# NF29 (POWER METER)

☞**SR.NO: 16-02-NF-**

☞**SUPPLY VOLTAGES:** 3 X 240.0V AC **[PTR SELECTABLE]** ☞**CURRENT INPUT:** -/**5**Amp. **[SELECTABLE]**

☞**AUXILLERY SUPPLY:** **80 TO 270V AC.**

☞**STANDARDS USED :** STABLE AC VOLTAGE & CURRENT SOURCE, PHASE SHIFTING TRANSFORMER, POWER METER & INTEGRATOR WITH BASIC ACCURACY OF 0.35%, STANDARD ENERGY METER OF ACCURACY CLASS 0.5s TRACEABLE TO NATIONAL STANDARDS.

☞**TRACEABILITY:** THE ABOVE METER(S) WAS TESTED AND CALIBRATED AGAINST "MTE"0.05 STANDARD (MASTER CALIBRATING INSTRUMENT) MODEL PRS 1.3.THE MTE STANDARD METER IS TRACEABLE TO INTERNATIONAL STANDARDS.

☞RESULT OF TEST: Pass ☞TEST ENGINEER: KST ☞ DATE: 02/02/2016

**WARRANTY**

THE EQUIPMENT SUPPLIED UNDER THIS T.C. IS GURANTEED AGAINST DESIGN, MANUFACTURING AND WORKMANSHIP DEFECTS FOR A PERIOD OF 12 MONTHS FROM THE ABOVE DATE. TRINITY ENERGY SYSTEMS UNDERTAKES TO REPLACE / REPAIR THE FAULTY UNIT AT OUR WORKS FREE OF COST. THE MANUFACTUR'S LIABILITY IS LIMITED TO THE VALUE OF GOODS SUPPLIED. THE MANUFACTURER WILL TAKE NO RESPONSIBILITY FOR ANY CONSEQUENTIAL DAMAGE CLAIMED WHATSOEVER. THIS WARRANTY CERTIFICTE IS REQUIRED TO BE PRODUCED FOR OBTAINING ANY REPAIR OR REPLACEMENT / SERVICE FROM THE MANUFACTURER. THE MANUFACTURING RESERVES THE RIGHT TO DETERMINE THE REASON FOR DEFECT / DAMAGE BEFORE PROVIDING SERVICE.

☞**Display Parameters:**

| **Page 1.** | | **Page 2.** | | **Page 3.** | | **Page 4.** | |
|---|---|---|---|---|---|---|---|
| **Phase to Neutral Voltage** | | **Phase to Phase Voltage** | | **Phase Current** | | **Phase PF** | |
| Vrn | R Phase | Vry | RY Phase | Ir | R Phase Current | PFr | R Phase PF |
| Vyn | Y Phase | Vyb | YB Phase | Iy | Y Phase Current | PFy | Y Phase PF |
| Vbn | B Phase | Vbr | BR Phase | Ib | B Phase Current | PFb | B Phase PF |
| **Page 5.** | | **Page 6.** | | **Page 7.** | | **Page 8.** | |
| KWr | R Phase KW | KVARr | R Phase KVAR | KVAr | R Phase KVA | KVA | System KVA |
| KWy | Y Phase KW | KVARy | Y Phase KVAR | KVAy | Y Phase KVA | KW | System KW |
| KWb | B Phase KW | KVARb | B Phase KVAR | KVAb | B Phase KVA | PF | System PF & Hz Frequency |
| **Page 9.** | | **Page 10.** | | **Page 11.** | | **Page 12.** | |
| KVAR | System KVAR | Kwh | System Kwh | Kvarh | System Kvarh | Kvah | System Kvah |

☞**In ideal condition the back light will turn off after 5 min.And if any key is pressed back light will on.**

☞**INSTALLATION & COMMISSIONING:**

1. Push the unit into the panel and mount using the clamps provided.
2. Connect the three phases with the phase sequence being R-Y-B to the corresponding terminals on the unit. Make sure that the three phases coming to the unit come through control fuses of 1.0 Amp rating. This will protect the electronics inside from damage due to sever over voltages or phase faults in the system.
3. In case of three phases four wire systems, connect the neutral to the terminal marked N.
4. Connect the two wires from the R-phase CT to terminals marked M1 & L1 such that S1 from CT goes to M1 on the unit.
5. Connect the two wires from the Y-phase CT to terminals marked M2 & L2 such that S1 from CT goes to M2 on the unit.
6. Connect the two wires from the B-phase CT to terminals marked M3 & L3 such that S1 from CT goes to M3 on the unit.
7. Switch on the auxiliary supply. The unit will come alive. The first parameter to be displayed will be CT Primary and then Station ID. This is displayed only once at the time of start-up of the unit and then show first page.

☞**CHANGING CT RATIO:**

Press the P/E key for 10 seconds, the display will show present **CT primary**. Press same key to select CT Primary. At end of display page, "P" will start blinking which shows that parameter is selected for programming. Now, you can change CT Primary by pressing up ▲ or down P/E key. The CT Primary can be changed in steps of 5A up to 200A, and in steps of 25A thereafter up to 8000A. After reaching 8000, if the key is kept in pressed condition, the CT Primary will rollover and start with 5A again. **When the desired CT Primary is reached, leave the key**. After 10 seconds, the meter will automatically reset and show the First PTR, Second CT Primary and Third STATION ID, which has been programmed, and then show page you have freeze last time when meter was in scroll mode otherwise it will show the page you have keep last time when meter was on manual mode.

☞**CHANGING SCROLL MODE:**

Press the P/E key for 10 seconds, the display will show present **CT primary**. Now, Press ▲ key to reach **SCROLL MODE** status (Yes or No). Press P/E key to select Scroll. At end of display page, "P" will start blinking which shows that parameter is selected for programming. Now, you can change Scroll mode to YES or NO by pressing up ▲ or down P/E key. After setting the desired Scroll Mode **leave the key**. After 10 seconds, the meter will automatically reset and show the First PTR, Second CT Primary and Third STATION ID, which has been programmed, and then show page you have freeze last time when meter was in scroll mode otherwise it will show the page you have keep last time when meter was on manual mode.

☞**CHANGING PT RATIO:**

Press the P/E key for 10 seconds, the display will show present **CT primary**. Now, Press ▲ key to reach **Ptr**. Press P/E key to select parameter for programming. At end of display page, "P" will start blinking which shows that parameter is selected for programming. Now, you can change PT Ratio by pressing up ▲ or down P/E key. PT Ratio can be set to 1, 3.77, 4, 20, 30, 60, 100, 200, 300 or 600. When the desired PT Ratio is set, **leave the key**. After 10 seconds, the meter will automatically reset and show the First PTR, Second CT Primary and Third STATION ID, which has been programmed, and then show page you have freeze last time when meter was in scroll mode otherwise it will show the page you have keep last time when meter was on manual mode.

☞ **CHANGING STATION ADDRESS:**

Press the P/E key for 10 seconds, the display will show present **Ptr**. Now, Press ▲ key to reach **Addr**. Press P/E key to select parameter for programming. At end of display page, "P" will start blinking which shows that parameter is selected for programming. Now, you can change Station Address by pressing up ▲ or down P/E key. Station Address can be programmed from 1 to 255. When the desired Station Address is reached **leave the key**. After 10 seconds, the meter will automatically reset and show the First PTR, Second CT Primary and Third STATION ID, which has been programmed, and then show page you have freeze last time when meter was in scroll mode otherwise it will show the page you have keep last time when meter was on manual mode.

# TRINITY ENERGY SYSTEMS PVT, LTD.

## Protocol details for RS485 MODBUS communication of Trinity meter NF29.

Communication Line Parameters: 9600 / 8 / N / 1

The register map is described below. All addresses are in decimal. All parameters are Unsigned long. If illegal address is sent in the query or the host tries to read more than 32 bytes of data in one query, exception message is generated.

The parameter name (description) and multiplication factors are also mentioned. Reserved values are for future use. They are transmitted as zeroes.

| 3 Phase 3000 - 3019 | 3 phase 3030 - 3049 | 3 phase 3060 - 3079 | 3 phase 3090 – 3109 | 3 phase 3120 – 3139 | MF |
|---|---|---|---|---|---|
| 3000-KVA | 3030-KWh | 3060-Reserved | 3090-Reserved | 3120-KVA-R | X100 |
| 3002-KW | 3032-KVAh | 3062-Reserved | 3092-Reserved | 3122-KVA-Y | X100 |
| 3004-KVAr | 3034-KVARh | 3064-Reserved | 3094-Reserved | 3124-KVA-B | X100 |
| 3006-PF | 3036-Hz | 3066-Reserved | 3096-Reserved | 3126-KW-R | X1000 |
| 3008-Avg.VLL | 3038-Vry | 3068-Vyb | 3098-Vbr | 3128-KW-Y | X100 |
| 3010-Avg.VLN | 3040-Vr | 3070-Vy | 3100-Vb | 3130-KW-B | X100 |
| 3012-Avg.Amps. | 3042-Ir | 3072-Iy | 3102-IB | 3132-KVAR-R | X100 |
| 3014-KVAR-B. | 3044-PF-R | 3074-PF-Y | 3104-PF-B | 3134-KVAR-Y | X100 |

**Hz - Hz has a multiplication factor of 100 & not 1000 .e.g. If Hz is 48.33, then it is sent as 4833.**

for providing resolution, all parameters except PF are multiplied with 100 before transmitting. Thus if the KVA value as 278.99, it is sent out as 27899. ***PF has a MF of 1000, instead of 100***. Thus, a PF value of 0.987 is sent as 987.

If an attempt is made to read from some address other than the valid addresses, the exception response is sent.

**EXCEPTION CODE:**

In the event that the query from the HOST has no communication error, but there is some error in specifying the address of registers to be read, the meter returns an exception message .The format of the exception message will be as Under:

| Unit Address | 0x83 | Exception code | CRC | CRC |
|---|---|---|---|---|

Exception Code can have only one value: 03: If the address is not a valid start address or host has requested more than 32 bytes of data, this code is returned.