E-1200 FLOW MEASUREMENT INSTRUMENT USER MANUAL

1. DESCRIPTION

E-1200, is a flow measurement instrument which can be configured for pulse, current or voltage input. When configured for pulse input, pulses which are produced by the proximity switches or by mechanical contacts can be used as an input to the device. When it is configured for current input, the input range can be 0-20 or 4-20 mA. When voltage input is selected, input range can be set to any value within 0-20 mV and 0-2500 mV. If the device is programmed for current or voltage input, input can be assigned for linear or square-root function. The device displays instantaneous flow rate and totalizer values.

E-1200 can control four digital outputs according to four configurable set points. The set point values can be assigned to flow rate, totalizer and batch counter. Measured values can be transferred to a central system via RS-485 line. The communication protocol is Modbus rtu. Maximum 31 devices can be connected to the communication line. Device must include the necessary hardware in order to be used as a control device and to be monitored from a center location through RS-485 communication line.

E-1200 is housed in a 96x96 mm. plastic case conforming IEC/TR 60668 standard.

2. TYPE CODING:

E-1200-W-X-Y-Z. The characters W, X, Y and Z describe the options. The related explanations are given below.

W: Stands for number of relay outputs.
- **0:** No output relay.
- **1:** 1 output relay.
- **2:** 2 output relay.
- **3:** 3 output relay.

X: Analog Output
- **0:** None
- **1:** 1 Analog output 0-20 mA / 4-20 mA
- **2:** 1 Analog output 0-10 V DC

Y: Specifies the communication option.
- **0:** None.
- **1:** RS-485 with Modbus rtu

Z: Specifies the operating voltage of the instrument.
- **0:** 85-265 V AC or 85-375 V DC.
- **1:** 20-60 V AC or 20-85 V DC.

3. OPERATION

The front panel view of E-1200 instrument is shown in Figure 3.1. There are two displays on the front panel, one of which having four digits and the other having six digits. Instantaneous flow rate is displayed in the four digit display (upper display) and totalized value is displayed in the six digit display. Batch count is displayed in the upper display while ▲ button is pressed. The device includes a third totalizer counter which the user can not reset. This counter has 10 digits and its value is displayed in the upper and lower displays while ▼ button is pressed. All values added to the totalizer are also added to the third totalizer counter. This counter is reset, when it exceeds 9.999.999.999.

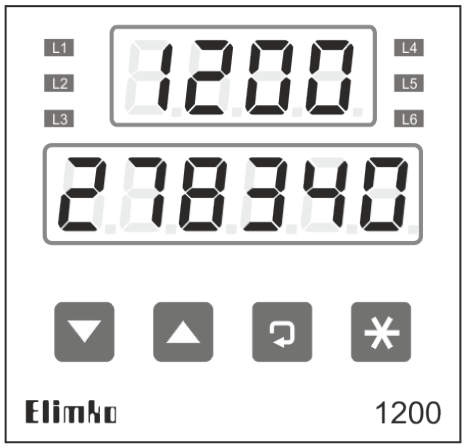


Figure.3.1.

▼ and ✱ buttons must be pressed simultaneously in order to reset the totalizer and ▲ and ✱ buttons must be pressed simultaneously in order to reset the batch counter. In order to activate this operation, **rSEt** parameter in the **GCnF** page must be set to **EnAbL** state.

The state of the output relays are indicated by the leds L1, L2, L3 and L4. The output relays RL1, RL2, RL3 and RL4 are controlled according to SET1, SET2, SET3 and SET4 configurable set point values respectively. Even if the device does not include these relays, the leds indicate the control action. When the instruments is programmed as an indicator, L1, L2, L3 and L4 leds will be off. The leds L5 and L6 indicate the states of DIN2 and DIN3 digital inputs respectively. DIN1 is the pulse input of the device. DIN2 and DIN3 are used to reset the totalizer and batch counter externally. In order to activate the DIN2 and DIN3 inputs, **d InP** parameter on the **GCnF** page must be set to **EnAbL** state.

tYPE parameter on the **GCnF** page determines the operation mode of the device. If this parameter is set to **IndC**, device will be used as an indicator. Instantaneous flow rate is displayed in the upper display and the totalizer value is displayed in the lower display. When the totalizer exceeds 999.999, the batch counter is incremented by one and the totalizer resets to "0". If the **tYPE** parameter is set as **CntSd** or **CntSE**, the output relays are controlled according to the configured set points and assigned properties. While in normal operation, ↵ button can be used to monitor the SET1, SET2, SET3 and SET4 values. If **tYPE** = **CntSE**, the displayed set value can be modified by ▼ and ▲ keys. If **tYPE** =

CntSd, the set point modification is disabled. While displaying the set points, pressing the ⊠ button reverts to normal operation.

4. CONFIGURATION

In order to enter configuration mode ⟲ and ⊠ buttons must be pressed simultaneously. After this operation, "**Cod**" message will be displayed on the upper display and the initial value of security code is displayed in the lower display as "0". The security code is adjusted by ▼ and ▲ buttons. The factory setting of the security code is "10", but later, the user can assign any value between 0 and 9999 to the security code. After entering the security code and pressing the ⟲ button the general configuration page (**PAGE/GCnF**) is accessed. While in this state, ▼ and ▲ buttons can be used to select the other pages (**SEtP**,**rCnF** or **CALb**). After selecting the page, successively pressing the ⟲ button will display the parameters in this page. The name of the parameter is displayed in the upper display and the value of the parameter is displayed in the lower display. The parameter values can be edited by ▼ and ▲ buttons. If ⟲ button is pressed for a duration not less than 3 seconds, returns to the beginning of the page and a new page can be selected.

The parameters in the **GCnF** page are **InPt**, **tYPE**, **rSEt**, **dInP**, **rEtn**, **Adr5**, **brtE** and **SCod** in the order of appearance. The parameters included in **rCnF** and **CALb** pages vary depending upon the value of **InPt** parameter. The parameters on the pages are given in TABLE 4.1. The **SEtP** page can not be accessed if the **tYPE** parameter in **GCnF** page is adjusted as **IndC**. The parameters are explained in section 5. EXPLANATION OF THE PARAMETERS.

The ⊠ button is used to exit from the configuration operation. If the entered security code is not correct, all the parameters except the security code (**SCod**) can be monitored, but editing is not allowed. In case the security code is forgotten, the power of the instrument must be reapplied, within 30 seconds ▼ , ▲ and ⊠ buttons are pressed simultaneously. This operation temporarily permits accessing and modifying all the parameters with any security code. Then, **SCod** parameter is accessed and adjusted to a desired value.

TABLE 4.1.: Parameters in the Configuration Pages

PAGE	1.Par.	2.Par.	3.Par.	4.Par.	5.Par.	6.Par.	7.Par.	8.Par.	9.Par.
GCnF	InPt	tYPE	rSEt	d InP	rEtn	Adr5	brtE	PrtE	SCod
SEtP(tYPE=CntSd veya CntSE)	rL 1	rP 1	rL2	rP2	rL3	rP3	rL4	rP4	
rCnF(InPt=PULSE)	tFr	tbn	FrP	PPU	dP	2Ero	rnGE	-	
rCnF(InPt=nAnP)	dP	2Ero	rnGE	F ILt	FUnC	CrnG	tot	CoFF	
rCnF(InPt=uoLt)	dP	2Ero	rnGE	F ILt	FUnC	urnG	tot	CoFF	
CALb(InPt=PULSE)	dAL	dAH	-	-	-	-	-	-	
CALb(InPt=nAnP)	20nA	dAL	dAH	-	-	-	-	-	
CALb(InPt=uoLt)	2u00	dAL	dAH	-	-	-	-	-	

5. EXPLANATION OF THE PARAMETERS

Cod : Password is asked with this message while entering into the configuration operation. If the entered password is not correct, all parameters except **SCod** can be displayed but can not be modified.

5.1. GCnF Page

InPt : This parameter specifies the input type of the device. It can be set as **PULSE**, **nAnP** or **uoLt**.

tYPE : This parameter determines the operation mode of the device. It can be set to **IndC**, **CntSd** or **CntSE**. If the parameter is adjusted as **IndC**, device will be used as an indicator. In this case, digital outputs will be blocked, it will not be possible to enter into **SEtP** page and to reach the set point values. If the parameter is programmed as **CntSd** or **CntSE** the device will be used as a controller. The difference between **CntSd** and **CntSE** is that the set point values for the first one are not editable.

rSEt : This parameter specifies whether the totalizer and batch counter will be reset via the buttons on the front panel or not. It can be set to **d ISAbL** or **EnAbL**. If it is set to **EnAbL**, the totalizer and batch counters can be reset when ▼ ,⊠ and ▲ ,⊠ buttons are pressed simultaneously. Resetting is disabled if the parameter is set to **d ISAbL**.

d InP : This parameter specifies whether the totalizer and batch counter will be reset via the digital inputs or not. It can be set as **d ISAbL** or **EnAbL**. If it is set as **EnAbLE**, the totalizer and batch counters can be reset when **d In2** and **d In3** inputs are activated. Resetting via the digital inputs are disabled if the parameter is set as **d ISAbL**.

rEtn : This parameter specifies the automatic quitting period of configuration mode. Parameter can be set to **d ISAbL** or it can be adjusted between 5 to 25 seconds. When it is set to **d ISAbL**, automatic return to normal operation is disabled. For other values, device will return to the normal mode of operation automatically in case no key operation is done in during the selected period.

Adr5 : It is communication address of the device. It can be adjusted between 0 and 31. If the device will be connected a central system via RS-485 communication line, central system will identify the device with its address. Devices on the same line must have different addresses.

brt : This parameter determines the communication baud rate. It can be set as 9.600, 19.200 or 38.400 bits/sec. All the devices connected to the same RS-485 communication line must have the same baud rate, otherwise, communication can not be established.

PrtE : This parameter determines the communication parity. It can be set as **nonE**, **odd** and **EuEn**. All the devices connected to the same RS-485 communication line must have the same parity, otherwise, communication can not be established.

SCod : It is the password value which must be entered while entering into the configuration Mode. It can be set to any value between 0 and 9999. Its default value is set to 10 at the factory. If incorrect password is entered, all the parameters except **SCod** can be monitored, but no modification is allowed. . In case the security code is forgotten, the power of the instrument must be reapplied, within 30 seconds ▼ , ▲ and ✱ buttons are pressed simultaneously. This operation temporarily permits accessing and modifying all the parameters with any security code. Then, **SCod** parameter is accessed and adjusted to a desired value.

5.2. SEtP Page:

This page can not be accessed if the **tYPE** parameter in **GCnF** page is set as **IndC**. This page includes the parameters that describes the control forms of the output relays RL1, RL2, RL3 and RL4 according to SET1, SET2, SET3 and SET4 set points. These are **rL 1**, **rP 1**, **rL2**, **rP2**, **rL3**, **rP3**, **rL4** and **rP4**. The last character in the parameter name (1, 2, 3 and 4) defines the related output relay and Set Point. In the below explanations, "x" is used to indicate the related output relay and Set Point.

rLx : This parameter specifies the source that is compared with SETx set point to control the output relay RLx. It can be set to **PrULLo**, **PrULH I**, **totLLo**, **totLH I**, **bAtCLo**, **bAtCH I**, **totALo**, **totAH I**. **PrUL**, stands for instantaneous flow, **totL** and **totA** stands for totalizer, and **bAtC** stands for batch counter. These values indicate that SETx set point is assigned to instantaneous flow, totalizer and batch counter respectively. The last two characters of the parameter value, **Lo** and **H I**, specifies the type of control. **Lo** means; if the source value is less than the set point, the relay is energized. **H I** means; if the source value is more than the set point, the relay is energized.

rPx : This parameter can be adjusted between 0.0 and 25.0. The function of the parameter is dependent to **rLx** parameter setting. If **rLx** = **PruL..**, **rPx** determines the hysteresis for controlling RLx, in percentage of (**rnGE-2Ero**). If **rLx** = **totL..** and **rPx**=0.0, the output relay RLx is controlled according to the result of comparison of the set point and the totalizer value. If **rLx** = **totL..** and **rP I** ≠ 0.0, the output relay RLx is controlled again in the same manner, but in this case totalizer is reset to zero (auto reset), batch counter increments and RLx holds its position for a period equal to **rPx** value in seconds, then returns to its previous position. If **rLx** = **bAtCH**, **rPx** has no significance. If **rLx** = **totA**, the operation will be the same as **rLx** = **totL** except the totalizer will not be reset and batch counter is not incremented.

5.3 rCnF Page:

5.3.1 InPt=PULSE

tFr : The unit of **tFr** is in seconds. It can be adjusted between 1 and 250 seconds. If the flow data is supplied to the device in pulse mode, the device calculates, the instantaneous value from the period between to consecutive pulses. If the period between two consecutive pulses exceeds the **tFr** duration, instantaneous value will be reset. For the applications with low pulse rate, **tFr** must be set to a period which will be long enough. This duration is also effective on the minimum value of the instantaneous value that can be measured.

tbn : It specifies the delay time to be given to the pulse in order to prevent the erroneous counting operation that will be caused by the contact bounces if a mechanical contact supplies the flow data into the device. It can be adjusted within the range of 0 and 100 miliseconds. If the input pulses are supplied from semi-conductor sensors, it can be set to "0". If this parameter is different than 0, input pulse rate will also be limited. For example, if it is set to 5, input pulse will be evaluated 5 miliseconds after it changes its position. Implicitly, maximum pulse rate is limited to 100 Hz (for square wave). Pulses with a frequency of more than 100 Hz are not counted.

FrP : This parameter is used as a multiplier in instantaneous flow rate and total flow measurements. It's value can be adjusted within a range between 0.00 and 2.50.

PPU : This parameter is used as a divider in instantaneous flow rate and total flow measurements. It's value can be adjusted between 0.01 and 500.00.

dP : This parameter determines the position of the decimal point. It can be adjusted as 0, 1 and 2. **dP** parameter is effective on instantaneous flow rate, totalizer values, set points, **rnGE** and **2Ero** parameters.

2Ero : This parameter defines the flow rate that corresponds to low limit of analog output. It can be adjusted between 0 and **rnGE**.

rnGE : This parameter defines the flow rate that corresponds to upper limit of analog output. It can be adjusted between 0 and 9999. It should be set to the maximum instantaneous flow rate value that will be measured.

APPLICATION EXAMPLE:

The parameters for 1.0 to 20.0 m^3/h instantaneous flow rate measurement with a flow sensor which produces one pulse per 10 liters.
tFr parameter is set to the maximum period between two consecutive pulses during measurement operation.
In the calculation of the instantaneous value, the following formula is used:
INSTANTANEOUS VALUE (unit/hour) = 3600 x Input Frequency (Hz) x (**FrP** / **PPU**)
If the indication has dots, **dP** parameter is determined with respect to the position of the dot.
Pulse frequency for a minimum 1.0 m3/h measurement value is 100/3600 = 0.0277 Hz. In other words, one pulse will be received in every 36 seconds. **tFr** parameter must be set to a minimum of 36 seconds.
Since the indication will be in xx.x format, the received number of pulses for 0.1 m3/h which is the smallest resolution in the indication is 10. PPU parameter is set to 10.00. If **FrP**=1.00 and **dP**=1 will be set, device will operate with the required functionality.

5.3.2 InPt=mAmP

dP : This parameter determines the position of the decimal point. It can be adjusted as 0, 1 and 2. **dP** parameter is effective on instantaneous flow rate, totalizer values, set points, **rnGE** , **2Ero** and **CoFF** parameters.

2Ero : This parameter defines the flow rate that corresponds to minimum analog input. It can be adjusted between 0 and **rnGE**. This parameter also defines the flow rate that corresponds to low limit of analog output.

rnGE : This parameter defines the flow rate that corresponds to maximum analog input. It can be adjusted between 0 and 9999. This parameter also defines the flow rate that corresponds to upper limit of analog output.

F ILt : Analog input signal is measured once in every 50 miliseconds. This parameter defines the number of measurements to be averaged. It can be adjusted between 1 and 20.

FUnC : It specifies the linearization function to be used in the input. It can be selected as **L InEAr** or **SQroot** (Linear and Square Root).

CrnG : This parameter defines the analog input range. It can be adjusted as **0-20mA** or **4-20mA**.

tot : This parameter defines the flow rate unit, it can be set as **m inUtE** or **HoUr** (Minute or Hour). According to the selection, progress of the totalizer is controlled.

CoFF : This parameter defines the minimum flow rate for which the totalizer is to stop counting. It can be set between 0 and **rnGE**. If the flow rate is less than **CoFF** value, the totalizers stop counting.

5.3.3 InPt=uoLt

dP : This parameter determines the position of the decimal point. It can be adjusted as 0, 1 and 2. **dP** parameter is effective on instantaneous flow rate, totalizer values, set points, **rnGE** , **2Ero** and **CoFF** parameters.

2Ero : This parameter defines the flow rate that corresponds to minimum analog input. It can be adjusted between 0 and **rnGE**. This parameter also defines the flow rate that corresponds to low limit of analog output.

rnGE : This parameter defines the flow rate that corresponds to maximum analog input. It can be adjusted between 0 and 9999. This parameter also defines the flow rate that corresponds to upper limit of analog output.

F ILt : Analog input signal is measured once in every 50 miliseconds. This parameter defines the number of measurements to be averaged. It can be adjusted between 1 and 20.

FUnC : It specifies the linearization function to be used in the input. It can be selected as **L InEAr** or **SQroot** (Linear and Square Root).

urnG : This parameter defines the analog input range. It can be adjusted between 20.0 and 2500.0. The parameter value corresponds to the maximum analog input in milivolts.

tot : This parameter defines the flow rate unit, it can be set as **m inUtE** or **HoUr** (Minute or Hour). According to the selection, progress of the totalizer is controlled.

CoFF : This parameter defines the minimum flow rate for which the totalizer is to stop counting. It can be set between 0 and **rnGE**. If the flow rate is less than **CoFF** value, the totalizers stop counting.

5.4 CALb Page:

CALb page includes the calibration parameters of the device. Any erroneous operation to be performed in this page may cause wrong measurement. The parameters in this page are set by using calibrators. If the measurement devices with the required accuracy are not available, it is not advised to enter into this page. The parameters which are necessary for all input options are given together in this section.

2u00 : It is the voltage input calibration parameter of the device. Before the adjustment operation, device input is set to voltage (**InPt** =**uoLt**). **UrnG** parameter in the **rCnF** page is set to 2000.0. A voltage of 2.000 volts is applied to the voltage input terminals 16(-) and 18(+) of the device. Adjustment is performed by pressing ▼ and ▲ buttons simultaneously while this parameter is selected. Afterwards, **UrnG** parameter must be set to the required value.

20mA : It is the current input calibration parameter of the device. Before the adjustment operation, device input is set to current (**InPt** =**mAnP**). 20 mA is applied to the current input terminals 16(-) and 17(+) terminals of the device while terminals 17 and 18 are short circuited. Adjustment is performed by pressing ▼ and ▲ buttons simultaneously while this parameter is selected.

dAL : This parameter determines the output current taken from terminals 11 and 12 while the instantaneous flow rate is equal to **2Ero**. It can be adjusted between 0 and 8191. For the adjustment of this parameter, an ammeter is connected to the analog output terminals 11(+) and 12(-) of the device. The output current is set to the required value (0 or 4 mA) by using ▼ and ▲ buttons while this parameter is selected.

dAH : This parameter determines the output current taken from terminals 11 and 12 while the instantaneous flow rate is equal to **rnGE**. It can be adjusted between 0 and 8191. For the adjustment of this parameter, an ammeter is connected to the analog output terminals 11(+) and 12(-) of the device. The output current is set to the required value (20 mA) by using ▼ and ▲ buttonss while this parameter is selected.

6. CONNECTION DIAGRAMS

The back panel view of the E-1200 device is shown in Figure 6.1. The connection terminals of the device is given in TABLE 6.1. according to the terminal numbers.

TABLE 6.1.: Connection Terminals of E-1200

CONNECTION LEADS	TERMINAL	Description
Operating Voltage	9, 10	Operating voltage is applied to the terminals 9 and 10.
Pulse Input	33, 34	33 is the common terminal of the digital inputs. Pulse input is applied to DIN1 (Terminals 33 and 34).
Current Input	16, 17, 18	Terminals 17 and 18 are short circuited. Current is applied to the terminals 16(-) and 17 (+)
Voltage Input	16, 18	16(-) 18 (+), Max. 3 Volts
Analog Output	11, 12	11(+), 12 (-) 4-20 mA (0-20 mA)
Digital Inputs	33, 34, 35, 36	33 is the common terminal of the digital inputs. Terminals 34, 35 and 36 are DIN1 (Pulse Input), DIN2 (Totalizer Reset) and DIN3 (Batch Counter Reset) respectively.
RL1 Outputs	1, 2	Normally open contact
RL2 Outputs	3, 4	Normally open contact
RL3 Outputs	5, 6	Normally open contact
RL4 Outputs	7, 8	Normally open contact
RS-485 Communication	37, 38, 39	Number 39 is common lead (GND) and number 38 is TRXA and number 37 is TRXB lead.
Transmitter Supply	11, 13	Transmitter Supply is 24 V DC with 25 mA current limit. It can be used in 2 wire transmitter connection or to supply the PNP sensor which is used for pulse input.

NOTE: Terminals 11, 31 and 33 are internally connected to each other.

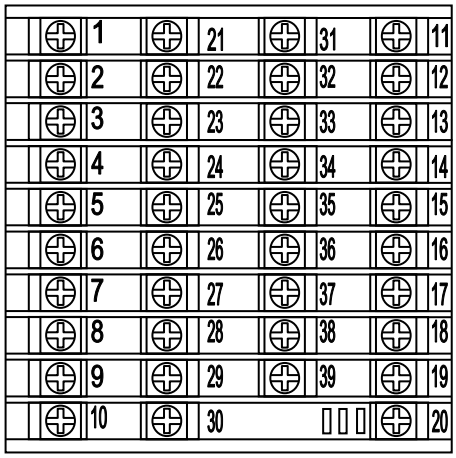


Figure 6.1.

Operating voltage of the device is applied from terminals 9 and 10.

If the pulse input is supplied via a mechanical contact, contact leads are connected to terminals 33 and 34. Flow pulses can also be supplied with a sensor having PNP output. In this case, (+) and (-) supply leads of the sensor are connected to the terminals 33 and 13 respectively. Sensor output is connected to the terminal 34.

Current input is applied to the terminals 16 (-) and 17 (+) while terminals 17 and 18 are short circuited. If two wire transmitter is being used, (+) lead of the transmitter will be connected to the terminal 11 and (-) lead will be connected to the terminals 17 and 18 which are short circuited. Terminal 16 will be connected to the terminal 13 which is the (-) lead of the transmitter power supply.

Voltage input is applied to the terminals 16(-) and 18 (+). The voltage to be applied on these terminals must not exceed 3 V DC.

Current output of the device which changes linearly with the programmed measurement limits is taken from the terminals 11(+) and 12 (-). Analog output is not isolated from the transmitter power supply and from the digital inputs.

Digital input terminals are 33 (common), 34 (DIN1), 35 (DIN2) and 36 (DIN3). Digital inputs are activated by short circuiting to the common terminal (33). DIN1 is used for pulse input. DIN2 and DIN3 can be used for the remote reset of the totalizer and batch counter respectively. In order for the DIN2 and DIN3 to be active, device must be configured to allow this.

Normally open contacts of the output relays are connected to the digital output terminals. The digital output terminals 1-2, 3-4 5-6 and 7-8 are connected to the contacts of RL1, RL2, RL3 and RL4 output relays respectively. Relay contacts are capable of switching 3 A at 250 V AC.

RS-485 communication line connections are connected to the terminals 37(TRXB), 38 (TRXA) and 39 (GND). These terminals are galvanically isolated from the other terminals.

Typical connection diagrams of E-1200 device for different applications are given in Figure 6.2.

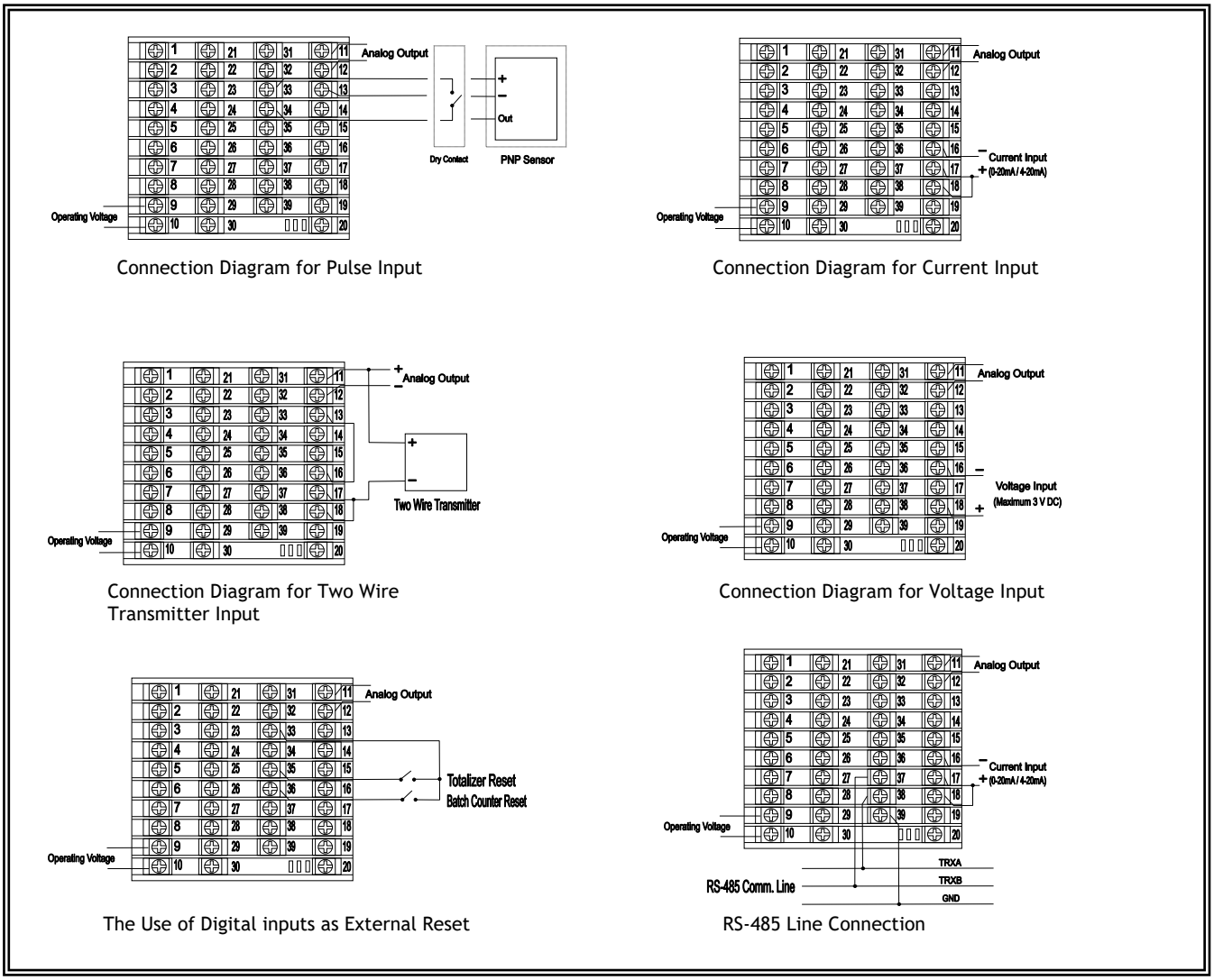


Figure 6.2.

7. MODBUS REGISTERS

E-1200 Flow Meter has an optional RS-485 communication interface that can be used for remotely monitoring measured values and device parameters. The data format is 8 bit, with no parity or odd parity or even parity and 1 stop bit. Communication setup is determined by the parameters **Adr5** (unit address), **brtE** (Baud-rate) and **PrtY** (parity) which are in the **GCnF** configuration page. See section **5.1** for the adjustment range of these parameters.

Modbus RTU protocol is used for communication. Only the Function Code 03 (Read Holding Registers) is supported. Modbus register addresses and related explanations are given in **Table 7.1**.

TABLE 7.1.: The Modbus Register Addresses of E-1200 Flow Meter.

ADDRESS	PARAMETER	AÇIKLAMA
1	DEBI	Instantaneous Flow.
2	TOPL2	Resetable Totalizer. **Totalizer Value=** 65536x(TOPL2+2) + TOPL2
3	TOPL2+2	
4	TOPL3	Batch Counter
5	TOPL4	Non-Resetable Totalizer. **Totalizer Value=** 1.000.000 x TOPL5 + (65536x(TOPL4+2) + TOPL4)
6	TOPL4+2	
7	TOPL5	
20	InPt	0=PULSE, 1=nAnP, 2=VoLt
21	tYPE	0= IndC, 1=Cont5d, 2=Cont5E
22	r5Et	0=EnAbLE, 1=d I5AbL
23	d InP	0=d I5AbL, 1=EnAbLE
24	rL 1	0=PruLLo, 1=PruLH I, 2=totLLo, 3=totLH I, 4=bAtCLo, 5=bAtCH I, 6=totALo, 7=totAH I
25	rP 1	
26	rL2	0=PruLLo, 1=PruLH I, 2=totLLo, 3=totLH I, 4=bAtCLo, 5=bAtCH I, 6=totALo, 7=totAH I
27	rP2	
28	rL3	0=PruLLo, 1=PruLH I, 2=totLLo, 3=totLH I, 4=bAtCLo, 5=bAtCH I, 6=totALo, 7=totAH I
29	rP3	
30	rL4	0=PruLLo, 1=PruLH I, 2=totLLo, 3=totLH I, 4=bAtCLo, 5=bAtCH I, 6=totALo, 7=totAH I
31	rP4	
32	dP	
33	rnGE	
34	tFr	
35	tbn	
36	FrP	
37	PPU	
38	FUnC	0=L InEAr, 1=SqrooT
39	CrnG	0=0-20nA, 1=4-20nA
40	UrnG	
41	tot	0=n InUtE, 1=HoUr
42	CoFF	

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