CERTIFICATE OF COMPLIANCE

Certificate Number	20161121-E64388
Report Reference	E64388-20060222
Issue Date	2016-NOVEMBER-21
Issued to:	SCHAFFNER EMV AG TEST CENTER NORDSTRASSE 11 4542 LUTERBACH SWITZERLAND
This is to certify that representative samples of	COMPONENT - ELECTROMAGNETIC INTERFERENCE FILTERS See Addendum page
	Have been investigated by UL in accordance with the Standard(s) indicated on this Certificate.
Standard(s) for Safety:	UL 1283 & CSA C22.2 No. 8-13, Electromagnetic Interference Filters
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's Certification and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog number, model number or other product designation as specified under "Marking" for the particular Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark: , may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual recognitions.

Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. The final acceptance of the component is dependent upon its installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.

Bruce Mahrenholz, Director North American Certification Program

UL LLC

SCE 188689 A

CERTIFICATE OF COMPLIANCE

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This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Appliance Filter,
Single stage filter Series FN 2030, Models FN 203, followed by 0, 1, 2 or 3, may be followed by A, A1, A2, B, C2, C1, C, D, V, W, F, X, G, Y, H1, H, I, K, L, M, N1, or N, may be followed by Z, followed by 1, 3, 4, 6, 8, 10, 12, 16, 20 or 30, followed by 06, 07 or 08.

Models FS24752-20-99, FS24752-20-99-1 and FS29555-15-99. Model FS8039-8-07-UL.

Two stage filter Series FN 209, followed by 0, 1, 2, 3 or 4, may be followed by A, A1, A2, B, C2, C1, C, D, V, W, F, X, G, Y, H1, H, I, K, L, M, N1, or N, may be followed by T, may be followed by A, A1, A2, B, C2, C1, C, D, V, W, F, X, G, Y, H1, H, I, K, L, M, N1, or N, may be followed by Z, followed by 1, 3, 4, 6, 8, 10, 12, 16, 20 or 30 followed by 06, 07 or 08. Model FS29555-20-99. Model FS8029-25-07-UL.

Model FS34689-20-06

Bruce Mahrenholz, Director North American Certification Program

UL LLC

SCE 188689 A

DESCRIPTION

PRODUCT COVERED:

USR, Component - Appliance Filter, single stage filter Series FN 2030, Models FN 203, followed by 0, 1, 2 or 3, may be followed by A, A1, A2, B, C2, C1, C, D, V, W, F, X, G, Y, H1, H, I, K, L, M, N1, or N, may be followed by Z, followed by 1, 3, 4, 6, 8, 10, 12, 16, 20 or 30, followed by 06, 07 or 08. Models FS24752-20-99, FS24752-20-99-1 and FS29555-15-99. Model FS8039-8-07-UL.

USR, Component - Appliance Filter, Two stage filter Series FN 209, followed by 0, 1, 2, 3 or 4, may be followed by A, A1, A2, B, C2, C1, C, D, V, W, F, X, G, Y, H1, H, I, K, L, M, N1, or N, may be followed by T, may be followed by A, A1, A2, B, C2, C1, C, D, V, W, F, X, G, Y, H1, H, I, K, L, M, N1, or N, may be followed by Z, followed by 1, 3, 4, 6, 8, 10, 12, 16, 20 or 30 followed by 06, 07 or 08. Model FS29555-20-99. Model FS8029-25-07-UL.

USR, CNR Component - Appliance Filter, Model **FS34689-20-06.**

Note: Refer to Ill. 1 and 2 for further details.

GENERAL:

These devices are either single stage filters, Series FN 203X, Models FS24752-20-99, FS24752-20-99-1 and FS29555-15-99, or two stage filters, Series FN 209X, Model FS29555-20-99, and FS34689-20-06. Both filter types are housed in a metal case and have variations of mounting means and termination type.

ELECTRICAL RATINGS:

Model Type	Voltage **(V ac/V dc)**	Current A	Frequency Hz	Phase	Cold-Maximum Ambient Temperature °C
FN203*PQZ*-1-XX	250	1	50/60	1	0 to 40
	250		**DC**		
FN203PQZ-3-XX	250	3	50/60	1	0 to 40
	250		**DC**		
FN203PQZ-4-XX	250	4	50/60	1	0 to 40
	250		**DC**		
FN203*PQZ*-6-XX	250	6	50/60	1	0 to 40
	250		**DC**		
FN203*PQZ*-8-XX	250	8	50/60	1	0 to 40
	250		**DC**		
FN203*PQZ*-10-XX	250	10	50/60	1	0 to 40
	250		**DC**		
FN203*PQZ*-12-XX	250	12	50/60	1	0 to 40
	250		**DC**		
FN203*PQZ*-16-XX	250	16	50/60	1	0 to 40
	250		**DC**		
FN203*PQZ*-20-XX	250	20	50/60	1	0 to 40
	250		**DC**		
FN203*PQZ*-30-XX	250	30	50/60	1	0 to 40
	250		**DC**		
FS24752-20-99	250	20	50/60	1	0 to 40
	250		**DC**		
FS29555-15-99	250	15	50/60	1	0 to 70
	250		**DC**		
FS8039-8-07-UL	250	8	50/60	1	0 to 40
	250		**DC**		
FN209*PQTSZ*-1-XX	250	1	50/60	1	0 to 40
	250		**DC**		
FN209*PQTSZ*-3-XX	250	3	50/60	1	0 to 40
	250		**DC**		
FN209*PQTSZ*-4-XX	250	4	50/60	1	0 to 40
	250		**DC**		
FN209*PQTSZ*-6-XX	250	6	50/60	1	0 to 40
	250		**DC**		
*					

See Nomenclature Breakdown for Model number designations.

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ELECTRICAL RATINGS (cont'd):

Model Type	Voltage (V ac/V dc)	Current A	Frequency Hz	Phase	Cold-Maximum Ambient Temperature °C
FN209*PQTSZ*-8-XX	250	8	50/60	1	0 to 40
	250		DC		
FN209*PQTSZ*-10-XX	250	10	50/60	1	0 to 40
	250		DC		
FN209*PQTSZ*-12-XX	250	12	50/60	1	0 to 40
	250		DC		
FN209*PQTSZ*-16-XX	250	16	50/60	1	0 to 40
	250		DC		
FN209*PQTSZ*-20-XX	250	20	50/60	1	0 to 40
	250		DC		
FN209*PQTSZ*-30-XX	250	30	50/60	1	0 to 40
	250		DC		
FS34689-20-06	250	20	50/60	1	-25 to 60
	250		DC		
FS24752-20-99-1	250	20	50/60	1	0 to 40
	250		DC		
FS29555-20-99	250	20	50/60	1	0 to 40
	250		DC		
FS8029-25-07-UL	250	25	50/60	1	0 to 40
	250		DC		

See Nomenclature Breakdown for Model number designations.

Nomenclature Breakdown:

Type designation	Meaning (see Ill.1 and Ill.2)
P	Circuit Diagram: For FN203 Series, *P* = 0 to 3; For FN209 Series, *P* = 0 to 4
Q, *T*, or *S*	Ratings for Y2-Capacitors: For FN203 Series, Q for CY; For FN209 Series, *Q* for CY-1, T for CY and S for CY-2: Blank or without letter = Standard Version (May be 2.2nF, 3.3nF, 4.7nF, 10nF as indicated in description below.); A=0.47nF; A1=0.22nF; A2=0.33nF; B=no Y2-Caps; C2=0.68 nF; C1=1nF; C=1.5nF; D=2.2nF; V=2.8nF; W=3nF; F=3.3nF; X=4nF; G=4.7nF; Y=5.5nF; H1=6.8nF; H=10nF; I=15nF; K=22nF; L=33nF; M=47nF; N1=68nF; N=100nF.
Z	Z indicates provided with Varistor; Blank = Standard without Varistor
XX	Terminals: 06 = Faston 6.3 x 0.8 (spade / soldering) 07 = Wire 08 = Screw terminal M4

MODEL DIFFERENCES:

Models FS24752-20-99 and FS24752-20-99-1 are similar to Model FN2030-20-06 except the addition of external leads being added to the device. (see ill. 5 and ill. 6).

Model FS29555-15-99 is similar to Model FN2030-16-06, except for the addition of external leads. (See Ill. 7).

Model FS29555-20-99 is similar to Model FN2090-20-06, except for the addition of external leads. (See Ill. 7).

Model FS34689-20-06 is similar to Model FN2090-20-06, except for the housing and component ratings and values as indicated.

TECHNICAL CONSIDERATIONS (NOT FOR UL FIELD REPRESENTATIVES USE):

USR indicates the filters have been evaluated to the Standard for Electromagnetic Interference Filters, UL 1283, Sixth Edition.

CNR indicates investigation to the requirements of the Canadian Standardfor Electromagnetic Interference (EMI) Filters, CAN/CSA C22.2 No. 8-13, Fifth Edition.

The components covered by this report are filter assemblies intended to be used in end-use products where the acceptability of the combination has been determined by Underwriters Laboratories Inc.

CONDITIONS OF ACCEPTABILITY:

General - For use only in complete equipment where the acceptability of the combination has been determined by Underwriters Laboratories Inc. The following items should be considered in the end use product engineering evaluation.

1. The filter shall be installed within an overall enclosure suitable for the end product application.

2. The filter shall be installed in compliance with the mounting, terminal, spacing and segregation requirements of the end use application.

3. The terminals have not been evaluated for field wiring. The acceptability of the grounding terminal should be determined in the end use application.

4. Appliance filters inherently have high leakage currents. The Leakage current measurements have been provided for reference only. The need to determine leakage current in the end use application shall be considered. Leakage current measurements for Models FS8039-8-07-UL, FS8029-25-07-UL, **and FS34689-2-06** exceeded the maximum 0.5 mA requirement of **UL** 1283. Suitability of these filters with these leakage currents need to be determined in the end-use application.

5. Capacitor Discharge voltage measurements have been provided for reference only. The need to determine capacitor discharge voltages in the end application shall be considered.

6. Temperature tests were conducted in free air. The maximum surrounding air temperature of the device for industrial control panel applications should not exceed 40°C for filter Series FN 209, FN 2030, models FN203, FS24752-20-99, FS24752-20-99-1, and FS29555-20-99; and 70°C for filter model FS29555-15-99 .

7. Temperature tests were conducted in free air. For other than industrial control panel applications the case temperature should be measured in the end use equipment.

8. The mounting means has not been evaluated.

CONDITIONS OF ACCEPTABILITY: (CONTINUED)

9. The samples were tested with the terminals in an horizontal position (on the same plane) with the mounting means lowermost. Consideration should be given to a temperature test if a different orientation is employed in the end application.

10. The Abnormal Operation (Limited Short Circuit) Test (Par. 32, UL 1283) was not conducted. Suitability of this device to comply with this requirement must be considered in the end-use application.

11. Models with the suffix designation "Z" contain a metal oxide varistor that has not been subjected to the SCCR and Intermediate Current Testing as required by UL 1449. The suitability of these devices to comply with these tests in the end-use application shall be determined.

12. Models with the suffix designation "Z" contain a metal oxide varistor, and therefore, these filters have been subjected to the Limited Current Abnormal Overvoltage Test as required by UL 1449 for the end-use application.

File E64388
Project 05CA46156
Project 10CA51646

Issued: February 22, 2006
Revised: **April 26, 2017**

REPORT

on

COMPONENT - ELECTROMAGNETIC INTERFERENCE FILTERS

Schaffner EMC Inc.
Edison, NJ