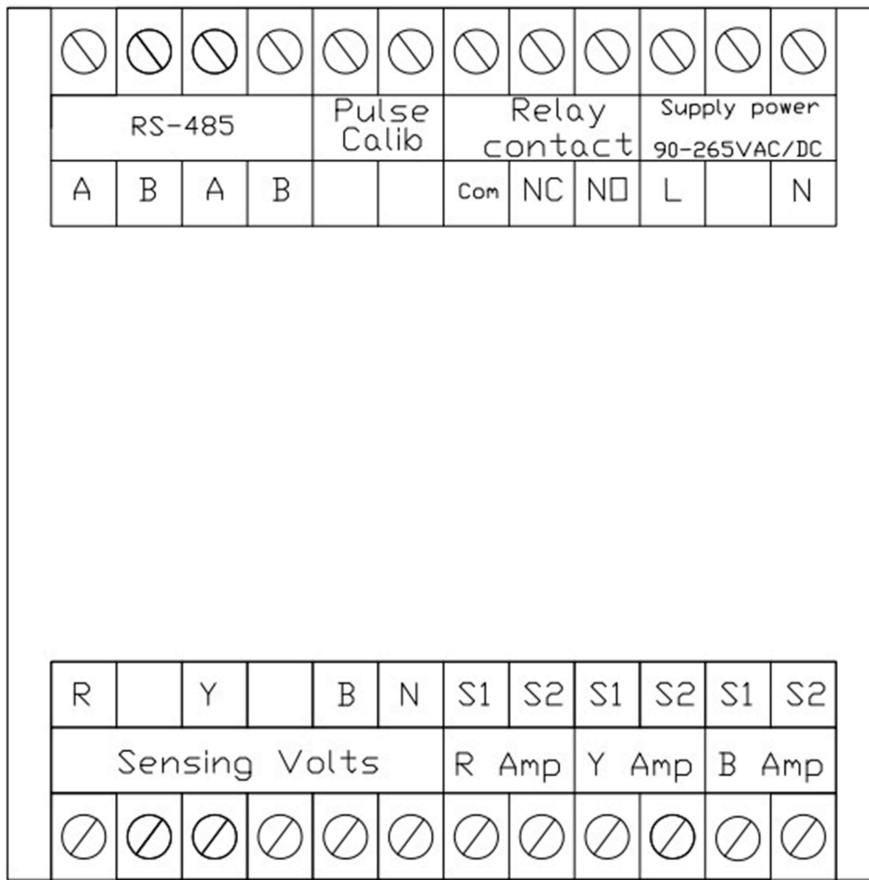
C.T Primary	1/5-10000A programmable for any value
C.T Secondary	1/5A (External CT must be connected for current more than 5A)
P.T Primary	30-500kV programmable for any value
P.T Secondary	100-500V programmable for any value

**Environmental Specifications**

Temperature Operating	-10–55° C (indoor)
Storage Temperature	-20 to 75° C
Humidity	< 95 % (non condensing)

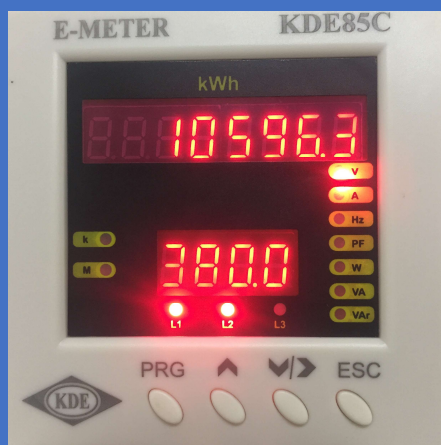
**Mechanical Specifications**

Mounting	Panel mount, keep by 4 clamp in corner
Weight	350Gram
Protection Level	IP 65 (for faceplate)



### Ordering Information

Part no	Supply Voltage	Output			Certification		
	100-235 VAC/DC (-10%/+10%)	Pulse	Relay	Comm (RS485)			
KDE81L		Yes			ISO9001:2015	ISO14001:2015	TCCS:02-2021
KDE81LC		Yes	Yes		ISO9001:2015	ISO14001:2015	TCCS:02-2021
KDE81LC-R		Yes	Yes	Yes	ISO9001:2015	ISO14001:2015	TCCS:02-2021

**Features:**

3 phase True RMS (Voltage, current)

3 phase power (Active, reactive, apparent) Energy (Active, reactive, apparent)

Programmable CT/PT Primary/Secondary

CT Polarity Error Detection

Single Pulse Output

Single Phase Network with Phase Selection

Modbus RTU Communication (RS485) (Option)

Phase Sequence Detection

**Technical Specifications****DISPLAY**

Display	2 rows, LED 0.39"
Digits	Rows first 8 digits for energy display, 4 digits display parameter.

**Input Specifications**

Electrical Connection	3P4W, 3P3W, 1P2W
Input Voltage Range	30V-300V ( $V_{LN}$ ) 57.7-518V ( $V_{LL}$ )
Input Current Range	5A AC (Min 7.5mA – Max 6A)
Frequency	45-65Hz
Display Scrolling	Automatic (fast, normal, slow), Manual
Power Consumption	<8VA
Display Reset	Programmable (For energy)
Resolution	10W, 10Var, 10VA, 1mV, 1mA. PF=0.001
Accuracy	Voltage ( $V_{LN}$ , $V_{LL}$ ) $\pm 0.2\%$ of FS, current $\pm 0.2\%$ of FS Power factor: $\pm 0.001$ , Frequency: $0.1\% V_{LN} > 30V$ , $V_{LL} > 57.7V$ Power (Active 0.2%, Reactive 0.5%, Apparent 1%) Energy (Wh class 0.5S) (VARh, VAh class1) IEC-62052-11 và 62053-21
Memory Retention	10 years (For energy)
Measuring Parameters	Voltage (L-L, L-N) (Individual) Current (Individual), Frequency, Power Factor (Individual) Active, Reactive & Apparent Power (Individual), Active, Energy, Load hours

**Output Specifications**

Communication Interface and protocol	RS485 and MODBUS RTU
Pulse Output	Max voltage 24VDC
Width pulse	Range 1 là $T \geq 160ms$ , $T_p = 80ms$ , Range 2 là $10ms \leq T < 160ms$ , $T_p = T/2$ (Depend on power and number pules)

**Supply Specifications**

Auxiliary Supply	90-270VAC/DC, 8VA
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**Resettable Parameters**

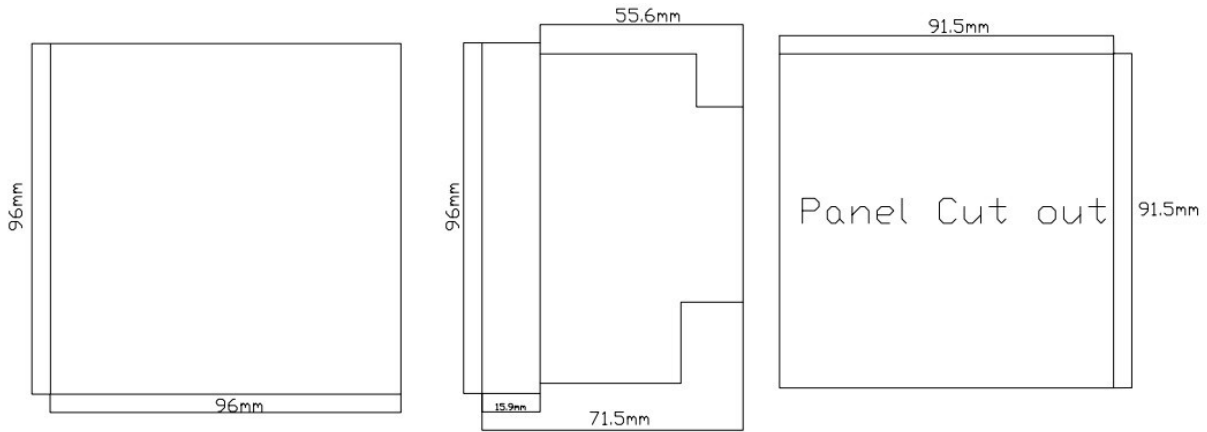
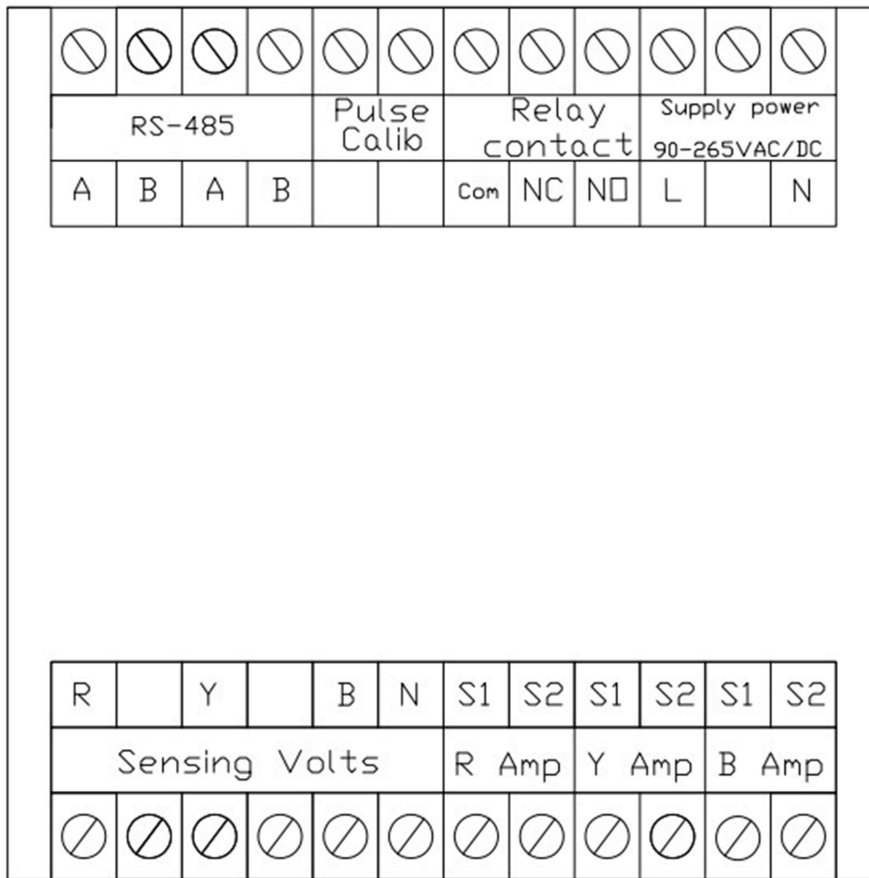
C.T Primary	1/5-10000A programmable for any value
C.T Secondary	1/5A (External CT must be connected for current more than 5A)
P.T Primary	30-500kV programmable for any value
P.T Secondary	100-500V programmable for any value

**Environmental Specifications**

Temperature Operating	-10–55° C (indoor)
Storage Temperature	-20 to 75° C
Humidity	< 95 % (non condensing)

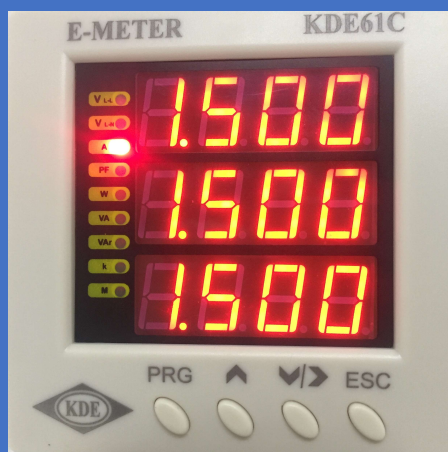
**Mechanical Specifications**

Mounting	Panel mount, keep by 4 clamp in corner
Weight	350Gram
Protection Level	IP 65 (for faceplate)



Ordering Information

Part no	Supply Voltage	Output			Certification		
	100-235 VAC/DC (-10% /+10%)	Pulse	Relay	Comm (RS485)			
KDE85		Yes	-	-	ISO9001:2015	ISO14001:2015	TCCS:02-2021
KDE85C		Yes	-	Yes	ISO9001:2015	ISO14001:2015	TCCS:02-2021

**Features:**

3 phase True RMS (Voltage, current)

3 phase power (Active, reactive, apparent) Energy (Active, reactive, apparent)

Programmable CT/PT Primary/Secondary

CT Polarity Error Detection

Single Pulse Output

Single Phase Network with Phase Selection

Modbus RTU Communication (RS485) (Option)

Phase Sequence Detection

**Technical Specifications****DISPLAY**

Display	3 rows 4 digits, LED 0.56"
Digits	4 digits (8 digits for energy display, 4 digit unit)

**Input Specifications**

Electrical Connection	3P4W, 3P3W, 1P2W
Input Voltage Range	30V-300V (V <sub>LN</sub> ) 57.7-518V (V <sub>LL</sub> )
Input Current Range	5A AC (Min 7.5mA – Max 6A)
Frequency	45-65Hz
Display Scrolling	Automatic (fast, normal, slow), Manual
Power Consumption	<8VA
Display Reset	Programmable (For energy)
Resolution	10W, 10Var, 10VA, 1mV, 1mA. PF=0.001
Accuracy	Voltage (V <sub>LN</sub> , V <sub>LL</sub> ) ±0.2% of FS, current ±0.2% of FS Power factor: ±0.001, Frequency: 0.1% V <sub>LN</sub> >30V, V <sub>LL</sub> >57.7V Power (Active 0.2%, Reactive 0.5%, Apparent 1%) Energy (Wh class 0.5S) (VARh, VAh class1) IEC-62052-11 và 62053-21
Memory Retention	10 years (For energy)
Measuring Parameters	Voltage (L-L, L-N) (Individual) Current (Individual), Frequency, Power Factor (Individual) Active, Reactive & Apparent Power (Individual), Active, Reactive & Apparent Energy, Load hours

**Output Specifications**

Communication Interface and protocol	RS485 and MODBUS RTU
Pulse Output	Max voltage 24VDC
Width pulse	Range 1 là T <sub>r</sub> ≥ 160ms, T <sub>p</sub> = 80ms, Range 2 là 10ms ≤ T < 160ms, T <sub>p</sub> = T/2 (Depend on power and number pules)

**Supply Specifications**

Auxiliary Supply	90-270VAC/DC, 8VA
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**Resettable Parameters**

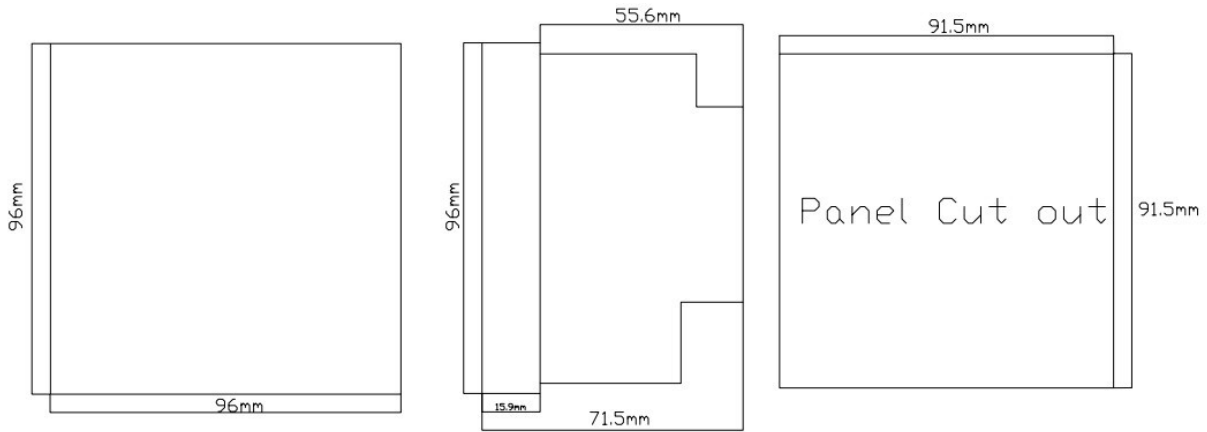
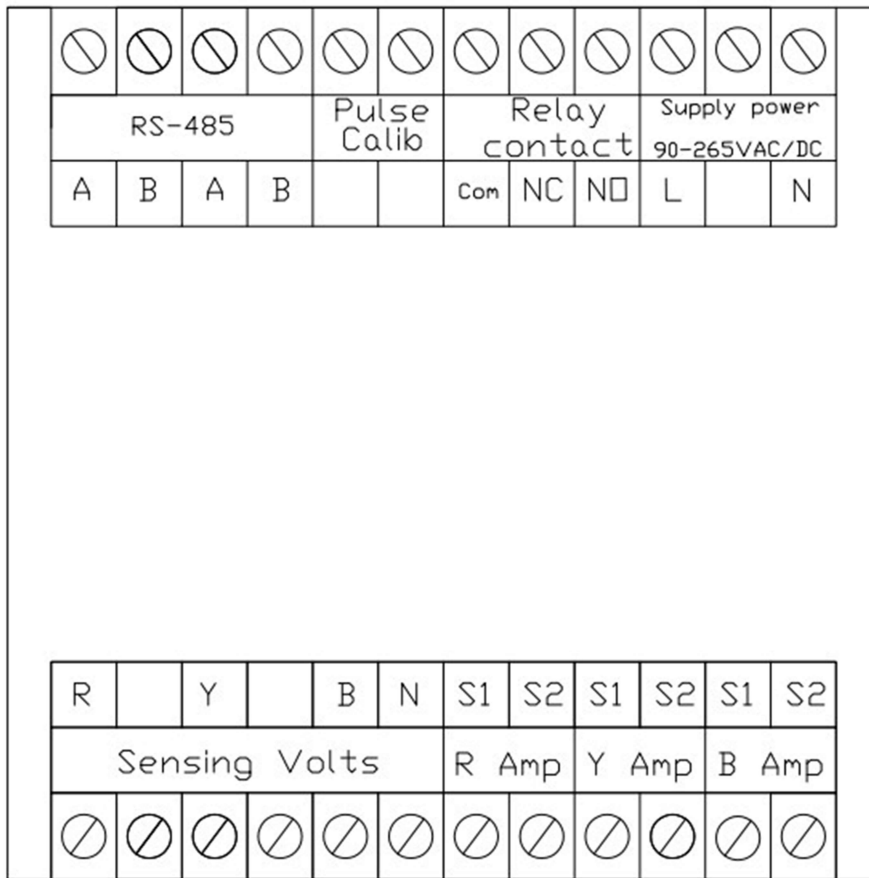
C.T Primary	1/5-10000A programmable for any value
C.T Secondary	1/5A (External CT must be connected for current more than 5A)
P.T Primary	30-500kV programmable for any value
P.T Secondary	100-500V programmable for any value

**Environmental Specifications**

Temperature Operating	-10–55° C (indoor)
Storage Temperature	-20 to 75° C
Humidity	< 95 % (non condensing)

**Mechanical Specifications**

Mounting	Panel mount, keep by 4 clamp in corner
Weight	350Gram
Protection Level	IP 65 (for faceplate)



Ordering Information

Part no	Supply Voltage	Output			Certification		
	100-235 VAC/DC (-10% /+10%)	Pulse	Relay	Comm (RS485)			
KDE61		Yes	-	-	ISO9001:2015	ISO14001:2015	TCCS:02-2021
KDE61C		Yes	-	Yes	ISO9001:2015	ISO14001:2015	TCCS:02-2021