

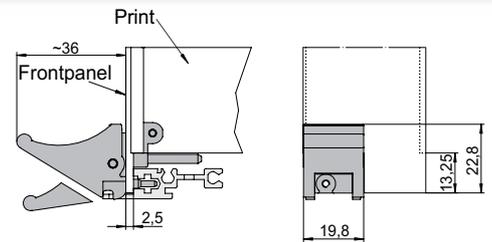
3: Handles



3.4 Injector/Ejector Handles acc. to IEEE

3.4.1 Ergonomic IEEE Standard Injector/Ejector Handle

- Without latching (standard)
- **Scope of delivery:**
 - Handle black (plastic, UL94 V-0)
 - Card holder (zinc die-cast, galvanised)
 - Reset spring (stainless steel)
 - Assembly material (screws M2.5 for fixing of card holder/printed board/front panel)
- Grey handles available on request



Injector/Ejector Handle Top with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-075 | 81-075-2 |

Injector/Ejector Handle Top without ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-075-01 | 81-075-01-2 |

Injector/Ejector Handle Bottom with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-076 | 81-076-2 |

Injector/Ejector Handle Bottom without ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-076-01 | 81-076-01-2 |

Label 18.5 x 10 mm

| | |
|----------------------------|--------|
| 1 sheet A4 with 280 labels | 81-030 |
|----------------------------|--------|

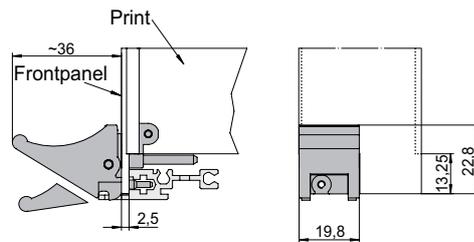


Label position

3: Handles

3.4.2 Ergonomic IEEE Hot-Swap Injector/Ejector Handle

- With latching (hot-swap)
- **Scope of delivery:**
 - Handle black, button red (plastic, UL94 V-0)
 - Card holder (zinc die-cast, galvanised)
 - Reset spring (stainless steel)
 - Assembly material (screws M2.5 for fixing of card holder/printed board)
- Grey handles available on request
- Offset version:
 - Offset by 2.54 mm (1/2 HP) to the right
 - Thus giving more space on the solder side of the PCB



Top Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-095 | 81-095-2 |
| Black offset | 81-184 | 81-184-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Top Handle without ESD pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-095-01 | 81-095-01-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Bottom Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-096 | 81-096-2 |
| Black offset | 81-185 | 81-185-2 |

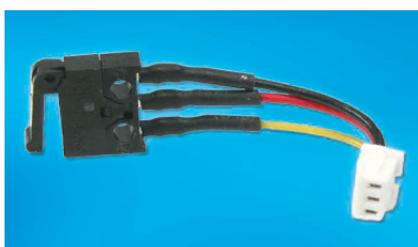
Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Bottom Handle without ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-096-01 | 81-096-01-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Microswitch for Injector/Ejector Handle

- Technical data and function see 3.4.7

| Description | Part-No. 10 pcs. | Part-No. 100 pcs. |
|--|---------------------|----------------------|
| Microswitch with pre-assembled wire cable length (25 mm) | 81-088-1 | 81-088-2 |

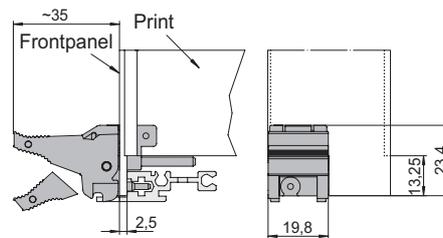
Label 18.5 x 10 mm

| | |
|----------------------------|--------|
| 1 sheet A4 with 280 labels | 81-030 |
|----------------------------|--------|

3: Handles

3.4.3 Classic IEEE Standard and Hot-Swap Injector/Ejector Handle

- Without latching (standard)
- **Scope of delivery:**
 - Handle black, without button (plastic, UL94 V-0)
 - Card holder (zinc die-cast, galvanized)
 - Reset spring (stainless steel)
 - Assembly material (screws M2.5 for fixing of card holder/printed board)
- Offset version:
 - Offset by 2.54 mm (1/2 HP) to the right
 - Thus giving more space on the solder side of the PCB



Top Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-260 | 81-260-2 |
| Black offset | 81-160 | 81-160-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Bottom Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-261 | 81-261-2 |
| Black offset | 81-161 | 81-161-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)

- With latching (hot-swap)
- **Scope of delivery:**
 - Handle black, button light grey (plastic, UL94 V-0)
 - Card holder (zinc die-cast, galvanized)
 - Assembly material (screws M2.5 for fixing of card holder/printed board)
- Offset version:
 - Offset by 2.54 mm (1/2 HP) to the right
 - Thus giving more space on the solder side of the PCB



Top Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-255 | 81-255-2 |
| Black offset | 81-155 | 81-155-2 |

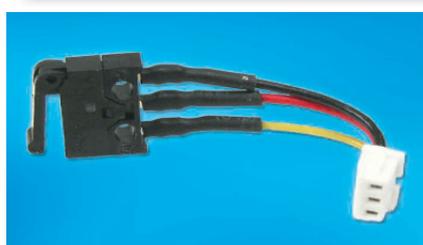
Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Bottom Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-256 | 81-256-2 |
| Black offset | 81-156 | 81-156-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Microswitch for Injector/Ejector Handle

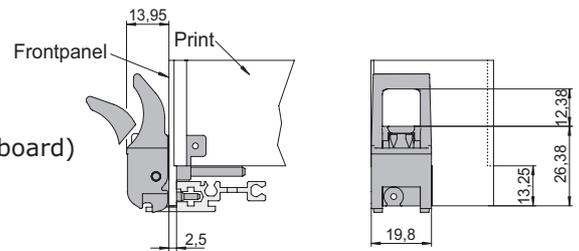
- Technical data and function see 3.4.7

| Description | Part-No. 10 pcs. | Part-No. 100 pcs. |
|--|---------------------|----------------------|
| Microswitch with pre-assembled wire cable length (25 mm) | 81-088-1 | 81-088-2 |

3: Handles

3.4.4 Low Profile Hot-Swap Injector/Ejector Handle for use in Telecom, VPX, VXS, VME64x, cPCI, and custom boards

- With latching (hot-swap)
- **Scope of delivery:**
 - Handle black, button red (plastic, UL94 V-0)
 - Card holder (zinc die-cast, galvanized)
 - Assembly material (screws M2.5 for fixing of card holder/printed board)
- Grey handles available on request
- Offset version:
 - Offset by 2.54 mm (1/2 HP) to the right
 - Thus giving more space on the solder side of the PCB



Top Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-205 | 81-205-2 |
| Black offset | 81-188 | 81-188-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Top Handle without ESD pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-205-01 | 81-205-01-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Bottom Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|--------------|-------------------|----------------------|
| Black | 81-206 | 81-206-2 |
| Black offset | 81-189 | 81-189-2 |

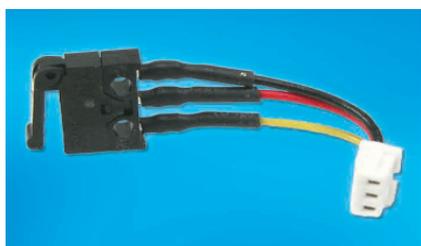
Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Bottom Handle without ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Black | 81-206-01 | 81-206-01-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Microswitch for Injector/Ejector Handle

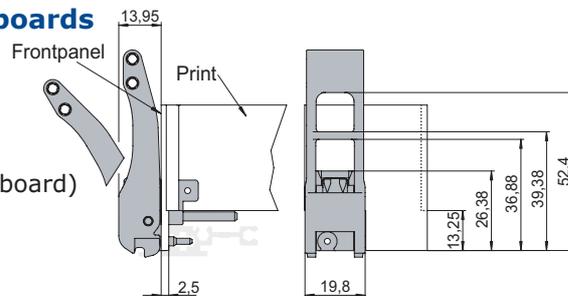
- Technical data and function see 3.4.7

| Description | Part-No. 10 pcs. | Part-No. 100 pcs. |
|--|---------------------|----------------------|
| Microswitch with pre-assembled wire cable length (25 mm) | 81-088-1 | 81-088-2 |

3: Handles

3.4.5 Low Profile Long Hot-Swap Injector/Ejector Handle For use in Telecom, VPX, VXS, VME64x, cPCI, & custom boards

- With latching (hot-swap)
- **Scope of delivery:**
 - Handle black, button red (plastic, UL94 V-0)
 - Card holder (zinc die-cast, galvanized)
 - Assembly material (screws M2.5 for fixing of card holder/printed board)
- Grey handles available on request
- Offset version:
 - Offset by 2.54 mm (1/2 HP) to the right
 - Thus giving more space on the solder side of the PCB



Top Handle with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 50 pcs. | Part-No. 100 pcs. |
|--------------|-------------------|---------------------|----------------------|
| Black | 81-214 | 81-214-5 | 81-214-2 |
| Black offset | 81-117 | 81-117-5 | 81-117-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



Bottom Handle with ESD pin

| Description | Part-No. 1 pc. | Part-No. 50 pcs. | Part-No. 100 pcs. |
|--------------|-------------------|---------------------|----------------------|
| Black | 81-215 | 81-215-5 | 81-215-2 |
| Black offset | 81-116 | 81-116-5 | 81-116-2 |

Optional screws for fixing front panels: M2.5, 100 pcs.: Cross recessed 1904-41 (12.7 mm), Torx: 1904K41 (11.3 mm)



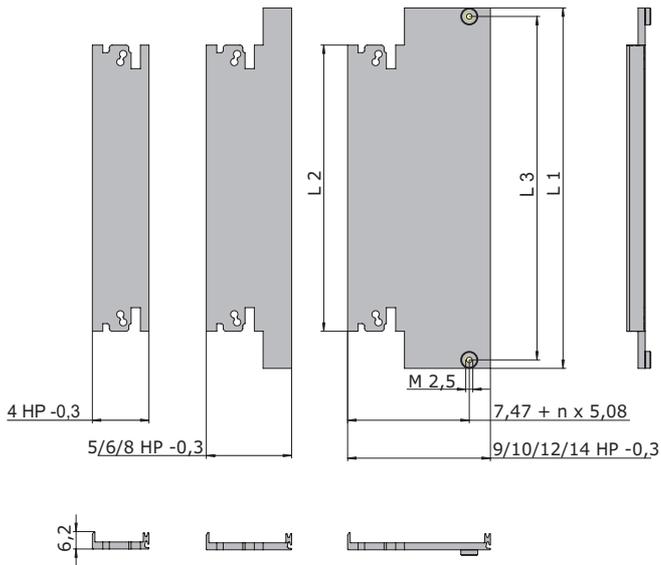
Microswitch for Injector/Ejector Handle

- Technical data and function see 3.4.7

| Description | Part-No. 10 pcs. | Part-No. 100 pcs. |
|--|---------------------|----------------------|
| Microswitch with pre-assembled wire cable length (25 mm) | 81-088-1 | 81-088-2 |

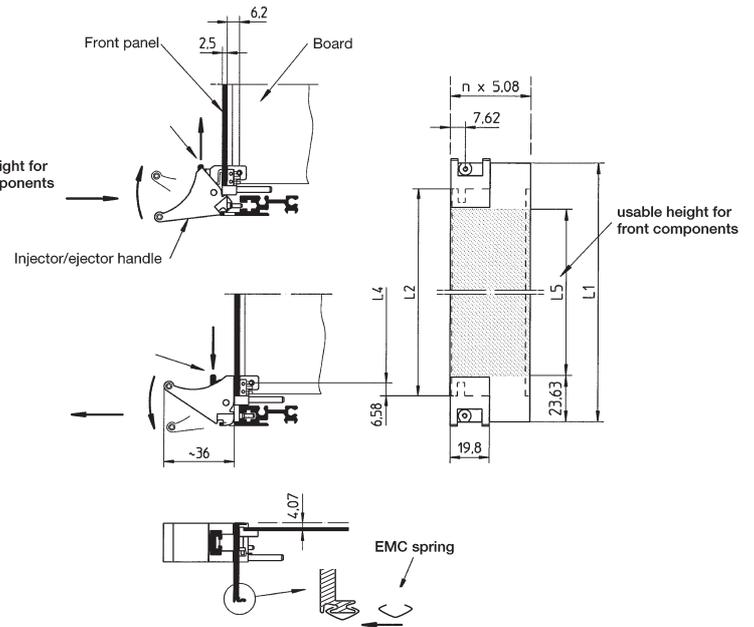
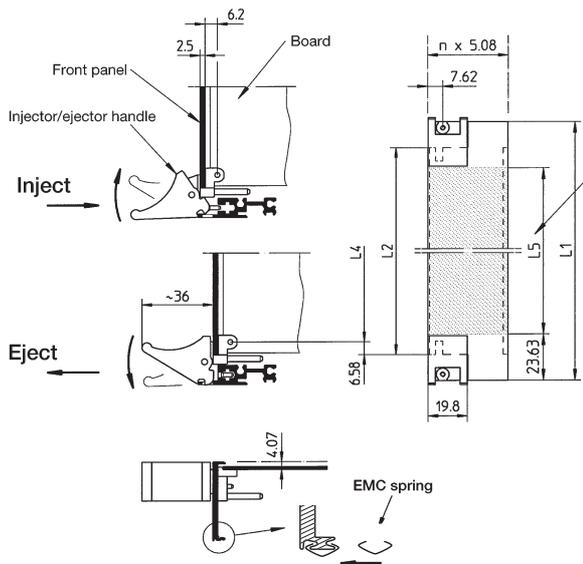
3: Handles

3.4.6 Cutouts and Function



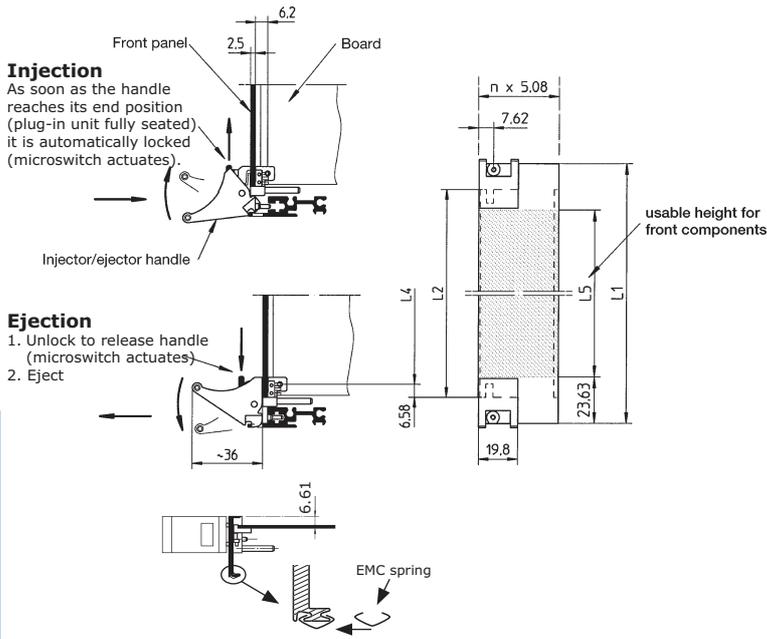
Injector/Ejector Handle Without Locking Feature (Function)

Injector/Ejector Handle With Locking Feature (Function)



3: Handles

Injector/Ejector Offset Handle With Locking Feature (Function)



Dimensions

| Height | L1 mm | L1 inch | L2 mm | L2 inch | L3 mm | L3 inch | L4 mm | L4 inch | L5 mm | L5 inch |
|--------|--------|---------|--------|---------|--------|---------|--------|---------|--------|---------|
| 3 U | 128.55 | 5.06 | 102.05 | 4.01 | 122.50 | 4.82 | 88.90 | 3.50 | 81.30 | 3.20 |
| 6 U | 261.90 | 10.31 | 235.40 | 9.27 | 255.85 | 10.07 | 222.25 | 8.75 | 214.65 | 8.45 |
| 9 U | 395.25 | 15.56 | 368.75 | 14.51 | 389.20 | 15.32 | 355.60 | 14.00 | 348.00 | 13.70 |

3.4.7 Microswitch Technical Data and Function

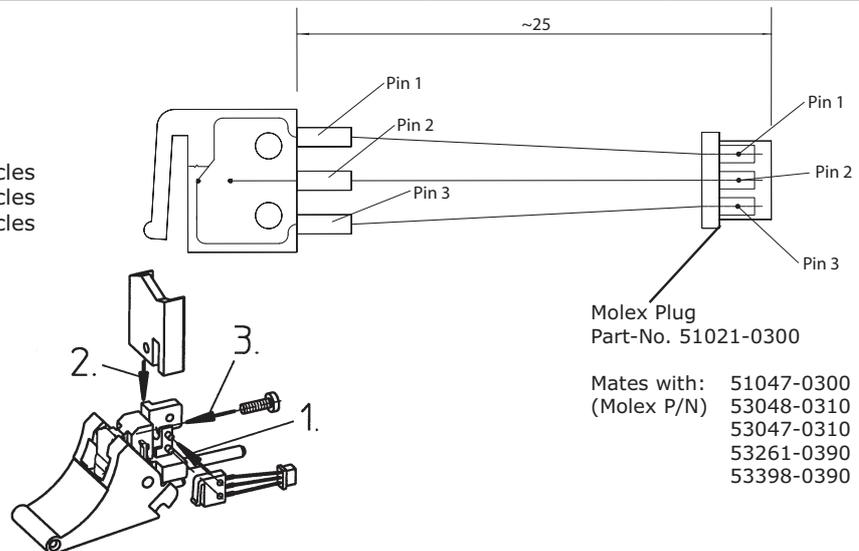


Microswitch for Injector/Ejector Handle

| Description | Part-No. | |
|--|----------|----------|
| | 10 pcs. | 100 pcs. |
| Microswitch with pre-assembled wire cable length (25 mm) | 81-088-1 | 81-088-2 |

Technical data

| | | |
|---------------|----------------------|---------------|
| Life circuit: | 30 V DC, 5 - 50 mA | 30'000 cycles |
| | 60 V DC, 5 mA | 30'000 cycles |
| | 60 V DC, 500 mA | 15'000 cycles |
| Temperature: | -25°C to +70°C | |
| Humidity: | RH 85% max. | |
| Vibration: | 10 Hz to 55 Hz, 18 g | |
| Shock: | 30 g, 11 msec | |



Switch function:

- Switch open: Connection between Pin 1 and Pin 3
- Switch closed: Connection between Pin 1 and Pin 2

Mounting sequence:

1. Push microswitch onto the handle
2. Insert the front panel into the handle
3. Screw-on

3: Handles

Hot-Swap Safely at the Touch of a Button

Modern backplanes are equipped with high pin density connectors. In order to manage the occurring high connecting forces, up to 500 N (100lbs.) for a 6U plug-in unit, a new insertion/extraction handle was designed and standardized in IEEE 1101.10.

The standards for CompactPCI Hot Swap and VME64x show new features added to the IEEE handle. To meet these different demands, Elma has developed two handles.

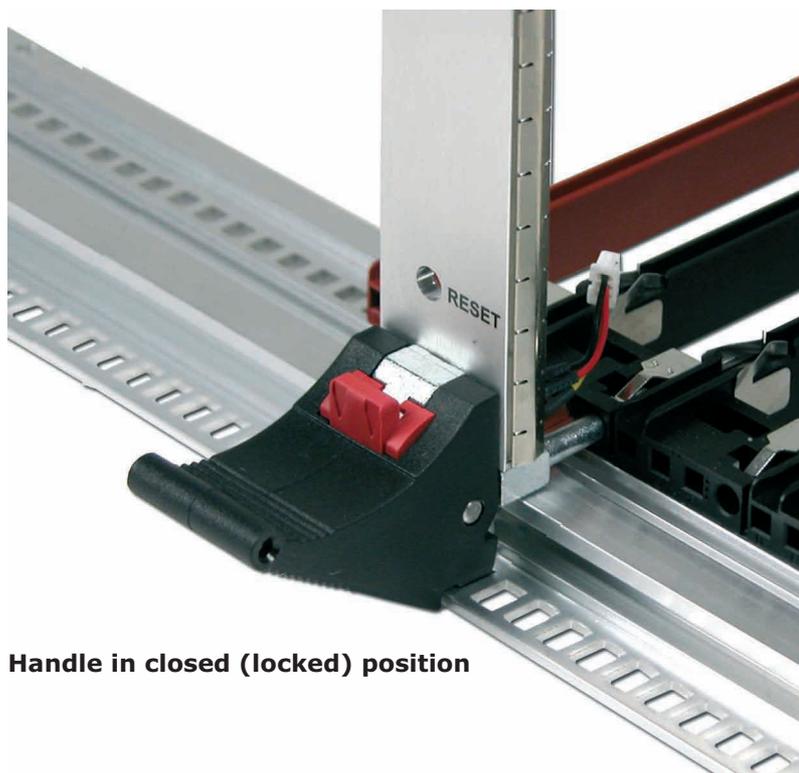
To confirm with IEEE 1101.10 and CompactPCI without Hot Swap or other applications where high insertion/extraction forces have to be managed, Elma developed a handle with an optimised ratio of leverage that impairs minimum vertical forces to the rack. Thus preventing the front extrusions from buckling which can cause malfunction of the handle. In addition the Elma handle has a positioning pin. This pin, anchored in the tapped strip, precisely aligns each board within its slot, eliminating lateral forces to adjacent boards (this guarantees the functionality of the EMC gaskets and reinforces the front extrusions). A matter of course are the coding (up to 4096 possibilities) and the ESD pin for electrostatic discharge of the front panel (via an ESD clip in the card guide) as defined in the IEEE standard.

The CompactPCI Hot Swap specification asks for a switch incorporated in the handle assembly. And the VME64x specifications requires a handle with a build in locking feature. Elma has added these features to the above mentioned handle. Thus offering the user two almost identical handles for different requirements. Unique and user friendly is the locking feature:

To remove the plug-in unit first the handle has to be unlocked by pushing down the red button on the handle. The red button also activates at the same time the switch (open). The red button remains depressed. Now the plug-in unit can be removed by pushing the handle outwards. If the red button was pushed in error, push the handle inwards. When the plug-in unit is fully seated, the red button jumps up automatically thus locking the handle and activating the switch (closed).

To separate the two operations (unlocking and extraction) means security and guarantees that the handle meets completely the Hot Swap specification. According to the specification the switch has to change the state as the handle is unlocked but before any movement of the board begins. On insertion the switch should change state after the board is fully seated (physical connection is done). This locking happens automatically with the Elma handle. Only when the plug-in unit is fully and correctly inserted, will the handle be locked and the switch actuated (closed).

The Hot Swap specification highly recommends a protective cover for Hot Swap boards. The cover from Elma can be mounted without screws. It is inserted between printed board and front panel. Then the double-sided adhesive tape is pressed on the printed board through the pins of the connector. No time or money is wasted fitting screws and in addition the cover can be fixed on all 6 U-, 160 mm and 80 mm boards even on those where holes for a protective cover are missing.



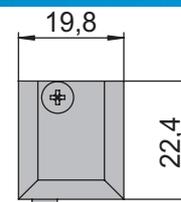
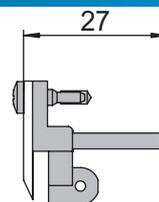
Handle in closed (locked) position

3: Handles

3.4.8 Card Holder and Coding Pins acc. to IEEE

• Scope of delivery:

- End piece card holder (zinc die-cast, nickel plated)
- Assembly material (screws M2.5 for fixing of front panel/card holder/printed board)



3.4.8.1 Card Holder/End Piece with ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Top | 81-018 | 81-018-2 |
| Bottom | 81-019 | 81-019-2 |



3.4.8.2 Card Holder/End Piece without ESD Pin

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Top | 81-018-01 | 81-018-01-2 |
| Bottom | 81-019-01 | 81-019-01-2 |



3.4.8.3 Coding Pins

- Acc. to IEC 60297-3-103
- Plastic, UL94 V-0
- Can be rotated in 4 positions

| Description | Part-No. 1 pc. | Part-No. 100 pcs. |
|-------------|-------------------|----------------------|
| Grey | 81-054-02 | 81-054-02-2 |
| Dark red | 81-054-06 | 81-054-06-2 |
| Black | 81-054-04 | 81-054-04-2 |