

# SINAF M

## FILTRO ACTIVO PARALELO MULTIFUNCIÓN

### ACTIVE HARMONIC FILTER

#### DESCRIPCIÓN

Los filtros activos ofrecen la mejor solución posible para resolver los problemas relacionados con la calidad en la red eléctrica, tanto en instalaciones trifásicas industriales, como instalaciones comerciales o de servicios. Estos problemas están causados, no únicamente por los armónicos, sino también por el consumo de potencia reactiva (generalmente de tipo capacitivo).

Los filtros activos están equipados con una pantalla táctil intuitiva, permitiendo todas las acciones de programación necesarias para desarrollar las siguientes acciones:

- Reducción de las corrientes armónicas hasta el 50 ° armónico.
- Corrección del factor de potencia. Seleccionable: Desde 0,7 inductivo hasta 0,7 capacitivo.
- Corrección mediante el equilibrio de fases, mejorando el consumo entre fase y fase y reduciendo la corriente del neutro.

Además, los nuevos filtros activos también permiten:

- Multirango de tensión y frecuencia (50/60 Hz).
- Gama para instalaciones de 3 hilos (modelo de 3W) o 4 hilos (modelo de 4W).
- Capacidad unitaria de filtrado para corrientes de 30 A, 60 A y 100 A ( hasta 400 A en un armario).
- Facilidad en instalación por sus dimensiones reducidas.

| Referencia<br><i>Part Number</i> | Modelo<br><i>Model</i> | Corriente de fase (A)<br><i>Current phase (A)</i> | Dimensiones A x L x P (mm)<br><i>Dimensions</i> | Precio (€)<br><i>Price</i> |
|----------------------------------|------------------------|---|---|----------------------------|
| SINAFM348030W                    | 3 Hilos                | 30  | 530x430x178                                     | Consult                    |
| SINAFM348060W                    | 3 Hilos                | 60  | 530x430x348                                     | Consult                    |
| SINAFM348100W                    | 3 Hilos                | 100   | 745x439x288                                     | Consult                    |
| SINAFM348100C                    | 3 Hilos                | 100   | 1890x608x812                                    | Consult                    |
| SINAFM348200C                    | 3 Hilos                | 200   | 1890x608x812                                    | Consult                    |
| SINAFM348300C                    | 3 Hilos                | 300   | 1890x608x812                                    | Consult                    |
| SINAFM348400C                    | 3 Hilos                | 400   | 1890x608x812                                    | Consult                    |

| Referencia<br><i>Part Number</i> | Modelo<br><i>Model</i> | Corriente de fase (A)<br><i>Current phase (A)</i> | Dimensiones A x L x P (mm)<br><i>Dimensions</i> | Precio (€)<br><i>Price</i> |
|----------------------------------|------------------------|---|---|----------------------------|
| SINAFM440030W                    | 4 Hilos                | 30  | 530x430x178                                     | Consult                    |
| SINAFM440060W                    | 4 Hilos                | 60  | 530x430x348                                     | Consult                    |
| SINAFM440100W                    | 4 Hilos                | 100   | 745x439x288                                     | Consult                    |
| SINAFM440100C                    | 4 Hilos                | 100   | 1890x608x812                                    | Consult                    |
| SINAFM440200C                    | 4 Hilos                | 200   | 1890x608x812                                    | Consult                    |
| SINAFM440300C                    | 4 Hilos                | 300   | 1890x608x812                                    | Consult                    |
| SINAFM440400C                    | 4 Hilos                | 400   | 1890x608x812                                    | Consult                    |

| Referencia<br><i>Part Number</i> | Modelo<br><i>Model</i> | Corriente de fase (A)<br><i>Current phase (A)</i> | Dimensiones A x L x P (mm)<br><i>Dimensions</i> | Precio (€)<br><i>Price</i> |
|----------------------------------|------------------------|---|---|----------------------------|
| SINAFM348100R                    | 3 Hilos                | 100   | 266x482,5x714,5                                 | Consult                    |
| SINAFM440100R                    | 4 Hilos                | 100   | 266x482,5x714,5                                 | Consult                    |

#### DESCRIPTION

Active filters offer the best possible solution to solve quality-related problems in three-phase industrial, commercial or service installations and utilities caused not only by harmonics but also by the consumption of reactive power (usually of the capacitive type).

Active filters are equipped with an intuitive touch-screen display, allowing all the necessary programming actions to develop the following actions:

- Reduction of harmonics currents up to the 50th harmonic. Optional selection of the harmonic frequencies to be filtered in order to achieve the highest efficiency. The user can select the harmonic frequencies to be filtered.
- Power factor correction. Both inductive and capacitive powers.
- Current balance correction, improving the phase-to-phase consumption and reduction of neutral currents.

In addition, the new active filters also allow:

- Multi-range voltage and frequency (50/60 Hz).
- Range for installations with 3 wires (3W model) or 4 wires (4W model)
- Unitary filter capacity for currents of 30 A, 60 A and 100 A (up to 400 A in a cabinet).
- Easy installation due to its small dimensions.
- Allows an installation of up to 100 filters in parallel.



## CARACTERÍSTICAS TÉCNICAS / TECHNICAL CHARACTERISTICS

| MODELO / MODELS   | SINAFM348030W<br>SINAFM440030W   | SINAFM348060W<br>SINAFM440060W | SINAFM348100W<br>SINAFM440100W | SINAFM348100C<br>SINAFM440100C                               | SINAFM348200C<br>SINAFM440200C | SINAFM348300C<br>SINAFM440300C | SINAFM348400C<br>SINAFM440400C |
|---|--|--------------------------------|--------------------------------|--|--------------------------------|--------------------------------|--------------------------------|
|   | Tipo Mural / Wall type   |                                |                                | Tipo Armario / Cabinet type                                  |                                |                                |                                |
| Corriente de fase (RMS) / Harmonic phase current (RMS)              | 30 A   | 60 A                           | 100 A                          | 100 A  | 200 A                          | 300 A                          | 400 A                          |
| Corriente de neutro (RMS) / Harmonic neutral current (RMS)          | 90 A   | 180 A                          | 300 A                          | 300 A  | 600 A                          | 900 A                          | 1200 A                         |
| Potencia máxima / Power   | 4W (400 V)   | 2070 VA                        | 41400 VA                       | 6900 VA  | 69000 VA                       | 138000 VA                      | 276000 VA                      |
|   | 3W (480 V)   | 22906 VA                       | 45812 VA                       | 76300 VA   | 76300 VA                       | 152600 VA                      | 305200 VA                      |
| Peso / Weight   | 30 kg  | 39 kg                          | 56 kg                          | 190 kg   | 245 kg                         | 300 kg                         | 355 kg                         |
| <b>CARACTERÍSTICAS ELÉCTRICAS / ELECTRICAL FEATURES</b>             |  |                                |                                |  |                                |                                |                                |
| Voltaje nominal (Fase-Fase) / Rated voltage (Ph-Ph)                 | 400...480 ± 10 % (3 W) / 230...400 V ± 10 % (4 W)  |                                |                                |  |                                |                                |                                |
| Frecuencia / Frequency  | 50 Hz / 60 Hz ± 5%   |                                |                                |  |                                |                                |                                |
| THD V máximo / Maximum THD V  | 25%  |                                |                                |  |                                |                                |                                |
| Nivel de ruido / Noise Level  | < 52 dBA   | < 54 dBA                       | < 60 dBA                       | < 60 dBA   | < 63 dBA                       | < 66 dBA                       | < 69 dBA                       |
| Número de fases / Number of phases                                  | 3 fases sin neutro (3 W) / 3 fases con neutro (4 W) / 3 phases without neutral wire (3 Wires) / 3 phases with neutral wire (4 Wires)                                   |                                |                                |  |                                |                                |                                |
| Compensación de corriente armónica / Current harmonics compensation | 2º hasta 50º seleccionable / 2nd to 50th harmonic selectable   |                                |                                |  |                                |                                |                                |
| Selección específica de armónico / Specified harmonic selection     | 3º hasta el 25º armónico / 3er to 25th harmonic  |                                |                                |  |                                |                                |                                |
| Medida de corriente / Current measurement                           | .../5A, Clase 1 o (0,5...0,2) frecuencia más de 2500 Hz (1.5 VA) / .../5A, Class 1 or (0.5... 0.2, 0.2S) freq. up to 2500Hz (1.5 VA)                                   |                                |                                |  |                                |                                |                                |
| <b>CARACTERÍSTICAS DEL FILTRO / FILTER CHARACTERISTICS</b>          |  |                                |                                |  |                                |                                |                                |
| Controlador / Controller  | Digital, DSP   |                                |                                |  |                                |                                |                                |
| Tiempo de respuesta del transitorio / Transient response time       | < 0.1 ms   |                                |                                |  |                                |                                |                                |
| Protección envolvente / Protection degree                           | IP20 (u otros grados de protección previa solicitud) / IP20 (or other upon request)  |                                |                                |  |                                |                                |                                |
| Limitador de corriente / Current limitation                         | Protección contra sobrecorriente por limitación de corriente en el valor nominal del filtro / Protection from over current by current limitation at filter rated value |                                |                                |  |                                |                                |                                |
| Visualización pantalla táctil / Graphic display panel               | Color TCT Touch screen 3,5" . Web Server and Data logger   |                                |                                |  |                                |                                |                                |
| <b>COMUNICACIÓN / COMMUNICATION</b>                                 |  |                                |                                |  |                                |                                |                                |
| Interfaz / Interface  | RS-485   |                                |                                |  |                                |                                |                                |
| Protocolo / Protocol  | MODBUS RTU   |                                |                                |  |                                |                                |                                |
| Velocidad en baudios / Baud rate                                    | 9600   |                                |                                |  |                                |                                |                                |
| Tipo de paridad / Type of parity                                    | ninguno, impar, par / None, odd, even  |                                |                                |  |                                |                                |                                |
| Ethernet  | TCP/IP, Modbus TCP   |                                |                                |  |                                |                                |                                |
| <b>CONEXIONADO / INSTALLATION</b>                                   |  |                                |                                |  |                                |                                |                                |
| Red / Grid  | Borne anilla M6  |                                |                                | Borne anilla M8  |                                |                                |                                |
|   | Anchura máxima de la anilla 12 mm  |                                |                                | Anchura máxima de la anilla 23 mm / Maximum ring width 23 mm |                                |                                |                                |
| Par de apriete: / Tightening torque:                                | 2,2-2,4 Nm   |                                |                                | 8-10 Nm  |                                |                                |                                |
| CTs   | Conectar 6 polos, conductor máximo / maximum cable cross section: 2,5 mm² Par de apriete / Tightening torque: 0,5...0,6 Nm   |                                |                                |  |                                |                                |                                |
| RS-485  | Conector 3 polos. Conductor máximo / maximum cable cross section: 2,5 mm². Par de apriete / Tightening torque: 0,5...0,6 Nm  |                                |                                |  |                                |                                |                                |
| Ethernet  | RJ45   |                                |                                |  |                                |                                |                                |
| <b>NORMAS / STANDARDS</b>   |  |                                |                                |  |                                |                                |                                |
| Armonicos / Reference Harmonic Standard                             | EN61000-3-4,   |                                |                                |  |                                |                                |                                |
| Seguridad / Safety Standard   | EN 62477-1:2012; IEC 61439-1:2011  |                                |                                |  |                                |                                |                                |
| Compatibilidad electromagnética / Electromagnetic Compatibility     | EN61000-6-4:2007, EN61000-6-2:2006, IEC 55011:2011   |                                |                                |  |                                |                                |                                |
| <b>CONDICIONES AMBIENTALES / ENVIRONMENTAL CONDITIONS</b>           |  |                                |                                |  |                                |                                |                                |
| Temperatura de funcionamiento / Operating temperature               | -10°C...+ 45 °C  |                                |                                |  |                                |                                |                                |
| Temperatura de almacenaje / Storage temperature                     | -20 °C...+ 55 °C   |                                |                                |  |                                |                                |                                |
| Humedad relativa / Relative humidity                                | 0%...95% sin condensación / 0%...95% without condensation  |                                |                                |  |                                |                                |                                |
| Altitud / Operating altitude  | < 3000 metros (2000 metros sin reducción de capacidad) / < 3000 meters (2000 meters without reduce capacity)   |                                |                                |  |                                |                                |                                |

## APLICACIONES / APPLICATIONS

Solución ideal para instalaciones, con gran cantidad de cargas no lineales monofásicas y trifásica. Es decir, cargas generadoras de armónicos. Por ejemplo, variadores de velocidad, ordenadores, SAI, luminarias, aparatos elevadores, etc... también garantizan una mejora en la calidad de la red para aquellas instalaciones que necesitan aumentar la producción o mejorar la continuidad del suministro del sistema.

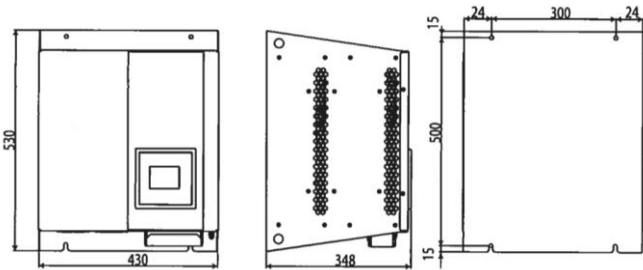
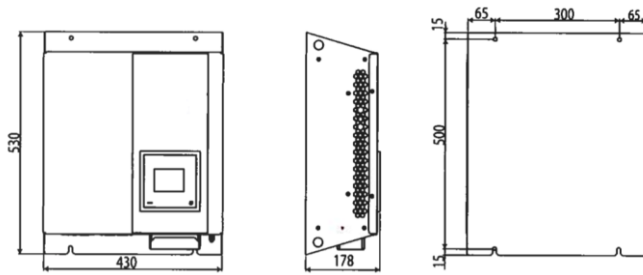
They are an ideal solution for installations with a large amount of single-phase and three-phase loads generating harmonics, such as computers, UPS units, lights, lifting equipment, speed drivers, etc...

They could also be used in installations that require a good power quality for the purpose of increasing production and improve supply continuity in the system.

**DIMENSIONES / DIMENSIONS**

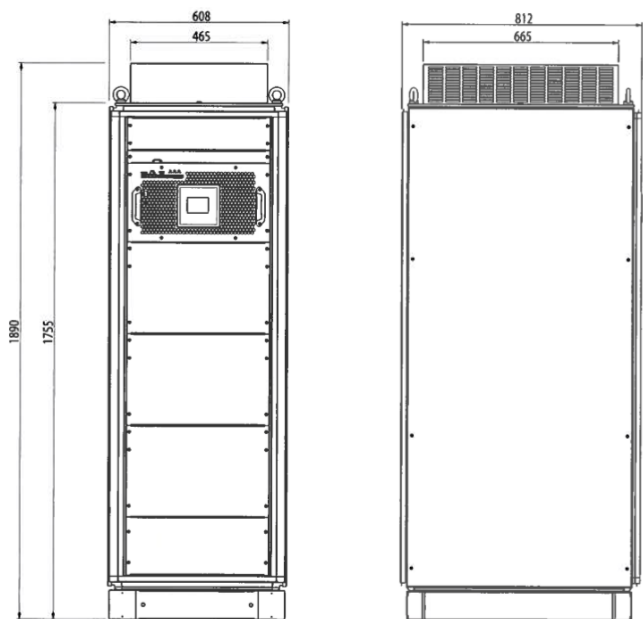
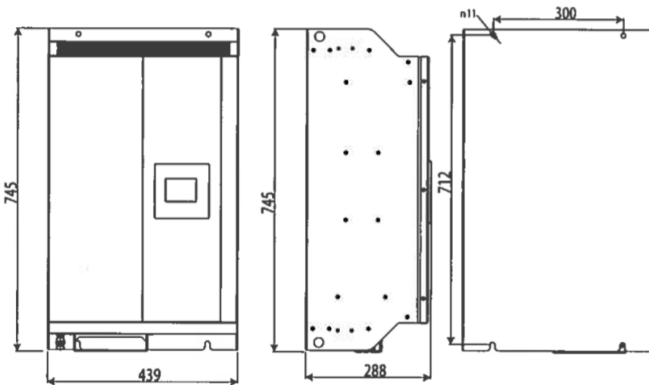
\* Todos los filtros activos disponen de filtro EMI incorporado  
 \* All active harmonic filters have a built-in EMI filter

**SINAFM348030W / SINAFM440030W** →



← **SINAFM348060W / SINAFM44060W**

**SINAFM440100W / SINAFM340100W** →



← **SINAFM440100C / SINAFM340100C  
 SINAFM440200C / SINAFM340200C  
 SINAFM440300C / SINAFM340300W  
 SINAFM440400W / SINAFM340400W**

CONEXIONES / CONNECTION

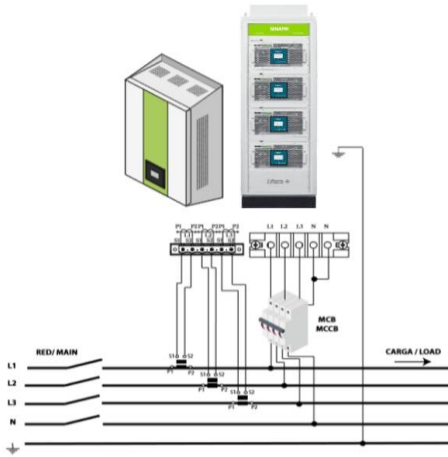


Figura 19: Medida trifásica con conexión a 4 hilos y medida de corriente en el lado de Red.  
Figure 19: Three-phase measuring with 4-wire connection and current measurement on the main side.

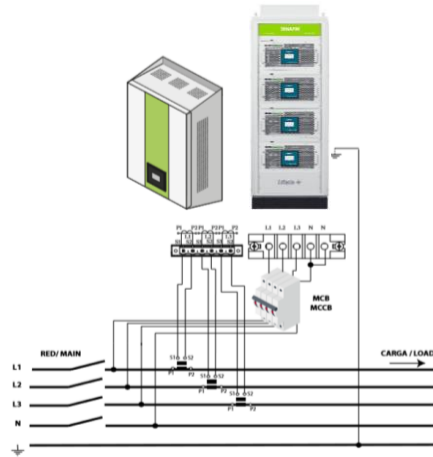


Figura 20: Medida trifásica con conexión a 4 hilos y medida de corriente en el lado de Carga.  
Figure 20: Three-phase measuring with 4-wire connection and current measurement on the load side.

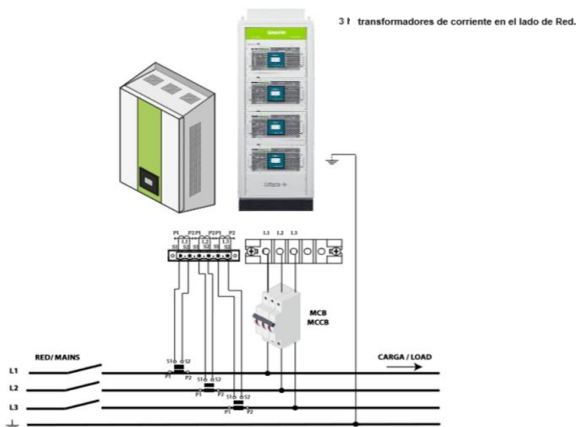


Figura 21: Medida trifásica con conexión a 3 hilos y medida de corriente en el lado de Red.  
Figure 21: Three-phase measuring with 3-wire connection and current measurement on the main side.

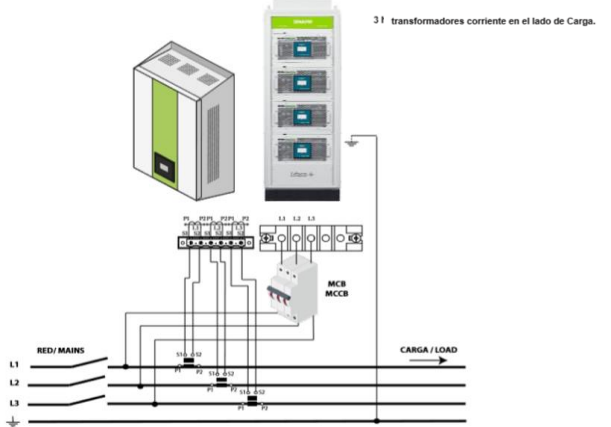


Figura 22: Medida trifásica con conexión a 3 hilos y medida de corriente en el lado de Carga.  
Figure 22: Three-phase measuring with 3-wire connection and current measurement on the load side.

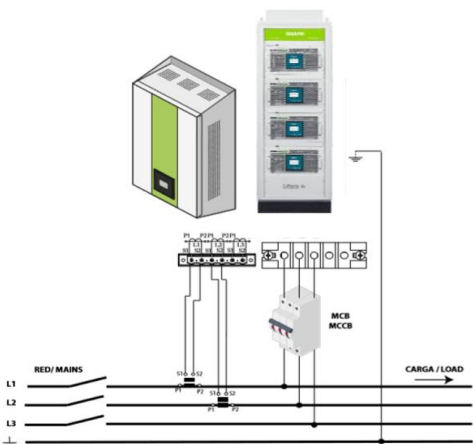


Figura 23: Medida trifásica con conexión a 3 hilos y 2 transformadores de corriente en el lado de Red.  
Figure 23: Three-phase measuring with a 3-wire connection and 2 current transformers on the main side.

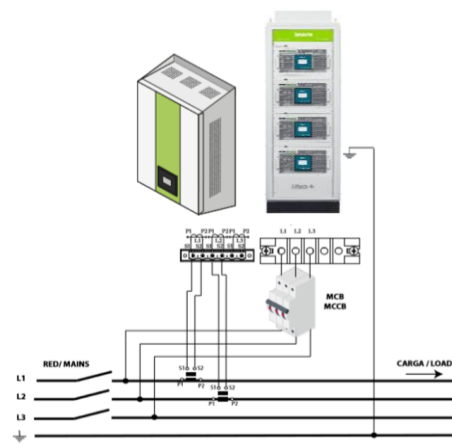


Figura 24: Medida trifásica con conexión a 3 hilos y 2 transformadores corriente en el lado de Carga.  
Figure 24: Three-phase measuring with a 3-wire connection and 2 current transformers on the load side.

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