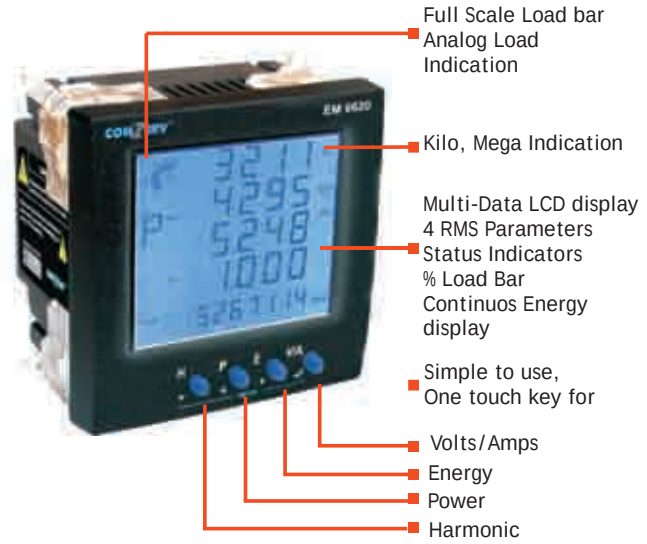
PowerCon - EM 6600 Series Power Quality + Control

A new approach to Energy Management



Applications

- Integration of Power Quality Measurement and Control:
  Monitors the over limit value of power quality parameters, which can trigger a sound or light alarm through a DO and hence control limits
- MCC (Motor Control Centers):
  Monitors loading characteristic of motor, Load ON and OFF duration can be recorded in eLAN using the DI status
- Optimizes Demand Utilization:
  Idle time minimization by monitoring the ON, OFF time
- Power Distribution Automation
- Breaker Status monitoring:
  Remote PC can be read the status of the breaker through the DI assigned in the meter
- Industrial Automation:
  Conveyor start / stop, Furnace heater ON/OFF etc can be controlled from a remote PC using DI status in the meter and eLAN Energy Management SW
- Energy Management System:
  Saves energy for Industrial and commercial complex
- Shopping malls , hotels, campus, utility, Govt facilities, intelligent buildings:
  Monitors the power quality and records energy consumption independently as well as part of the energy management network
- Switchboard digital network
- Power generating plants
- Monitors the RMS and power parameters, including the frequency, power factor, crest factor, K factor etc
- Textile ring frame machine:
  Specific Energy Consumption (SEC), doff duration and interval
- Heat Treatment furnace, Cement etc
- Waste / sewage treatment plants

EM 6600 PowerCon series is a new approach to Energy Management, integrating Control I/Os which enable Process Integration, Breaker Status Detection, Alarm output, Basic Demand control outputs and more, directly integrated within the meter. Conzerv has also developed matching advanced eLAN applications for Specific Energy Consumption in Heat Treatment, Texile Spinning, Cement and much more.

Features & Benefits

- I/Os - 4 Digital I/Ps, 2 Digital O/Ps, 2 Relay O/Ps
- Power Quality Measurement
- Min/Max Statistics
- True RMS metering
- Individual Harmonic measurements upto 31st Harmonics
- Measurement
  - Voltage and current 3 phase & Avg
  - Direct Connect up to 480 VLL
  - Frequency
  - Neutral current
  - kVA, kW, kVAR 3 phase & total
  - PF with lead and lag indication
  - Bi-directional kWh / kVARh Total & Net
  - kVAh (through communication)
- Wiring mode configuration
  - 3 phase, 3 wire Delta
  - 3 phase, 4 wire Star (Wye)
  - 1 phase, 2 wire
- Universal ac/dc power supply
  - 85 to 264 V ac or 100 to 300V dc
  - Burden < 3.5 W
- Communication Built In
  - Isolated RS 485 port
  - Modbus RTU Protocol

User Programmable

- PT Primary & Secondary and CT primary
- Digital / Pulse Output
- Alarms for Basic, Power, & Demand parameters (through ConPAD Software)

Accuracy

Parameter	Accuracy in %		Resolution	Range
	Cl 1.0	Cl 0.5		
Voltage	1.0	0.5	0.1%	40~276 ac VLN
Current	1.0	0.5	0.1%	1% ~ 120% CT
Neutral Current	2.0	1.0	0.1%	1% ~ 120% CT
Power	1.0	0.5	0.1%	0 ~ 9999 MW
Reactive power	1.0	0.5	0.1%	0 ~ 9999 MVAR
Apparent power	1.0	0.5	0.1%	0 ~ 9999 MVA
Power factor	1.0	0.5	0.01	±0.02 ~ 1.00
Frequency	0.2	0.1	0.01Hz	45 ~ 65 Hz
Energy	1.0	0.5	0.1kWh	0 ~ 99999999.9 kWh
Reactive Energy	1.0	0.5	0.1kVARh	0 ~ 99999999.9 kVARh
Harmonics	2.0	1.0	0.01%	0 ~ 100%
Unbalance factor	1.0	0.5	0.1%	0 ~ 100%

Features

	Parameters	Function	EM 6610	EM 6620
Real Time Measurement	Line to neutral voltage VLN	V1, V2, V3, VLNavg	●	●
	Line to Line voltage VLL	V12, V23, V31, VLLavg	●	●
	Current	I1(A1), I2(A2), I3(A3), In(An), Iavg(Aavg)	●	●
	Active Power	P1(kW1), P2(kW2), P3(kW3), P(kW)	●	●
	Reactive Power	q1(kVAR1), q2(kVAR2), q3(kVAR3), q(kVAR)	●	●
	Apparent Power	S1(kVA1), S2(kVA2), S3(kVA3), S(kVA)	●	●
	Power factor	PF1, PF2, PF3, PF	●	●
	Frequency	F	●	●
Energy & Demand	Active Energy	Imp-kWh, Exp-kWh, Total-kWh, Net-kWh	●	●
	Reactive Energy	Imp-kVARh, Exp-kVARh, Total-kVARh, Net-kVARh	●	●
	Apparent Energy	kVAh	C	C
	Demand	P_{Demand}, q_{Demand}, S_{Demand}		●
Power Quality	Voltage % unbalance	V	●	●
	Current % unbalance	I(A)	●	●
	Voltage THD	Star(Wye): THD V1, V2, V3, VLNavg Delta: THD V12, V23, V31, VLLavg	●	●
	Current THD	THD I1(A1), I2(A2), I3(A3), Iavg(Aavg)	●	●
	Individual Harmonics	V & I : 2nd to 31st		C
	Voltage Crest Factor (Distortion)	Crest factor for phase/line voltage		C
	Telephone interference factor (Higher Harmonics)	THFF		C
	Current K factor	K factor		C
Statistics	Max & Min Values with Time Stamp	V 1,2,3; V 12,23,31 I 1,2,3 (A 1,2,3) F P :kW, kVAR, kVA, PF P_{Demand} :kW, kVAR, kVA		●
I/O	Digital Input	4DI-12 to 24V dc,10 to 15mA (30mA max)	●	●
	Digital/Pulse Output*	2DO-Max Volt 100Vdc & Current <50mA	●	●
	Relay Output	2RO-'Form A' contact 3A/250V ac or 3A/30V dc	●	●
Comm Alarm	Over/Under Limit alarm			C
Comm	RS 485	Modbus Protocol	●	●
Time	Real Time Clock	Month: Date: Year Hour: Minute: Sec	●	●

Note:

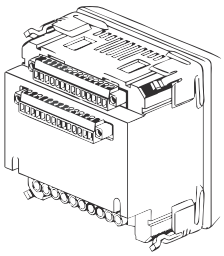
●= Standard, C= Only through communication

Max ,Min Time Stamp available only through Communication

* Additional DC Supply & relay is required for control application

Digital Output can be configured for Pulse output only in EM 6610 and can be configured for Pulse or Alarm output in EM 6620

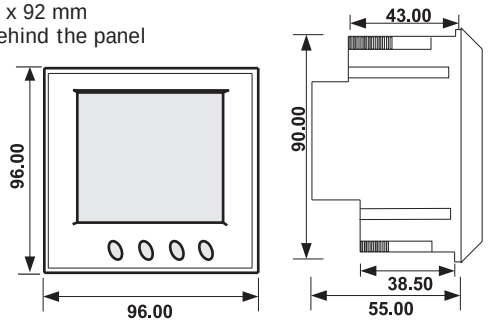
Rear View



Dimensions

Panel cutout: 92 x 92 mm

Depth: 64 mm behind the panel



Technical Specifications

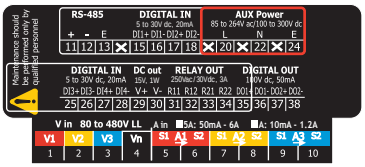
Sensing/Measurement	True RMS,1Sec update time
Accuracy	Class 0.5 as per IEC 60687 Class 1.0 as per IEC 61036
Input Voltage: PT Primary PT Secondary Overload	 100 to 500k VLL ac Editable from 100 to 440VLL Maximum input voltage 480VLL 2 times for continuous, 2500V ac for 1Sec (Non recurrence)
Aux Supply	85 to 264V ac or 100 to 300V dc
Power Consumption	< 3.5 W
Input Current: CT Primary CT Secondary Overload	 Upto 10000A 5A nominal, Range: 50mA to 6A 1A nominal, Range: 10mA to 1A (ordering option) For 5A meter:10A for continuous 100A for 1sec (non recurrence)
Burden	< 0.2VA
Frequency	45Hz to 65Hz
Communication Protocol Baud Rate	 RS 485, 2 wire, half duplexed, optical isolated Modbus RTU 1200 to 38400 bps
Environmental Temperature	Meter: -25°C to +70°C Display: -10°C to +70°C Storage: -40°C to +85°C Humidity: 5% to 95% non condensing
Standards	Environmental: IEC 60068-2 Safety: IEC 61557-2 EMC: IEC 61000-4/-2-3-4-5-6-8-11 Dimension: DIN 43700
Protection against Dust & Water	IP 40 (Front), IP 20 (Rear)
Weight	350 gms approx
Warranty	1 Year

Ordering Option

Specify

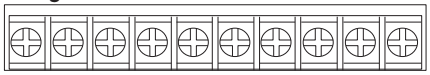
Model No.	Accuracy	CT Secondary
☐ EM 6610	☐ Cl 1.0 ☐ Cl 0.5	☐ 1A ☐ 5A
☐ EM 6620	☐ Cl 1.0 ☐ Cl 0.5	☐ 1A ☐ 5A

TB Label



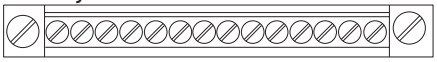
Terminal Details

Voltage & Current terminals



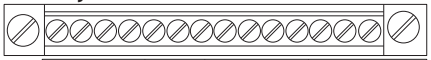
VOLTAGE INPUTS				CURRENT INPUTS								
V1	V2	V3	Vn	S1	A1	S2	S1	A2	S2	S1	A3	S2
1	2	3	4	5	6		7	8		9	10	

Auxiliary terminals



RS 485				DIGITAL IN 5 to 30V dc, 20mA				AUX Power 85 to 264V ac/100 to 300V dc					
+	-	E		DI1+	DI1-	DI2+	DI2-		L		N		G
11	12	13	x	15	16	17	18	x	20	x	22	x	24

Auxiliary terminals - I/O



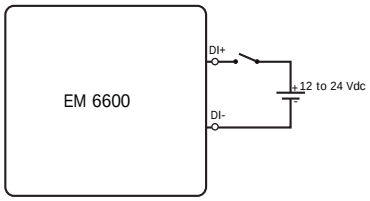
DIGITAL IN 5 to 30V dc, 20mA				DC OUT 15V, 1W		RELAY OUT 250V ac/30V dc, 3A				DIGITAL OUT 100V dc, 50mA			
DI3+	DI3-	DI4+	DI4-	V+	V-	R11	R12	R21	R22	DO1+	DO1-	DO2+	DO2-
25	26	27	28	29	30	31	32	33	34	35	36	37	38

I/Os

Digital Input

A separate auxiliary supply 12 to 24V dc is required for the digital inputs

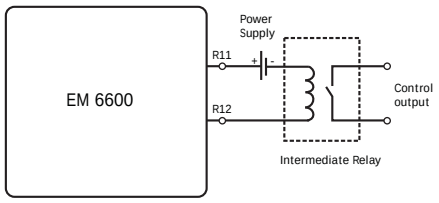
The current in loop should be 10 to 15mA (30mA max)



Relay Output

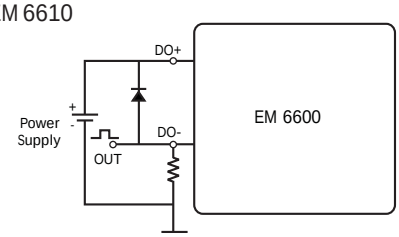
Relay type is mechanical " form A" contact 3A/250V ac or 3A/30V dc

Relay output is independent and can be configured for alarm parameters only through communication e.g : eLAN



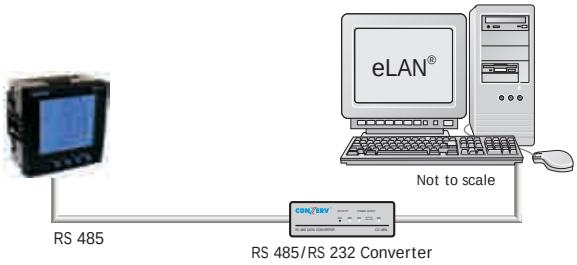
Digital Output

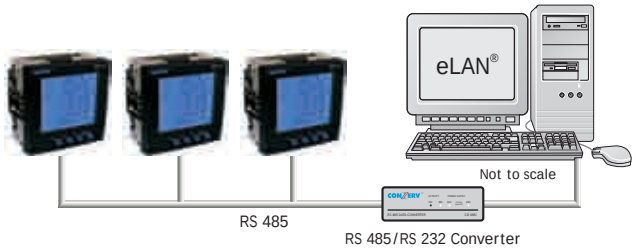
The max output voltage and current are 100Vdc and 50mA The Digital output can be used as Energy Pulse output or over limit alarming output in EM 6620 & only as Energy Pulse output in EM 6610



Digital Communication

RS 485 standard, communication capability using open modbus RTU protocol. The meters can be multi dropped using RS 485 twisted pair.
The baud rate can be set from 1200 to 38400. RS 485 Half duplex isolated serial channel connection.

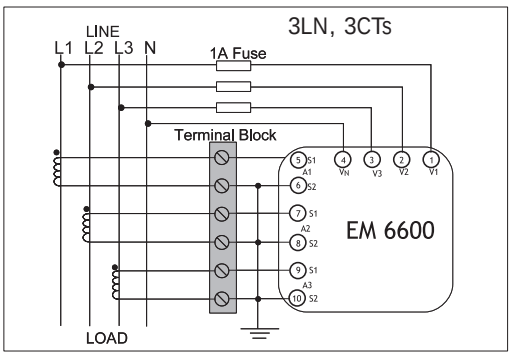


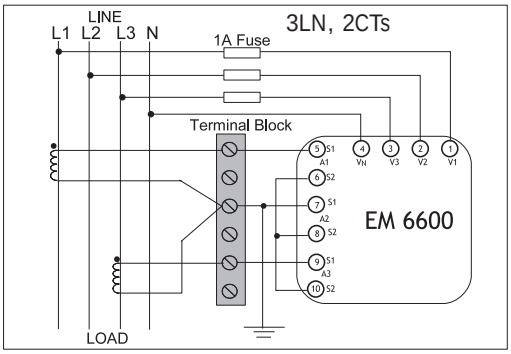


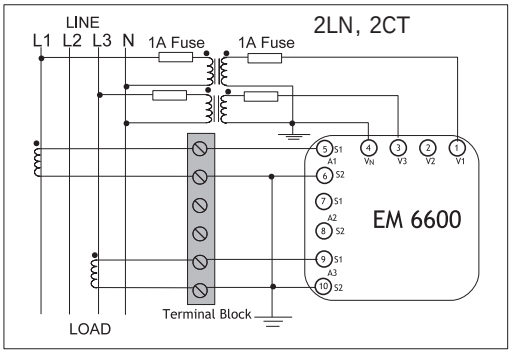
BMS Compatible

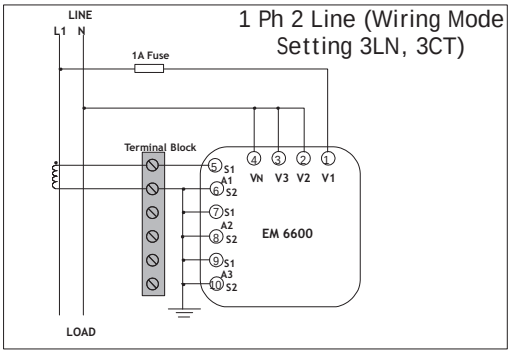
Access of parameter through RS 485 communication port. Integrates with BMS and EMS packages.

Wiring Diagram









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