FLOW TOTALIZER

MODEL : AFT96

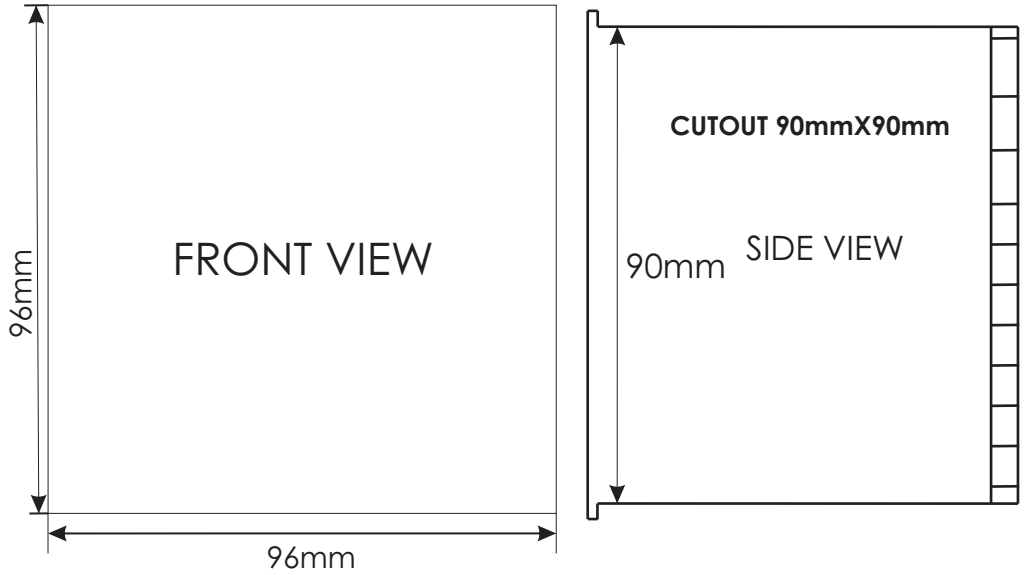
USER MANUAL

VER. 1.0

ARANKA

MENU

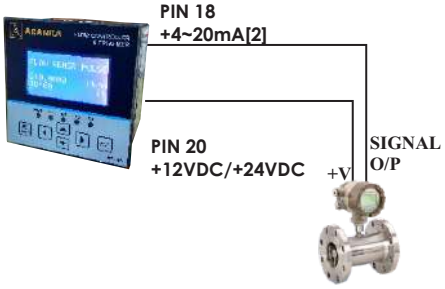
DIMENSION



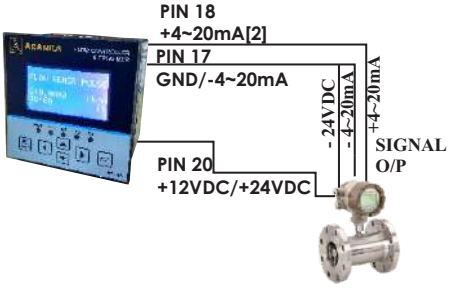
TERMINAL DIAGRAM

WIRING CONNECTION FOR PULSE TYPE FLOWMETER

WIRING CONNECTION
FOR [2 WIRE] 4~20mA OUTPUT FLOWMETER



WIRING CONNECTION
FOR [4 WIRE] 4~20mA OUTPUT FLOWMETER



TERMINAL DISCRIPTION

1 L [90~260VAC]
2 N [90~260VAC]
3 NO [RELAY 4]
4 C [RELAY 4]
5 NO [RELAY 3]
6 C [RELAY 3]
7 NO [RELAY 2]
8 C [RELAY 2]
9 NO [RELAY 1]
10 C [RELAY 1]
11 +4~20mA[Ch1 OUTPUT]
12 -4~20mA [Ch1 OUTPUT]
13 +4~20mA[Ch2 OUTPUT]
14 -4~20mA [Ch2 OUTPUT]
15 +5 PULSE [+5VDC POWER FOR PULSE INPUT]
16 + PULSE [PULSE INPUT]
17 GND/-4~20mA[4~20mA INPUT FROM FLOW SENSOR & GROUND FOR PULSE SENSOR]
18 +4~20mA [2][4~20mA INPUT FROM FLOW SENSOR]
19 -NA-
20 +12VDC /+24VDC [OUTPUT] [EXTERNAL POWER FOR SENSOR]
21 -NA-
22 -NA-
23 -NA-
24 -NA-
25 -NA-
26 -NA-
27 -NA-
28 -NA-
29 RS485 + [COMMUNICATION OPTIONAL]
30 RS485 - [COMMUNICATION OPTIONAL]

SPECIFICATIONS

POWER : 90VAC ~260VAC

INPUT : PULSE INPUT & 4~20mA BOTH

RANGE : SCALABLE

DISPLAY : LCD [16X4]

CURRENT FLOW DIGITAL OUTPUT : 3A RELAY 1CO.

TOTAL FLOW DIGITAL OUTPUT : 3A RELAY 1CO.

CURRENT FLOW ANALOG OUTPUT : 4~20mA [RETRANSMISSION]

CALIBRATION : FRONT KEY

CURRENT CONSUMPTION : 55mA AC

FLOWMETER TYPE : FRONT KEY SELECTABLE

KEY FUNCTIONS

PRESS & HOLD FOR 3 SEC. SET/BACK KEY TO ENTER IN MENU
FOR BACK TO MAIN SCREEN

TO SHIFT CURSER LEFT

TO INCREMENT CURSER / NUMERIC

TO DECREMENT CURSER / NUMERIC

TO SHIFT CURSER RIGHT

TO STORE DATA OR CHANGES

SELECT FLOWMETER TYPE

PRESS SET/ BACK KEY AND HOLD FOR 3 SECONDS.THE SCREEN WILL SHOW AS BELOW

```
>FLOW METER TYPE
 SCALING
 RELAY SET POINT
 CALIBRATION
```

NOW PRESS ENT KEY THE SCREEN WILL SHOW AS BELOW

```
>GEN PARSHALL FL
 PALM-BWL D/2 FL
 PALM-BWL D/3 FL
 PALM-BWL RCT FL
```

BY PRESSING  KEY YOU WILL SELECT BELOW TYPE OF FLOW SENSORS

TO PER FORM VARIOUS APPLICATION

```
>KHAFAGI VENT FL
 BOTTOM STEP  WR
 SUP RCT/BAZN WR
 TRAPEZOIDAL  WR
```

```
>SPL TRPZID(4:1)
 V-NOTCH      WEIR
 THOMSON(90)  WR
 NIVELCO GPA-1PX
```

```
>FLOW SENSR PULS
 FLOW SENSR 4-20
```

* DESCRIPTION OF ALL FLOW TYPE

1) GEN PARSHALL FL : GENERAL PARSHALL FLUME

2) PALM-BWL D/2 FL : PALMER-BOWLUS (D/2) FLUME

3) PALM-BWL D/3 FL : PALMER-BOWLUS (D/3) FLUME

4) PALM-BWL RCT FL : PALMER-BOWLUS(RECTANGULAR) FLUME

5) KHAFAGI VENT FL : KHAFIGI VENTURI FLUME

6) BOTTOM STEP WR : BOTTOM STEP WEIR

7) SUP RCT/BAZN WR : SUPPRESSED RACTANGULAR OR BAZIN WEIR

8) TRAPEZOIDAL WR : TRAPEZOIDAL WEIR

9) SPL TRPZID(4:1) : SPECIAL TRAPEZOIDAL (4:1) WEIR

10) V-NOTCH WEIR : V-NOTCH WEIR

11) THOMSON(90) WR : THOMSON(90 DEGREE NOTCH) WEIR

12) NIVELCO GPA-1PX : NIVELCO PARSHALL FLUMES (GPA1P1....GPA-1P9)

13) FLOW SENSR PULS : ANY FLOW SENSOR WHICH GENERATE PULSE OUT PUT (e.g. PEDDLE WHEEL, TURBINE ,ELECTROMAGNETIC etc..)

14) FLOW SENSR 4-20 : ANY FLOW TRANSMITTER WITH SENSOR WITCH GENERATE 4~20mA (e.g. PEDDLE WHEEL, TURBINE ,ELECTROMAGNETIC VORTEX FLOWMETER, OVAL GEAR etc..)

SELECTION OF FLOW METER

1) GEN PARSHALL FL : GENERAL PARSHALL FLUME

IF YOUR p42 HEIGHT IS <2.44METERS THAN FOLLOW AS LISTED
AFTER SELECTING FLOWMETER TYPE PRESS ENT KEY THE SCREEN SHOWS AS BELOW

>GEN PARSHALL FL PALM-BWL D/2 FL PALM-BWL D/3 FL PALM-BWL RCT FL	PRESS → ENT	GENERAL PARSHALL FLUME << = CANCEL OK=>>		
PRESS → ENT	SELECT P 42 WIDTH > P42 < 2.44 mtr P42 > 2.5 mtr << = CANCEL OK=>>	PRESS → ENT	ENTER P42(WIDTH) 0.305<P42<2.44 m P42 : 01.000mtr.	

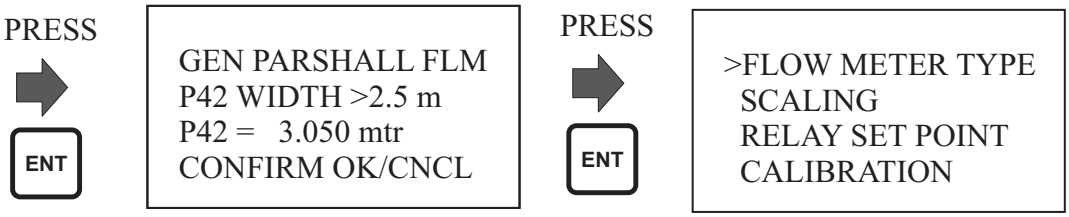
ENTER HEIGHT P42 IN METERS USING SHIFT & UP/DOWN KEY

PRESS → ENT	GEN PARSHALL FLM P42 WIDTH <2.44m P42 = 01.000 mtr CONFIRM OK/CNCL	PRESS → ENT	>FLOW METER TYPE SCALING RELAY SET POINT CALIBRATION

IF YOUR p42 HEIGHT IS >2.44METERS THAN FOLLOW AS LISTED
AFTER SELECTING FLOWMETER TYPE PRESS ENT KEY THE SCREEN SHOWS AS BELOW

>GEN PARSHALL FL PALM-BWL D/2 FL PALM-BWL D/3 FL PALM-BWL RCT FL	PRESS → ENT	GENERAL PARSHALL FLUME << = CANCEL OK=>>	
PRESS → ENT	SELECT P 42 WIDTH P42 < 2.44 mtr > P42 > 2.5 mtr << = CANCEL OK=>>	PRESS → ENT	SELECT P42 > 2,5m > 3.050 7.620 4.570 9.140 6.100 15.240

SELECT P 42 FROM GIVEN OPTION IN METERS



2) PALM-BWL D/2 FL : PALMER-BOWLUS (D/2) FLUME

UNDER PROGRESS [-NA-]

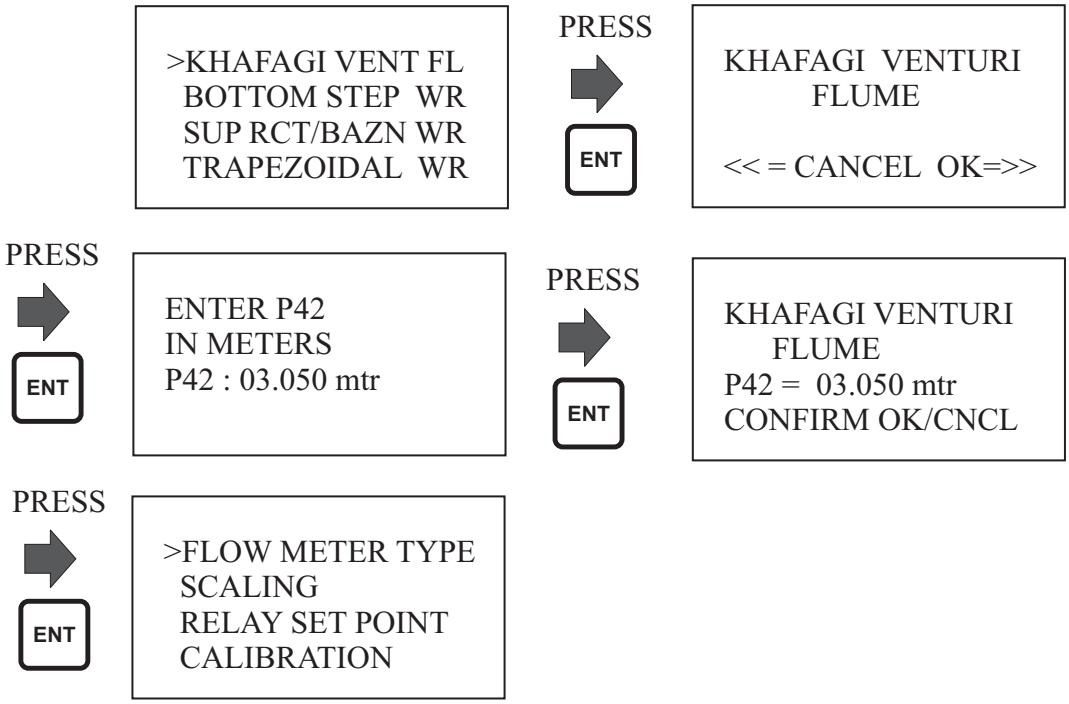
3) PALM-BWL D/3 FL : PALMER-BOWLUS (D/3) FLUME

UNDER PROGRESS [-NA-]

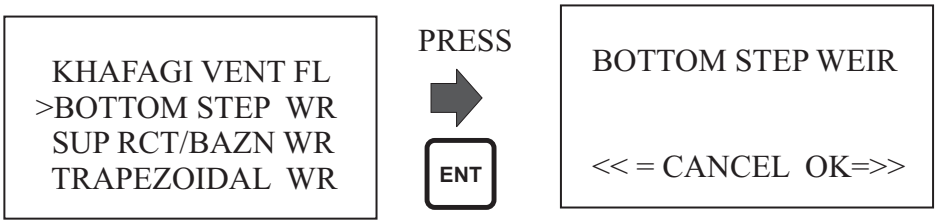
4) PALM-BWL RCT FL : PALMER-BOWLUS(RECTANGULAR) FLUME

UNDER PROGRESS [-NA-]

5) KHAFAGI VENT FL : KHAFIGI VENTURI FLUME



6) BOTTOM STEP WR : BOTTOM STEP WEIR



PRESS

ENTER P42
0.3< P42 < 15m
P42 : 03.050 mtr

ENTER HEIGHT P42 IN METERS USING SHIFT & UP/DOWN KEY

PRESS

BOTTOM STEP WEIR

P42 = 03.050 mtr
CONFIRM OK/CNCL

PRESS

>FLOW METER TYPE
SCALING
RELAY SET POINT
CALIBRATION

7) SUP RCT/BAZN WR : SUPPRESSED RACTANGULAR OR BAZIN WEIR

KHAFAGI VENT FL
BOTTOM STEP WR
>SUP RCT/BAZN WR
TRAPEZOIDAL WR

PRESS

SUPPRESSED
RECT/BAZIN WEIR

<< = CANCEL OK=>>

PRESS

SUP RCT/BAZN WR
> P41 : 00.000 m
P42 : 03.050 m
SAVE EXIT

PRESS

ENTER P41
0.15 < P41 < 0.8
P41 : 00.000mtr

ENTER HEIGHT P41 IN METERS USING SHIFT & UP/DOWN KEY THE VALUE MUST BE IN BETWEEN 0.15mtr TO 0.8 mtr

PRESS

SUP RCT/BAZN WR
P41 : 00.000 m
> P42 : 03.050 m
SAVE EXIT

PRESS

ENTER P42
0.15 < P42 < 3 m
P42 : 03.050mtr

ENTER HEIGHT P42 IN METERS USING SHIFT & UP/DOWN KEY THE VALUE MUST BE IN BETWEEN 0.15mtr TO 3 mtr

PRESS

SUP RCT/BAZN WR
P41 : 00.000 m
P42 : 03.050 m
> SAVE EXIT

PRESS

SUP RCT/BAZN WR
P41 : 00.000 m
P42 : 03.050 m
CONFIRM OK/CNCL

PRESS


```
>FLOW METER TYPE
 SCALING
 RELAY SET POINT
 CALIBRATION
```

8) TRAPEZOIDAL WR : TRAPEZOIDAL WEIR

```
 KHAFAGI VENT FL
 BOTTOM STEP WR
 SUP RCT/BAZN WR
>TRAPEZOIDAL WR
```

PRESS


```
TRAPEZOIDAL WEIR


<< = CANCEL  OK=>>
```

PRESS


```
TRAPEZOIDAL WEIR
> P41 : 000 '
  P42 : 02.050 m
  SAVE      EXIT
```

PRESS


```
ENTER P41
20 < P41 < 100'
P41 : 000 ' (deg)
```

ENTER HEIGHT P41 IN METERS USING SHIFT & UP/DOWN KEY THE VALUE MUST BE IN BETWEEN 20 Degree TO 100 Degree

PRESS


```
TRAPEZOIDAL WEIR
  P41 : 000 '
> P42 : 02.050 m
  SAVE      EXIT
```

PRESS


```
ENTER P42
0.5  < P42 <   15 m
P42 : 02.050 mtr
```

ENTER HEIGHT P42 IN METERS USING SHIFT & UP/DOWN KEY THE VALUE MUST BE IN BETWEEN 0.5 Meter To 15 Meter

PRESS


```
TRAPEZOIDAL WEIR
  P41 : 000 '
  P42 : 02.050 m
> SAVE      EXIT
```

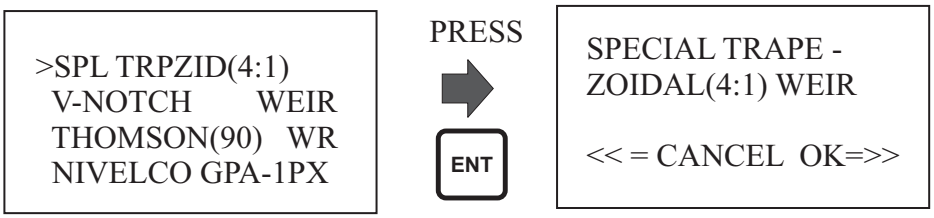
PRESS

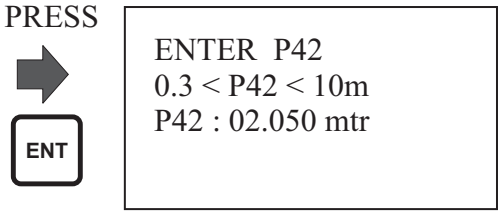

```
TRAPEZOIDAL WEIR
  P41 : 000 '
  P42 : 02.050 m
CONFIRM OK/CNCL
```

PRESS

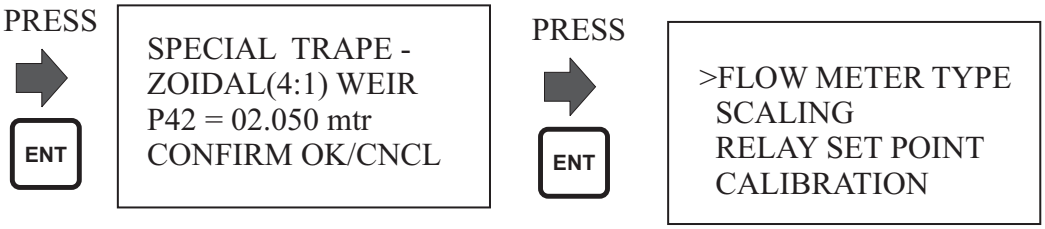

```
>FLOW METER TYPE
 SCALING
 RELAY SET POINT
 CALIBRATION
```

9) SPL TRPZID(4:1) : SPECIAL TRAPEZOIDAL (4:1) WEIR

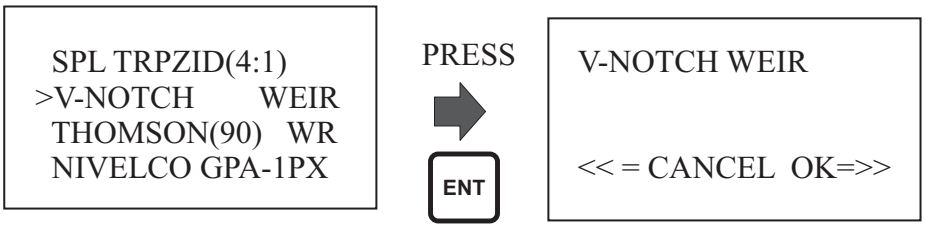


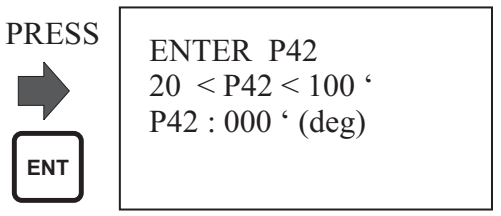


ENTER HEIGHT P42 IN METERS USING SHIFT & UP/DOWN KEY THE VALUE MUST BE IN BETWEEN 0.3 Meter To 10 Meter

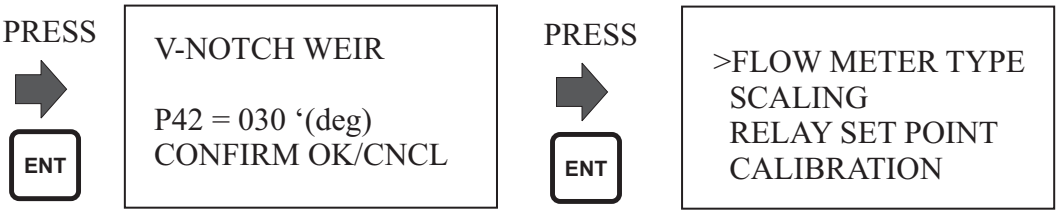


10) V-NOTCH WEIR : V-NOTCH WEIR

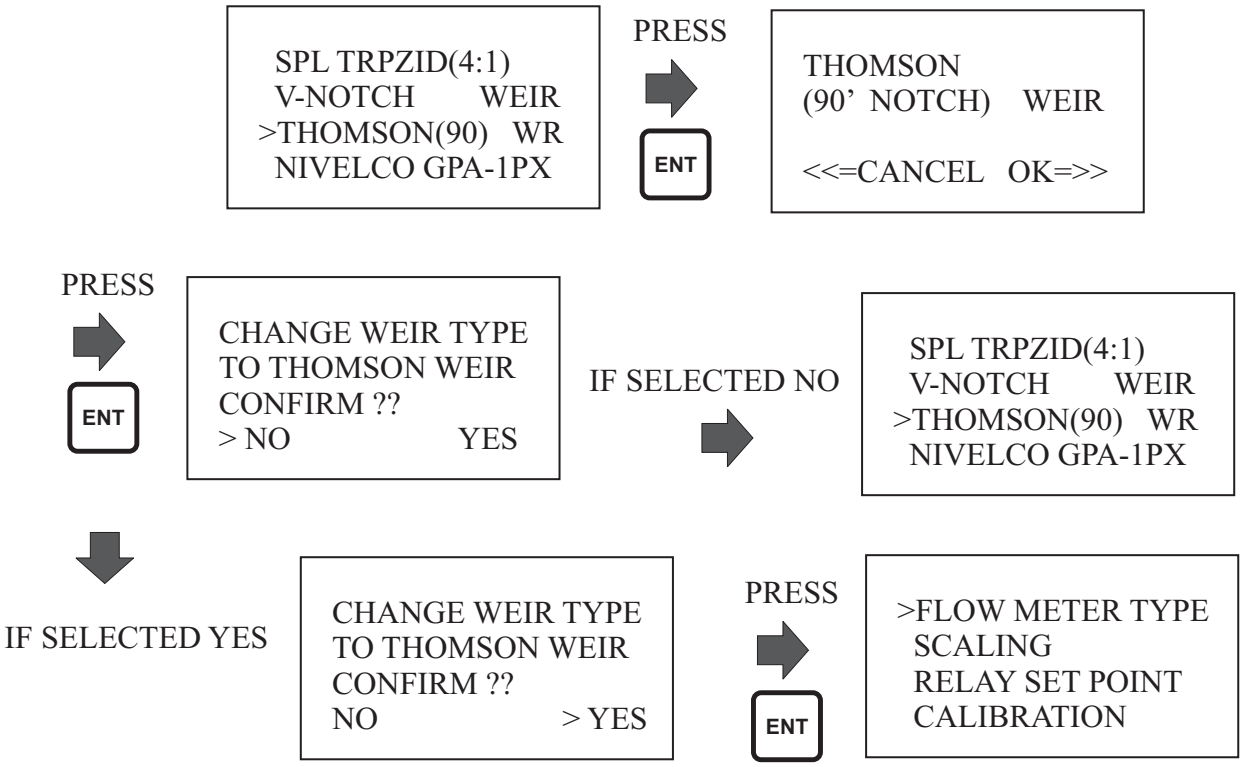




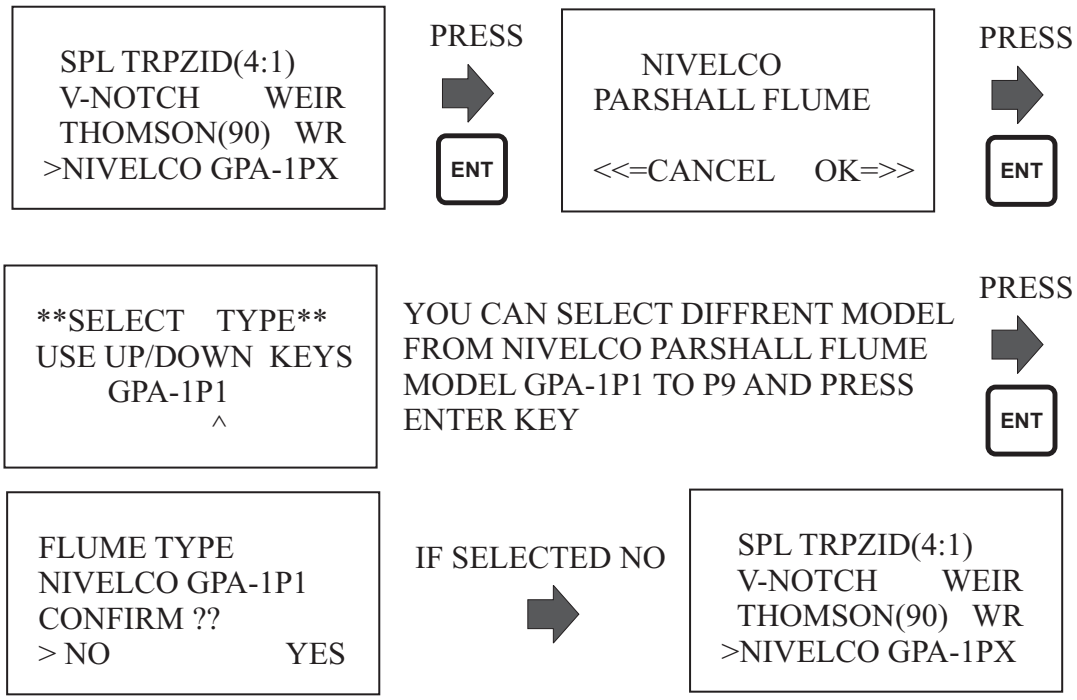
ENTER HEIGHT P42 IN METERS USING SHIFT & UP/DOWN KEY THE VALUE MUST BE IN BETWEEN 20 Degree TO 100 Degree



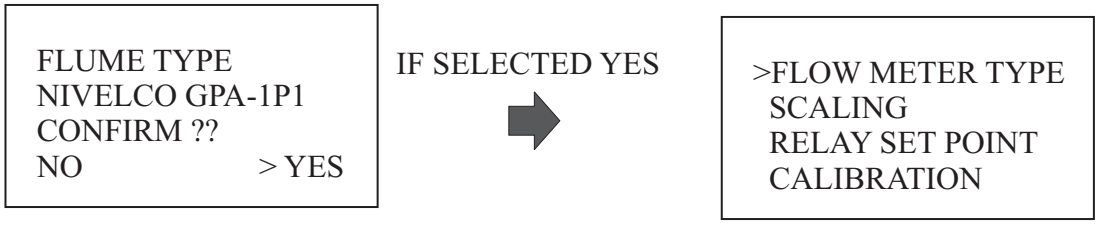
11) THOMSON(90) WR : THOMSON(90 DEGREE NOTCH) WEIR



12) NIVELCO GPA-1PX : NIVELCO MAKE GPA 1PX PARSHALL FLUME

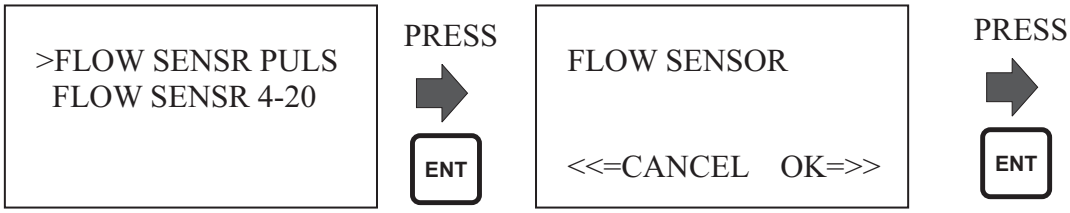


12) NIVELCO GPA-1PX : NIVELCO MAKE GPA 1PX PARSHALL FLUME

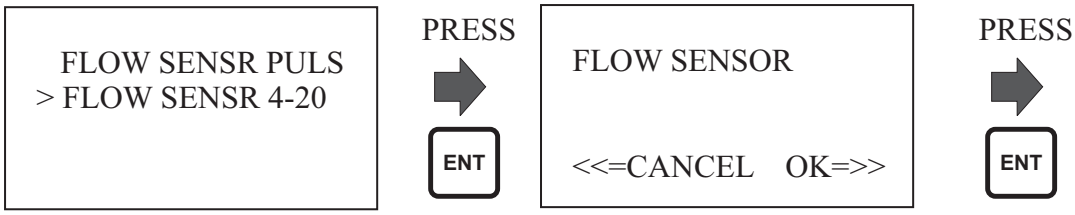


AS PER ABOVE SAME PROCESS YOU CAN USE FOR GPA-1P1 TO GPA-1P9

13) FLOW SENSR PULS : FLOW SENSORS WHOM OUTPUT IS PULSE



14) FLOW SENSR 4-20 : FLOW SENSORS WHOM OUTPUT IS 4~20mA

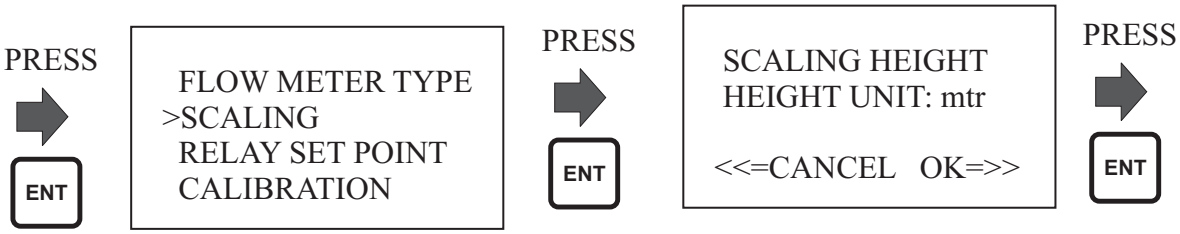


14) FLOW SENSR 4-20 : FLOW SENSORS WHOM OUTPUT IS 4~20mA

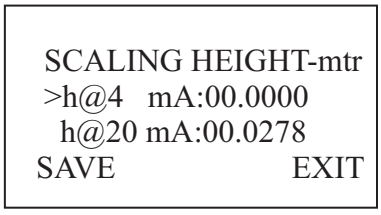
CHANGE METER TYP TO FLOW SENSOR 4-20 mA i/p TYPE?? NO > YES	IF SELECTED YES 	>FLOW METER TYPE SCALING RELAY SET POINT CALIBRATION

SCALING FLOW

1) SCALING OF ALL FLUMES & WEIR

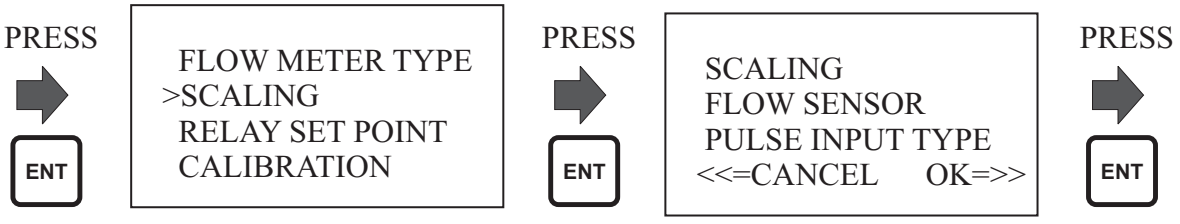


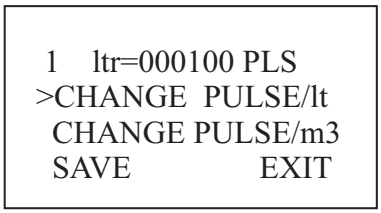
* FOR SCALING OF ALL FLUMES & WEIR ARE IN HEIGHT. THE HEIGHT FROM LEVEL SENSOR IN METERS



*ENTER VALUE OF HEIGHT AT 4 mA & HEIGHT AT 20mA
* SET CURSOR TO SAVE AND PRESS ENTER KEY
* MAKE CONFIRM BY PRESSING ENTER KEY

2) SCALING OF PULSE INPUT





*ENTER NOS OF PULSES GENERATED FOR 1 LITER OR PULSES GENERATED FOR 1 M3 VOLUME
*SET CURSOR TO SAVE AND PRESS ENTER KEY
* MAKE CONFIRM BY PRESSING ENTER KEY

3) SCALING OF 4~20mA INPUT

PRESS


```
  FLOW METER TYPE
>SCALING
  RELAY SET POINT
  CALIBRATION
```

PRESS


```
SCALING FLOW
FLOW UNIT :  m3/h

<<=CANCEL      OK=>>
```

PRESS


```
SCALING FLOW -m3/h
>Q@4     mA:00000.0
 Q@20    mA:00100.0
SAVE            EXIT
```

*ENTER VALUE OF ZERO 4mA & SPAN 20mA IN m3/h ONLY
*SET CURSOR TO SAVE AND PRESS ENTER KEY
* MAKE CONFIRM BY PRESSING ENTER KEY

RELAY SET POINT

PRESS


```
  FLOW METER TYPE
  SCALING
>RELAY SET POINT
  CALIBRATION
```

PRESS


```
>FLOW SETPOINT
 TOTAL FLOW S/P

<<=CANCEL    OK=>>
```

*THERE TWO RELAY OUTPUTS ONE FOR CURRENT FLOW SET POINT
SECOND ONE IS FOR TOTAL FLOW SET POINT.

*** FOR CURRENT FLOW SET POINT**

```
>Q SP:00050.0000
 Q < S/P, REL ON
 HYST:00010.0000
 SAVE          EXIT
```

* Q SP: IS SET POINT VALUE PRESS


```
ENTER FLOW Q FOR
RELAY SET POINT
Q S/P:00050.0000
```

PRESS


```
 Q SP:00050.0000
> Q < S/P, REL ON
 HYST:00010.0000
 SAVE          EXIT
```

* YOU CAN SELECT RELAY ON IN TWO MODE

1) IF CURRENT FLOW IS LESS THAN SET POINT
   RELAY ON FLOW<S/P
2) IF CURRENT FLOW IS GREATER THAN SET POINT
   RELAY ON FLOW>S/P

PRESS


```
RELAY ON WHEN
> FLOW < S/P
  FLOW > S/P
<<=CANCEL    OK=>>
```

PRESS


```
 Q SP:00050.0000
> Q < S/P, REL ON
 HYST:00010.0000
 SAVE          EXIT
```

```
 Q SP:00050.0000
 Q < S/P, REL ON
> HYST:00010.0000
 SAVE          EXIT
```

PRESS


```
ENTER HYSTERASIS
FOR FLOW S/P
HYST:  00010.0000
```

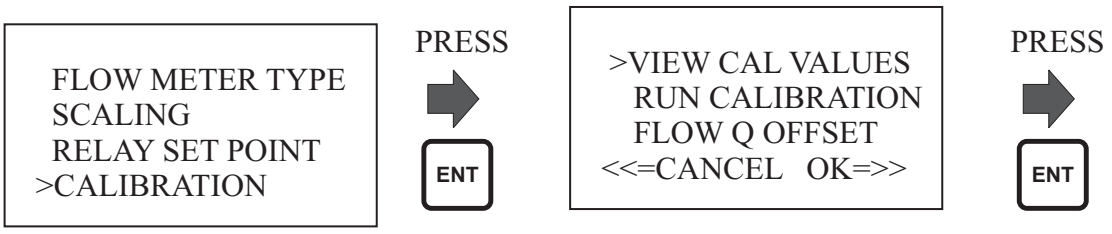
* SET HYSTERISIS CONTROL FOR RELAY. PRESS


```
 Q SP:00050.0000
 Q < S/P, REL ON
> HYST:00010.0000
 SAVE          EXIT
```

*SET CURSOR TO SAVE AND PRESS ENTER KEY
* MAKE CONFIRM BY PRESSING ENTER KEY

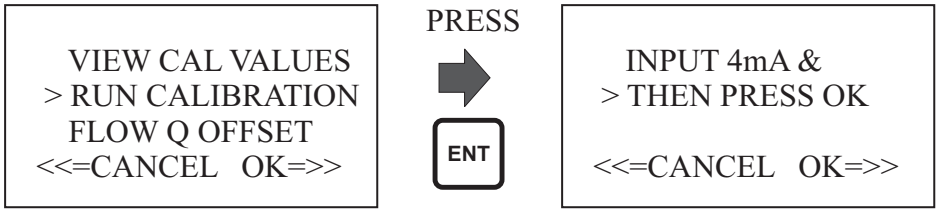
CALIBRATION

>> VIEW CAL VALUES

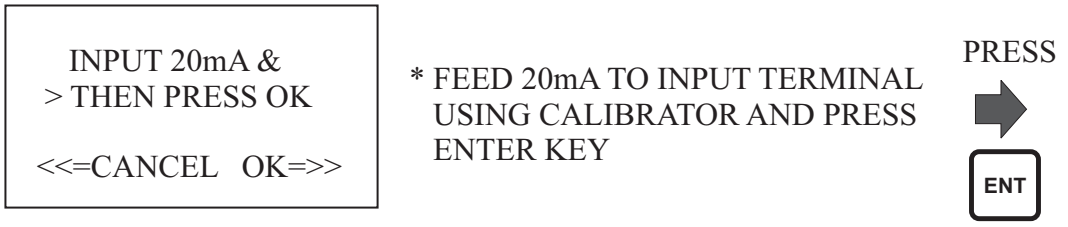


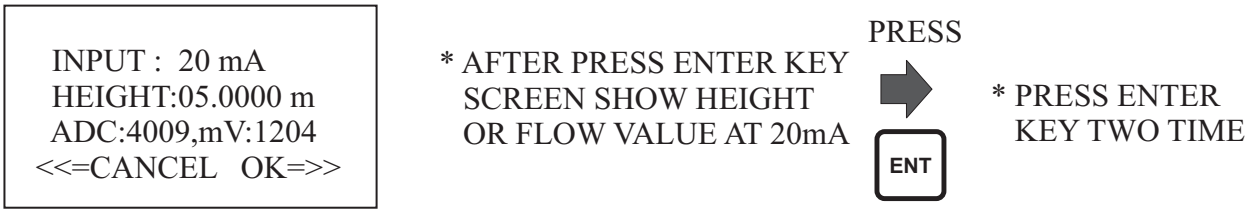
*VIEW CAL VALUES IS USE FOR BASIC TECHNICAL DETAILS [FACTORY USE ONLY]

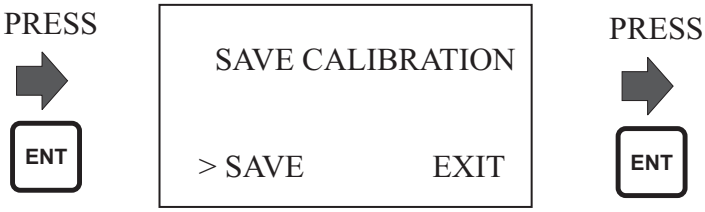
>> RUN CALIBRATION



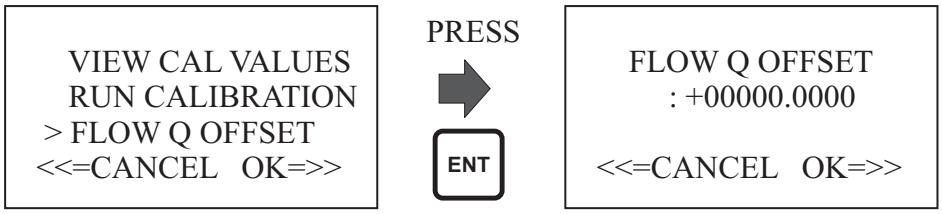
*ABOVE SCREEN FOR CALIBRATION OF INPUT [4~20mA] COMES FROM LEVEL TRANSMITTER [FOR FULMES & WEIR] OR FLOW TRANSMITTER.
* FEED 4mA TO INPUT TERMINAL USING CALIBRATOR AND PRESS ENTER KEY



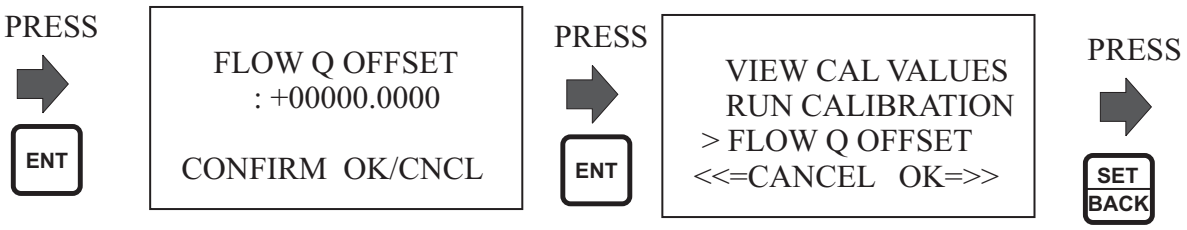




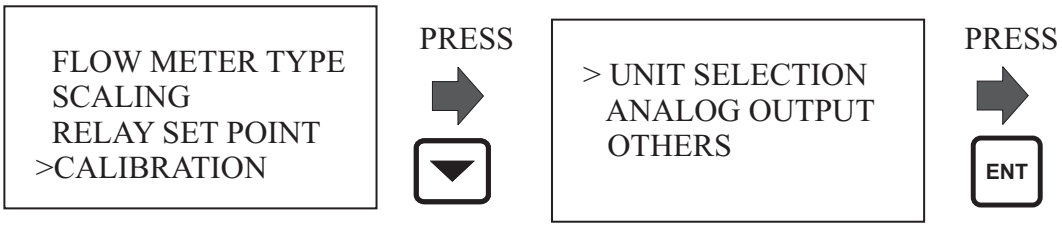
>> FLOW Q OFFSET

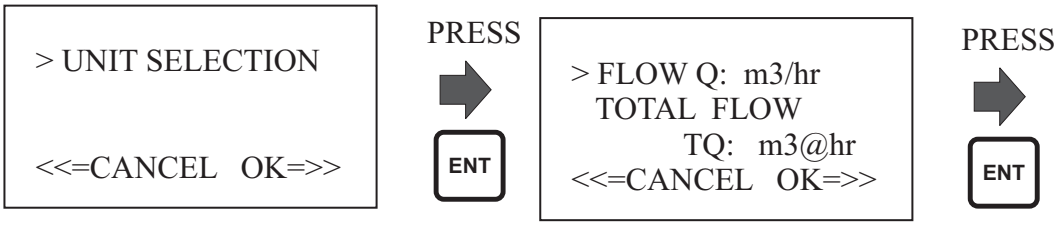


*FLOW Q OFFSET IS USE TO ENTER OFFSET FOR REDUCE ERROR GENERATED DUE TO ACCURACY BY SENSOR OR SYSTEM. BY PRESSING ENTER KEY A CURSOR WILL APPEAR AND FEED DESIRE VALUE AND PRESS ENTER KEY THE CURSOR WILL DISAPPEAR AND PRESS ENTER KEY ONCE AGIN THE SCREEN SHOW AS LISTED.



UNIT SELECTION

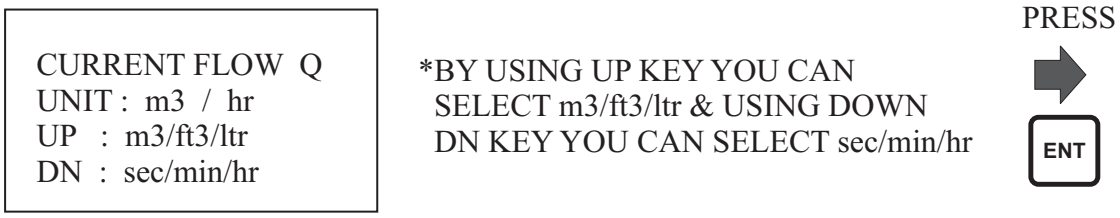


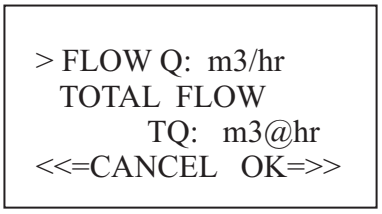


*AS PER ABOVE SCREEN YOU CAN SELECT CURRENT FLOW MEASURING UNIT & TOTAL FLOW MEASURING UNIT.
CURRENT FLOW UNIT ARE
m3/hr, m3/sec, m3/min
ft3/hr, ft3/sec, ft3/min
ltr/hr, ltr/sec, ltr/min

TOTAL FLOW UNIT
m3 / ft3 / ltr

>> CURRENT FLOW UNIT SELECTION





>> TOTAL FLOW UNIT SELECTION

FLOW Q: m3/hr
> TOTAL FLOW
TQ: m3@hr
<<=CANCEL OK=>>

PRESS

TOTAL FLOW TQ
UNIT : m3 @ hr
UP : m3/ft3/ltr
DN : sec/min/hr

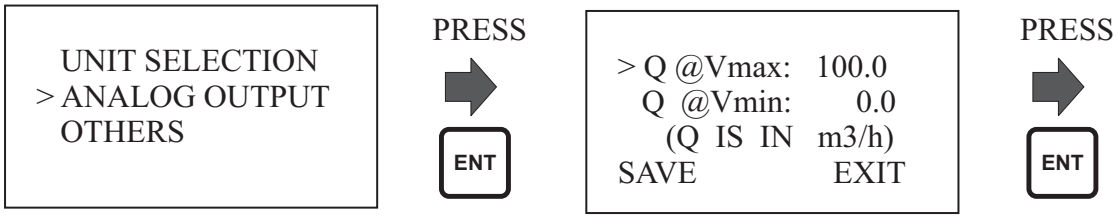
*BY USING UP KEY YOU CAN SELECT m3/ft3/ltr & USING DOWN DN KEY YOU CAN SELECT sec/min/hr

PRESS

FLOW Q: m3/hr
> TOTAL FLOW
TQ: m3@hr
<<=CANCEL OK=>>

*SET CURSOR TO SAVE AND PRESS ENTER KEY
* MAKE CONFIRM BY PRESSING ENTER KEY

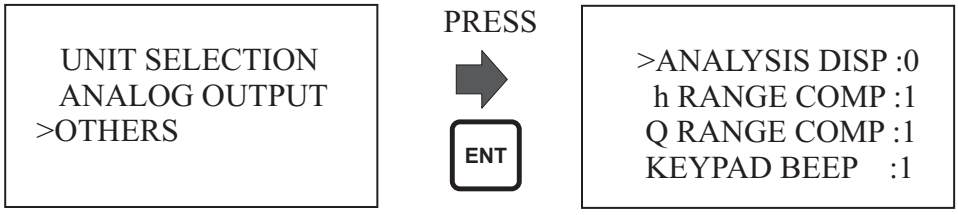
ANALOG OUTPUT



*YOU CAN SCALE OUTPUT 4~20mA BY FEED VALUE OF Vmin [Vmin =4mA] & Vmax [Vmax=20mA]. **NOTE: THE RANGE MUST BE IN m3/h ONLY**

*SET CURSOR TO SAVE AND PRESS ENTER KEY
* MAKE CONFIRM BY PRESSING ENTER KEY

OTHERS [USE FOR FACOTRY USE ONLY]



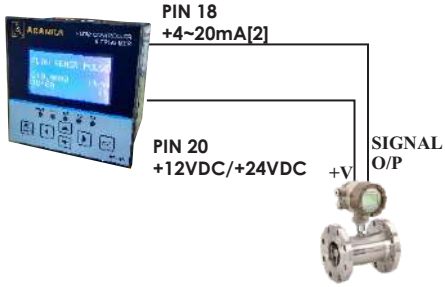
APPLICATIONS

>> PADDEL WHEEL / OVEL GEAR FLOW SENSOR [PULSE INPUT]

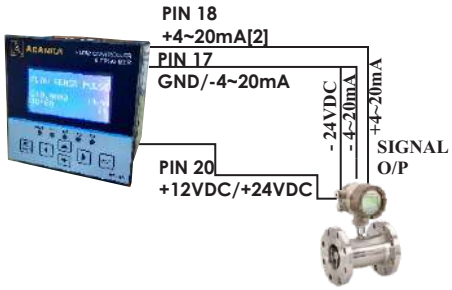
WIRING CONNECTION FOR PULSE TYPE FLOWMETER

>> TURBINE FLOW SENSOR [4~20mA INPUT]

WIRING CONNECTION
FOR [2 WIRE] 4~20mA OUTPUT FLOWMETER



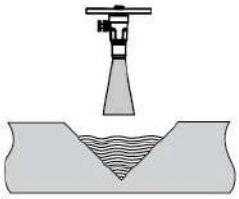
WIRING CONNECTION
FOR [4 WIRE] 4~20mA OUTPUT FLOWMETER



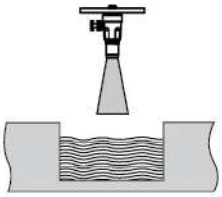
* TURBINE FLOW SENSOR WITH TRANSMITTER
* ELECTROMAGNETIC FLOW SENSOR WITH TRANSMITTER
* VORTEX FLOW SENSOR WITH TRANSMITTER
* ULTRASONIC FLOWMETER

>> OPEN CANNEL FLOW SENSOR [4~20mA INPUT]

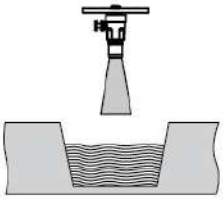
V-Notch
Sharp-Crested Weir



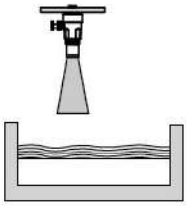
Rectangular
Sharp-Crested Weir



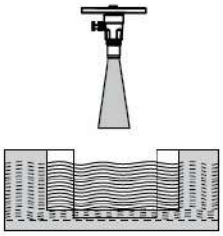
Trapezoidal
Sharp-Crested Weir



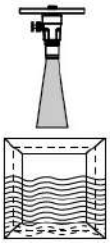
Rectangular Constricted
Sharp-Crested Weir



Parshall Flumes



Khafagi-Venturi Flumes



Palmer-Bowles Flumes