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masibus

MFT20

Multifunction Transducer

Masibus MFT20 is a cost effective with versatile capabilities for electrical parameter monitoring and communication. It measures all sought of electrical parameters including voltage, current, PF, power and energy. All essential measuring values can be programmed to the output and are available through Modbus communication, the connection of the input signals can be freely programmed for 3 phase 3 wire as well as 3 phase 4 wire, for both balanced and unbalanced load.

High sampling rate and true RMS measurement gives accurate reading under all harmonic conditions; measured electrical parameters in MFT can be converted to equivalent current or voltage signals. These signals can be flexibly assigned upto two analog O/P channels. Any parameter can be assigned to any channel as well as single parameter can be assigned to multiple channels. MFT has isolated interface between device' internal electronics and field to ensure personal safety.

Based on field requirement MFT20 offers various accuracy class options like class 0.2 / class 0.5 accuracy as per IEC 60688.

MFT20 replaces a number of conventional single function transducers and thus reduces the inventory.

More than basic metering, it provides THD measurements, maximum demand and optionally a programmable pulse output.

Multifunction transducer stores energy and programmed parameters into non-volatile memory.

MFT can be further connected to SCADA network, PLC, other indicating instruments and monitoring systems via RS-485 Modbus RTU port.

Features

- Available in accuracy class 0.5 or 0.2 as per IEC 60688 standard
- Field programmable CT/PT ratio
- True RMS, microcontroller based transducer
- 28 Electrical parameters can be mapped to analogue O/P
- Field programmable up to two analogue output
- Long range, site-configurable inputs and outputs
- Load-independent accuracy on all outputs
- Four quadrant measurement
- RS-485 Modbus-RTU communication protocol
- User assignable Modbus registers
- Energy pulse output
- Maximum demand & THD measurement up to 31st harmonics
- Old register to store the previously cleared energy values
- Last day energy & min. max. value measurement
- Finger touch proof terminals
- DIN-Rail & wall mount
- GUI based site configuration software

Applications

- Interface with PLC / SCADA / RTU
- Remote monitoring and indicating instruments
- Energy monitoring management system (EMS)
- Process monitoring & control
- Electric utility-generation, transmission and distribution
- Control & relay panels
- Motor control center panels
- Power control center panels
- Process control
- DG set panels
- Original equipment manufacturers (OEMs)
- HVAC & building management system
- HV & LV switchgear panels

TECHNICAL SPECIFICATIONS

Specification	Aux. - Powered Model	Self - Powered Model
Accuracy Class	Class 0.5, Class 0.2	
System Type	3Ph4W / 3Ph3W (Site selectable)	
Input Voltage		
Direct Measuring Voltage	20VL-N to 300VL-N (34VL-L to 520VL-L)	63.5VL-N to 240VL-N
PT Secondary (Nominal Voltage-Vn)	63.5VL-N to 240VL-N	63.5VL-N to 240VL-N
Burden	<0.2 VA per phase	
PT Ratio	Programmable on site	
Max. Continuous Input Voltage	1.3 x Nominal value	
Overload Withstand	2 x Nominal value for 5 s	
Accuracy Range	10% - Vn - 120% [Minimum voltage is 20V]	50% - Vn - 120% [Minimum voltage is 57.8V]
Input Current		
Direct Measuring Current	0.01A to 6A	
Secondary Current (Nominal Current-In)	1A or 5A	
Burden	<0.2VA per phase	
CT Ratio	Programmable on site	
Max. Continuous Input Current	2 x Nominal value	
Overload Withstand	20 x Nominal value for 1 s	
Accuracy Range	10% -In-120%	
Frequency	45 to 65Hz	
Display		
LED Display (Optional)	1 line 4 digit 0.32" RED 7-segment LED display	
LCD Display (Optional)	16x2 Backlight LCD	-
Measured Parameters		
Voltage	L1-L2, L2-L3, L1-L3 and average (3Ph3W & 3Ph4W) L1-N, L2-N, L3-N & average (1Ph & 3Ph4W)	
Current	All phase currents, average, sum, neutral current (3P4W)	
Frequency	System frequency	
Power Factor	Phase wise PF & Average PF	
Phase Angle	Phase wise	
Power (Phase Wise & Total)	Active power (W, KW & MW) Reactive power (VAR, KVAR & MVAR) Apparent power (VA, KVA & MVA)	
Energy (Phase Wise & Total)	Active energy for import & export (Separate) (KWh, MWh & GWh) Reactive energy for import & export (Separate) (KVARh, MVARh & GVARh) Reactive Energy Q1, Q2, Q3, Q4, Total Apparent energy (KVAh, MVAh & GVAh)	
Demand	Maximum power demand on KW/KVA Maximum current demand (Block/Sliding for 15/30 minutes window)	
Power Quality	THD & Harmonics for each voltage and current (3rd to 31st odd) Phase wise DPF & average DPF (Displacement Power Factor)	
Percentage Voltage & Current Unbalance (Amplitude method) ON hour, RUN hour (Up to 65000 hours Recording) Last day Energy for Total, Old Energy for Total, Old Overflow Count & Old Load Hours, Min. - Max. Value (V, I, PF, Frequency, Total w, Total VAR, Total VA) 15 minute values (configurable 15 minute/1 hour) of Active Energy Import, Active Energy Export, Reactive Energy Import and Reactive Energy Export		
Standard compliance	IEC 60688, IEC 61326-1	
Electromagnetic Interference / Compatibility (EMI/EMC)		
Electrostatic Discharge Test (ESD) [IEC 61000-4-2]		
Electromagnetic Field [IEC 61000-4-3]		
Burst Test [IEC 61000-4-4]		
Surge [IEC 61000-4-5]		
Conducted RF [IEC 61000-4-6]		
Power Frequency Magnetic Field [IEC 61000-4-8]		
Voltage Dip and Short Interruptions [IEC 61000-4-11]		
Conducted Emission [CISPR 11]		
Radiated Emission [CISPR 11]		
RS-485 Modbus Communication		
Interface	RS-485	
Protocol	Modbus-RTU	
Baud Rate	2400, 4800, 9600, 19200, 38400 (Selectable)	
Parity Bit	None, with 1 or 2 stop bit Odd or Even, with 1 or 2 stop bit	
Pulse Output		
Assigned Energy Parameter	WH/VARH/VAH	
Pulse Rate	Programmable from 1 to 60000 pulses per KWh[I] / 10KWh[I] / 100KWh[I] / MWh[I] / KWh[E] / 10KWh[E] / 100KWh[E] / MWh[E] / KVARh[I] / 10KVARh[I] / 100KVARh[I] / MVARh[I] / KVARh[E] / 10KVARh[E] / 100KVARh[E] / MVARh[E] / KVAh / 10KVAh / 100KVAh / MVAh of total.	
Pulse Duration	20 mSec ± 10%	
Output Type	Open collector	
Ratings	24VDC,20mA	

TECHNICAL SPECIFICATIONS

Analog Output (Optional)		
No. of Outputs	Up to 2	-
Output Type	4-20mA, 0-20mA, 0-10V, 0-5V, 1-5V DC	-
Response Time	<600 ms	-
Mapping	Field selected from inputs parameters	-
O/P Impedance	<550 Ω for mA O/P >2 KΩ for V O/P	-
Ripple	<0.4% Peak to peak	-

Power Supply		
Power Supply	Standard: 85-265VAC, 50/60Hz or 100-300VDC Optional: 20-60 VDC	Self-powered from direct voltage/PT
Power Consumption	< 3VA (Without Analog O/P) < 7VA (With Analog O/P)	<3.0 VA

Isolation (Withstanding voltage)

Between primary terminals* and secondary terminals**: **At least 3000 V AC for 1 minute**
Between primary terminals*: **At least 3000 V AC for 1 minute**
Between secondary terminals**: **At least 500 V AC for 1 minute**
* Primary terminals indicate aux power terminals, voltage input terminals and CT input terminals.
** Secondary terminals indicate pulse O/P, communication O/P, analog O/P-1 and analog O/P-2
Insulation resistance: 200MΩ or more at 500 V DC between power terminals and grounding terminal

Physical	
Mounting Type	DIN-Rail mounting / Wall mounting
Dimension (in mm)	70H x 100W x 112D
Case Material	ABS
Weight	0.5 Kg
Terminations	Metal screw can accept up to two 2.5 mm^2 wire or single 4.0 mm^2 wire

Environmental	
Operating Temperature	-10 to 60°C
Storage Temperature	-40° to 70°C
Usage Group	I as per IEC60688
Relative Humidity	Up to 95% non-condensing
Warm Up Time	5 minutes
Installation Category	CAT III for < 300V AC
Protection Class	II
Pollution Degree	2
Ingress Protection	Housing IP40, terminals IP20

Ordering Code

Model	Accuracy		Analog Output				Power Supply		Display	
			Output type		No. of Output					
MFT20	X		X		X		X		X	
	1	Class 0.5	N	None	N	None	U1	Aux. Powered 85-265VAC/ 100-300VDC	N	None
	2	Class 0.2	1	4-20mA	1	One			LCD	LCD
			2	0-20mA	2	Two			LED	LED
			3	0-5V			U2	Aux. Powered 20-60VDC		
			4	1-5V						
			5	0-10V			U3*	Self Powered 57.5V AC to 520VAC		
			S	Special▾						

▾Consult Factory

Note*: Analog output option is not applicable in case of self-powered model

Sonepar India Private Limited
B-30, GIDC Electronics Estate, Sector-25, Gandhinagar-382016, Gujarat, India.
Tel: +91 79 23287275-77
E-mail: sales.masibus@soneparindia.com, Web: www.masibus.com

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