NAMUR R/T

Low Cost, NAMUR Input Ratemeter/Totalizer

Features

- CSA Listed
- Separate Scaling Factors For A & B Inputs
- Display Rate & Total
- NAMUR Input - 10 kHz Max.
- RS422/RS232 Serial Communication (optional)
- Modbus RTU RS422/RS485/RS232 (optional)
- NEMA 4X / IP65 Front Panel
- Separate Add/Subtract Simultaneous Inputs
- Quadrature and U/D Direction Control Inputs
- 4-20mA or 0-20mA Analog Output (optional)

Application:

Any rate, total or blending application where 2 preset alarms and scaling are required for a NAMUR sensor.

Description:

The NAMUR R/T (NRT) is a 6 digit totalizer / ratemeter with two level, 5 digit preset alarm control of total or rate. Inputs A & B have separate scaling K-factors. The totalizer can be programmed for "A" subtract "B", "A" add "B" or A & B as separate totalizers, with display and control of the "net" total and rate of "A". The NAMUR R/T is also available in 2 other versions. NC2: a two preset totalizer with scaling, NR2: a high/low alarm ratemeter with scaling. If only one input is required, the unit will display the total and rate from that one channel. The NAMUR R/T can accept up to 10,000 pulses per second. It has a 5 digit floating decimal scale factor allowing total readout in true engineering units and rate per second, minute or hour.

Input "A" simultaneously drives a ratemeter which can be programmed to display the basic frequency (rate per second) or factored to show rate per minute or rate per hour. Simply push the "VIEW" button to see either total or rate without losing a count. Two separate 5 A relay contacts can be set to operate at either rate or total presets in a latch or auto-recycle mode with output timing from 0.1 to 99.9 seconds.

Two control outputs can be assigned to either the totalizer or ratemeter and can automatically recycle at the preset total or stay latched until reset.

Several units can communicate to a host computer on a single RS232 or RS422 loop. Each unit can be assigned it's own I.D. number.

When two inputs are received (A & B), the unit can either add or subtract the two inputs or display the two inputs as separate totalizers.

Specifications:

Display: 6 digit, 0.55" High LED

Input Power:
- 110 VAC ± 15% or 12 to 15 VDC
- 220 VAC ± 15% or 12 to 15 VDC
- 24VAC ± 15% or 12 to 15 VDC

Current: 250 mA DC max. or 6.5 VA AC

Output Power: (AC powered units only)
Terminal 7:   +12 VDC @ 50 mA, unregulated -10 + 50%
Terminal 10:   +8VDC @ 50mA

Temperature:
Operating:
+32°F (0°C) to +130 F (+54°C)
Storage:
-40 F (-40°C) to +200°F (93°C)

Humidity: 0-90% Noncondensing

Memory: EEPROM stores data for 10 years if power is lost.

Inputs:
NAMUR Input:
Logic 0 < 1 mA; Logic 1 > 3 mA
Input Resistance 1000 ohms (typ.)
4-30VDC Input:
Logic 0 open or < 1V, Logic 1 > 4V
Input Resistance 10K ohms (typ.)
3N: NAMUR input on Input A
4-30 VDC input on Input B
3NB: NAMUR input on Input A and Input B
5N: NAMUR input on Input A
4-30 V Direction Control input on Input B.
5NB: NAMUR input on Input A and Input B
Direction Control input on Input B
9NB: Quadrature, accepts NAMUR inputs on Input A and Input B with 90° phase shift for direction detection

Approvals: CSA File# LR91109-7, CE Compliant
Reset:
Front Panel:
    Resets displayed value and control output
Remote:
    4-30 VDC (75 - 240 V AC/DC, Input 8) negative edge
    resets Totalizer "A" and control output
Control Outputs:
Relays:
    2 each N.O. Relay; 5 Amps 120/240 VAC or 28 VDC.
    (N.C. relay contacts available with solder jumpers.)
Analog Output:
    An optional 4-20mA (0-20mA) output is available for
    the NAMUR R/T series.   The output can be pro-
grammed
    to track rate or total. This feature is available by
    adding suffix A to the part number. Connections are
    via a 2 terminal pluggable screw connector.
    Programming is accomplished by using the front panel
    in conjunction with rear dip switches.
    Accuracy: ±.25% FS worst case.
    Compliance Voltage: 3 to 30 VDC non inductive.
Scaling Factor (K-Factor)**:** In the standard unit, a user programmable K-Factor is used to convert the input pulses to engineering units. The 5 digit K-Factor dividers, with decimal keyed into any position, allow easy direct entry of any K-Factor from 0.0001 to 99999. Separate factors may be entered for the 2 separate input channels.
Presets: Two control outputs are provided. To set relay values, press "menu" button until "Relay" appears on the display, the A and B outputs can be assigned to the rate-meter (high/low), one preset for rate and one for total, or two presets on the A and B totalizers. A 5 digit value can be entered for both presets and the decimal point location is the same as the counter. The outputs can be set to en-ergize from 0.1 to 99.9 seconds or latch (0.0). If a value other than 0.0 is entered, the totalizers will auto reset at the preset . In the A-B or A+B versions, the relays will be assigned to either net total or A rate.
Lockout: Unauthorized front panel changes can be pre-vented by entering a user selected 5 digit code in the "LOC" mode. The front panel can be completely locked out or the presets can remain accessible.
Ratemeter: Accuracy: 0.01% FS (±1 display digit).
 The rate display updates once per second. The rate meter can be programmed to accept almost any number of pulses per unit of measurement, sample from 2 to 24 seconds maximum, and auto-range up to 5 digits of significant infor-mation. In the "RPS" mode, the ratemeter displays in units per second, and in the "scale" mode, units per hour or per minute. The unit will display the rate of the A Input only.
Totalizer: The two 6-digit totalizers can count at 10 kHz max. Each can have a 5-digit dividing scale factor. The to-talizer advances on the positive edge of each pulse. Count up or down modes available, as are quadrature inputs from encoders for position or flow measurement. The unit can be programmed to view the net value of "A+B" or "A-B", or A and B as separate totalizers.
RS232/RS422 with KEP Protocol:
If the serial interface option is supplied, multiple units can be linked together. (The terminal addressing the unit must be capable of driving all loads in the loop.) Unit status and new set points can be communicated by serial communi-cation. Mode changes, however, must always be made on the front panel.
Data is received and transmitted over standard EIA RS232 or RS422 levels. Unit number, baud rate and parity are entered in the "Program Setting" set up mode and remain in memory even if power is off.
RS232/RS422/RS485 with Modbus RTU Protocol:
The serial port can be used for serial printing or also for data acquisition. The unit can assign addresses up to 247 units (The terminal addressing the unit must be capable of driving all loads in the loop.) The unit can communicate with a master device through a Modbus-RTU protocol. The data given for each parameter is in IEEE float format comprising of 2 words. The unit can be connected in a network.
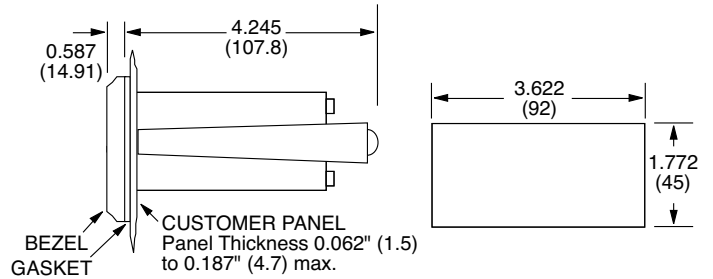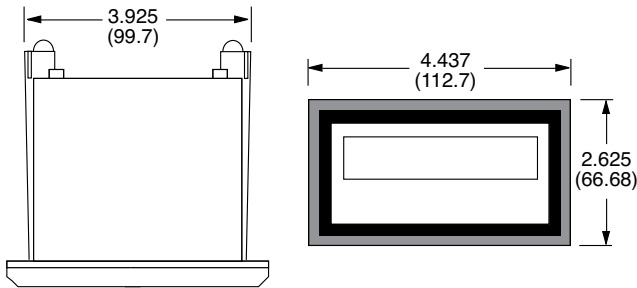   Device ID: 01-247
    Baud Rates: 300, 600, 1200, 2400, 4800, 9600
    Parity: None, Odd, Even

    Protocol: Modbus RTU (Half Duplex)

Mounting:

Termination:

○ 1- COMMON
○ 2- N.O.(N.C./NPN)
RELAYS A
○ 3- COMMON
○ 4- N.O.(N.C./NPN)
RELAYS B
○13- V+
○14- I SINK
ANALOG OUTPUT

○ 5- A INPUT (NAMUR)
○ 6- B INPUT
○ 7- +12VDC OUT/+DC IN (unregulated)
○ 8- -DC (GROUND)
○ 9- RESET INPUT
○ 10- +8VDC @ 50mA
○ 11- A.C. INPUT
○ 12- A.C. INPUT

SWITCH	OFF	ON
4	RUN	CAL.
3	4-20mA	0-20mA
2	RATE	COUNT
1	RUN	SET

ON

Ordering Information

Example: NRT   A   3   1

Series:
NRT= 6 digits, ratemeter/totalizer with presets and scaling.
NC2= 6 digits, totalizer only with presets and scaling.
NR2= 5 digits, rate only with presets and scaling.

Operating Voltage:
A= 110 VAC ± 15% or 12 to 15 VDC
B= 220 VAC ± 15% or 12 to 15 VDC
C= 24 VAC ± 15% or 12 to 15 VDC

Count Inputs:
3N = NAMUR input on Input A, 4-30 VDC input on Input B.
3NB = NAMUR input on Input A and Input B
5N = NAMUR input on Input A, 4-30 V Direction Control input on Input B.
5NB = NAMUR input on Input A and Input B Direction Control input on Input B
9NB = Quadrature, accepts NAMUR inputs on Input A and Input B with 90° phase shift for direction detection.

Options
1= RS232 Communications
2= RS422 Communications
3= Modbus RTU RS232
4= Modbus RTU RS422/RS485
A= Analog Output (4-20/0-20 mA)

NOTE: RS232/RS422/RS485 & Analog Output options can not be combined

Accessories
Separate keyboard panel - order #34242
NEMA4 wall mount enclosure available see LCN4X & MS821
Explosion proof enclosure available, see XHV
Serial printer available, see P1000, P295
Ethernet Port Server available, see IEPS
RS-422/485 to RS-232 Communication Adaptor available, see CA285
Modbus DDE/OPC Server available, see KEPserver