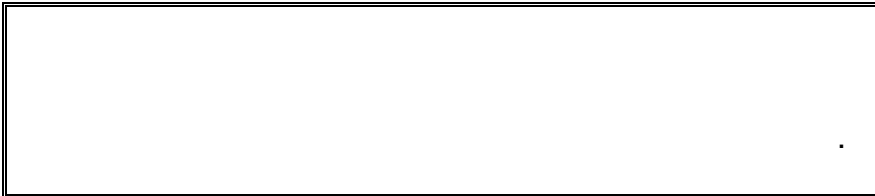


**KEN - 900**



( )

•	.....	1
•	.....	2
2.1	.....	2
2.2	.....	3
•	.....	4
3.1	.....	4
3.2	.....	5
•	.....	7
4.1	.....	7
4.2	.....	8
4.3	.....	19
•	.....	20
5.1	.....	20
5.2	.....	21
5.3	.....	22
5.4	.....	32
5.5	.....	32
•	.....	37

“ ”

3가

△ :

△ : 가

△ : , 가

△ KEN-900

△ KEN-900 KEN-900 , ,

△ KEN-900 ( ,PT , CT1,2 )

△ , , .

△ , .

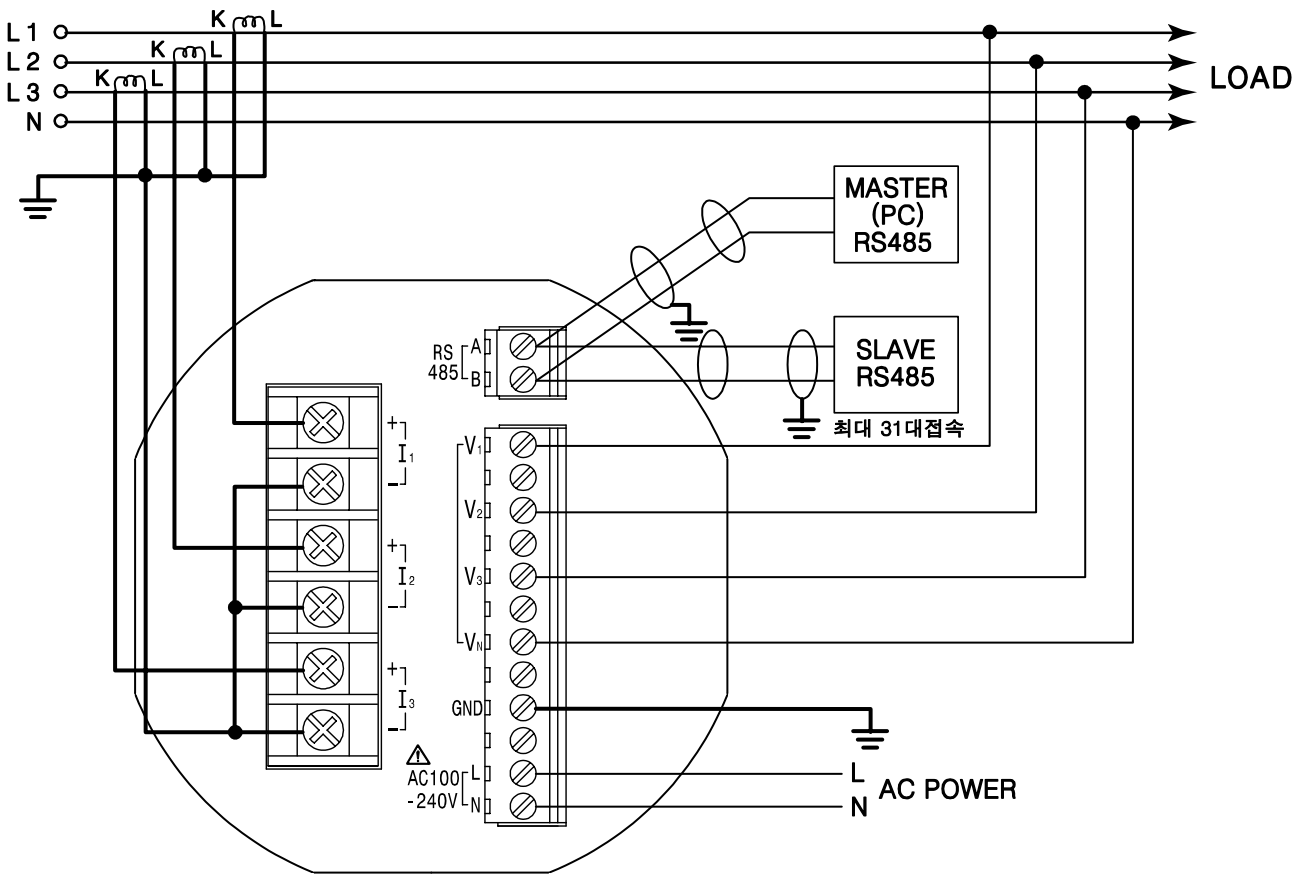
△ (가 , , ) 가

△ , ,

△ , .

2.1 (3 4 Star )

2.1 3 4  
 345V, 600V, 5A  
 4.2



2.1 KEN-900 (3 4 :Star )

## 2.2

KEN-900

- 1) MS
- 2) MS FS
- 3)
- 4) (Up) (Down)
- 5) FS
- 6) MS 1)
- 7) VS AS

## 2.3

KEN-900

2.1

5.1

2.1

PT	PT	1.0~5000.0	1.0	
CT 1	Ct	1~20.000	5	
	Line	StAr dELt 1P3L 1P2L	StAr	
	Volt	PhAS, LinE	PhAS	
	bAud	1200, 2400, 4800 9600, 19.2(19200), 38.4(38400)	9600	
	PAr	nonE, EVen, odd	nonE	
	Addr	1~247		

### 3.1

KEN-900

(panel mount type)

3

가

- , , .
- ,
- , , ( )

가 . PT CT

#### 3.1 KEN-900

#### 3.1

	FS (Full scale)		%		
			FS		
	600V×PT	L-L	±0.3	10%~120% FS	0~170kV
	345V×PT	L-N			
	CT PRIMARY CURRENT		±0.3	2%~120% FS	0~20kA
	345V×PT×CT×3	STAR DELTA	±0.5	PF   50%	-2000MW~+2000MW
	345V×PT×CT×2	1P3L			
	345V×PT×CT	1P2L			
	345V×PT×CT×3	STAR DELTA	±0.5	PF   90%	-2000MVar~+2000MVar
	345V×PT×CT×2	1P3L			
	345V×PT×CT	1P2L			
	345V×PT×CT×3	STAR DELTA	±0.5	PF   50%	0~2000MVA
	345V×PT×CT×2	1P3L			
	345V×PT×CT	1P2L			
	100		±1	PF   50% 10%FS 10%FS	-99.9%~+100%
			±0.3	10V	45.0~65.0Hz
(Positive total)					0.000kWh~ 999999MWh
(Absolute total)					0.000kVarh~ 999999MVarh
					40~110% 8 LED

PT =

CT, CT Primary current = CT 1

- FS 10~120% . FS 2~120% .
- 가
- CT, PT .
- 20~26 .
- THD 5% , .

### 3.2

- : 50/60Hz
- : CT 5A
- : AC 85~600V (PT 1.0~5000.0)
- : AC 100~240V ( $\pm 10\%$ ) Free Voltage
- : -20 ~60
- : -25 ~80
- : 0~80% ( 가 )
- : 5VA (AC 220V )

- : 100M
- : AC 2000V,60Hz,10mA 1min
- :  $1.2 \times 50 \mu s, 3$
- : -10~60 ,2

- Fast transient :

- . : IEC 1000-4-4
- . : Common mode ;2kV
- . / : 2kV

- : RS485 1PORT(option )
- : MODBUS -RTU
- : 1.2km
- : Twist pair cable, Min  $0.36 \text{ mm}^2$ (22AWG), 60PF/m .
- : 1200, 2400, 4800, 9600, 19.2k, 38.4kbps
- : PT, CT
- :  $120(H) \times 120(W) \times 129(D) \text{ mm}$
- : 1.0 Kg

- Display Mode :

LED Bar graph

3 7-segment LED  
LED

- : 100mm round cut-out

- (Standard Compliance) :

IEC 687/348

IEC 1000-4-4

ANSI c37.90.1

IEC 1036

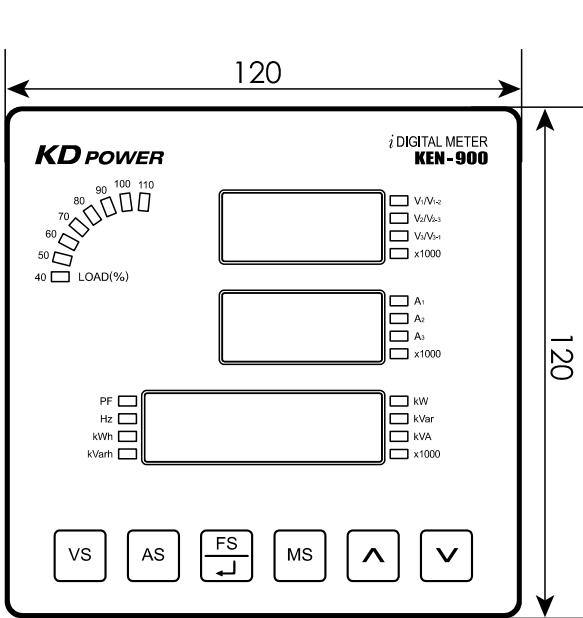


# 4.1

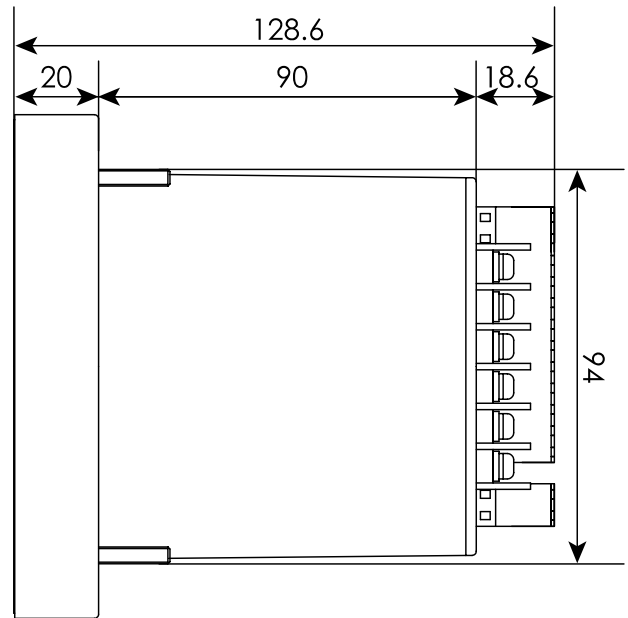
4.1

KEN-900

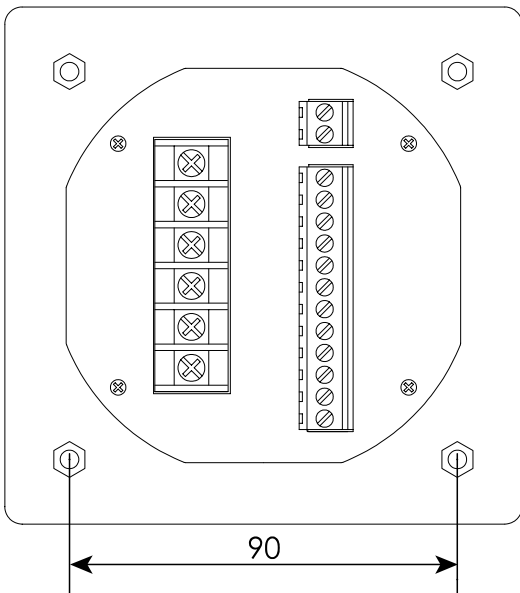
4mm



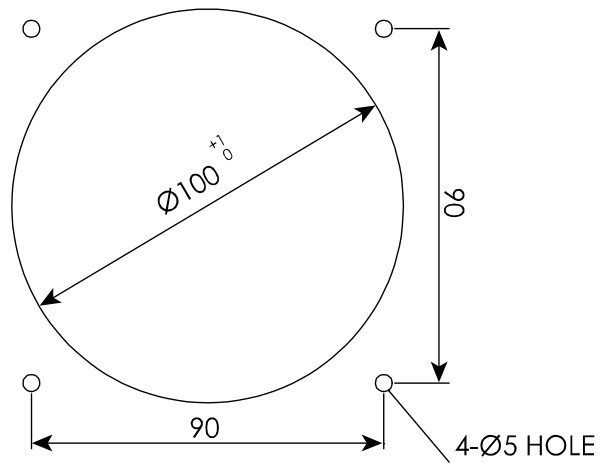
(a)



(b)



(c)



(d)

4.1 KEN-900

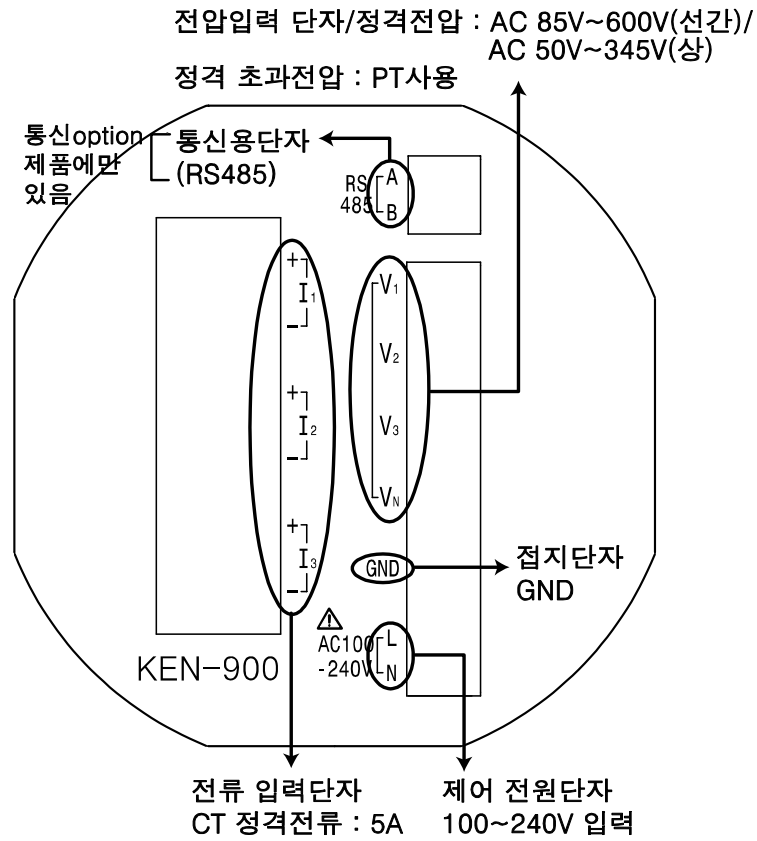
Cutout

## 4.2

1)

KEN-900

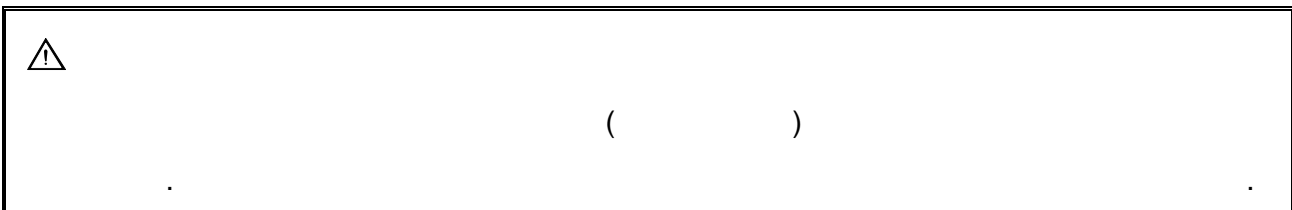
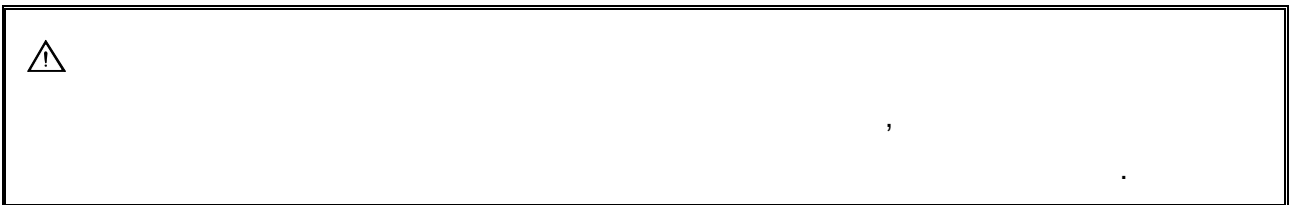
4.3



4.3 KEN-900

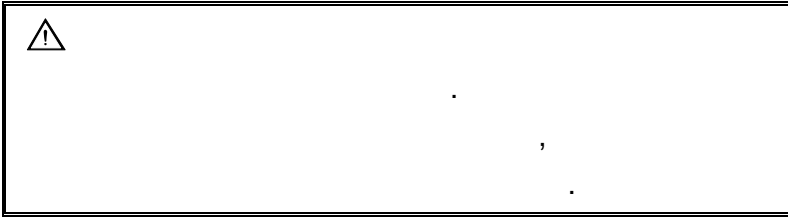
2)

(kgf - cm) : 10  
: 3.5mm<sup>2</sup>



3) (GND)

4.3



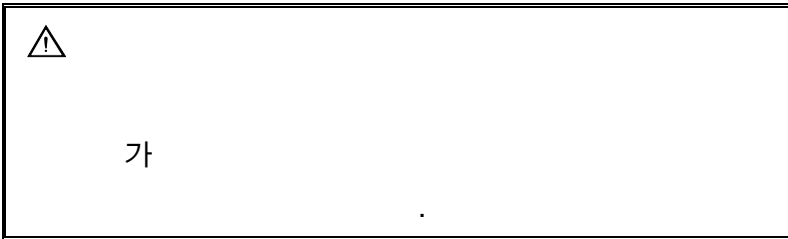
4)

4.3

KEN-900

(L, N)

AC 100~240V(±10%)



5)

4.3

$V_1, V_2, V_3, V_N$

4.4 ~

4.10

AC 345V

가

PT

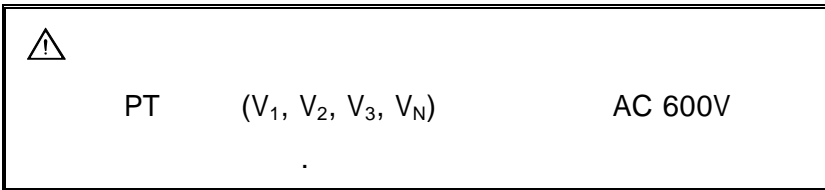
PT

1.0

5000.0

0.1

가



PT

165000V:110V

PT

1500

(165000 ÷ 110 = 1500)

MS

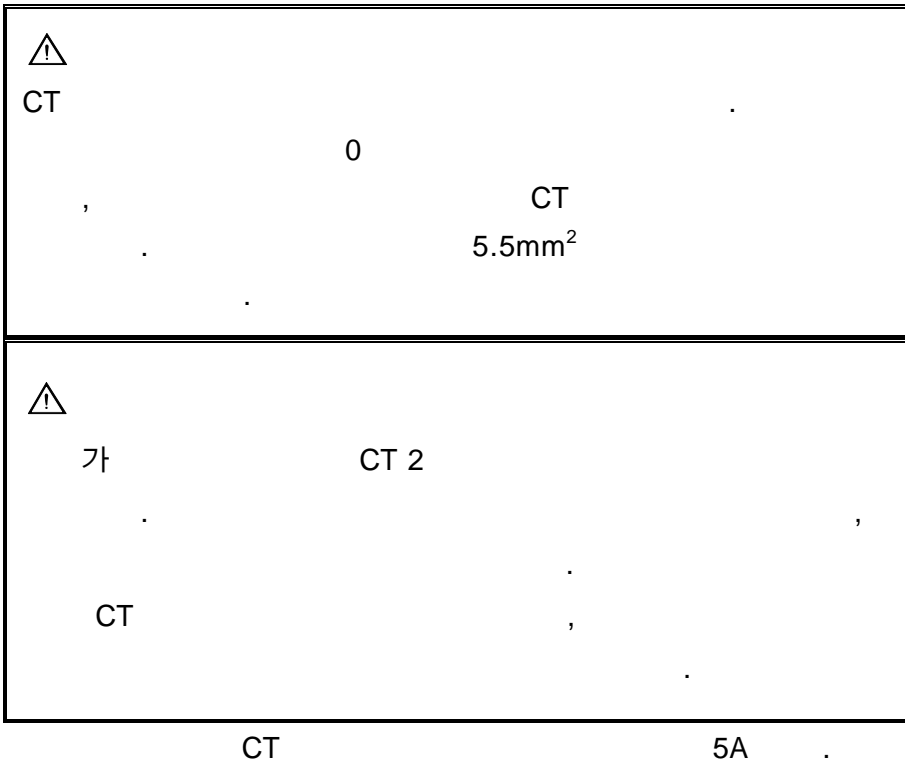
Pt

6)

4.3

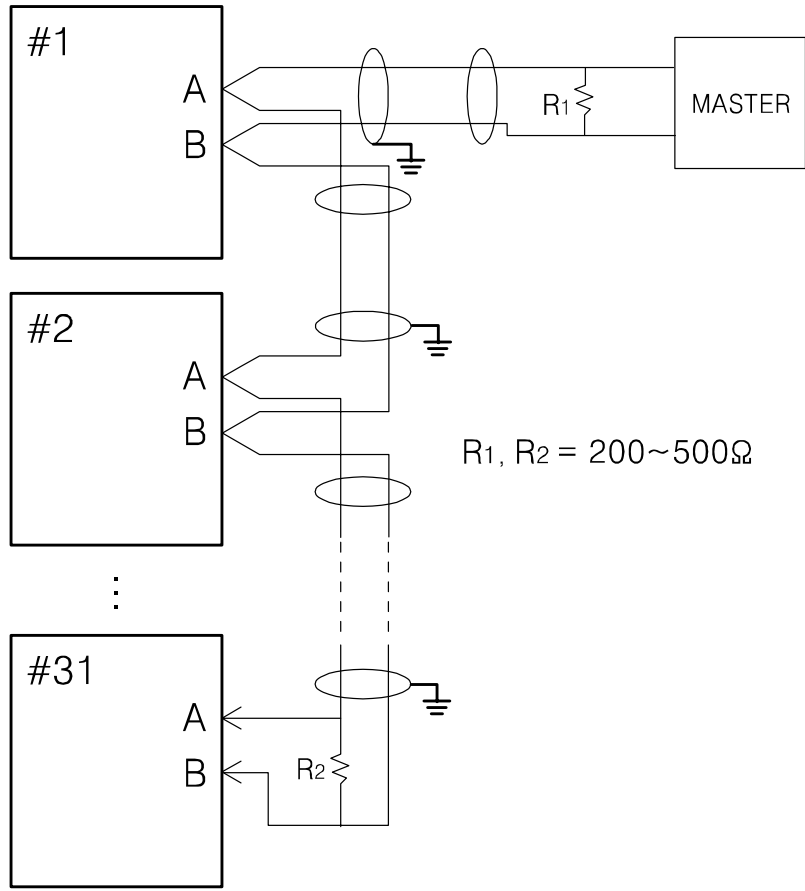
$I_1, I_2, I_3$

4.4~ 4.10



7) ( )

4.3 RS-485 A, B  
 KEN-900 RS-485 2.1  
 KEN-900 Repeater 31  
 4.4 RS-485



4.4 RS-485

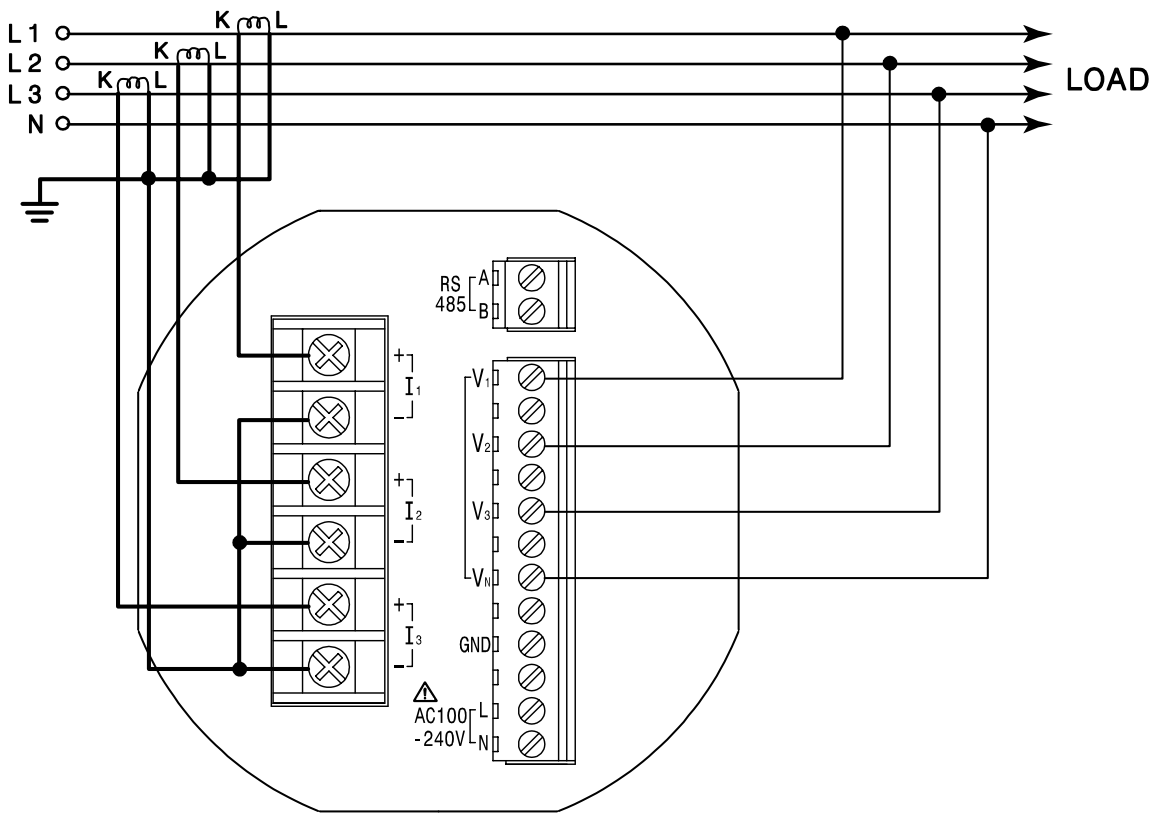
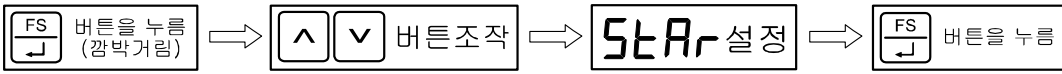
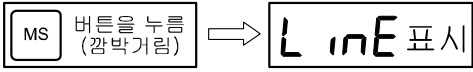
) PC RS-485/232 가 R1 가

8) /  
 4.5~ 4.11 KEN-900

KEN-900 7 가

- 3 4 : 4.5
- 3 4 PT (Y-Y) : 4.6
- 3 3 (3CT ) : 4.7
- 3 3 (2CT ) : 4.8
- 3 3 2PT 2CT : 4.9
- 3 : 4.10
- 2 : 4.11 - 11 -

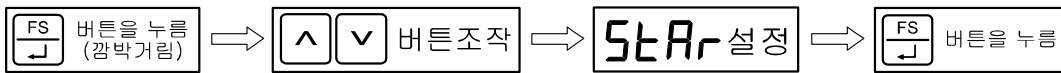
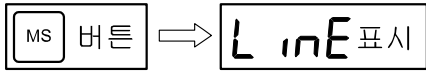
3 4                    345V                    PT  
 MS                    LinE                    FS                    StAr  
 . PT                    1.0                    .



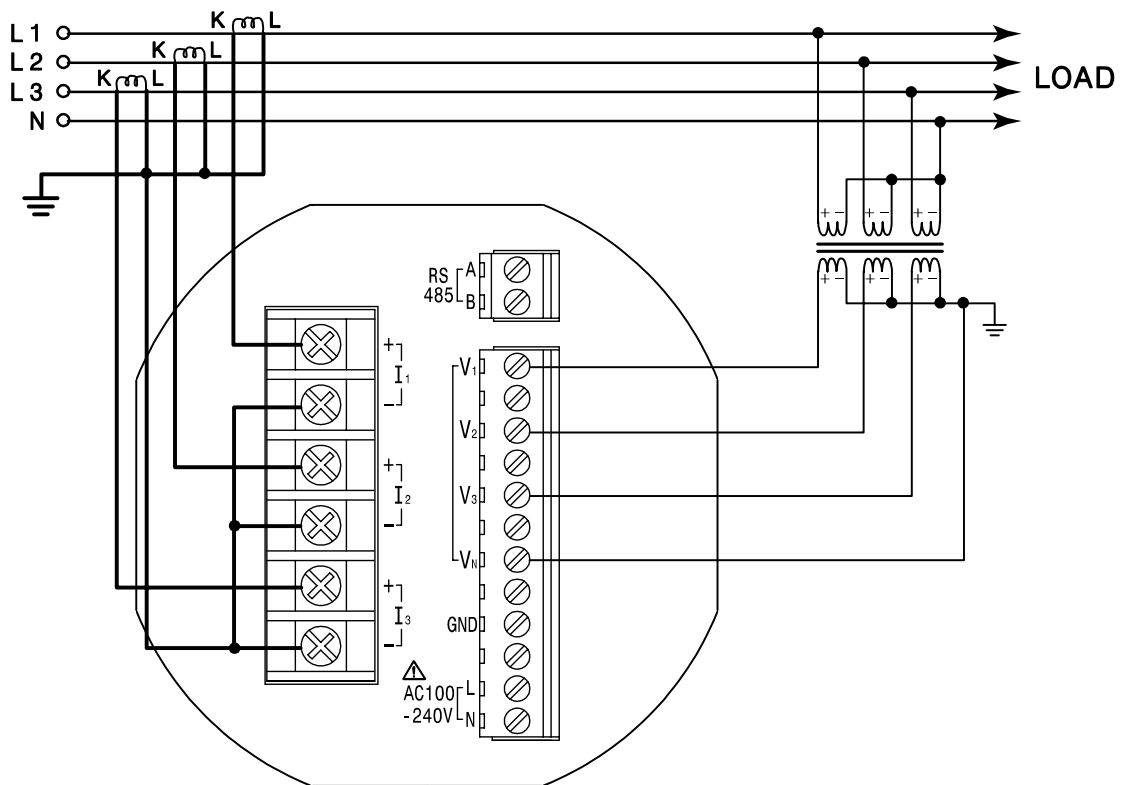
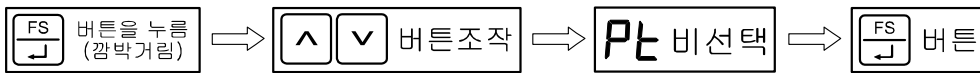
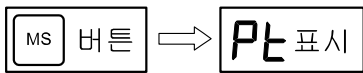
4.5 3 4 ( PT 가 )

3 4 Pt (Y-Y)

3 4 PT MS  
 LinE , FS Star . PT  
 MS Pt FS , PT  
 1.0~5000.0



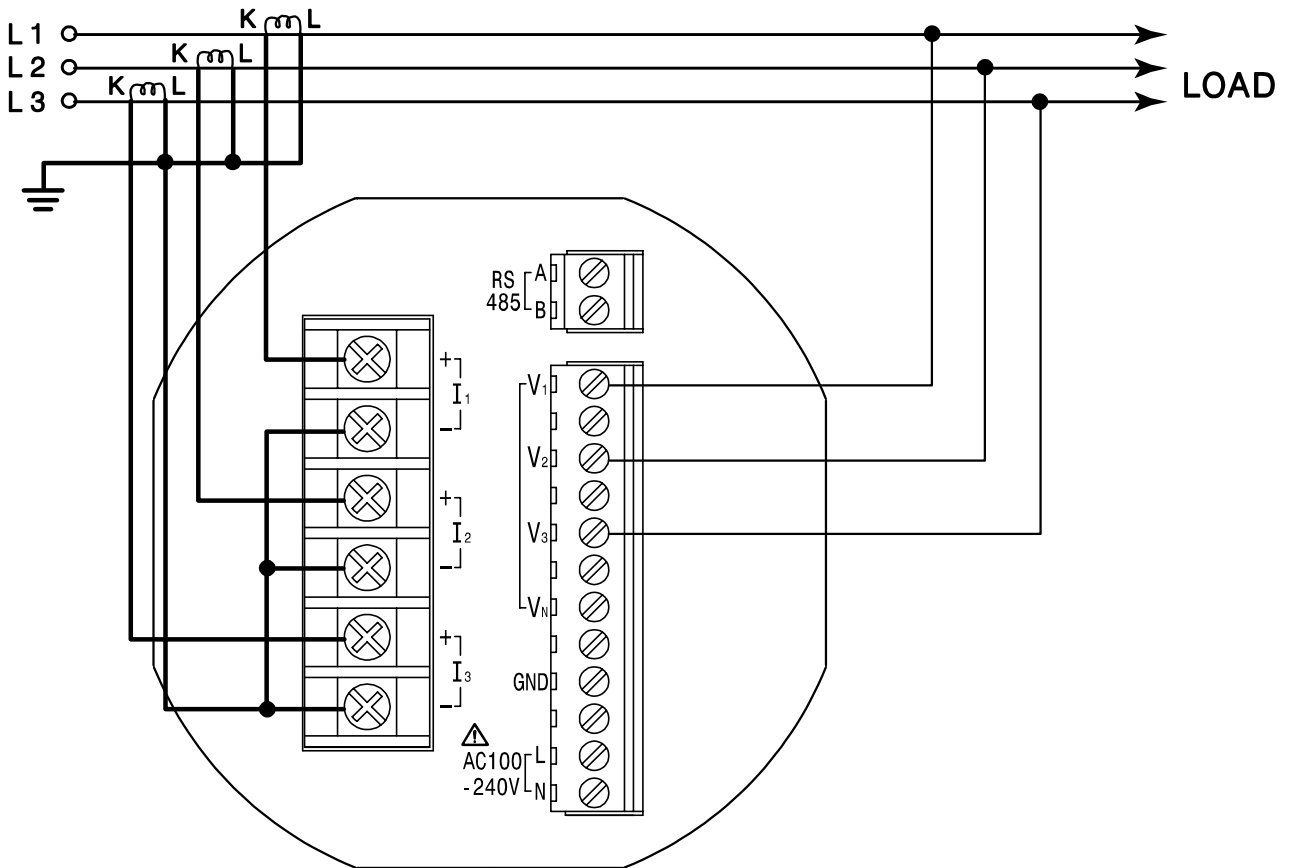
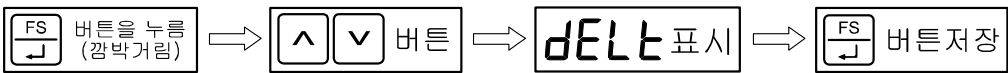
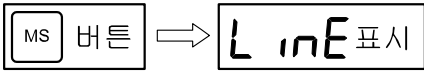
PT :



4.6 3 4 PT

3 3 (3CT )

3 3 345V 3 CT  
 MS LinE , FS  
 dELT . PT 1.0



4.7 3 3 (3 CT )



3 3

( 2 CT )

3 3

345V

PT

2 CT

MS

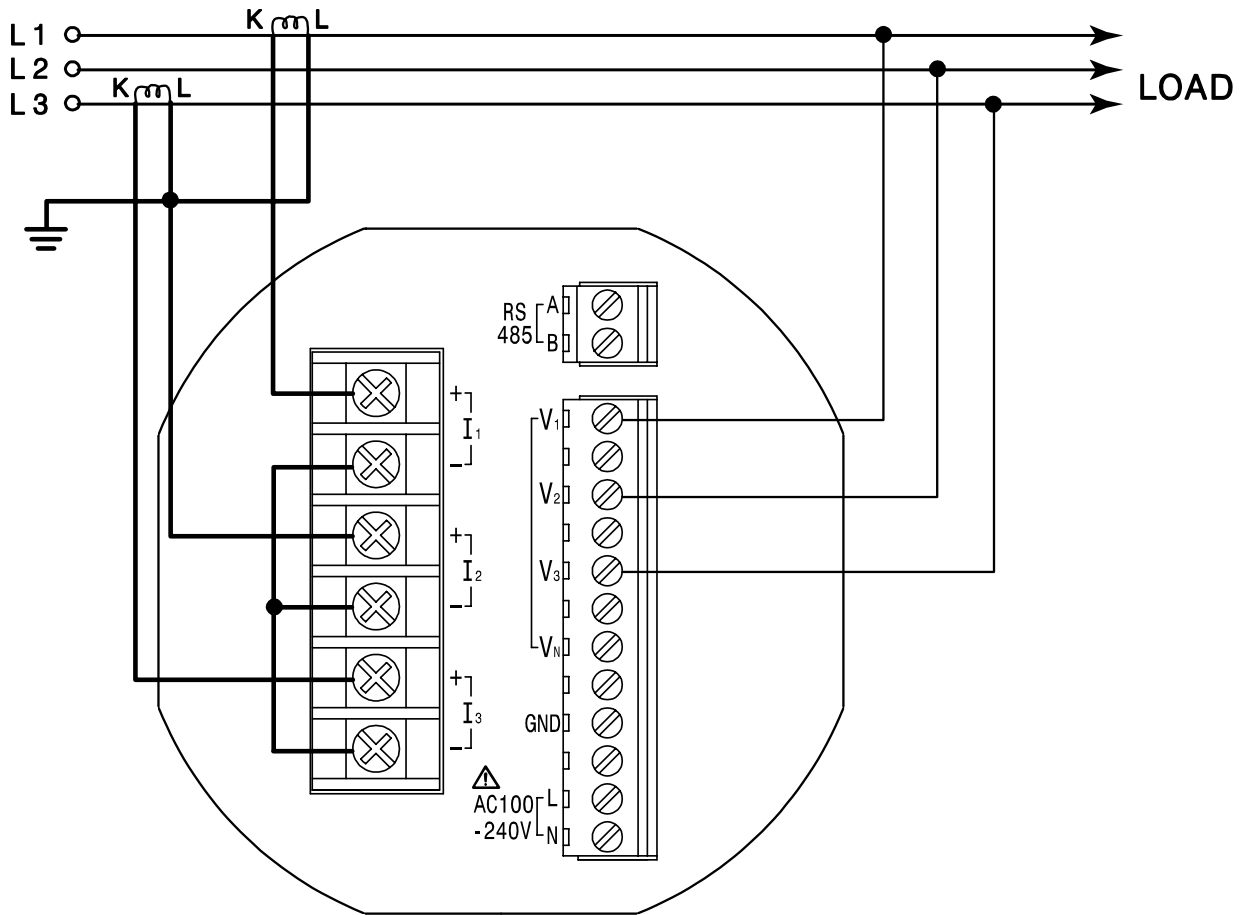
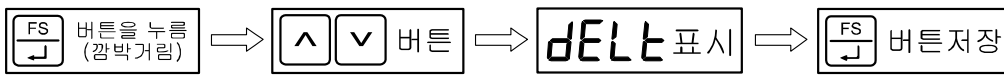
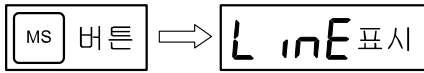
LinE

, FS

dELt

. PT

1.0

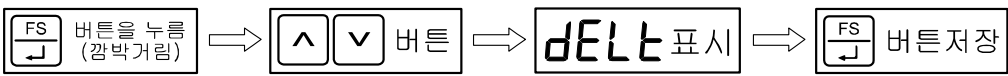
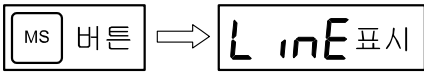


4.8 3 3

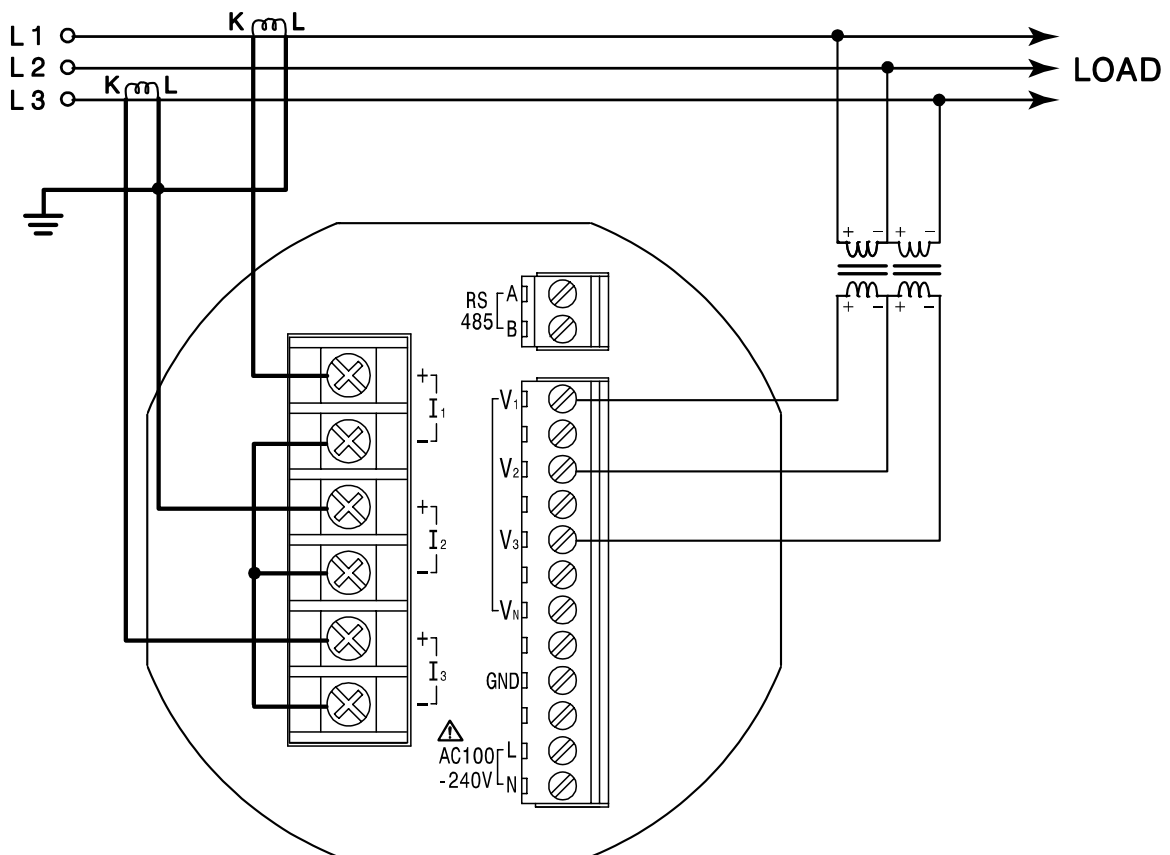
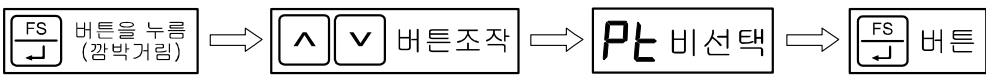
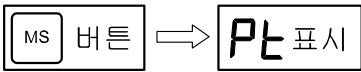
( 2 CT )

3 3 (2PT, 2CT )

3 3 2 PT MS LinE , FS StAr MS  
 PT MS Pt , FS  
 1.0~5000.0



PT :



4.9 3 3 (2PT, 2CT )





### 4.3

KEN-900

4.12

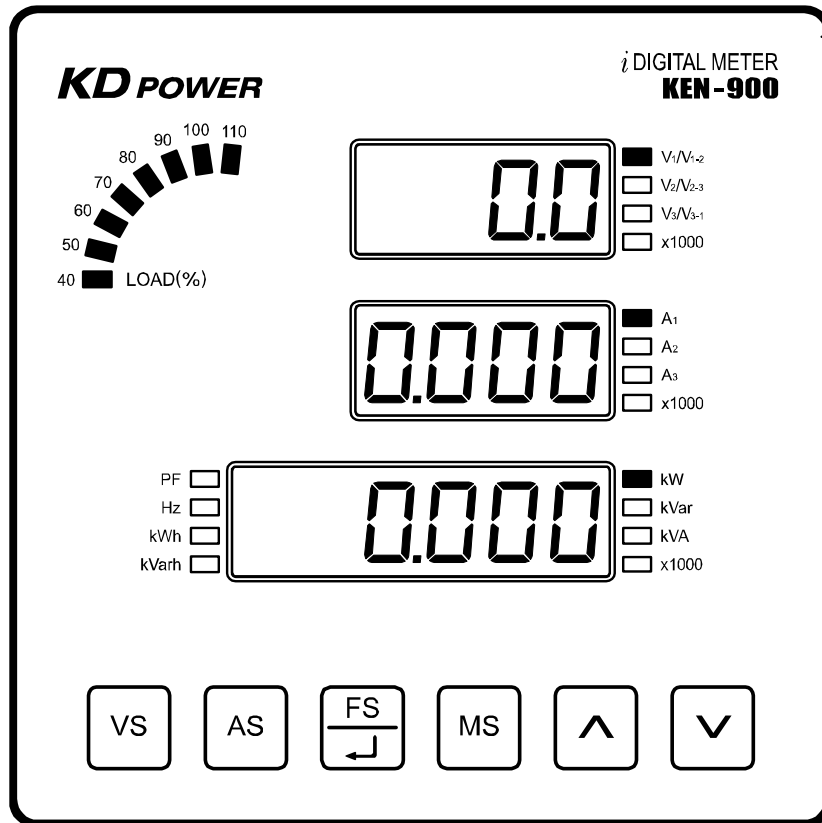
7-segment 가 4 2

7-segment 가 6 1

LED 4 3  
 ×1000 LED 가  
 40~110% Load Bar Graph LED 가

6  
 (Up Button) : 가  
 (Down Button) :

MS : 가  
 FS : ( )  
 VS : MS  
 AS : MS

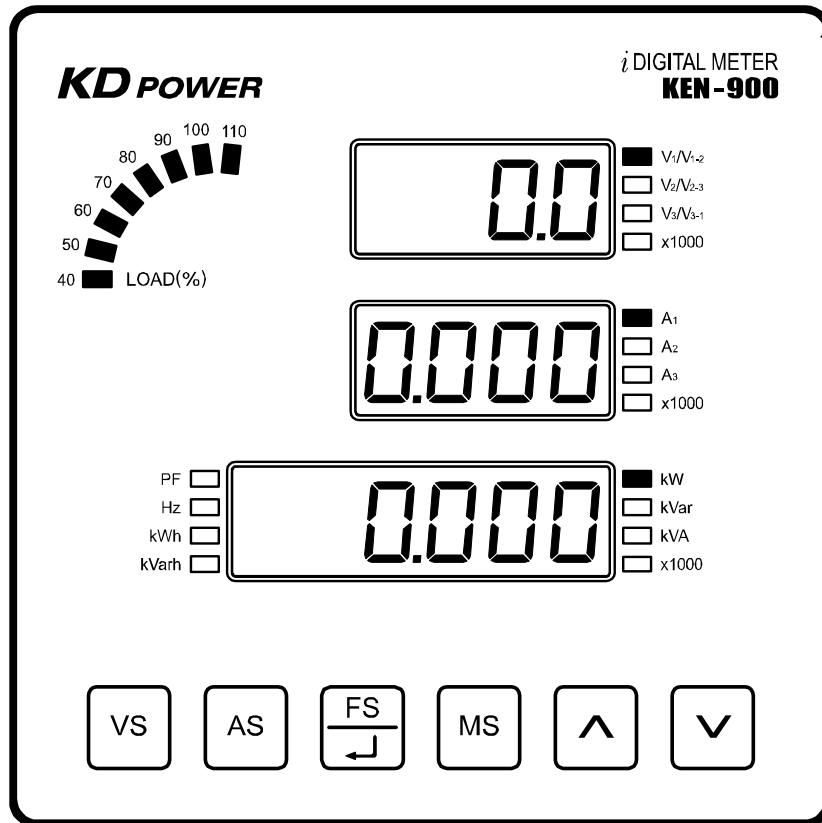


4.12 KEN-900

5.1

KEN-900

5.1



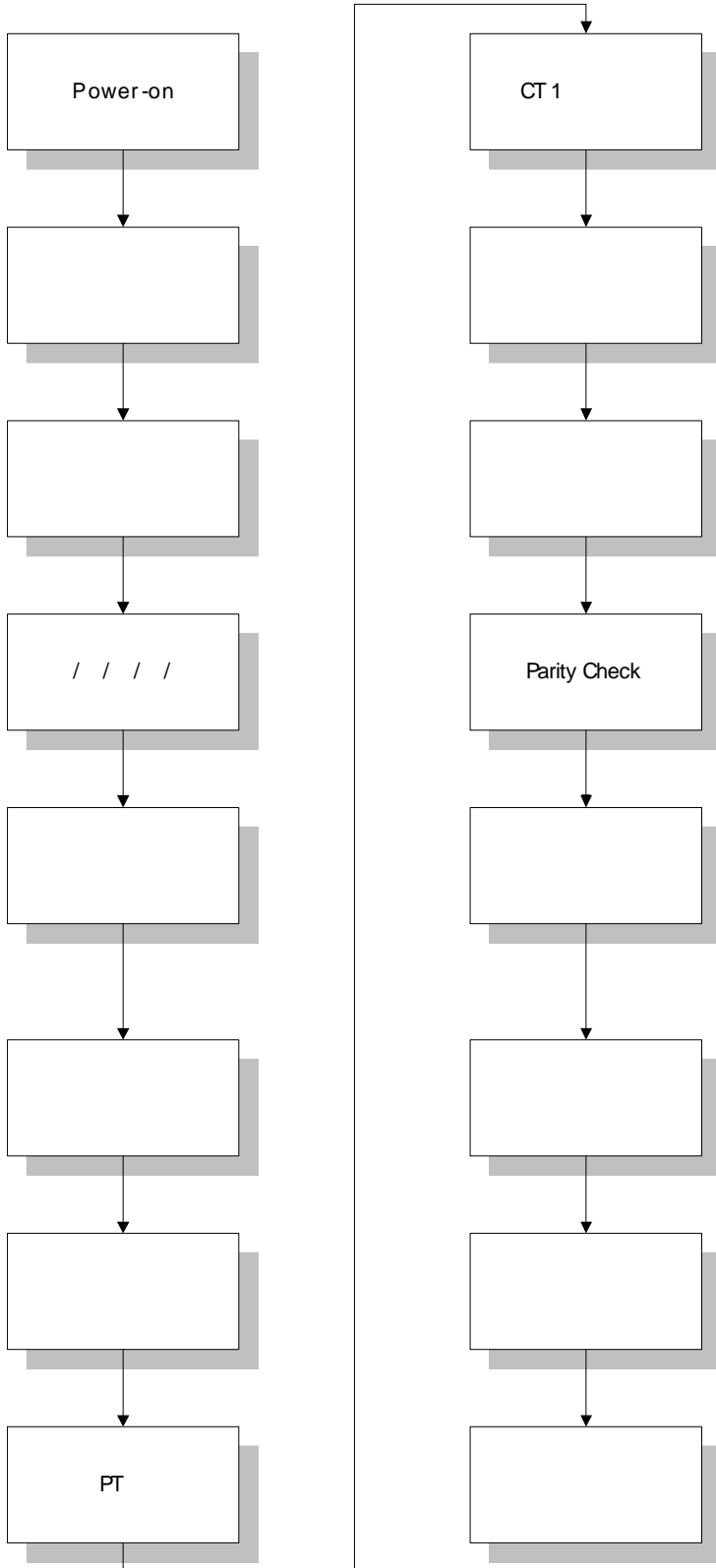
5.1

# 5.2

MS ( )

5.2  
FS

MS



5.2

(MS )

### 5.3

FS (Up) 가 , (Down)

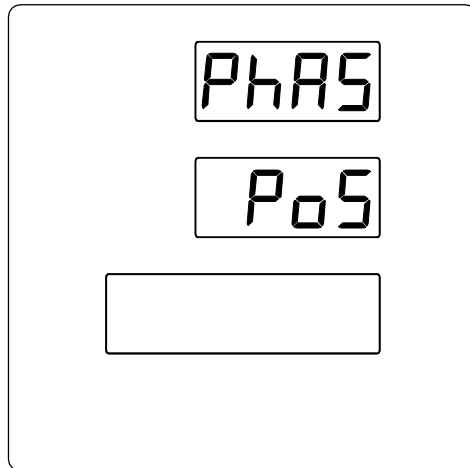
가 VS AS FS

5.1

1)

KEN-900 3 가  
 (Positive phase) PoS , (Negative phase) nEG , Err

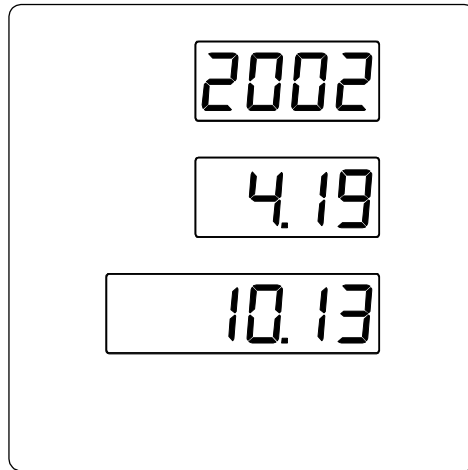
Power-on MS segment PhAS 가  
 , 가 segment



2) , , , ,  
 KEN-900

MS segment 가, 가 segment ,  
 segment , ,  
 FS , , , , FS  
 , FS  
 VS, AS, MS



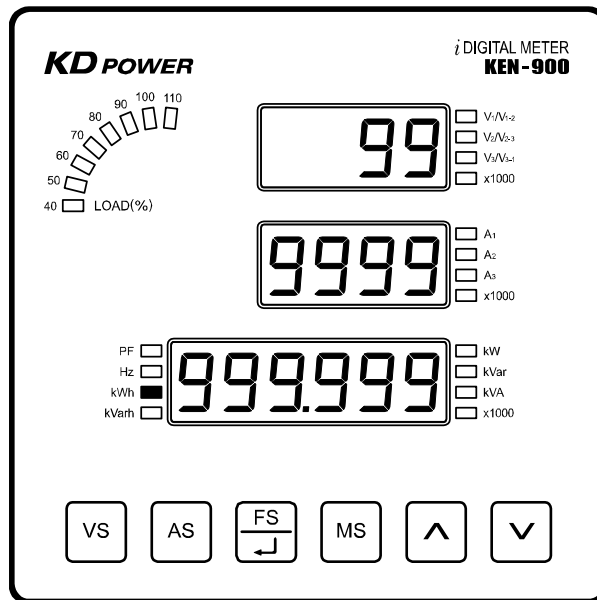


3)

KEN-900

MS

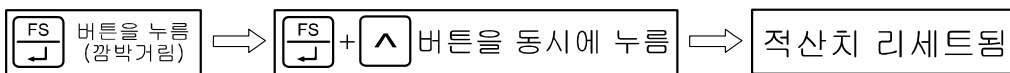
segment



999999999.999kWh

999999999.999kWh

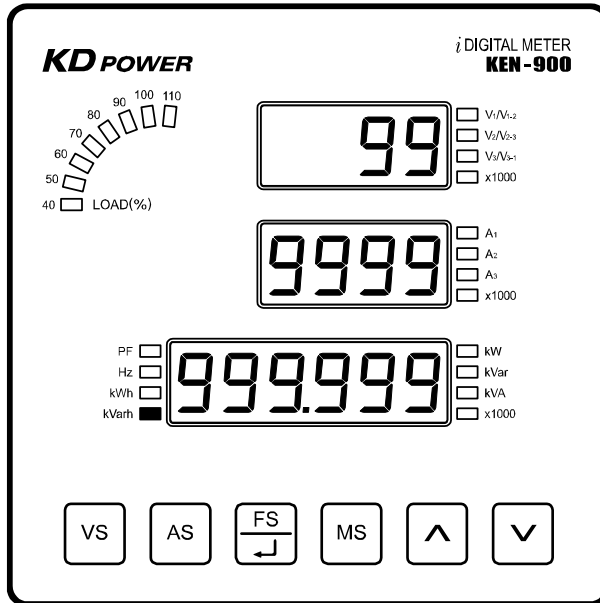
0.000kWh



4)

MS

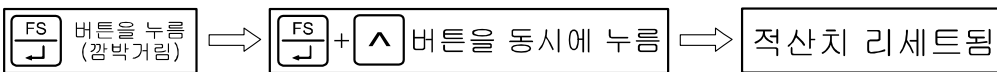
segment



999999999.999kvarh

999999999.999kvarh

0.000kvarh



5)

KEN-900

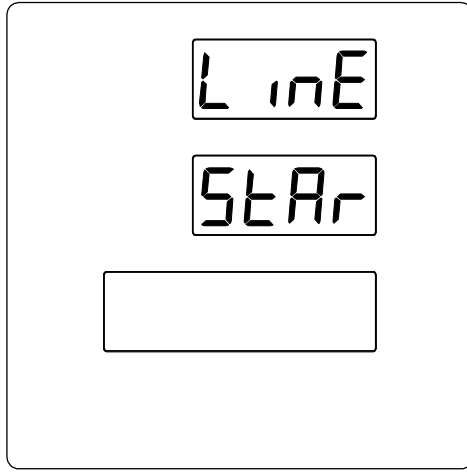
4 가

- . 3 4 (Star)
- . 3 3 (delta)
- . 3 (1P3L)
- . 2 (1P2L)

(default) :

MS segment LinE , 가 segment  
 4 가 (StAr, dELt, 1P3L, 1P2L) 3 4 StAr  
 가

FS 가 segment  
 , FS

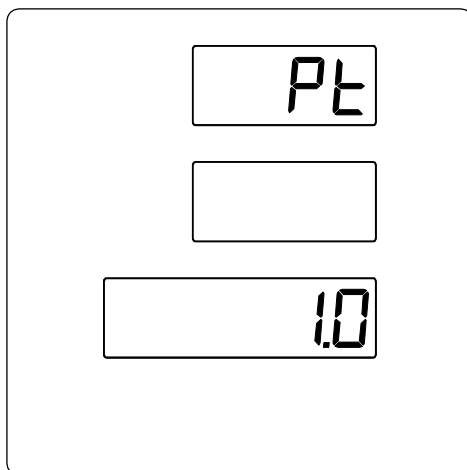


6) PT

(Potential Transformer : PT)

(default) :

MS segment Pt 가 segment  
1.0 .  
PT 345V .  
PT :  
가 . PT 1.0 1.0 5000.0 0.1  
FS FS  
FS

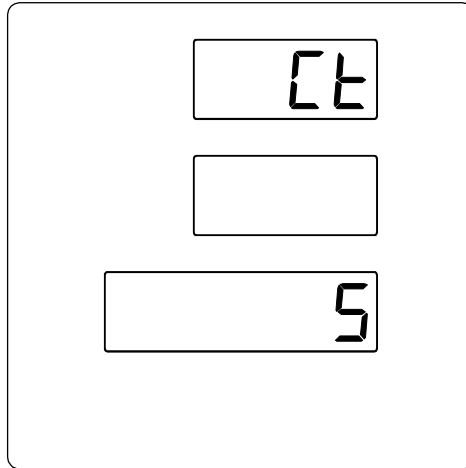


7) CT 1

(Current Transformer: CT)

(default) :

MS	segment	Ct 가	segment
CT 1	5 가	1 20000	1 가
1 CT	5 가		FS
CT	FS		1

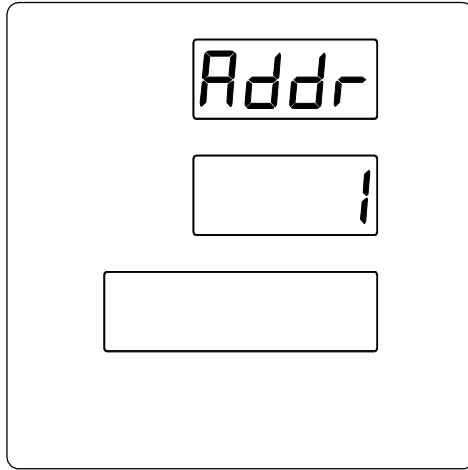


8)

		Master	Slave	KEN-
900	(ID)	ID 1	247	

(default) :

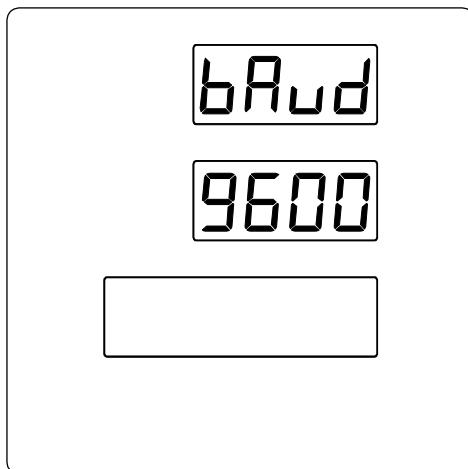
MS	segment	Addr	가	segment
1	가	ID	가	
		KEN-900	ID	
		FS	(ID)	
FS				



9)

KEN-900  
 1200 38400 bps 6 (1200, 2400, 4800, 9600, 19200, 38400)

(default) :  
 MS segment bAud 가 가 segment  
 9600  
 :  
 가 FS  
 , FS



10) (parity check)

KEN-900

(odd)

(even)

(none)

(default) :

MS

segment

PAri

가

segment

nonE 가

:

(odd)

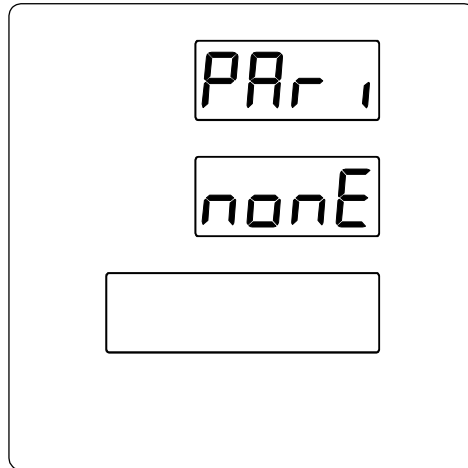
(even)

(nonE)

FS

nonE

FS



11)

KEN-900

5~1000ms

1 가

(default) :

MS

segment

rESP 가

, 가

segment

5 가

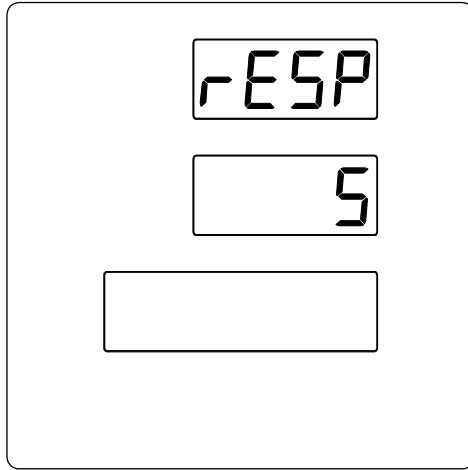
:

5 가

FS

5~1000ms

, FS



12)

(PhaS)

(LinE)

(default) :

MS

segment

voLt 가

, 가

segment

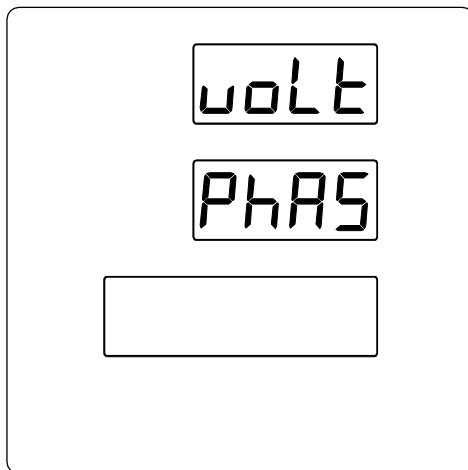
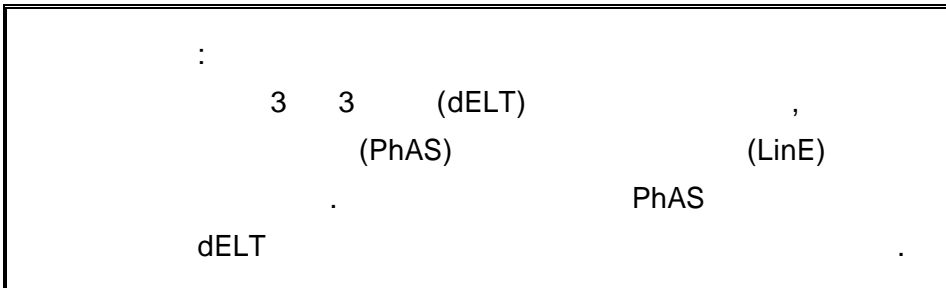
PhAS 가

LinE

FS

PhAS 가

FS



13)

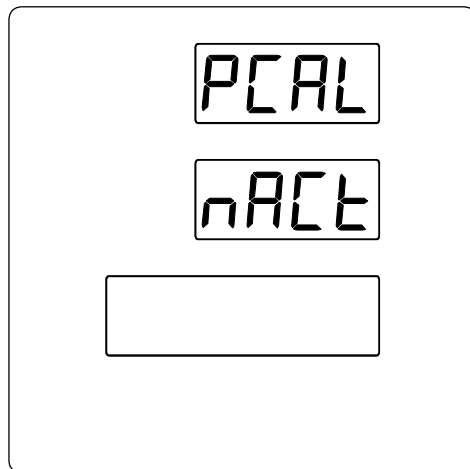
가 . Reactive Power  
Non-active Power .

Reactive power : P Q 가 ,  
 $S = \sqrt{P^2 + Q^2}$  .

Non-Active Power : P 가 , S  
 $S = V \times I$  , non-active N  $\sqrt{S^2 - P^2}$  .

:  
: MS segment PCAL 가 rEAC 가 .

:  
Non-Active Power , FS , 가 rEAC 가  
Non-Active Power , FS





5.1.

segment

	segment ( )		
	PhAS Err	Pos : nEg : Err :	
, ,	2002 4.11 15.16		
	0.001 LED on kWh	0.001kWh~ 999,999,999.999kWh	LED on
	0.001 LED on kVarh	0.001kVarh~ 999,999,999.999kVar	LED on
	Line StAr	StAr : 3 4 dELt : 3 3 1P3L : 3 1P2L : 2	
PT	PT 1.0	1.0~5000.0	
CT 1	CT 5	1~20,000	- CT : 1 - : A
	Addr 1	1~247	
	bAud 9600	1200,2400,4800,9600 19.2(19,200),38.4(38,400)	:bps
Parity Check	PAr, nonE	nonE EVEN odd	
	rESP 20	5~1000ms	:ms
	Volt PhAS	PhAS : LinE :	
	PCAL rEAC	rEAC : Reactive method nACT : Non - Active method	

: FS

: MS

VS AS

## 5.4

Power on

가  
 VS , AS , FS  
 VS : VS / 가  
 AS : AS 가  
 FS : FS , , , , , ,  
 가

## 5.5

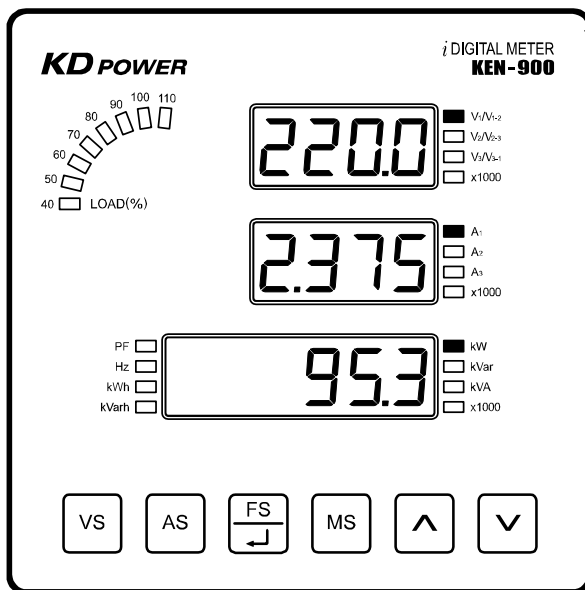
1)

KEN-900 5.3 가  
 LED 가

$V_1/V_{12}, V_2/V_{23}, V_3/V_{31}$

9,999V x1000 LED 가 가 kilo  
 VS / LED 가 1  
 3 LED 가 Phase Line

3 4 (Star) (VoLT) PhAS  
 ( $V_1, V_2, V_3$ ) , LED . VS  
 3 LED 가  
 5.3 220.0V



← 상전압 표시

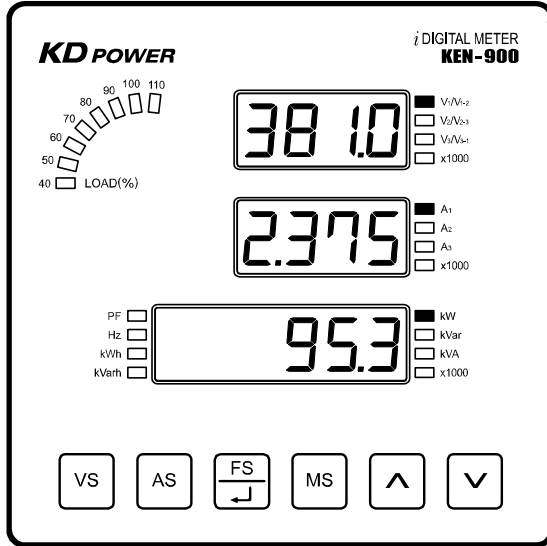
← 전류 표시

← 유효전력 표시

5.3 3 4 (Star) (PhAS)

3 4 (Star) (voLt) LinE  
 (V<sub>1-2</sub>, V<sub>2-3</sub>, V<sub>3-1</sub>) , LED

VS 3 LED 가  
 5.4 381.0V



← 선간전압 표시

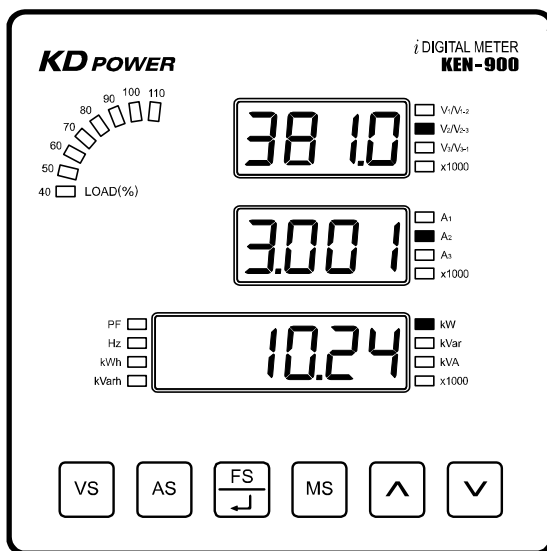
← 전류 표시

← 유효전력 표시

5.4 3 4 (Star) (LinE)

3 3 (dELt) (voLt) LinE  
 (V<sub>1-2</sub>, V<sub>2-3</sub>, V<sub>3-1</sub>) , LED

VS 3 LED 가  
 5.5 381.0V



← 선간전압 표시

← 전류 표시

← 유효전력 표시

5.5 3 3 (dELt) (LinE)

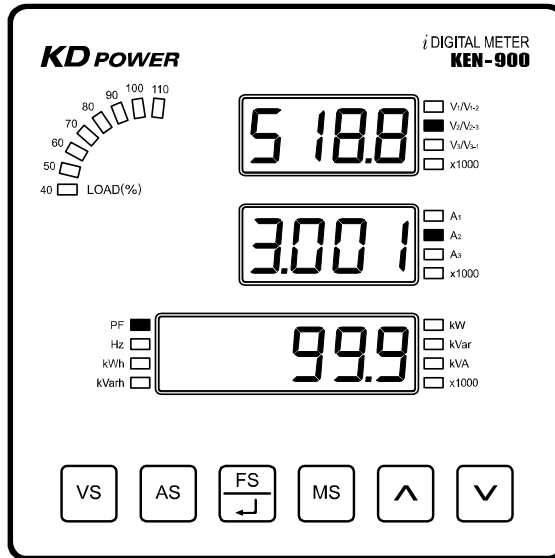
3 3 (dELt) (voLt) PhAS  
 LinE .(dELt )

KEN-900 5.3~5.5 3 A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>  
 LED 가  
 3 LED 가  
 9,999A x1000 LED 가 Kilo

2)  
 KEN-900 5.3~5.5 , ,  
 LED 가  
 9999kVA, 9999kVar, 9999kW 가  
 x1000 LED 가 가 M( 가)

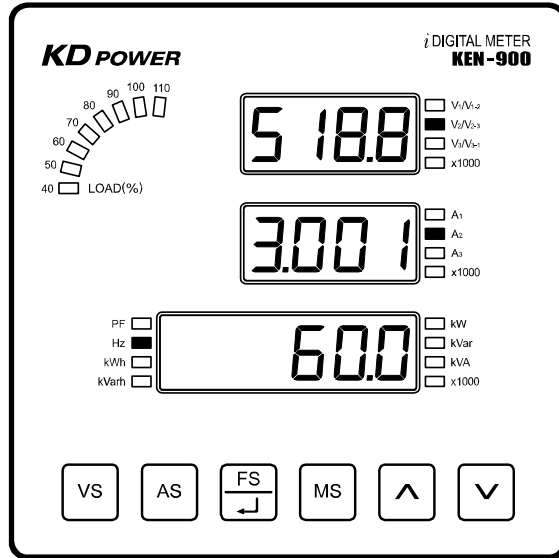
3) ,  
 KEN-900 , 5.6 ~ 5.7 .  
 -99.9%~+100% , (-) 가  
 45.0~65.0Hz

역률표시 →



5.6

주파수 표시 →



5.7

4)

KEN-900

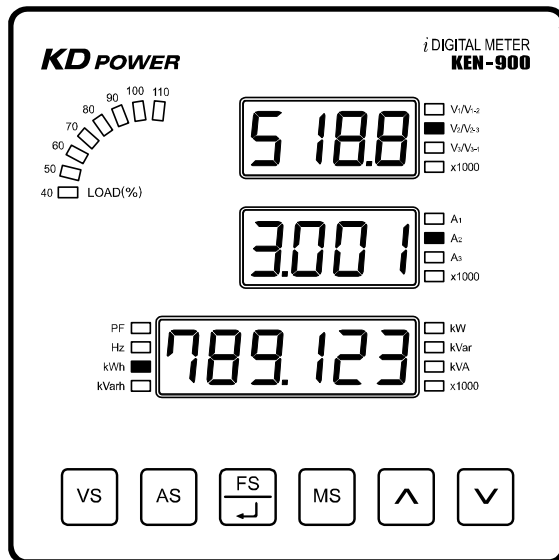
5.8                      789.123kWh  
 999999 × 1000kWh  
 (EEPROM)

5.8

6

가

유효  
 전력량 표시 →



5.8

5)

KEN-900

5.10

6

5.10

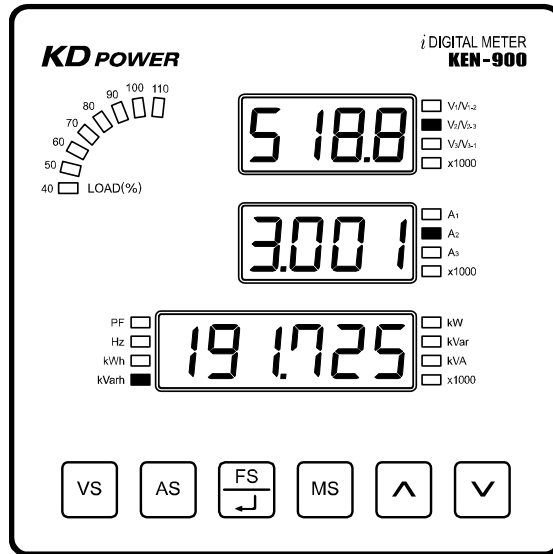
191.725 kVarh

999999 × 1000kVarh

가

(EEPROM)

무효 전력량 표시 →



5.10

6) %

5.3~

5.10

KEN-900

%

5.3

8

LED

4

LED

, 2

LED

, 2

LED 가

5.3

LED

		LED		
0	<40%	LED OFF		
40%	<50%	1		
50%	<60%	2		
60%	<70%	3		
70%	<80%	4		
80%	<90%	4	+	1
90%	<100%	4	+	2
100%	<110%	4	+	2 + 1
110%	<	4	+	2 + 2

KEN-900

가 가

:	: KEN-900
: 1	:
_____	
_____	
TEL	



: 61-2  
TEL.031-980-8000( ), FAX.031-980-8044  
: 080-223-3000

Memo.