USER'S MANUAL
FOR
FLOW RATE CONTROLLER
FRC-2310-A

FLOW RATE CONTROLLER

FRC 2310A

ACTUAL FLOW RATE   LPH / mcubePH

SET FLOW RATE   LPH / mcubePH

PROG | ▲ | ▼ | ESC / TARE

OUT 1   PULSE IN   OUT 2

NK Instruments Pvt. Ltd.

1	2	3	4	5	6	7	8	9
12V	IN+	GND						
NPN PULSE IN								

MODEL: FRC2310A

NC2	NO2	C2	NC1	NO1	C1	E	N	L
RELAY OUT # 2			RELAY OUT # 1			230V MAINS IN		
10	11	12	13	14	15	16	17	18
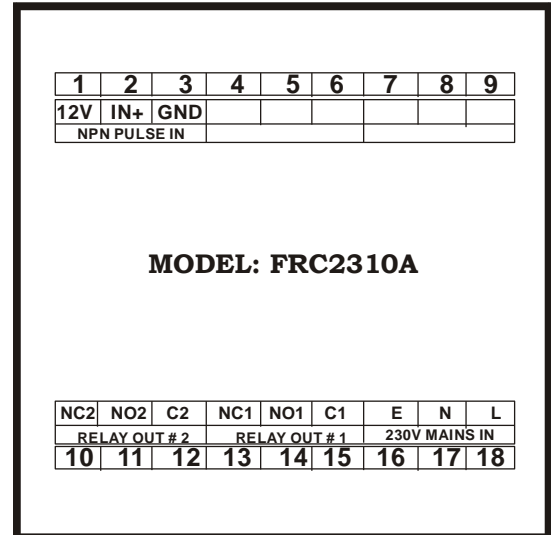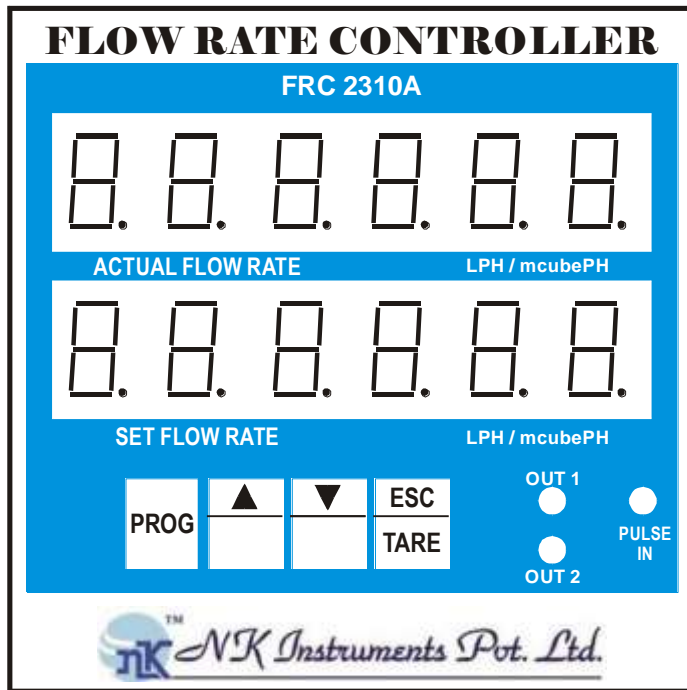
INTRODUCTION:

FLOW RATE CONTROLLER FRC2310A IS A MICROCONTROLLER BASED INTELLIGENT FLOW RATE INDICATOR AND CONTROLLER. IT CAN BE INTERFACED TO PULSE TYPE SENSOR INPUT WITH K FACTOR FOR FLOW MEASURMENT. THE FLOW TOTALISER UNIT HAS TWO SIX DIGIT LED DISPLAY TO INDICATE, THE ACTUAL FLOW RATE AND THE SET FLOW RATE (LOWER DISPLAY).

THE FLOW RATE IS INDICATED UPTO FIVE DIGITS. THE FLOW RATE INDICATOR READS THE SIGNAL FROM THE PULSE INPUT TYPE SENSOR. IT ADD'S THE K FACTOR VALUE TO THE FLOW PULSES COUNTED EVERY SECOND AS RECEIVED FROM THE FLOW SENSOR AND COMPUTES THE FLOW RATE (EITHER FLOW RATE PER HOUR OR FLOW RATE PER MINUTE AS PROGRAMMED BY THE USER).

THE FLOW RATE UNIT FRC2310A HAS 12VDC OUTPUT FOR THE FLOW SENSOR EXCITATION (MAX 50mA).

THE FLOW RATE UNIT FRC2310A FEATURES TWO POTENTIAL FREE RELAY OUTPUTS AND TWO PROGRAMMABLE SET FLOW RATE VALUE. USER CAN PROGRAM HIGH SET FLOW ARTE AND LOW SET FLOW RATE. IF THE ACTUAL FLOW RATE IS ABOVE THE HIGH SET FLOW RATE THEN RELAY # 1 IS OUT ON. IF THE ACTUAL FLOW RATE IS BELOW THE HIGH SET FLOW RATE THEN RELAY # 1 IS PUT OFF. IF THE ACTUAL FLOW RATE IS ABOVE THE LOW SET FLOW RATE THEN RELAY # 2 IS OUT OFF. IF THE ACTUAL FLOW RATE IS BELOW THE LOW SET FLOW RATE THEN RELAY # 2 IS PUT ON.

ALL THE PARAMETERS ARE STORED IN A NONVOLATILE MEMORY AND ARE NOT DISTURBED EVEN IN A POWER OFF CONDITION.

SPECIFICATIONS:

- MICRO CONTROLLER BASED INTELLIGENT UNIT.
- INPUT – FOR FLOW MEASURMENT – PADDLE TYPE PULSE FLOW SENSOR (NPN NO).
- PROGRAMMABLE K FACTOR AND EXPONENT VALUE AS PER THE FLOW SENSOR
- UPPER LINE OF THE DISPAY READS THE FLOW RATE IN LITRES PER HOUR OR LITRES PER MINUTE.
- LOWER LINE OF THE DISPAY READS THE HIGH SET FLOW RATE IN LITRES/HOUR OR LITRES/MINUTE.
- TWO RELAY OUTPUTS (POTENTIAL FREE CONTACT RATING 230V AC, 1A)
- PROGRAMMING OF PARAMETERS – BY KEYS ON THE FRONT.
- POWER SUPPLY – 230V AC 50Hz.
- DIMENSIONS – 96(W) X 96(H) X 110(D) mm. DIN PANEL MOUNTING ENCLOSURE

FRONT PANEL DESCTIPTION:

FRONT PANEL CONSITS OF:

SIX KEYS –

PROG	-	TO ENTER PROGRAM MODE.
UP ARROW	-	TO INCREMENT THE PARAMETER VALUE DURING PROGRAMMING.
DOWN ARROW	-	TO DECREMENT THE PARAMETER VALUE DURING PROGRAMMING
ESC	-	TO END THE PROGRAM MODE

DISPLAY: LED DISPLAY   TWO LINE BY SIX DIGIT SEVEN SEGMENT LED DISPLAY

POWER UP STATUS:

THE TOTALISER UNIT **FIT2110A** WHEN POWERED ON – THE DISPLAY FOR TWO SECONDS READS
                              "FrC---"
                              "2210-A"
AFTER TWO SECONDS THE UPPER LINE OF THE DISPLAY READS THE ACTUAL FLOW RATE. THE SECOND LINE OF THE DISPLAY READS THE HIGH SET FLOW RATE

PROGRAMMING OF THE SET FLOW RATE:

1.	**PROG**	**000101** **002500**	PRESS THE PROG KEY CONTINOUSLY TILL THE DISPLAY READS "**MENU-1**" NOW RELEASE THE PROG KEY.
2.		**SEt Fr** **MEnU-1**	THE UPPER LINE OF THE DISPLAY READS PROGRAM SET POINT FLOW RATE WE ARE IN MENU OPTION # 1
3.	**PROG**	**02500** **SetFrH**	PRESS AND RELEASE THE PROG KEY. THE LOWER DISPLAY READS THE MESSAGE "SetFrH" .

THE UPPER LINE OF THE DISPLAY READS THE HIGH SET FLOW RATE VALUE. PRESS THE UP OR DOWN ARROW KEY'S TO PROGRAM THE HIGH SET FLOW RATE VALUE.

4.	**PROG**	**00500** **SetFrL**	PRESS AND RELEASE THE PROG KEY. THE LOWER DISPLAY READS THE MESSAGE "SetFrL" .

THE UPPER LINE OF THE DISPLAY READS THE LOW SET FLOW RATE VALUE. PRESS THE UP OR DOWN ARROW KEY'S TO PROGRAM THE LOW SET FLOW RATE VALUE.

3.	**PROG**	**02500** **SetFrH**	PRESS AND RELEASE THE PROG KEY. THE LOWER DISPLAY READS THE MESSAGE "SetFrH" .

WE ARE BACK TO STEP 3

5.	**ESC**	**01101** **02500**	PRESS THE ESC KEY TO END THE PROGRAMMING OF PARAMETERS FOR THE SET FLOW RATE.

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PROGRAMMING OF THE FLOW RATE CALCULATION PERIOD AND THE FLOW RATE FILTER TIME:

1.	**PROG**	**000101** **002500**	PRESS THE PROG KEY CONTINOUSLY TILL THE DISPLAY READS **"MENU-1"** NOW RELEASE THE PROG KEY.
2.		**SEt Fr** **MEnU-1**	THE UPPER LINE OF THE DISPLAY READS PROGRAM SET POINT FLOW RATE WE ARE IN MENU OPTION # 1
3.	**UP ARROW**	**CPAr** **MEnU-2**	PRESS AND RELEASE THE UP ARROW KEY THE UPPER LINE OF THE DISPLAY READS "C Par" PROGRAM CONTROLLER PARAMETERS WE ARE IN MENU OPTION # 2
4.	**PROG**	**LC 00** **2 CPAr**	PRESS AND RELEASE THE PROG KEY. THE LOWER DISPLAY READS THE MESSAGE "2 CPAr"

THE UPPER LINE OF THE DISPLAY READS THE LOCK CODE MESSAGE ON THE LEFT SIDE. ON THE RIGHT SIDE THE UPPER DISPLAY READS THE LOCK CODE VALUE.

5.	**UP ARROW**	**LC 25** **2 CPAr**	PRESS THE UP ARROW KEY TO PROGRAM THE LOCK CODE TO ENTER THE MENU OPTION # 2
6.	**PROG**	**LC 25** **2 CPAr**	NOW PRESS THE PROG KEY AND RELEASE
7.		**Fr PH** **2 CPAr**	.

THE UPPER LINE OF THE DISPLAY READS THE ACTUAL FLOW RATE CALCULATION PERIOD
(PM – FOR FLOW RATE PER MINUTE) (PH – FOR FLOW RATE PER HOUR)
PRESS THE UP OR DOWN ARROW KEY'S TO SELECT THE FLOW RATE CALCULATION OPTION.

8.	**PROG**	**Ft 04** **2 CPAr**	PRESS THE PROG KEY AND RELEASE .

THE UPPER LINE OF THE DISPLAY READS THE ACTUAL FLOW RATE CALCULATION FILTER TIME
PRESS THE UP OR DOWN ARROW KEY'S TO SELECT THE FLOW RATE CALCULATION FILTER TIME.
THE USER CAN SET THIS VALUE FROM 01 TO 08 SECONDS.
THIS TIME PERIOD IS USED TO AVERAGE THE ACTUAL FLOW RATE VALUE.
IF THE TIME PERIOD SELECTED IS 04, THEN THE ACTUAL FLOW RATE VALUE IS AVERAGED FOR THE LAST FOUR SECONDS, EVERY SECOND.

7.	**PROG**	**Fr PH** **2 CPAr**	PRESS THE PROG KEY AND RELEASE

WE ARE BACK TO STEP 7

9.	**ESC**	**01101** **02500**	PRESS THE ESC KEY TO END THE PROGRAMMING OF ACTUAL FLOW RATE CALCULTATION PARAMETERS.

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PROGRAMMING OF THE K FACTOR AND THE EXPONENT VALUE AS PER THE FLOW SENSOR:

NOTE: THESE VALUE AS PROGRAMMED AS PER THE FLOW SENSOR DETAILS, AND SHOULD NOT BE CHANGED. IF THESE VALUES ARE CHANGED THE CALCULATION OF ACTUAL FLOW RATE WILL GET AFFECTED

1.	**PROG**	**000101** **002500**	PRESS THE PROG KEY CONTINOUSLY TILL THE DISPLAY READS **"MENU-1"** NOW RELEASE THE PROG KEY.
2.		**SEt Fr** **MEnU-1**	THE UPPER LINE OF THE DISPLAY READS PROGRAM SET POINT FLOW RATE WE ARE IN MENU OPTION # 1
3.	**UP ARROW**	**CPAr** **MEnU-2**	PRESS AND RELEASE THE UP ARROW KEY THE UPPER LINE OF THE DISPLAY READS "C Par" PROGRAM CONTROLLER PARAMETERS WE ARE IN MENU OPTION # 2
4.	**UP ARROW**	**K FAC** **MEnU-3**	PRESS AND RELEASE THE UP ARROW KEY THE UPPER LINE OF THE DISPLAY READS "K FAC" PROGRAM K FACTOR VALUE AND EXPONENET VALUYE WE ARE IN MENU OPTION # 3
5.	**PROG**	**LC 00** **3 KFAC**	PRESS AND RELEASE THE PROG KEY. THE LOWER DISPLAY READS THE MESSAGE "3 KFAC"

THE UPPER LINE OF THE DISPLAY READS THE LOCK CODE MESSAGE ON THE LEFT SIDE. ON THE RIGHT SIDE THE UPPER DISPLAY READS THE LOCK CODE VALUE.

6.	**UP ARROW**	**LC 35** **3 KFAC**	PRESS THE UP ARROW KEY TO PROGRAM THE LOCK CODE TO ENTER THE MENU OPTION # 3
7	**PROG**	**LC 35** **3 KFAC**	NOW PRESS THE PROG KEY AND RELEASE
8.		**0.02222** **3 KFAC**	

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THE UPPER LINE OF THE DISPLAY READS THE ACTUAL K FACTOR VALUE IN FIVE DIGITS AFTER DECIMAL POINT. PRESS THE UP OR DOWN ARROW KEY'S TO PROGRAM THE ACTUAL K FACTOR VALUE AS GIVEN ON THE SENSOR.

9.	**PROG**	**Et 0** **3 KFAC**	PRESS THE PROG KEY AND RELEASE

THE UPPER LINE OF THE DISPLAY READS THE EXPONENT VALUE OF THE K FACTOR AS MENTIONED ON THE FLOW SENSOR. THE EXPONENET VALUE CAN BE EITHER 0, OR –1, OR –2 OR –3.
PRESS THE UP OR DOWN ARROW KEY'S TO SELECT THE EXPONENET VALUE AS REQUIRED.

8.	**PROG**	**0.02222** **3 KFAC**	PRESS THE PROG KEY AND RELEASE

WE ARE BACK TO STEP 8

10.	**ESC**	**01101** **02500**	PRESS THE ESC KEY TO END THE PROGRAMMING OF ACTUAL FLOW RATE CALCULTATION PARAMETERS.

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