GE
Grid Solutions

iSTAT M232

Communicating Measurement Centre

The GE iSTAT M232 measurement centre provides economical, 0.5% Class 1 accuracy measurement and energy monitoring of single or 3-phase circuits in utility and industrial applications. The iSTAT M232 also utilizes software setup and auto-ranging CT inputs to ease installation and provides Serial or USB communications along with standard pulse and optional tariff outputs for easy system integration.

Key Benefits

High Accuracy Measurements

The iSTAT M232 provides Active Energy IEC 62053-21 Class 1 accuracy and measures key metrics such as Power (Active, Reactive, Apparent); Power Factor; Voltage; Current Frequency; Energy (Active, Reactive) and Total Harmonic Distortion (THD - Current; Phase; Line).

Variety of Communications and I/O Options

The iSTAT M232 family supports Modbus RTU protocol over Serial or USB communications ports. The M232 comes standard with pulse outputs and cane be optionally equipped with two tariff inputs. This provides significant flexibility to meet communications requirements for easy integration and communication of energy monitoring data.

Easy Installation and Setup

The iSTAT M2x3 family uses a standard 96mm square panel mounting for easy installation and software-based setup through provided iSTAT QDSP setup software. Furthermore, the current inputs are auto-ranging 1A/5A for easy ordering and installation.

High Accuracy Measurements

- IEC 62053-21 Class 1 Accuracy
- Measurement of key energy metrics and current and voltage THD values

Variety of Communications and I/O options

- Support Modbus and DNP3 communications over Serial or USB ports
- Standard pulse outputs with optional tariff inputs

Easy Installation and Integration

- iSTAT QDSP setup software for configuration
- Standardized 96mm square panel installation
- Auto-ranging CT inputs 1A/5A for easy ordering and installation

FEATURES	BENEFITS
Multifunction configurable measurement centre	Many site applications can be fulfilled from a single product
Configurable connections for single and 3-phase balanced and unbalanced loads	Easy to specify the measurement centre for any application, including when full details are not available
Auto-range voltage and current inputs, up to 500 V and 5 A	Easy to specify the measurement centre for any application, including when full details are not available
Universal AC/DC power supply as standard	Power supply suits most site requirements
0.5% measurement accuracy, true RMS	Accurate measurements of any electrical network regardless of distortion
Class 1 energy measurement, combined with tariff inputs and energy pulse outputs	Able to perform energy measurement and functions
RS232, RS485 or USB communicatons using MODBUS RTU	Allows connection to most remote energy management, DCS and SCADA systems
Software and hardware alarms on M232	Alarms increase the range of applications that the measurement centre can be used for
Configuration using QDSP software on M232	Easy to use software allowing fast configuration

## Flexible Installation and User-Friendly Design

The M232 range supports flexible installation with a multitude of features including connections that have autoranging on voltage and current input circuits; wrong connection warnings; and QDSP setup software and setup wizard. The auto-ranging current and voltage inputs use 5A and 500V as the maximum nominal secondary values respectively. Furthermore, the CT and VT secondary values do not need to be specified at the time of order as these can be configured within the M2x3.

Finally, the M232 has a user-friendly display for localized viewing of desired information. Data is displayed on 128 x 64 dot graphic LCD with illumination (37 x 69 mm).
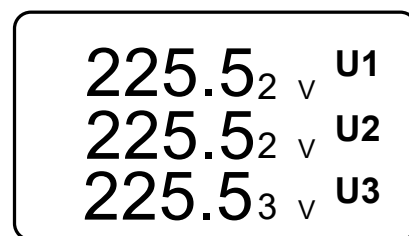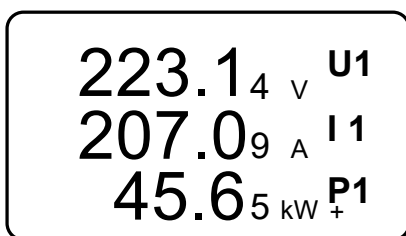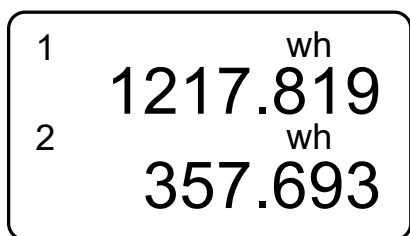
QDSP Settings Software

The iSTAT M232 uses iSTAT QDSP settings software which is available for download. QDSP settings software is used across the range of GE iSTAT programmable measurement center and transducer products. The software provides functionality for device setup, simulation and visualization.

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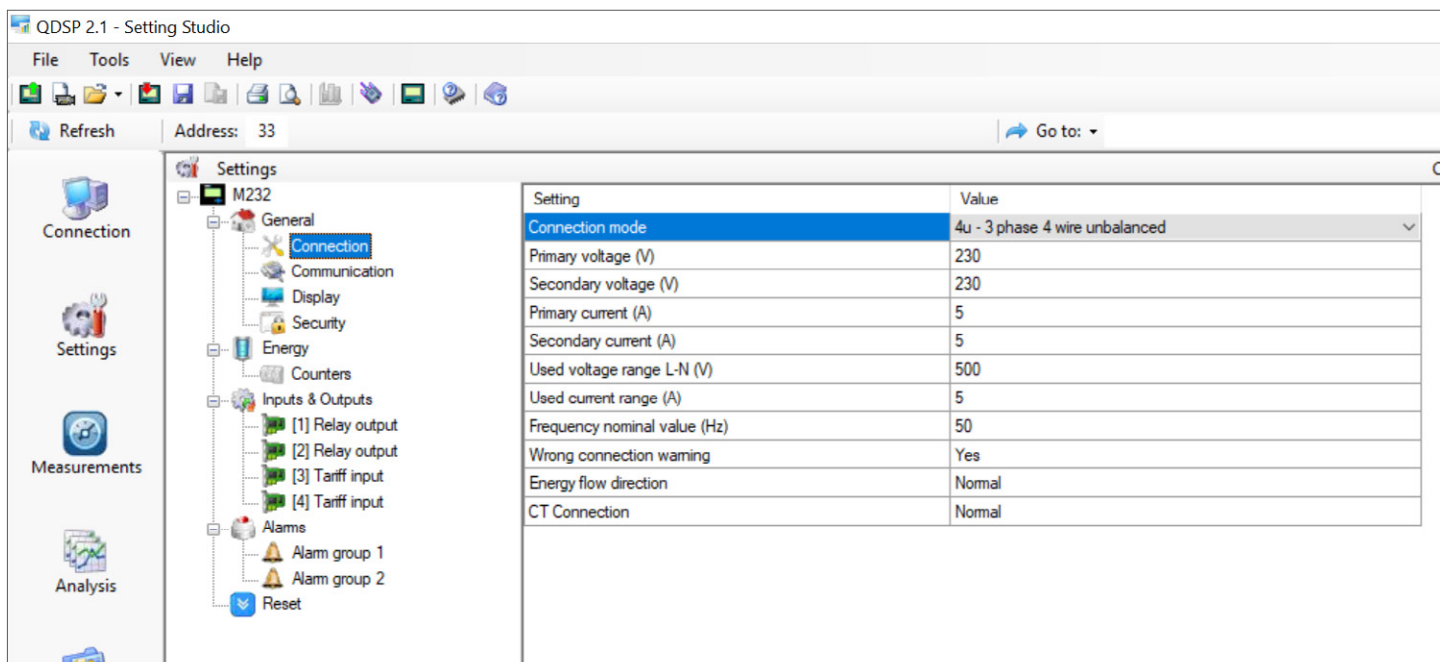
Comprehensive Measurements

The M232 measures over 60 instantaneous values including values that are measured according to IEC standard listed in the table below. Some measurements can be displayed locally and/or communicated to monitoring or SCADA systems.

MEASURAND	ACCURACY CLASS	STANDARD
Voltage L-N, L-L	0.5	IEC 61557-12
Current	0.5	IEC 61557-12
Active power (I_N = 5 A)	0.5	IEC 61557-12
Active power (I_N = 1 A)	0.5	IEC 61557-12
Active energy	Class 1	IEC 62053-21
Reactive energy	Class 2	IEC 62053-23
Frequency (f)	10 mHz	IEC 61557-12
Power factor (PF)	0.5	IEC 61557-12
THD (U)	0.5%	IEC 61557-12
THD (I)	0.5%	IEC 61557-12

Dimensional Drawings

Through Hole Connection
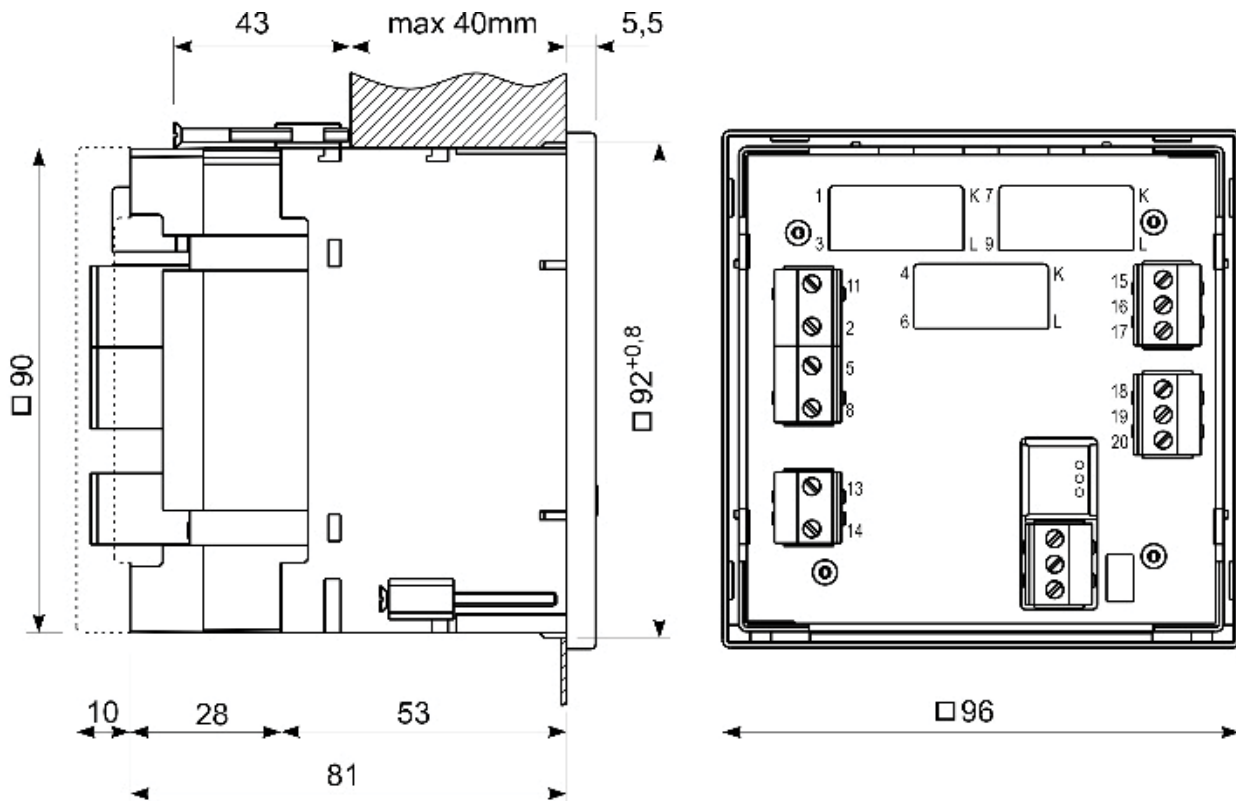
*All dimensions in mm*

Connection terminals and markings

FUNCTION		CONNECTION	
Measuring input	AC current	IL1	CT1
		IL2	CT2
		IL3	CT3
	AC voltage	UL1	2
		UL2	5
		UL3	8
		N	11
Inputs / outputs	I/O 1, 2	I/O – 1	15
		Common (1, 2)	
		I/O – 2	16
	I/O 3, 4	I/O – 3	
		Common (3, 4)	17
		I/O – 4	18
Auxiliary power supply		+ / AC (L)	13
		– / AC (N)	14
Communication	RS232/RS485 /M-Bus	Rx / A / M+	21
		GND / C / NC	22
		Tx / B / M	23
	USB	USB type B	
	Service USB	Mini USB	
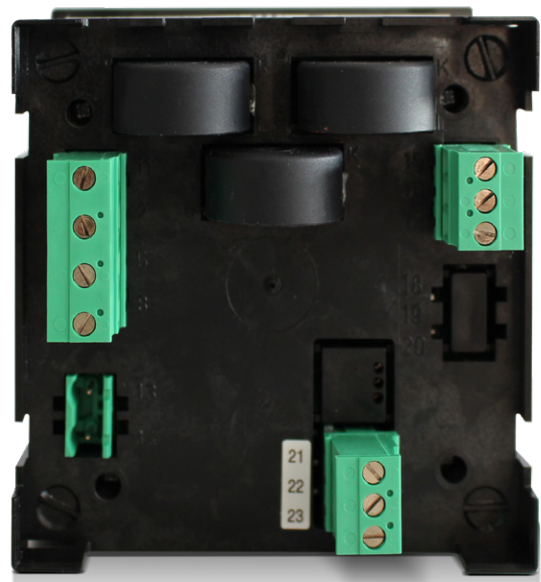
M232 View of rear connections

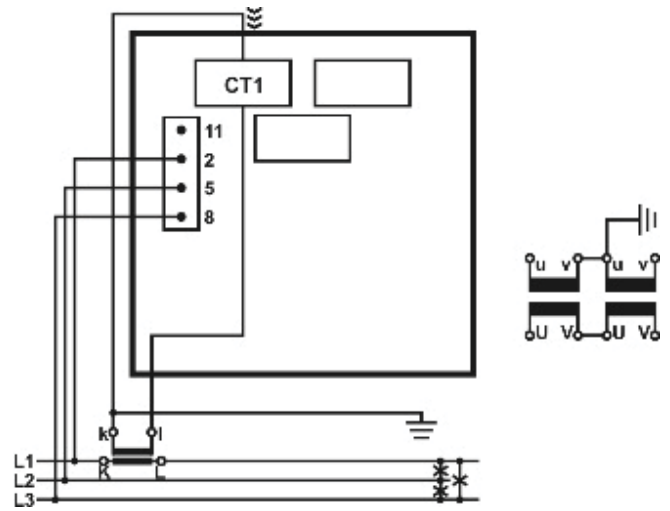## Wiring Diagrams

Through Hole CT Connection
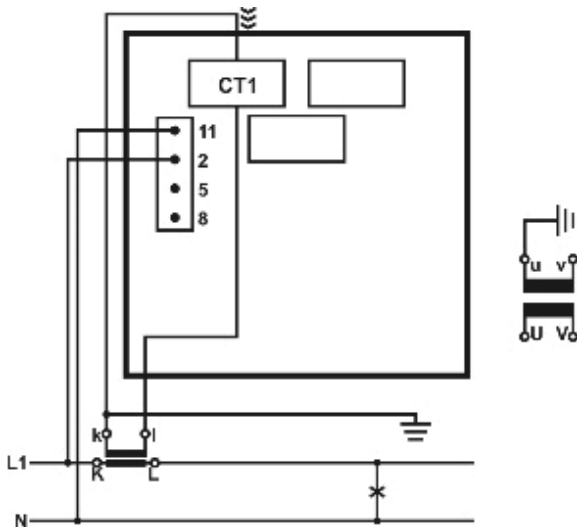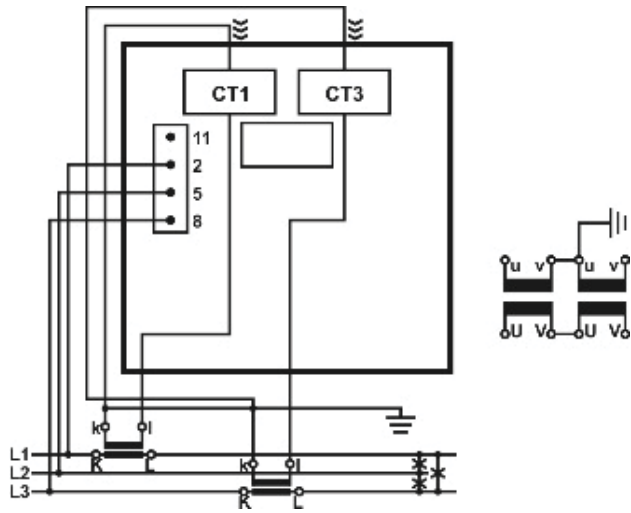
1b (1W1b)
Single-phase connection

3b (1W3b)
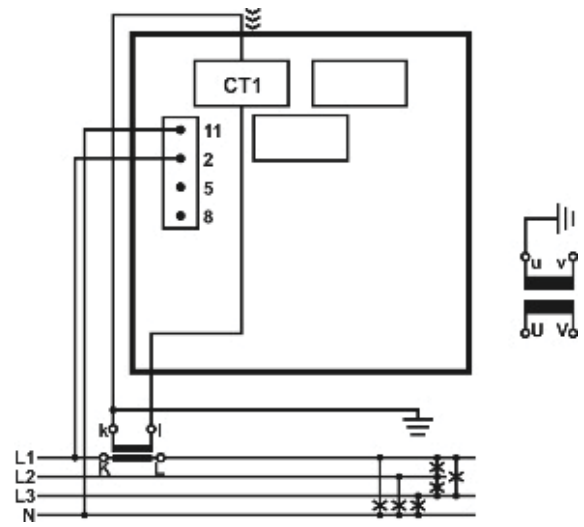Three-phase, three-wire connection with balanced load

Wiring Diagrams (Cont'd)

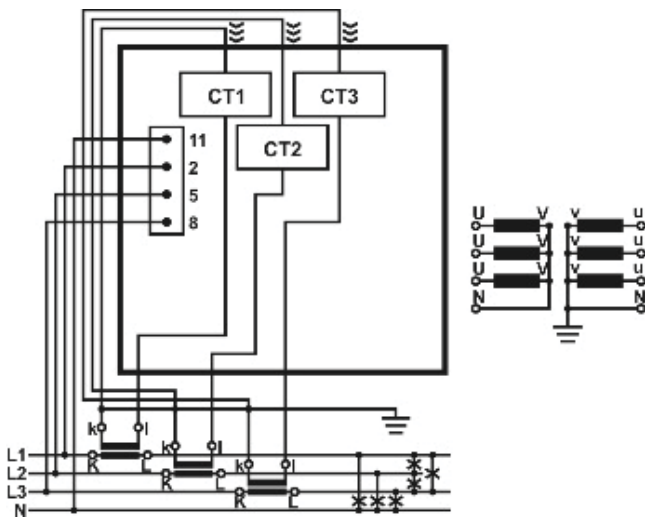Connection with Through Hole (Option X)

3u (2W3u)
Three-phase, three-wire connection with unbalanced load

4b (1W4b)
Three-phase, four wire connection with balanced load

4u (3W4)
Three-phase, four wire connection with unbalanced load

Technical Specifications

VOLTAGE MEASUREMENTS

- Measuring range 10 ... 600 V_{LN}
- Nominal voltage(UN) 50 ... 500 V_{LN}
- Max. measured value (cont.) 600 V_{LN} ; 1000 V_{LL}
- Overload 2 × U_N; 10 s
- Consumption < 0.1 VA
- Input impedance 3.3 MΩ per phase

CURRENT MEASUREMENTS

- Measuring range 0.01 ... 10 A
- Nominal current (I_N) 1 / 5 A
- Max. measured value 12.5 A sinusoidal
- Max. allowed value (thermal) 15 A cont.
- Overload 20 × I_N; 1s

FREQUENCY MEASUREMENTS

- Frequency measuring range (Only for frequency meas.) 16 ... 400 Hz (on comm.) f_N ± 30 Hz (on analogue out)
- Nominal frequency (f_N) 50/60 Hz

POWER SUPPLY

UNIVERSAL SUPPLY – FULL RANGE
- Nominal voltage AC range 48 ... 276 V
- Nominal frequency range 40 ... 65 Hz
- Nominal voltage DC range 20 ... 300 V
- Consumption < 3.5 VA

AC POWER SUPPLY
- Nominal voltage AC 57.7 / 63.5 / 100 /110 / 230 / 240 / 400 / 440 / 500 V
- Nominal frequency range 40 ... 65 Hz
- Consumption < 3.5 VA

COMMUNICATION

SERIAL COMMUNICATION RS485
- Connection type network
- Insulation Protection class II 3.5 kV AC TRMS 1 min
- Max. connection length 1000 m
- Transfer mode Asynchronous
- Protocol MODBUS RTU / DNP3
- Transfer rate 2.4 kBaud to 115.2 kBaud

USB COMMUNICATION
- Connection type Direct
- Max. connection length 5 m
- Insulation Protection class II 3.5 kV AC TRMS 1 min
- Transfer mode Asynchronous
- Protocol MODBUS RTU / DNP3
- Transfer rate USB 2.0

ENVIRONMENTAL

- Ambient temperature usage group III
- Operating temperature - 10 to +60 °C
- Storage temperature - 40 to +70 °C
- Maximum humidity ≤ 95% r.h. non-condensing
- Altitude ≤ 2000 m

MECHANICAL

- Dimensions: 96 mm × 96 mm × 96.5 mm (CT 101.5 mm)
- Mounting: Panel mounting 96 mm × 96 mm
- Required mounting hole: 92+0.8 mm × 92+0.8 mm
- Weight: 500 g
- Enclosure material: PC/ABS

WIRING

- Voltage inputs (4): <=2.5 mm^2 , AWG 24-12 single wire
- Current inputs (3): <= Ø 6 mm one conductor with insulation
- Supply (3): <= 2.5 mm^2 , AWG 24-12 single wire
- Com, I/O: <= 2.5 mm^2 , AWG 24-12 single wire

COMPLIANCE

- IEC 61557-12 Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. – Equipment for testing, measuring or monitoring of protective measures
- IEC 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use
- IEC 62053-21* Electricity metering equipment (a.c.) Particular requirements
- IEC 62053-22* Electricity metering equipment (a.c.) Particular requirements
- IEC 62053-23* Electricity metering equipment (a.c.) Particular requirements
- IEC 62053-31* Electricity metering equipment (a.c.) Particular requirements
- IEC 61326-1 EMC requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements
- IEC 60529 Degrees of protection provided by enclosures (IP code)
- UL 94 Tests for flammability of plastic materials for parts in devices and appliances
- IEC 61158 Industrial communication networks – Fieldbus specifications (Type 3)
- IEC 13757 Communication system for and remote reading of meters

* Partial compliance

Additional Technical Specifications can be found in the Instruction Manual

Ordering Codes

M232	*	*	*	*	*	*	*	*	*	*	Description
iSTAT M232											Communicating Measurement Centre
Electrical Network	X										Menu Configurable
Accuracy (±% of reading)		A									0.5% measured values (energy Class 1)
Secondary Current			R								Auto-Range 1 & 5A
Secondary Voltage				B							63.5V (for 57.5V to 69.3V L-N or 100V to 120VL-L)
				R							Auto-Range 50...500V
Auxiliary Voltage:					U						Universal AC/DC supply (48-276 Vac, 20-300 Vdc)
Communications						2					Serial RS232
						4					Serial RS485
						U					USB (type B)
Module 1 (rear)							2				2 x Pulse (Alarm) contacts (Always fitted)
Module 2 (rear)								N			Not Fitted
								T			2 x Tariff Inputs 230 Vac ±20% (Giving 4 Tariffs)
								U			2 x Tariff Inputs 110 Vac ±20% (Giving 4 Tariffs)
Finish									0		Standard
									1		IP54 (c/w Panel Gasket)
Design Suffix										0A	Factory determined

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