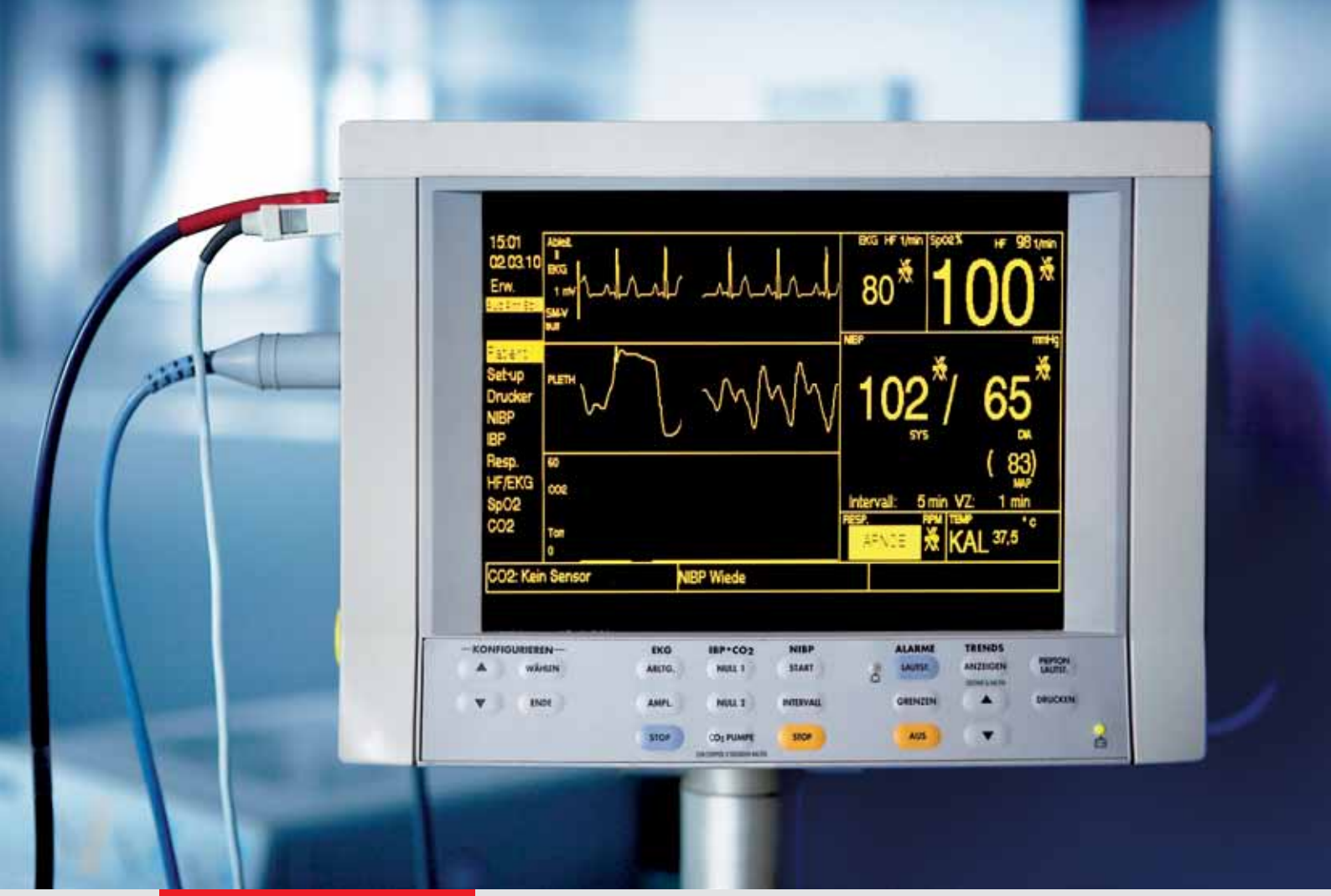


Application Note

Using IEC-Lock Power Cords with IEC Inlets and Filters

schaffner
energy efficiency and reliability

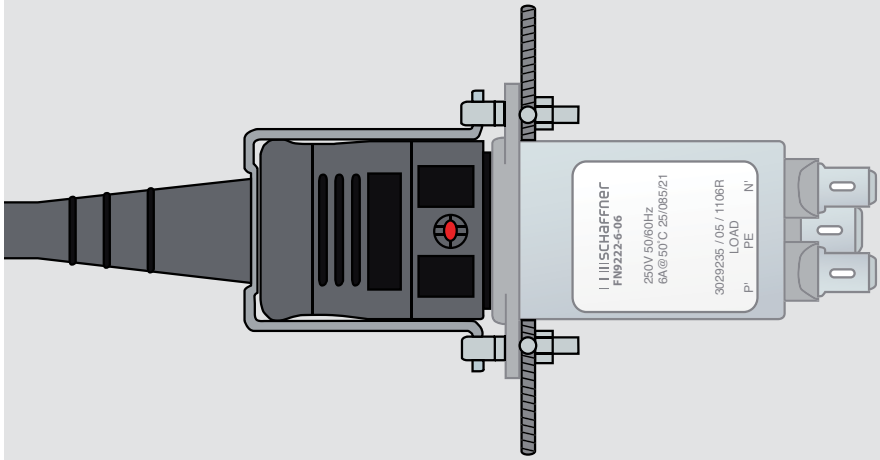
IL (IEC-Lock) power cord series provide a locking system usable for applications with every standard IEC inlet. With IEC-Lock there is an easier solution against accidental disconnection now available compared to earlier constructions with retaining clip.

Industries and applications

Any industry using IEC inlets with the need for a reliable mains connection can benefit from IL power cord series.

- Data centers
- Medical devices
- *In-vitro* diagnostic devices
- Automatic vending and gaming machines
- The most diverse (portable) electronic devices
- High value testing and measurement equipment
- High value power supplies
- Office equipment
- 1-phase industrial equipment
- Audio, video, broadcasting equipment

Traditional locking systems with retaining clip



"State of the art" solution up to now was the usage of a retaining clip like displayed above. Extra effort was required to install this system to the IEC inlet or filter. If the tensile force exceeds the tensile ultimate strength of the bolt or the clip, it can break.

Mechanical classifications of the bolts

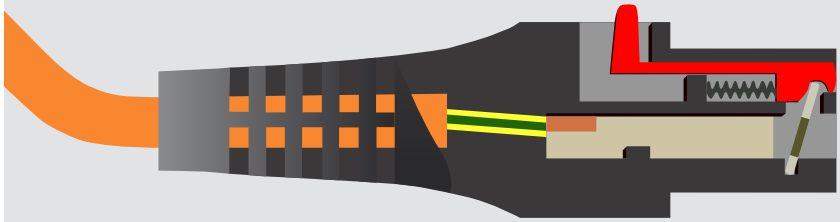
Steel bolts are characterized by their strength classes. The property classes most often used are 5.8, 8.8 (industrial standard) or 10.9. The number before the point is the tensile ultimate strength in N/mm² divided by 100. The yield point for operating in the plastic region is 10 times the figure before the point multiplied with the figure after the point. For example, a property class 5.8 bolt has a nominal (minimum) tensile ultimate strength of 500 N/mm² and a tensile yield strength of 400 N/mm².

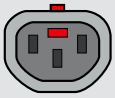
A M3 class 5.8 bolt with a tensile stress area of 5.0 mm² can carry a tensile force up to 2000 N (200kg). Bolts made of aluminum alloy have a tensile ultimate strength of about 100 N/mm². Thus a M3 bolt can hold a tensile yield force up to 500N (50kg).

New innovative locking System: IEC-Lock

IEC-Lock can substitute existing constructions with retaining clips and is suitable for all electronic equipment with IEC inlets or filters where a precaution against accidental disconnection is instrumental to improve the system reliability.

How IEC-Lock works





IEC Plug with integral locking system

IEC-Lock is an integrated locking system which needs no modi-fication of the existing IEC inlet or filter. It locks to the ground pin of any standard IEC inlet.

Important safety considerations

Based on this locking principle designers have to consider that the tensile force is directly affecting the inlet. IEC-Lock can clamp up to a tensile force of at least 200N (20kg). With tensile forces beyond IEC-Lock declamps before severe damage is caused to the equipment or the power cord. Thus designers of electronic equipment have to focus on the mounting of the IEC inlet or filter. To ensure the highest safety level of the system, it is strongly recommended to use IL power cords only in connection with flange mounted inlets and filters, which are bolted together with the equipment panel.

M3 bolts of the lowest property class (4.6) are sufficient having a tensile yield strength of 240 N/mm^2 and to hold a tensile yield force up to 1200N (120kg) each. So all retaining clip solutions with flange mounted IEC inlets and filters can be substituted by IEC-Lock reducing the construction effort significantly.

Snap-in versions of IEC inlets and filters depend on the maximum allowed tensile yield force of the snap-in assembly. Here the applicable force is far below the flange mount versions described above. Also IEC inlets and fil-ters for rear mounting where the inlet is not directly bolted together with the panel are not permissible.

We do not recommend using IEC-Lock with snap-in IEC inlets and filters!

The plastic inlet of the snap-in filter housing, the complete snap-in filter or the IEC inlet can be pulled out under extreme conditions so that live parts might be touchable and endanger the life of equipment users.

IEC-Lock application recommendation overview

✓ Flange mounting inlets and filters

✗ Snap-in and rear mounting inlets and filters

DO NOT USE!

Headquarters, global innovation and development center

Schaffner Group
Nordstrasse 11
4542 Luterbach
Schweiz
T +41 32 681 66 26
F +41 32 681 66 30
info@schaffner.com
www.schaffner.com

Sales and application centers

China
Schaffner EMC Ltd. Shanghai
T20-3, No 565 Chuangye Road
Pudong New Area
Shanghai 201201
T +86 21 3813 9500
F +86 21 3813 9501 / 02
cschina@schaffner.com
www.schaffner.com

Germany
Schaffner Deutschland GmbH
Schoemperlenstrasse 12B
76185 Karlsruhe
T +49 721 56910
F +49 721 569110
germanysales@schaffner.com

Finnland
Schaffner Oy
Tynninkuja 7
08700 Lohja
T +358 19 35 72 71
F +358 19 32 66 10
finlandsales@schaffner.com

France
Schaffner EMC S.A.S.
112, Quai de Bezons
95103 Argenteuil
T +33 1 34 34 30 60
F +33 1 39 47 02 28
francesales@schaffner.com

Italy
Schaffner EMC S.r.l.
Via Galileo Galilei, 47
20092 Cinisello Balsamo (MI)
T +39 02 66 04 30 45/47
F +39 02 61 23 943
italysales@schaffner.com

Japan
Schaffner EMC K.K.
Mitsui-Seimei Sangenjaya Bldg. 7F
1-32-12, Kamiuma, Setagaya-ku
Tokyo 154-0011
T +81 3 5712 3650
F +81 3 5712 3651
japansales@schaffner.com
www.schaffner.jp

Sweden
Schaffner EMC AB
Turebergstorg 1, 6
19147 Sollentuna
T +46 8 5792 1121 / 22
F +46 8 92 96 90
swedensales@schaffner.com

Switzerland
Schaffner EMV AG
Nordstrasse 11
4542 Luterbach
T +41 32 681 66 26
F +41 32 681 66 41
sales@schaffner.ch

Singapore
Schaffner EMC Pte Ltd.
Blk 3015A Ubi Road 1
05-09 Kampong Ubi Industrial Estate
T +65 6377 3283
F +65 6377 3281
singaporesales@schaffner.com

Spain
Schaffner EMC España
Antonio Bello
Calle Caléndula 93,
Miniparc III, Edificio E
El Soto de la Moraleja,
Alcobendas
28109 Madrid
T +34 618 176 133
spainsales@schaffner.com

Taiwan
Schaffner EMV Ltd.
6th Floor, No 413
Rui Guang Road
Neihu District
Taipei City 114
T +886 2 87525050
F +886 2 87518086
taiwansales@schaffner.com

Thailand
Schaffner EMC Co. Ltd.
Northern Region Industrial Estate
67 Moo 4 Tambon Ban Klang
Amphur Muang P.O. Box 14
Lamphun 51000
T +66 53 58 11 04
F +66 53 58 10 19
thailandsales@schaffner.com

UK
Schaffner Ltd.
5 Ashville Way
Molly Millars Lane
Wokingham
Berkshire RG41 2PL
T +44 118 9770070
F +44 118 9792969
uksales@schaffner.com
www.schaffner.uk.com

USA
Schaffner EMC Inc.
52 Mayfield Avenue
Edison, New Jersey 08837
T +1 732 225 9533
F +1 732 225 4789
usasales@schaffner.com
www.schaffner.com/us

To find your local partner within Schaffner's global network, please go to

www.schaffner.com

Schaffner is an ISO-registered company. Its products are designed and manufactured under the strict quality and environnmental requirements of the ISO 9001 and ISO 14001 standards.

This document has been carefully checked. However, Schaffner does not assume any liability for errors or inaccuracies.

10/2011 EN

schaffner
energy efficiency and reliability