



## F21 / F25 Series

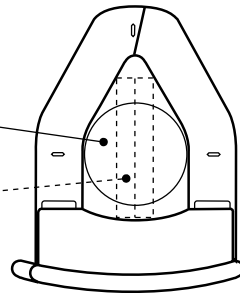
In order to ensure the optimal quality of the electrical supply on a network it is essential to be able to measure and identify patterns of harmonic distortion so that corrective measures can be implemented.

These two clamp-on harmonic meters make for the rapid diagnosis, identification and measurement of harmonic "pollution". They measure voltages and intensities in true RMS value, as well as frequencies. Model F21 is designed for use on AC networks.

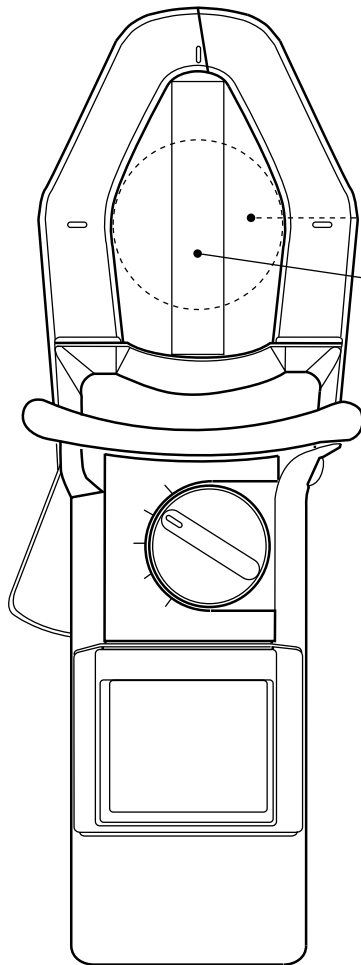
As a diagnostic tool, it directly measures the overall distortion of the current or the voltage. The F21 also has an analogue output so that the current may be displayed visually on an oscilloscope.

Model F25 is suited to both DC and AC networks. For a more thorough diagnosis the F25 measures harmonics order by order, as an absolute value (A or V) or as a relative value (%) up to the 25<sup>th</sup> harmonic.

Ø 42 mm max  
cable  
2 busbars  
50 x 5 mm



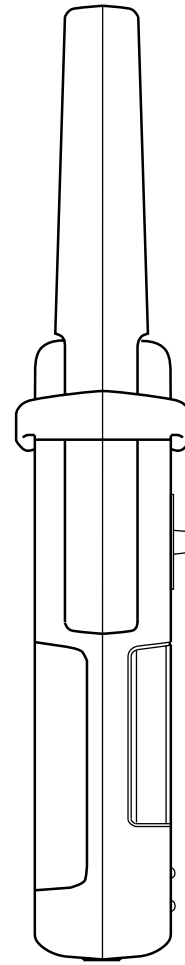
Jaws of F21 Model



Ø 50 mm max  
cable  
1 busbars  
80 x 5 mm

F25 Model

104 mm (F25)  
97 mm (F21)



276 mm (F25)  
254 mm (F21)

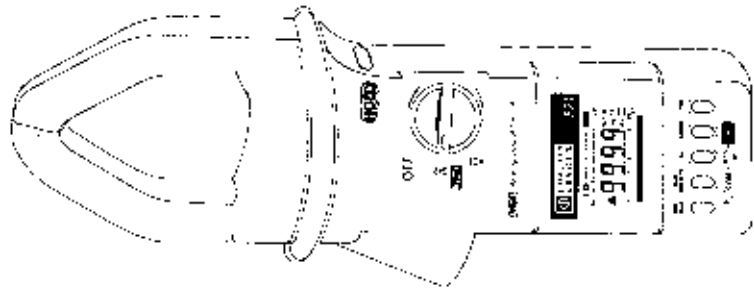
52 mm (F25)  
44 mm (F21)

Title : F21 / F25 Series	
Drawing N°	Drawn :
Manufactured by :  CHAUVIN ARNOUX	

# Clamp-on harmonic meters

## Model F21

F21/F25 series



### ■ Electrical Specification

#### Current (true RMS AC)

0.05 to 700 A RMS  
0.05 to 1000 A Peak

- Ranges:  
0 to 100 A - 100 to 400 A - 400 to 700 A
- Typical accuracy  
(45 to 65 Hz sinusoidal signal): 2%
- Frequency range:  
15 Hz to 10 kHz
- Max sustainable overload:  
3 kA Peak

#### Voltage (true RMS AC)

0.05 to 600 V RMS or DC  
0.05 to 1200 V Peak

- Ranges:  
0 to 400 V - 400 to 1000 V
- input impedance: 1 M $\Omega$
- Typical accuracy  
(40 to 65 Hz sinusoidal signal): 1.5%
- Frequency range: 15 Hz to 10 kHz
- Max sustainable overload:  
1.5 kV Peak

#### Peak Factor PF

- Measurement range: 1 to 10
- Trigger threshold:  
300 mA or 300 mV
- Resolution: 0.01
- Accuracy (40 to 450 Hz): 10%
- Frequency response: 15 Hz to 10 kHz

#### Frequency

- Measurement range: 0.5 to 9999 Hz
- Trigger threshold: 1 A or 1 V
- Ranges: 0.5 to 999.9 Hz - 1000 to 9999 Hz
- Accuracy:  
0.5 to 999.9 Hz : 0.1% R.  $\pm$  1 ct  
1000 to 9999 Hz: 0.2% R.  $\pm$  1 ct

#### Harmonics

- Overall measurement of:
- Total harmonic distortion THD: 0.5 to 600%
  - Trigger threshold: 300mA or 300 mV
  - Accuracy: 3%  $\pm$  2 pt
  - Frequency range:  
Fundamental between 45 and 65 Hz,  
Up to the 25<sup>th</sup> harmonic
  - Distortion factor DF: 0.5 to 100%
  - Trigger threshold: 300mA or 300 mV
  - Accuracy: 3%  $\pm$  2 pt
  - Frequency range: fundamental between 45  
and 65 Hz, up to the 25<sup>th</sup> harmonic

#### Analogue output: V out

- Measurement range:  
0.05 to 700 A RMS for 1 mV/A  
0.05 to 60 A RMS for 10 mV/A
- Accuracy: 3%
- Impedance: 4 k $\Omega$ , 47 pF
- Max sustainable overload: 1.5 kV Peak

#### Power supply:

- Type : 1 6LF22 9 V battery
- Battery life :  
50 hours of continual use (without using  
back-light)
- Low battery level indicated by "battery"  
symbol

### ■ Mechanical Specification

**Clamps max. cable diameter of:**  
 $\varnothing$  42 mm or 2 busbars: 50 x 5 mm

#### Display:

10000 count LCD,  
30 segment back-lit Bar-graph

#### Dimensions:

254 x 97 x 44 mm

#### Weight :

600 g approx.

#### Operating temperature:

-10 to +55°C

#### Storage temperature :

-40 to +70°C

#### RH in use :

0 to 80% up to 40°C

### ■ Safety Specifications

#### Protection level:

- IEC 1010-2-032 / IEC 1010-1
- Double insulation
- Category III installation
- Degree 2 of pollution
- Voltage rating: 600 V RMS
- EMC series IEC 1000-4

#### Mechanical protection ratings:

Watertightness: IP40  
Drop test: 1 m  
Mechanical shock: 100 g (IEC 68-2-27)  
Vibrations: IEC 68-2-6

#### Self-extinguishing ability of case:

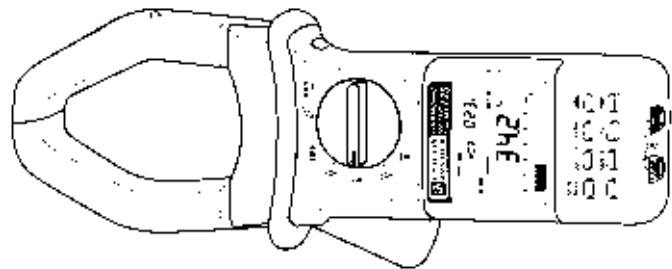
UL94 V2

To Order	Reference
Clamp-on Harmonic meters <b>F21</b> with carrying case, test probe leads, BNC lead/safety plug, battery and user's manual	P01.1207.52

# Clamp-on Harmonic Meter

## Model F25

F21/F25 series



### ■ Electrical Specification

#### Current (true RMS AC+DC)

0.30 to 1000 A RMS or DC  
0.50 to 1500 A peak

- Ranges:  
0 to 60 A - 60 to 600 A - 600 to 1500 A
- Resolution: 10 mA - 100 mA - 1 A
- Basic accuracy  
(45 to 65 Hz sinusoidal signal): 2%
- Frequency range:  
DC and 10 Hz to 5 kHz
- Automatic DC zeroing
- Max sustainable overload:  
3 kA Peak

#### Voltage (true RMS AC+DC)

0.05 to 600 V rms or DC  
0.1 to 1500 V Peak

- Ranges:  
0 to 60 V - 60 to 600 V - 600 to 1500 V
- Resolution : 10 mV - 100 mV - 1 V
- Input impedance: 1 M $\Omega$
- Typical accuracy  
(40 to 65 Hz sinusoidal signal): 1%
- Frequency range:  
DC and 10 Hz to 5 kHz
- Max sustainable overload:  
1.5 kV Peak

#### Peak Factor

- Measurement range: 1 to 10
- Resolution: 0.01
- Accuracy (40 to 70 Hz):  
2% for CF < 3.5  $\pm$  2 cts
- Trigger threshold: 5 V or 5 A

#### Frequency

- Measurement range: 0.5 to 19.99 kHz
- Range:  
0.5 to 99.99 Hz – 100.0 to 999.9 Hz  
1000 to 9999 Hz – 10.00 to 19.99 kHz
- Resolution: 0.01 – 0.1 - 1 - 10 Hz
- Accuracy (< 1 kHz): 0.1%  $\pm$  2 cts
- Trigger threshold: 2 V or 2 A

#### DC Ripple

- Measurement range: 2 to 999.9%
- Ranges: 2 to 99.9 % - 100.0 to 999.9 %
- Resolution: 0.1 %
- Accuracy: 5%

#### Harmonics

- Overall, or harmonic by harmonic up to 25<sup>th</sup>
- Total Harmonic Distortion (THD):  
0.2 to 600%
- Overall accuracy across global THD:  
5%  $\pm$  2 cts
- Frequency range:  
fundamental between 40 and 70 Hz
- Min. signal: 10 V or 10 A
- Distortion factor DF: 0.2 to 100%
- Overall accuracy across DF: 5%  $\pm$  2 cts
- Frequency range:  
fundamental between 40 and 70 Hz
- Min. signal value: 10 V or 10 A

#### Power supply:

- Type: 4 LR6 1.5 V batteries or storage cell
- Battery life: 40 hours in continual use
- Displays hours left on battery supply
- Battery low indicator

### ■ Mechanical Specifications

#### Clamps max. cable diameter of:

$\varnothing$  50 mm or; busbar: 80 x 5 mm

**Display:** 2 x 10000 count back-lit LCD,  
1 x 100 count display

#### Dimensions:

276 x 104 x 52 mm

#### Weight:

670 g approx.

#### Operating temperature:

-10 to +55°C

#### Storage temperature:

-40 to +70°C

#### RH during use:

0 to 80% up to 40°C

### ■ Safety Specifications

#### Protection level:

- IEC 1010-2-032
- Double insulation
- Category III installation
- Degree 2 pollution
- Voltage rated: 600 V rms
- EMC series IEC 1000-4

#### Mechanical protection ratings

- Watertightness: IP40
- Drop test: 1m
- Mechanical shock: 100 g (IEC 68-2-27)
- Vibrations: IEC 68-2-6

#### Casing self-extinguishing ability:

UL94 V2

To Order	Reference
Clamp-on harmonic meter <b>F25</b> with case, test probe leads, batteries, mini-guide manual and user's manual	P01.1207.54A