



Rounded front frame 96 x 96

- the new front frame with integrated sealing is a perfect combination of design and functionality.
- the sealing which is laid in foam on the inside provides secure sealing between enclosure and panel instrument
- injection-moulded snap-fits ensure a solid attachment to the enclosure
- with front panel IP 54 possible

Material: Polycarbonate black

Other colours on request!

Description	Order no.
Front frame 96 x 96 mm	445-316-30
Matching front panel	445-316-33



Transparent cover

- reliable protection against outer defects
- quick and easy fixation without tools
- no unintended movement because of special flaps at the edges
- soft, flexible transparent material enables operation of keys, front foils, etc.
- can be retrofitted easily on instruments that are already in use

Material: Plasticised PVC

Degree of protection: IP 65

Dimensions W x H mm	Order no.
144 x 72	445-279-00
144 x 96	445-339-00
96 x 48	445-179-00
96 x 72	445-259-00
96 x 96	445-319-00



Compact display enclosure

- extremely small depth of only 25 mm
- red transparent antireflection-filter screen
- card fixation by slots in top and bottom of the case, parallel to the filter screen

Material:

Polycarbonate, listed acc. to UL 94 V-0

Dimensions H x W x D:

96 x 48 x 30 mm

Degree of protection:

IP 65 (with use of moulding seals)

Customer-specific solutions and other colours available on request!

Description	Order no.
Enclosure	448-160-00
Moulded sealing	448-160-10





The largest range of panel instrument cases

The injection-moulded cases can be configured for any type of use. The entire interior of the case is equipped with guide grooves for cards. Threaded inserts (M2) are located on the front and rear and mounting pins for fixing clamps are mounted on the sides. The front frame can easily be locked into place and is included in the delivery of the case. The rear panel is injection moulded and fits exactly onto the case. Special material properties ensure the best quality. DIN cases and rear panels are made of glass fibre reinforced Noryl SE1 GFN2 with the best mechanical and electrical properties.



Mechanical properties

Bending strength
as per ISO 178 125 MPa

Tenacity until break
as per ISO 527 80 MPa

Hardness, H 358/30
as per ISO 2039/1 125 MPa

Physical properties

Water absorption
as per DIN 53495 0,22 %

Density 1,23 g/cm³

Electrical properties

Electric resistivity
as per IEC 93 >10¹⁵ Ohm

Dielectric strength
as per DIN 53481 250 kV/cm

Observe low-voltage guidelines when installing devices that have an operating voltage above 50V.

Thermal properties

Thermal conductivity
as per DIN 52612 150° 0,28 W/m°C

Continuous operating temperature:
up to 135 °C

Additional notes of interest

- 1) For a one-time contribution to the tooling costs, all enclosures can be adapted to meet your specific requirements:
 - a) depth of the enclosure
 - b) position and arrangement of PCB guides
 - c) depression depth for retaining the front panel or pane
- 2) Provided the tooling costs are shared, even the rear Noryl panel can be customized with
 - a) cut-outs (e.g., vent slots)
 - b) company logo and address in raised lettering according to your specifications.

Your enclosure is manufactured using only your tool set - individuality is guaranteed.

For small orders, we also offer cost-effective treatment of enclosures and rear panels according to your specifications in our modern CNC-controlled treatment centre.

Conductive coatings

To gain interference immunity or prevent radiation from interfering transmissions, it is usually necessary to cover these devices with a conductive enclosure. This can be done either with a metal enclosure or by applying a conductive metal coating to a plastic enclosure, which, as a rule, is non-conductive.

The latter has the advantage of lower cost and weight. A conductive coating can be added to a plastic enclosure by lining the surface with metal foil or galvanic coating, by metallizing it in a high-vacuum or by applying a metallic lacquer.

apra-norm uses a high-quality conductive lacquer that offers excellent conductivity, outstanding resistance to corrosion and an impressive cost-performance ratio since the use of costly devices and equipment is not needed.

The coating used by apra-norm was developed to shield against EMI (electromagnetic interferences) and electrostatic discharge and to earth sensitive electrical devices. Our standard lacquer is copper-based as it represents the best economical and environmental solution for high shielding performance coupled with high conductivity.

Physical properties of the conductive varnish

Sheet resistance: < 0,25 Ω/square with 50 µm layer thickness

Attenuation as per ASTM ES 7-83:
>60 dB at 50 µm

Adhesion as per ASTM 3359 B: 5 B

Pencil hardness: > 9 H

max. operating temperature: 95 °C