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smART™ Series Type F

Power Factor Correction Filter Banks

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The use of energy efficient equipment may mean that harmonics exist within your power system. Learn how to improve power factor while mitigating or blocking harmful harmonic frequencies.

Manage the risks to your power system today!

Improve system efficiency
Manage power factor and harmonics effectively

Reduce the effects of harmonics within your system
Use tuned filter banks to mitigate harmonics in your system

Protect Power Factor Correction Capacitors
Block harmful frequencies from damaging installed capacitors

Eliminate utility penalties
Select appropriate target power factor to remove utility penalties from your monthly bill

Decrease peak current spikes
Lower peak demand currents to better manage utility power consumption rates

Reduce voltage drops
Maintain quality voltage throughout your power system

Reduce CO2 emissions
Reduce fuel consumption when generators are in use

Improve system uptime
Power system efficiency allows for equipment to run more efficiently

Decrease equipment operating temperatures
Reducing ampere flow helps equipment to run cooler

Cost effective solutions
Varying solutions available based on budgets and goals

Increase kVA Capability
Fully utilize the potential in existing transformers

Understand your power system
Power Quality studies offered to assist you in selecting the right product

THE CHALLENGE: PROVIDING REACTIVE COMPENSATION TO INDUCTIVE LOADS IN HARMONIC RICH ENVIROMENTS

Power systems are typically made up of both linear and non-linear loads. Although the need for power factor correction is not eliminated, the type of equipment required for the correction is different. Capacitors provide a low impedance path for harmonic frequencies. Unprotected power factor correction equipment can quickly fail due to overloaded capacitors.

The smART™ Series Type F Solution

Power Factor Correction in Harmonic Environments

Arteche PQ offers a broad range of reactive compensation solutions designed to meet the needs of your specific application. VAR compensation can be applied at any point on your power system in order to meet your explicit goals. In addition to the standard products available, we also have the ability to customize a solution specific to your individual needs.

Tuned and Detuned Systems

Tuned filter banks are designed to mitigate harmonics flowing on a given system. In addition to providing the VAR demands of a given load, a tuned product will reduce the amount of harmonic frequencies flowing on the electrical system. Detuned systems will provide some harmonic reduction within the system; however, the primary purpose of a detuned unit is to protect the capacitors from overloading on harmonic currents. The Arteche PQ team can assist you with the selection of the right product for your specific needs.

Fixed and Automatic Systems

Fixed power factor correction systems are a low cost solution typically applied directly at the load. The amount of VARs provided by the unit does not vary so it is best used with applications where the power requirements remain steady for the duration of the work cycle. Automatic systems can be applied to various loads because the unit will interact with the system to determine the amount of VARs required based on the given load. Automatic systems are best suited for applications where the power requirements may vary up to six times per hour. More dynamic loads may require the use of the smARTvar® Dynamic VAR Compensation product line. Contact Arteche PQ for more information on the smARTvar® product offering.

Harmonic Rich Environments

Technological Advances

Energy efficient and smart devices use switching components to better manage the energy usage of a wide range of applications. This type of energy management often results in the distortion of voltage and current waveforms. Protect your Power Factor Correction equipment by blocking harmonic frequencies from damaging the capacitors or use the equipment to minimize the harmonic distortion on your power system.

Available in Low and Medium Voltage

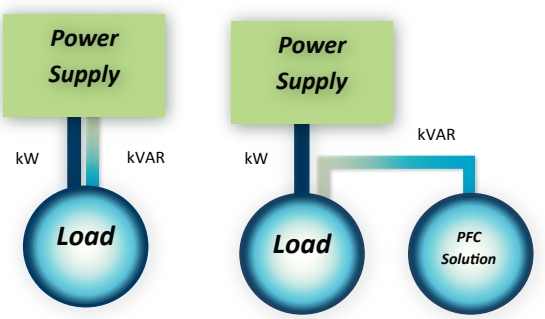
Arteche PQ offers solutions from the smallest motor to facility-wide solutions. Low voltage products (690 volts or less) are available in standard configurations while medium voltage systems (up to 35 kV Class) can be designed specifically for your needs.

Plan Ahead

Changes both inside and outside your facility can have an impact on your equipment. The addition of VFDs, large UPS systems, or other electronic loads may increase the amount of harmonics on the electrical system and could cause the failure of an existing tuned filter. Arteche PQ offers engineering assistance to help mitigate equipment issues related to changes on your electrical system.

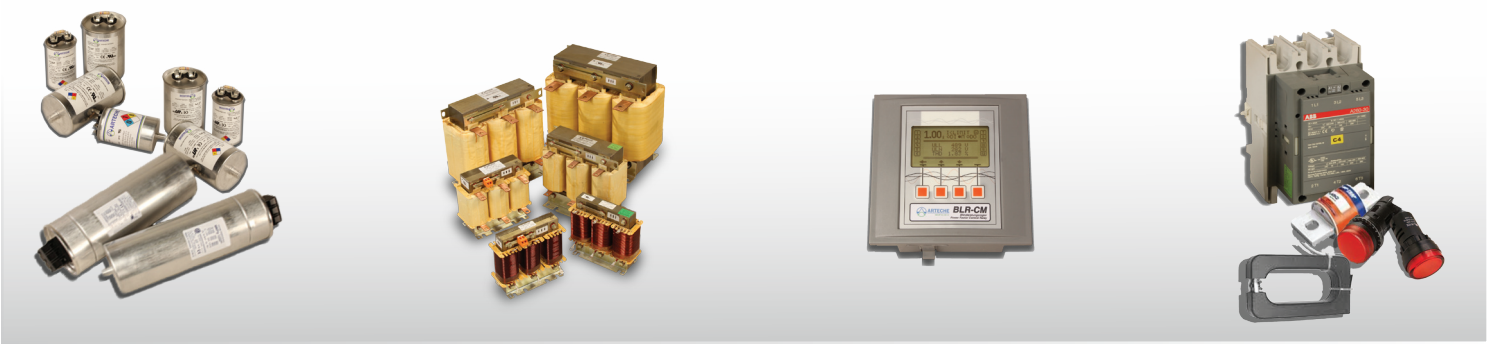
Customized For You

Every power system is unique and standard products may not always provide the correct solution to the challenges you face. Arteche PQ has the ability to conduct a Power Quality study and engineer the right product for your specific needs.



When capacitor solutions are applied, the power source no longer needs to provide reactive power for the load

THE smART™ SERIES Type F SYSTEMS



LONG LIFE CAPACITORS
The System

- Systems available with single phase or three phase capacitors
- Designed for rigorous and harmonic rich applications
- Self-healing design
- Self-protecting with internal pressure switch
- Environmentally friendly materials

REACTORS
For Tuned and Detuned Systems

- Industry leading reactor design ensures continuous high performance
- Block harmful harmonic currents from entering the capacitor or provide tuning to mitigate system harmonics
- Minimal watts loss
- Reduced stray magnetic fields
- Low audible noise

THE smART™ SERIES CONTROLLER
Intelligent System Control

- Precise system control in automatic systems
- Controller designed for accuracy in harmonic environments
- Various step sizes and step counts can be accommodated from a single control unit
- Liquid Crystal Display has the ability to provide information on current, voltage, power, total harmonic distortion, frequency, and temperature.
- Multiple communication options available to meet facility requirements

SYSTEMS
Meet Application Specific Requirements

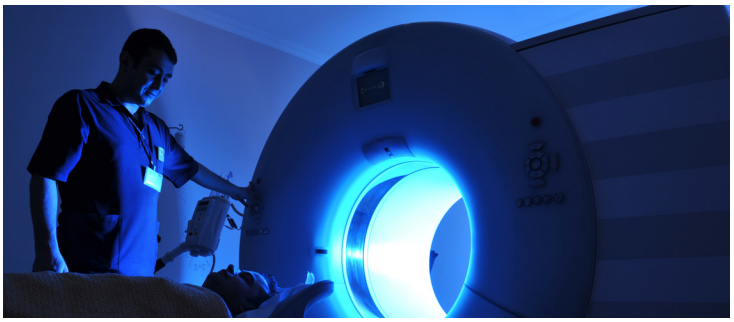
- High quality contactors for maximum life expectancy in automatic systems
- Split core current transformers for various system configurations
- Fuses for fixed solutions and blown fuse indication for both fixed and automatic systems
- Custom components can be engineered into Arteche systems to meet the specific needs of any number of applications

Product Specifications (Typical)

Power Systems:	3-phase, 3-wire
Frequency:	60Hz or 50 Hz
System Voltage:	Low voltage: 208, 240, 380, 415, 480, 600, 690 volts
	Medium voltage: 2.4, 4.16, 7.2, 15, 35 kV Class
VAR Capacity:	Customizable based upon application
VARs / Switch:	Customizable based upon application
Enclosures:	Type 1, Type 3R, & Type 12
	(Others available upon request)
Temperatures:	Storage: -30° C to 60° C
	Operating: 0° C to 40° C
Relative Humidity:	0 – 95% non-condensing
Altitude:	1000 Meters (3300 Feet) maximum without
	de-rating
Standards:	Complies with NEMA, ANSI, UL, CUL, IEC, & IEEE
	requirements; UL 508, 508A Listed

Capacitor Specifications (Typical)

Construction:	Aluminum housing with metallized polypropylene film; dry type or liquid type, both environmentally friendly
Protection:	Self-healing, Self-Protecting with Internal Pressure Switch
Discharge:	Discharges to ≤50V within 1 minute
Power Losses:	<0.5 watts per kVAR
Maximum Voltage Capacity:	110% of capacitor Rating
Maximum Capacity:	135% of rated reactive power
Maximum Current:	135% of rated capacitor current
Temperature Range:	-40° C Minimum to 85° C
Capacitor Life Expectancy:	150,000 to 495,000 hours at 55° C
Agency Approval:	Meets or exceeds UL 810 and CSA 22.2 Standards



APPLICATIONS

The smART™ Series Type F Power Factor Correction Filter Banks can be configured to meet the needs of a wide variety of applications. From fixed units applied directly to the load to facility wide automatic banks, these solutions can assist you in getting the most from your power system.

Foundries & Steel
Oil & Gas
Water / Wastewater
Material Handling
Breweries
Pulp & Paper
Printing / Publishing
Datacenters
Textiles
Commercial Facilities
Automotive
Healthcare
Glass & Plastics
Metal Fabrication
Rubber Processing
Chemical Processing

Typical Power Factor By Industry	
INDUSTRY	POWER FACTOR
Arc Furnaces	0.70 to 0.90
Arc Welding	0.35 to 0.60
Breweries	0.75 to 0.80
Cement Works	0.75 to 0.80
Chemical	0.65 to 0.75
Foundries	0.50 to 0.80
Induction Furnaces	0.15 to 0.40
Machine Shops	0.40 to 0.65
Printing	0.55 to 0.70
Quarries	0.50 to 0.70

Determining the Right Solution for Your Application

Fixed, Automatic, or Dynamic?

Fixed
Fixed solutions are designed for single loads where the operation does not vary often during its normal cycle. The power factor correction unit can be added or removed from the system along with the load.

Automatic
Automatic solutions are designed for multiple loads or loads that vary up to six times per hour. The applied kVAR can be adjusted based upon the load at any given moment during the application's normal cycle.

Dynamic
Dynamic solutions are designed for loads such as welding applications where the power demand changes rapidly. The kVAR requirement can be adjusted immediately based on the power requirements of the load.

Harmonic Filtering Required?

Type C
smART™ Series Type C Power Factor Correction Banks are designed for systems that do not have significant harmonic content. If more than 85% of the facility's total load is linear, it is likely that the Type C product is the right choice for the application.

Type F
smART™ Series Type F Power Factor Filter Banks are designed for systems that have harmonic content. If more than 15% of the facility's total load is non-linear, it is likely that the Type F product is the right choice for the application.

Symptom	Problem	Solution
Electric utility bills are high	Power Factor is too low	Small motors: Fixed smART™ Solution or Facility wide: Automatic smART™ Solution
Facility is experiencing transients, flicker, or has rapid load changes	PQ Equipment is too low or PQ Equipment not performing	Customized smART™ Solution or smARTvar® Dynamic VAR Compensator
Transformers overheating, blown fuses, or multiple VFDs	Harmonics on the power system	<15% Harmonic Load: smART™ Series Type C or >15% Harmonic Load: smART™ Series Type F
Equipment malfunction or early equipment failure	Excessive harmonics or system resonance	smART™ Series Type F Custom Solution or AHF Active Harmonic Filter

With so many solutions to choose from, it can be difficult to select the appropriate product for your application. From fixed to automatic, tuned to de-tuned, the array of choices can seem overwhelming. Arteche PQ personnel are also available to assist in the selection of the proper product. The APQ team can even conduct on-site Power Quality studies or review a single line diagram of the facility to offer the right product or combination of products for the optimum power system efficiency solution. To learn more about the various solutions available for both power factor correction and harmonic mitigation, visit our website at www.artechepq.com

Power Factor Correction and Harmonics

High efficiency equipment, found throughout facilities in the modern business environment, improves energy consumption; however, such equipment can cause distortion on both the voltage and current waveforms. Defined as multiples of the fundamental, harmonic frequencies can cause facility issues such as equipment overheating, premature equipment failure, capacitor or fuse failure, production downtime, and reduced total power factor. As with power factor, high harmonic content not only impacts the equipment within a facility, but also may impact the ability of a utility to provide clean power to other customers. For this reason, utility companies can impose penalties, or even provide disconnect notices, to organizations that do not address severe harmonic distortion.

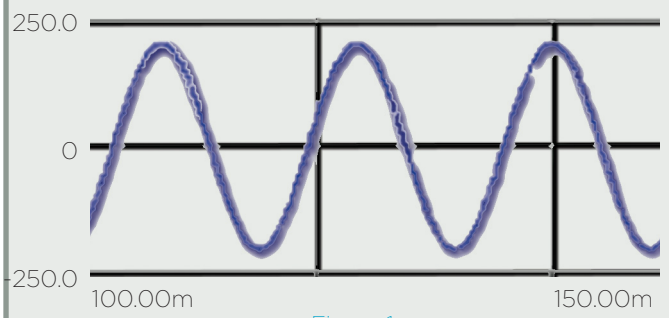


Figure 1

Figure 1 above shows a current waveform without distortion

Figure 2 below shows a current waveform that is 35% distorted.

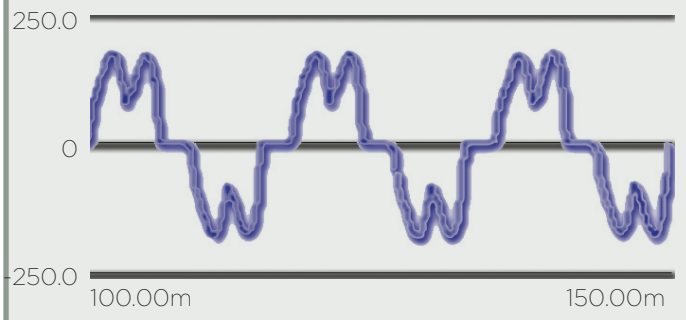


Figure 2

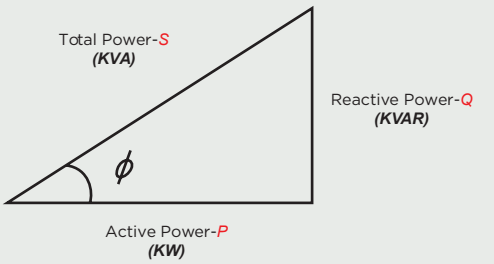


Figure 3

Figure 3 above shows the classic power triangle

Figure 4 below shows the modified power triangle when harmonics are taken into consideration.

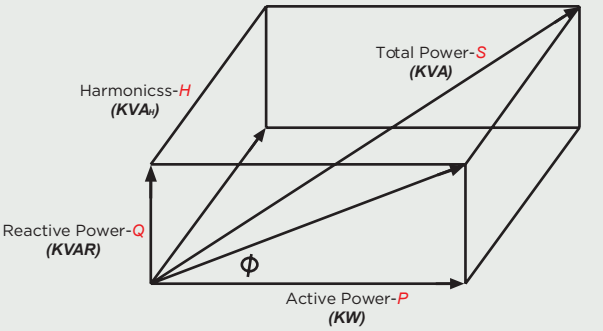


Figure 4

Harmonic distortion also impacts the classic power triangle. In the classic power triangle, kVA is determined by a combination of active and reactive power. To determine power factor using the classic power triangle, the formula is $kVA^2 = kW^2 + kVAR^2$. The presence of harmonics, however, must be addressed through the addition of another vector. The new formula for determining power factor is $kVA = \sqrt{kVA^2 + kVAR^2 + kVAH^2}$.

While further lowering total power factor, harmonics can also cause failure in capacitors. In order to address harmonics on a system, smART™ Series Type F Power Factor Filter Banks can be configured in tuned or detuned designs. A tuned design will improve power factor while also reducing harmonic distortion. Detuned units protect the capacitors from failing due to the additional harmonic currents.

smART™ SERIES Type F

Fixed Power Factor Filter Banks

FFB 240V Selection Chart

Catalog Number	KVAR	Ampere Rating	*DIMENSIONS (Inches)			
			H x W x D			WT
FFB 0010 240 01 NB D	10	25.5	63	24	32	65
FFB 0025 240 01 NB D	25	63.8	63	24	32	67
FFB 0030 240 01 NB D	30	76.5	63	24	32	68
FFB 0040 240 01 NB D	40	102.0	63	24	32	70
FFB 0050 240 01 NB D	50	127.5	63	24	32	72
FFB 0060 240 01 NB D	60	153.0	63	24	32	119
FFB 0075 240 01 NB D	75	191.3	63	24	32	125
FFB 0100 240 01 NB D	100	255.0	63	24	32	165
FFB 0125 240 01 NB D	125	318.8	63	24	32	172
FFB 0150 240 01 NB D	150	382.5	63	24	32	199
FFB 0175 240 01 NB D	175	446.3	63	24	32	206
FFB 0200 240 01 NB D	200	510.0	63	24	32	215
FFB 0225 240 01 NB D	225	573.8	83	24	32	239
FFB 0250 240 01 NB D	250	637.5	83	24	32	248
FFB 0275 240 01 NB D	275	701.3	83	24	32	254
FFB 0300 240 01 NB D	300	765.0	83	24	32	270
FFB 0325 240 01 NB D	325	828.8	83	24	32	275
FFB 0350 240 01 NB D	350	892.5	83	24	32	275
FFB 0375 240 01 NB D	375	956.3	83	24	32	281
FFB 0400 240 01 NB D	400	1020.0	83	24	32	283
FFB 0450 240 01 NB D	450	1147.5	83	48	32	351
FFB 0500 240 01 NB D	500	1275.0	83	48	32	356

*Dimensions are subject to change at any time. Please contact APQ for current dimensions.

Fixed Filter Bank Part Number System

FFB 0025 480 01 NB D xxxx

Product Designation

KVAR Rating

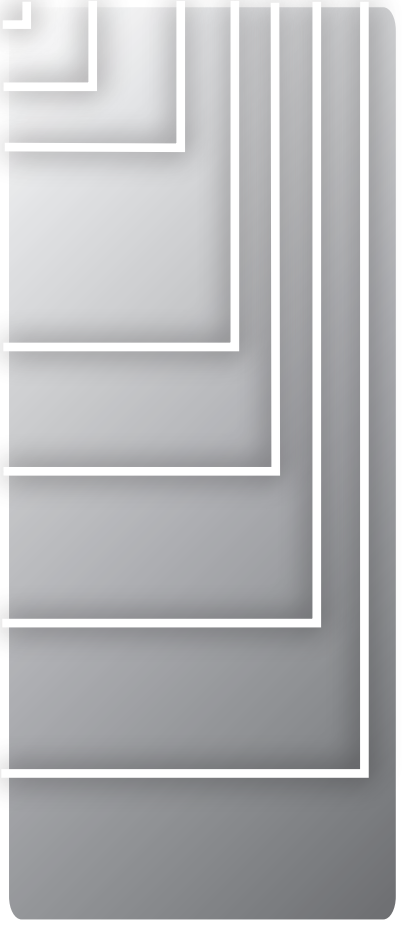
Nominal Voltage & Freq
208 Volts @ 60 Hz = 208
240 Volts @ 60 Hz = 240
400 Volts @ 50Hz = 400
480 Volts @ 60Hz = 480
600 Volts @ 60 Hz = 600
690 Volts @ 50Hz = 690

Enclosure Type
Type 1 = 01
Type 3R = 3R
Type 12 = 12

Overload Protection
Non-Fused = NF
Fuses & Lights = FL
Circuit Breakers = CB
No Circuit Breakers = NB

Filter Selection
5th Tuned = 5
7th Tuned = 7
11th Tuned = 1
Detuned = D

Product Options
Mechanical Contactors = MC
Contact Arteche PQ for additional design options



Customizing Your Equipment

Standard smART™ Series Type F Fixed Solutions are offered as detuned units without circuit breakers or fuses. Specific harmonic frequencies can be targeted with the Arteche PQ tuned filter banks, not shown in the selection charts above. Be sure to review the Overload Protection Options that are most appropriate for your particular installation. In addition to the multiple protection options and tuning capabilities, Arteche PQ can integrate any number of special product additions suitable for your specific needs. In fact, our team can even work with you to develop a control and monitoring system to integrate the new unit into an existing facility system. The products referenced in the selection charts are representative of the most common products sold by Arteche PQ. If the best size or solution is not already shown, don't hesitate to contact the Arteche PQ Team so that we can tailor a solution especially for your application.

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smART™ SERIES Type F

Fixed Power Factor Filter Banks

FFB 480V and 600V Selection Charts

Catalog Number	KVAR	Ampere Rating	*DIMENSIONS (Inches)			
			H x W x D			WT
FFB 0025 480 01 NB D	25	31.9	63	24	32	115
FFB 0030 480 01 NB D	30	38.3	63	24	32	117
FFB 0040 480 01 NB D	40	51.0	63	24	32	119
FFB 0050 480 01 NB D	50	63.8	63	24	32	121
FFB 0060 480 01 NB D	60	76.5	63	24	32	123
FFB 0075 480 01 NB D	75	95.6	63	24	32	125
FFB 0080 480 01 NB D	80	102.0	63	24	32	127
FFB 0100 480 01 NB D	100	127.5	63	24	32	239
FFB 0120 480 01 NB D	120	153.0	63	24	32	243
FFB 0125 480 01 NB D	125	159.4	63	24	32	252
FFB 0150 480 01 NB D	150	191.3	63	24	32	405
FFB 0175 480 01 NB D	175	223.1	63	24	32	409
FFB 0200 480 01 NB D	200	255.0	63	24	32	414
FFB 0225 480 01 NB D	225	286.9	83	24	32	420
FFB 0250 480 01 NB D	250	318.8	83	24	32	424
FFB 0275 480 01 NB D	275	350.6	83	24	32	430
FFB 0300 480 01 NB D	300	382.5	83	24	32	437
FFB 0350 480 01 NB D	350	446.3	83	24	32	443
FFB 0400 480 01 NB D	400	510.0	83	48	32	450
FFB 0450 480 01 NB D	450	573.8	83	48	32	456
FFB 0500 480 01 NB D	500	637.5	83	48	32	459
FFB 0550 480 01 NB D	550	701.3	83	48	32	465
FFB 0600 480 01 NB D	600	765.0	83	48	32	472
FFB 0650 480 01 NB D	650	828.8	83	48	32	512
FFB 0700 480 01 NB D	700	892.5	83	48	32	526
FFB 0750 480 01 NB D	750	956.3	83	48	32	538
FFB 0800 480 01 NB D	800	1020.0	83	48	32	621
FFB 0850 480 01 NB D	850	1083.8	83	72	32	628
FFB 0900 480 01 NB D	900	1147.5	83	72	32	635
FFB 0950 480 01 NB D	950	1211.3	83	72	32	641
FFB 1000 480 01 NB D	1000	1275.0	83	72	32	654

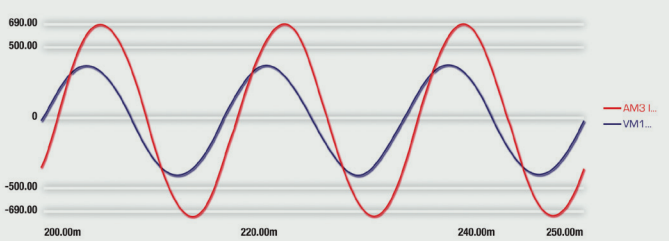
*Dimensions are subject to change at any time. Please contact APQ for current dimensions.

Catalog Number	KVAR	Ampere Rating	*DIMENSIONS (Inches)			
			H x W x D			WT
FFB 0025 600 01 NB D	25	25.5	63	24	32	115
FFB 0030 600 01 NB D	30	30.6	63	24	32	117
FFB 0040 600 01 NB D	40	40.8	63	24	32	119
FFB 0050 600 01 NB D	50	51.0	63	24	32	121
FFB 0060 600 01 NB D	60	61.2	63	24	32	123
FFB 0075 600 01 NB D	75	76.5	63	24	32	125
FFB 0080 600 01 NB D	80	81.6	63	24	32	127
FFB 0100 600 01 NB D	100	102.0	63	24	32	239
FFB 0120 600 01 NB D	120	122.4	63	24	32	243
FFB 0125 600 01 NB D	125	127.5	63	24	32	252
FFB 0150 600 01 NB D	150	153.0	63	24	32	405
FFB 0175 600 01 NB D	175	178.5	63	24	32	409
FFB 0200 600 01 NB D	200	204.0	63	24	32	414
FFB 0225 600 01 NB D	225	229.5	83	24	32	420
FFB 0250 600 01 NB D	250	255.0	83	24	32	424
FFB 0275 600 01 NB D	275	280.5	83	24	32	430
FFB 0300 600 01 NB D	300	306.0	83	24	32	437
FFB 0350 600 01 NB D	350	357.0	83	24	32	443
FFB 0400 600 01 NB D	400	408.0	83	24	32	450
FFB 0450 600 01 NB D	450	459.0	83	48	32	456
FFB 0500 600 01 NB D	500	510.0	83	48	32	459
FFB 0550 600 01 NB D	550	561.0	83	48	32	465
FFB 0600 600 01 NB D	600	612.0	83	48	32	472
FFB 0650 600 01 NB D	650	663.0	83	48	32	512
FFB 0700 600 01 NB D	700	714.0	83	48	32	526
FFB 0750 600 01 NB D	750	765.0	83	48	32	538
FFB 0800 600 01 NB D	800	816.0	83	48	32	621
FFB 0850 600 01 NB D	850	867.0	83	72	32	628
FFB 0900 600 01 NB D	900	918.0	83	72	32	635
FFB 0950 600 01 NB D	950	969.0	83	72	32	641
FFB 1000 600 01 NB D	1000	1020.0	83	72	32	654

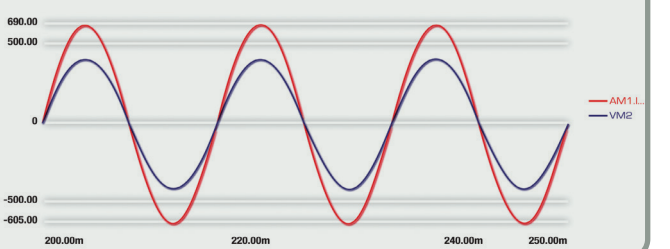
*Dimensions are subject to change at any time. Please contact APQ for current dimensions.

Power factor improvement, and all of the related benefits, is only realized between the power source and the power factor correction solution. Power factor will remain low between the load(s) and the provided solution as illustrated in the graphs below.

Downstream from Capacitor



Upstream from Capacitor



smART™ SERIES Type F

Automatic Power Factor Filter Banks

FAB 240V Selection Chart

Catalog Number	KVAR	Ampere Rating	KVAR Per Step	Step Count	*DIMENSIONS (Inches)			
					H x W x D			WT
FAB 0050 240 01 NB D 05 K M	50	127.5	10	5	63	24	32	232
FAB 0070 240 01 NB D 07 K M	70	178.5	10	7	63	24	32	239
FAB 0090 240 01 NB D 09 K M	90	229.5	10	9	63	24	32	575
FAB 0110 240 01 NB D 11 K M	110	280.5	10	11	63	24	32	575
FAB 0125 240 01 NB D 05 A M	125	318.8	25	5	63	24	32	269
FAB 0150 240 01 NB D 05 P M	150	382.5	30	5	63	24	32	281
FAB 0175 240 01 NB D 07 A M	175	446.3	25	7	63	24	32	563
FAB 0200 240 01 NB D 05 Q M	200	510.0	40	5	63	24	32	306
FAB 0210 240 01 NB D 07 P M	210	535.5	30	7	83	24	32	575
FAB 0225 240 01 NB D 09 A M	225	573.8	25	9	83	24	32	588
FAB 0250 240 01 NB D 05 B M	250	637.5	50	5	83	24	32	551
FAB 0270 240 01 NB D 09 P M	270	688.5	30	9	83	24	32	600
FAB 0275 240 01 NB D 11 A M	275	701.3	25	11	83	24	32	1334
FAB 0280 240 01 NB D 07 Q M	280	714.0	40	7	83	24	32	575
FAB 0330 240 01 NB D 11 P M	330	841.5	30	11	83	24	32	1347
FAB 0350 240 01 NB D 07 B M	350	892.5	50	7	83	24	32	655
FAB 0360 240 01 NB D 09 Q M	360	918.0	40	9	83	24	32	1310
FAB 0440 240 01 NB D 11 Q M	440	1122.0	40	11	83	48	32	1347
FAB 0450 240 01 NB D 09 B M	450	1147.5	50	9	83	48	32	1334
FAB 0550 240 01 NB D 11 B M	550	1402.5	50	11	83	48	32	1347

*Dimensions are subject to change at any time. Please contact APQ for current dimensions.

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smART™ SERIES Type F

Automatic Power Factor Filter Banks

FAB 480V Selection Chart

Catalog Number	KVAR	Ampere Rating	KVAR Per Step	Step Count	*DIMENSIONS (Inches)			
					H x W x D			WT
FAB 0100 480 01 NB D 04 A M	100	127.5	25	4	63	24	32	551
FAB 0125 480 01 NB D 05 A M	125	159.4	25	5	63	24	32	571
FAB 0150 480 01 NB D 03 B M	150	191.3	50	3	63	24	32	591
FAB 0175 480 01 NB D 07 A M	175	223.1	25	7	63	24	32	833
FAB 0200 480 01 NB D 04 B M	200	255.0	50	4	63	24	32	856
FAB 0225 480 01 NB D 09 A M	225	286.9	25	9	83	24	32	873
FAB 0250 480 01 NB D 05 B M	250	318.8	50	5	83	24	32	897
FAB 0275 480 01 NB D 11 A M	275	350.6	25	11	83	24	32	915
FAB 0300 480 01 NB D 04 C M	300	382.5	75	4	83	24	32	938
FAB 0350 480 01 NB D 07 B M	350	446.3	50	7	83	24	32	967
FAB 0375 480 01 NB D 05 C M	375	478.1	75	5	83	24	32	992
FAB 0400 480 01 NB D 08 B M	400	510.0	50	8	83	24	32	1764
FAB 0450 480 01 NB D 09 B M	450	573.8	50	9	83	48	32	1604
FAB 0500 480 01 NB D 05 D M	500	637.5	100	5	83	48	32	1597
FAB 0550 480 01 NB D 11 B M	550	701.3	50	11	83	48	32	1604
FAB 0600 480 01 NB D 08 C M	600	765.0	75	8	83	48	32	1611
FAB 0650 480 01 NB D 13 B M	650	828.8	50	13	83	48	32	1604
FAB 0700 480 01 NB D 07 D M	700	892.5	100	7	83	48	32	1604
FAB 0750 480 01 NB D 10 C M	750	956.3	75	10	83	48	32	1611
FAB 0800 480 01 NB D 08 D M	800	1020.0	100	8	83	48	32	1775
FAB 0900 480 01 NB D 09 D M	900	1147.5	100	9	83	72	32	2817
FAB 1000 480 01 NB D 10 D M	1000	1275.0	100	10	83	72	32	2645
FAB 1100 480 01 NB D 11 D M	1100	1402.5	100	11	83	72	32	2939
FAB 1200 480 01 NB D 12 D M	1200	1530.0	100	12	83	72	32	3261
FAB 1300 480 01 NB D 13 D M	1300	1657.5	100	13	83	96	32	3582
FAB 1400 480 01 NB D 14 D M	1400	1785.0	100	14	83	96	32	3912
FAB 1500 480 01 NB D 15 D M	1500	1912.5	100	15	83	96	32	4215
FAB 1600 480 01 NB D 16 D M	1600	2040.0	100	16	83	96	32	4562
FAB 1800 480 01 NB D 18 D M	1800	2295.0	100	18	83	120	32	4891
FAB 2000 480 01 NB D 20 D M	2000	2550.0	100	20	83	120	32	5120

*Dimensions are subject to change at any time. Please contact APQ for current dimensions.

Automatic Filter Bank

FAB 0025 480 01 CB

Product Designation

Total KVAR Rating

Nominal Voltage & Freq

208 Volts @ 60 Hz = 208
240 Volts @ 60 Hz = 240
400 Volts @ 50Hz = 400
480 Volts @ 60Hz = 480
600 Volts @ 60 Hz = 600
690 Volts @ 50Hz = 690

Enclosure Type

Type 1 = 01
Type 3R = 3R
Type 12 = 12

Overload Protection

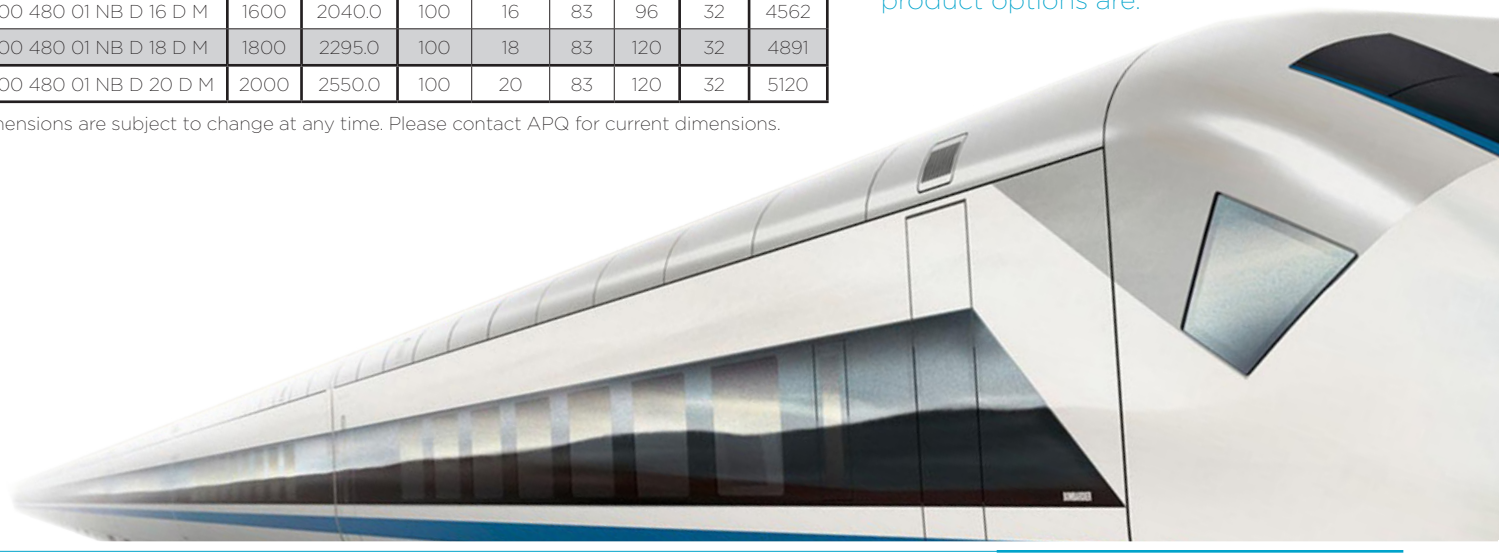
Circuit Breakers = CB
No Circuit Breaker = NB

Filter Selection

3rd Tuned = 3
5th Tuned = 5
7th Tuned = 7
Detuned = D

Optional Equipment

Standard smART™ Series Type F Automatic Solutions are offered as Type 1 units with a set step count and no circuit breaker. Arteche PQ can design various step counts at a given kVAR rating for your unique application. A few of the available product options are:



smART™ SERIES Type F

Automatic Power Factor Filter Banks

FAB 600V Selection Chart

Part Number System

D 05 B A xxx

Product Options
Current Transformer = C
Blown Fuse Indicators = F
Power Monitor = M
Other Options Available

Controller Selection
Arteche Standard = A
Arteche Modbus = M
Arteche Mini Scada = S
Other Options Available

Step Size
25 kVAr Steps = A
50 kVAr Steps = B
75 kVAr Steps = C
100 kVAr Steps = D
5 kVAr Steps = J
10 kVAr Steps = K

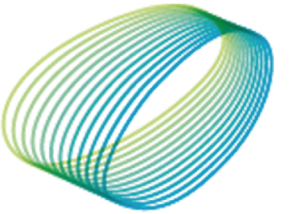
Contact Arteche for step size PN code

Switched Steps
Step Count

- Blown fuse indication lights
- Circuit Breakers
- Modbus or Mini Scada communication
- Disconnect Switch
- Power Monitor

Catalog Number	KVAR	Ampere Rating	KVAR Per Step	Step Count	*DIMENSIONS (Inches)			
					H x W x D			WT
FAB 0125 600 01 NB D 05 A M	125	127.5	25	5	63	24	32	771
FAB 0150 600 01 NB D 05 P M	150	153.0	30	5	63	24	32	796
FAB 0175 600 01 NB D 07 A M	175	178.5	25	7	63	24	32	821
FAB 0200 600 01 NB D 05 Q M	200	204.0	40	5	63	24	32	846
FAB 0225 600 01 NB D 09 A M	225	229.5	25	9	83	24	32	871
FAB 0250 600 01 NB D 05 B M	250	255.0	50	5	83	24	32	896
FAB 0275 600 01 NB D 11 A M	275	280.5	25	11	83	24	32	1249
FAB 0300 600 01 NB D 05 R M	300	306.0	60	5	83	24	32	935
FAB 0325 600 01 NB D 13 A M	325	331.5	25	13	83	24	32	1299
FAB 0350 600 01 NB D 07 B M	350	357.0	50	7	83	24	32	1357
FAB 0375 600 01 NB D 05 C M	375	382.5	75	5	83	24	32	1479
FAB 0375 600 01 NB D 15 A M	375	382.5	25	15	83	24	32	2608
FAB 0425 600 01 NB D 17 A M	425	433.5	25	17	83	48	32	2608
FAB 0450 600 01 NB D 09 B M	450	459.0	50	9	83	48	32	2495
FAB 0450 600 01 NB D 15 P M	450	459.0	30	15	83	48	32	2608
FAB 0475 600 01 NB D 19 A M	475	484.5	25	19	83	48	32	2608
FAB 0500 600 01 NB D 05 D M	500	510.0	100	5	83	48	32	2497
FAB 0525 600 01 NB D 07 C M	525	535.5	75	7	83	48	32	2512
FAB 0525 600 01 NB D 21 A M	525	535.5	25	21	83	48	32	2608
FAB 0550 600 01 NB D 11 B M	550	561.0	50	11	83	48	32	2712
FAB 0575 600 01 NB D 23 A M	575	586.5	25	23	83	48	32	2718
FAB 0600 600 01 NB D 15 Q M	600	612.0	40	15	83	48	32	2722
FAB 0650 600 01 NB D 13 B M	650	663.0	50	13	83	48	32	2735
FAB 0675 600 01 NB D 09 C M	675	688.5	75	9	83	48	32	2746
FAB 0700 600 01 NB D 07 D M	700	714.0	100	7	83	48	32	2752
FAB 0750 600 01 NB D 15 B M	750	765.0	50	15	83	48	32	2768
FAB 0825 600 01 NB D 11 C M	825	841.5	75	11	83	72	32	3062
FAB 0850 600 01 NB D 17 B M	850	867.0	50	17	83	72	32	3256
FAB 0900 600 01 NB D 09 D M	900	918.0	100	9	83	72	32	3389
FAB 0950 600 01 NB D 19 B M	950	969.0	50	19	83	72	32	3403
FAB 1100 600 01 NB D 11 D M	1100	1122.0	100	11	83	72	32	3589
FAB 1150 600 01 NB D 23 B M	1150	1173.0	50	23	83	72	32	3676

*Dimensions are subject to change at any time. Please contact APQ for current dimensions.



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Arteche PQ, Inc.
16964 West Victor Road
New Berlin, Wisconsin 53151
T. (1) 262 754.3883 • F. (1) 262 754.3993 • www.artechepq.com