26 TECHNICAL DATA

26.1 Power Supply

CT Operation

Voltage Range:	57.5 - 240V (3 ph 4 wire) 100 - 415V (3 ph 3 wire)
Standard Voltage (Dir):	120, 230, 277, 400V
Standard Voltage (VT):	57.7, 63.5, 100, 110, 115V 120, 200V
Current Range (In –Imax)	5-6A, 5-10A, 1-2A, 1-1.2A
Starting Current	Class 0.2s and Class 0.5s - 0.1% In Class 1 - 0.2% In, Class 2 - 0.3% In
Accuracy Class (kWh):	Class 0.2s, Class 0.5s, Class 1 and Class 2

Direct Connection

Voltage Range	57.5 - 240V (3 ph 4 wire) 100 - 415V (3 ph 3 wire)
Standard Voltage:	120, 230, 277, 400V
Current Range (Ib – Imax)	10 - 100A
Standard Currents (Ib):	10, 15, 20, 30, 40A
Starting Current	Class 1 - 0.4% Ib, Class 2 - 0.5% Ib
Accuracy Class (kWh):	Class 1 and Class 2
Supply voltage variation (Un) -	+15% -20%
Supply frequency -	50 or 60 Hz
Frequency variation -	±5%
Internal battery -	Lithium (CR2025-1HF) giving a total stand-by life of 10 years minimum
Replaceable Battery A1700 - Z, hardware suffix 4/5, design suffix J	Battery type CR2032 coin cell Battery life - 10 years at 25 ˚C - 5 years at 50 ˚C

26.2 Burden Per Phase

Voltage circuit (at 230V 50 Hz)

Single element	1.92W	4.17VA
Two/three element	1.12W	2.45VA

Current circuit

CT connected meter at 5A	0.12VA
CT connected meter at 1A	0.02VA
Whole Current meter at 100A	0.2VA

26.3 Product Design Life

15 years

(Certified Product life - 10 years)

26.4 Temperature Range

Meter operating range	-25° C to +55° C
Optional operating range	-25° C to +70° C (Revision Suffix H/J only, see model code)
Display operating range	-10° C to +70° C (* See note below)
Storage range	-25° C to +70° C
Humidity -	Annual Mean 75% (For 30 days spread over one year, 95%)

*** Note -** The contrast of the LCD may be impaired at temperatures lower than -10° C. This will not however damage the display and the contrast will return to normal when the temperature rises above -10° C.

26.5 Physical

Dimensions (in mm) -	Standard Terminal Cover - 279 (high) x 170 (wide) x 81 (deep)	
	Short Terminal Cover - 220 (high) x 170 (wide) x 81 (deep)	
	Short DIN accessories Cover - 240 (high) x 170 (wide) x 81 (deep)	
Weight -	1.5kg	
Standard Display	2 x 16 characters -	4.9mm x 3mm
Large character Display	Top line (16 characters) -	5.5mm x 3mm
	Bottom line (16 characters) -	8mm x 3mm
Current Terminals -	Terminal bore	8.0mm x 30mm deep
	Screw size	M6 (two per terminal)
	Cable size -	35 sq mm maximum
Voltage Terminals -	Screw size	M3
	Cable size -	5 sq mm maximum conductor
		5.5mm maximum diameter
		(including insulation)
Auxiliary Terminals -	Screw type	2.5mm diameter
	cable size -	1.5 sq mm maximum
		0.4 sq mm minimum

26.6 Output Relays (Internal)

Four output relays can be supplied as an option.

Type -	Volt free normally open contacts
Rating -	100mA maximum, 240V +15% a.c. maximum 24W rating, maximum pulse rate 4 Hz
Retransmit pulse width	80 msec (Programmable)
Integration period reset	2.5 sec
End of billing reset pulse	2.5 sec
Impulse withstand -	12kV from a 50 ohm source
	6kV from a 2 ohms source via a minimum load resistance of 2k

Recommended load- For 240V operation it is recommended that a minimum load of 6k ohms is used (typical interposing relay)

For other applications consult Elster Metering Systems

26.7 Optical Communications Port

Type - Opto-electronic, bi-directional

Protocol - Flag IEC 62056-21 (formerly 61107)

26.8 Safety Class

Category - Safety Class II

26.9 Real Time Clock

Type - Synchronised to the a.c. supply, or to a crystal oscillator

Crystal Accuracy - Better than 0.5 sec per day at 23°C

A1700 Revision Suffix G - better than 1 second a day over the operating temperature range

26.10 Insulation

All units are tested as follows: (50Hz sinusoidal waveform, RMS values).

1. 2.0kV for 1 minute between the voltage circuits together and each current circuit (with voltage links removed as appropriate)
2. 2.0kV for 1 minute between each current circuit and any other current circuit (with voltage links removed as appropriate)
3. 4.0kV for 1 minute between all voltage and current circuits together and all relay contacts plus auxiliary inputs plus the RS232 port together
4. 4.0kV for 1 minute between all relay contacts and the auxiliary input plus RS232 port
5. 4.0kV for 1 minute between one set of relay contacts and the other set of relay contacts

WARNING

Should the unit ever be dismantled it is vital that these insulation checks are repeated before the A1700 meter is re-installed. Failure to do so may result in electric shock.

26.11 Auxiliary Voltage

Minimum: 70V

Maximum: 265V

Frequency: 50Hz or 60Hz

Burden

Single phase: 1.9W 4.17VA

Surge current

Auxiliary voltage surge current at switch-on: 4A for 0.002s

Insulation

Between

a) The auxiliary voltage and the measurement voltage: 1kV a.c. for 60s

b) The auxiliary voltage and the measurement current: 2.5kV a.c. for 60s

c) The auxiliary voltage and relay outputs: 4.0kV a.c. for 60 s

External cable supplied for the auxiliary voltage connection: 4kV a.c. for 60s

26.12 External Battery Read without Power

Battery

Style: PP3

Type: Rechargeable NiMH

Voltage: 9V

Capacity: 160mAh (minimum)

Discharge

Cumulative operating time: 1 hour minimum when fully charged

Self discharge: 75% after 30 days at 45°C

Charge

Charging method: Trickle charge

Charging time: 9 days maximum at 45°C

Operating temperature range

Discharge: -20°C to +50°C

Charge: +10°C to +45°C

Battery life

Number power outages: 500 maximum

Replacement period: 5 years

26.13 Operation on Different Power Systems

The A1700 allows for 3 manufacturing configurations for use on the following power systems:

Model PB3 Configuration 1 - 3 elements	Model PB3 Configuration 2 - 3 elements	Model PB2 Configuration 3 - 2 elements
3ph 4w	3ph 4w	3ph 3w
2ph of 3ph 4w *	3ph 3w *	
2ph 3w *	Note: For this configuration the yellow phase should be disabled and the phase fail threshold reduced to about 40%.	
1ph 3w *		
1ph 2w *		

The pulse value of the test indicator is that marked on the nameplate regardless of the power system to which the meter is connected. This means that the pulse rate of the test indicator at Imax will be less for systems not using all elements.

UNUSED TERMINALS

See * in configuration table above

Meters installed with these configurations will have unused main terminals.
To avoid accidental or fraudulent contact with these unused terminals, it is strongly recommended that either:

1. Full terminal covers without cut-outs are used
2. Suitable insulated blanking plugs are used on meters fitted with short terminal covers or terminal covers with cut-outs

27 SAFETY ISSUE

SAFETY ISSUE

Normally unused terminals will not have any voltage present on them. In the unlikely event that a live internal wire breaks loose and rests on an unused terminal, that terminal will present a hazard.

For safety, isolate all high voltage supplies to the meter before making any adjustments to terminal connections. Failure to do so may result in electric shock.