

Clamp-on Harmonic Meters

F21/F25 Series



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.

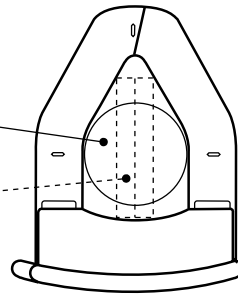
These two clamp-on harmonic meters make for the rapid diagnosis, identification and measurement of harmonic "pollution". They measure voltages and intensities in true RMS value, as well as frequencies. Model F21 is designed for use on AC networks.

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 25th harmonic.

Ø 42 mm max
cable

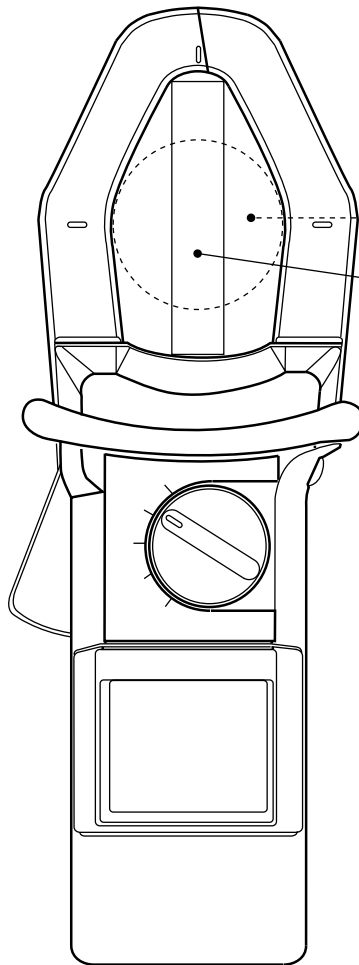
2 busbars
50 x 5 mm



Jaws of F21 Model

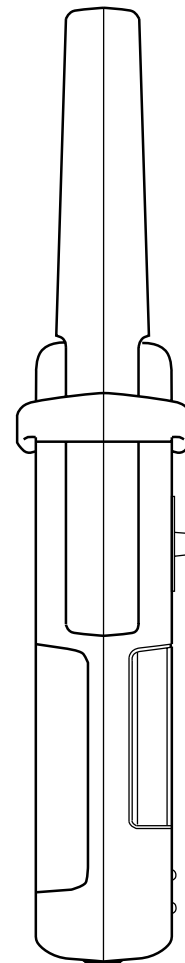
Ø 50 mm max
cable

1 busbars
80 x 5 mm



F25 Model

104 mm (F25)
97 mm (F21)



254 mm (F21)
276 mm (F25)

52 mm (F25)
44 mm (F21)

Title :
F21 / F25 Series

Drawing N°

Drawn :

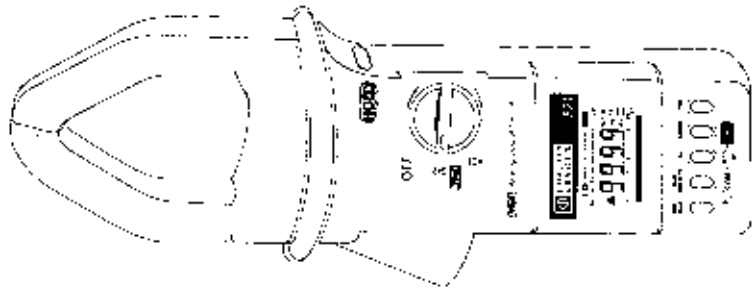
Manufactured by :

**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 Ω
- 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 25th 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 25th 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 Ω , 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:

Ø 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

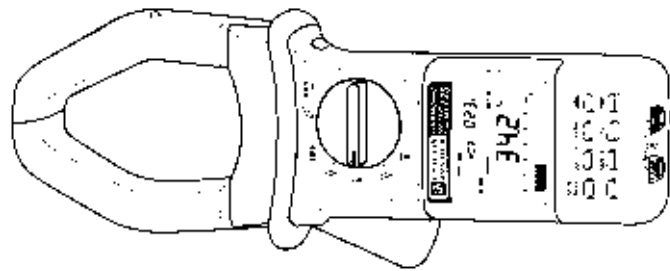
Self-extinguishing ability of case:

UL94 V2

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 MΩ

■ 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 ± 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% ± 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 25th

■ Total Harmonic Distortion (THD):

0.2 to 600%

Overall accuracy across global THD:

5% ± 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% ± 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:

Ø 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