Technical Datasheet

Alpha 10X

VAF Meter



Alpha 10X measures important electrical parameters in 3-phase 4-wire, 3-phase 3-wire, 1-phase 2-wire and 1-phase 3-wire (split-phase) network. It displays many parameters at a glance. It measures electrical parameters like Voltage, Current, Frequency & Power Factor. The instrument has one optional built-in relay output which can be configured as limit output. MODBUS RTU over RS485 is built in for remote monitoring and configuration.

Application

- Internal monitoring/auditing
- Genset, Test Benches and Laboratories
- Sub-metering
- Electrical load monitoring

Product Features

True RMS Measurement
- The instrument measures distorted waveform up to 15th harmonic

Front Panel Keys
- Two keys are useful for easy setup navigation and changing setup parameters

Storage Of Parameters
- The instrument stores minimum and maximum values of System Voltage, System Current. Also Run Hour, ON Hours, number of AUX interrupts are stored

Display
- 3-line, 4-digit bright red LED display & indication LEDs
- Display can be configured for automatic scrolling of parameters or manual scrolling through keys as per requirement and application of user

On Site Programmable
- It is possible to program primary, secondary of external potential transformer (PT) & primary, secondary of external current transformer (CT) Auto scroll via front panel keys and MODBUS RTU

MODBUS RTU (RS485) Output
- RS485 output enables the instrument to transmit all the measured parameters over standard MODBUS RTU protocol The instrument can be configured baud rate, Device address via Keys & MODBUS RTU communication

Limit (Alarm) Output
- Potential free 1 NO contact Fully configurable trip point, hysteresis, on and off delays for Limit Output operation

Compliance To International Safety Standards
- Compliance to international safety standard IEC 61010-1:2017

Auxiliary Supply
- Higher Auxiliary power supply with voltage range 60V-300V AC/DC
- Lower Auxiliary power supply with voltage range 20V 60V AC/DC

EMC Compatibility
- Compliance to International standard IEC 61326

Technical Specifications

Input Voltage	
Nominal input voltage (AC RMS)	288.68V L-N (500V L-L)
System PT secondary values	100V L-L to 500V L-L programmable on site.
System PT primary values	100V L-L to 1200kV L-L programmable on site. (1000 MVA maximum power per phase) (1200kV L-L when CT primary ≤ 1002A)
Max continuous input voltage	120% of nominal value
Overload Indication	"-OL-" >121% of Nominal value
Nominal input voltage burden	< 0.1VA approx. per phase
Overload Withstand	2 x rated value for 1 second, repeated 10 times at 10 second intervals
Input Current	
Nominal input current	1A / 5A, on-site programmable
System CT primary values	From 1A to 9999A (1000 MVA maximum power per phase) (9999A when PT primary ≤ 120kV L-L)
Max continuous input current	120% of nominal value
Overload Indication	"-OL-" >121% of Nominal value
Nominal input current burden	< 0.3VA approx. per phase
Overload Withstand	20 x rated value for 1 second, repeated 5 times at 5 second intervals
Auxiliary Supply	
Higher Auxiliary supply range	60-300V AC/DC (230V nominal)
Lower Auxiliary supply range	20-60V AC/DC
Aux Supply frequency	45 to 65 Hz range
Auxiliary Supply burden	< 4VA approx (230V nominal).
Operating Measuring Ranges	
Current	5...120% of nominal value
Voltage	10...120% of nominal value
Power Factor	0.5 Lag ... 1... 0.5 Lead
Frequency	40Hz to 70Hz
Reference Conditions for Accuracy	
Reference temperature	23°C +/- 2°C
Influence of temperature	0.025%/°C for Voltage & 0.025%/°C for Current
Input Waveform	Sinusoidal (distortion factor 0.005)
Input frequency	50/60 Hz ± 2%
Voltage Range	10... 120% of nominal value
Current Range	5... 120% of nominal value
Power Factor	40.....120% of nominal value of Voltage
	40.....120% of nominal value of Current

Technical Specifications

Display Update Rate	
Response time to step input	1 sec approx.
Accuracy	
Voltage	± 0.5% of Nominal value
Current	± 0.5% of Nominal value
Frequency	± 0.1% of mid-frequency
Power Factor	±2°
Applicable Standards	
EMC	IEC 61326 - 1, Table 2
Immunity	IEC 61000-4-2, 4-3, 4-4, 4-5, 4-6, 4-8, 4-11
Emission	CISPR 11
Safety	IEC 61010-1:2017
IP for water & dust	IEC 60529
Isolation	
Pollution degree	2
Installation category	III
High voltage test :	
All Circuit Vs Surface	3.5 kV RMS, 50 Hz,1 min
Input / AUX Vs Others	3.3 kV RMS, 50 Hz, 1 min
Input Voltage Vs Input Current	2.2 kV RMS, 50 Hz, 1 min
Input Vs AUX	3.3 kV RMS, 50 Hz, 1 min
RS485 Vs Relay	2.2 kV RMS, 50 Hz, 1 min
Environmental	
Operating temperature	-10 to +60°C
Storage temperature	-25 to +70°C
Relative humidity	0... 95% RH (non condensing)
Warm up time	Minimum 3 minutes
Shock (As per IEC60068-2-27)	Half sine wave, Peak acceleration 30 gn (300 m/s^2),duration 18 ms.
Vibration	10... 150...10 Hz, 0.15mm amplitude
Number of Sweep cycles	10 per axis
Enclosure	IP 20 (Terminal side) and IP 54 (Front side)
Interfaces	
Relay	250VAC, 5A AC; 30V DC, 5A DC
Modbus RTU	RS485, Baud rate : 4.8k, 9.6k, 19.2k, 38.4k 57.6k bps (Response time > 200ms)
Installation	
Mechanical Housing	Lexan 940 (Polycarbonate), Flammability Class V-0 acc. to UL 94, self extinguishing, non dripping, free of halogen
Mounting Position	Panel Mounted (96X96)
Connection Element	Conventional screw type terminal with indirect wire terminals (Screw Torque: 0.5N.m)
Connection Terminal	4 mm^2 solid or 2.5 mm^2 stranded cable
Weight	250 Gram Approx.

Technical Specifications

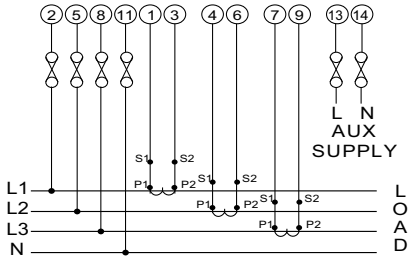
Parameter Measurement and Display

✓ : Available × : Not Available

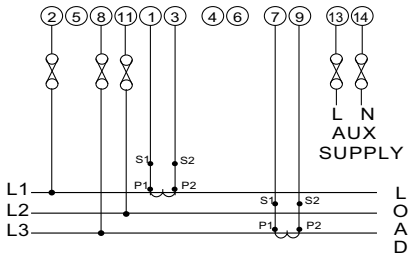
Sr No	Parameters	3 Phase 4 Wire	3 Phase 3 Wire	1 Phase 2 Wire	1 Phase 3 Wire
1.	System Volts	✓	✓	✓	✓
2.	System Current	✓	✓	✓	✓
3.	Voltage L1	✓	×	✓	✓
4.	Voltage L2	✓	×	×	✓
5.	Voltage L3	✓	×	×	×
6.	Voltage L1-2	✓	✓	×	✓
7.	Voltage L2-3	✓	✓	×	×
8.	Voltage L3-1	✓	✓	×	×
9.	Current L1	✓	✓	✓	✓
10.	Current L2	✓	✓	×	✓
11.	Current L3	✓	✓	×	×
12.	Frequency	✓	✓	✓	✓
13.	System Power Factor	✓	✓	✓	✓
14.	Power Factor L1	✓	×	✓	✓
15.	Power Factor L2	✓	×	×	✓
16.	Power Factor L3	✓	×	×	×
17.	RPM	✓	✓	✓	✓
18.	Min and Max System Voltage	✓	✓	✓	✓
19.	Min and Max System Current	✓	✓	✓	✓
20.	Run Hour	✓	✓	✓	✓
21.	On Hour	✓	✓	✓	✓
22.	Number of Interruptions	✓	✓	✓	✓
23.	Neutral Current	✓	×	×	×

Electrical Connections

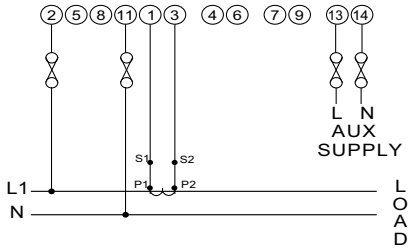
a) 3 Phase 4 Wire



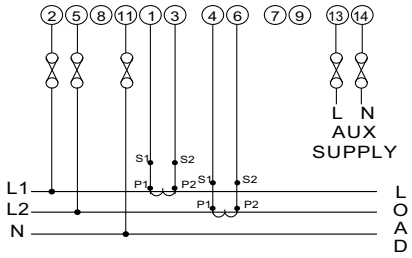
b) 3 Phase 3 Wire



c) Single Phase Load (1 Phase 2 Wire)

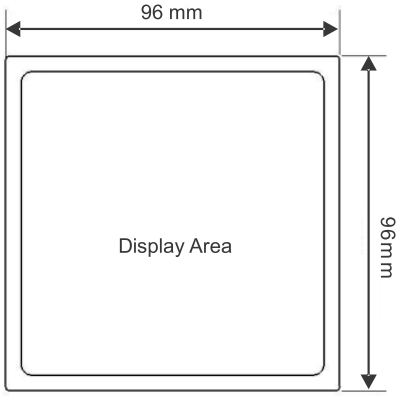


d) Split Phase (1 Phase 3 Wire)

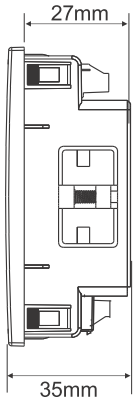


It is recommended that the wires used for connections to the instrument should have lugs crimped at the end. That is, the connections should be made with lugged wires for secure connections.

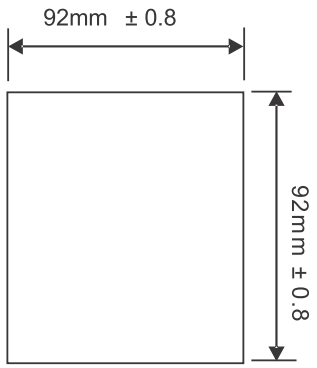
Dimensions



Front View



Side View



Panel Cutout

Ordering Information

Ordering Information	DE10-	3	3	01	02	X	X	5	00ST
Product Type	Alpha 10X								
System Type	3 Phase (On site configurable as 1/3 Phase)								
Input voltage	100-500V L-L 50/60Hz								
Input Current	CT - 1/5A								
Output Option	NONE					Z			
	RS485 + 1 Relay Output					R			
Auxiliary Supply	20-60VAC/DC						L		
	60-300 AC/DC						H		
Accuracy	Class 0.5								

Order Code Example

Order Code Example : DE10-330102RH500ST

Alpha 10X- Input 100-500VLL 50/60Hz, 1/5A, With RS485 + 1 Relay Output, Aux 60-300V AC/DC

Sifam Tinsley Instrumentation Inc.
2105, Barrett Park Dr, Unit 105,
Kennesaw, GA 30144
(USA)
E-mail Id : psk@sifamtinsley.com
Web : www.sifamtinsley.com
Contact No. :+1 404 736 4903