L2 & L3 WP02 Master and Slave cabinets assembly and changes

Scope of work to adapt Rittal 28U cabinets to install WP02 Master and Slave LLRF systems.

Version 1.1, Wojciech Wierba, Krzysztof Oliwa, 18.09.2014

The paper describes adaptation of 28U Rittal racks to cover WP02 requirements for LLRF systems.

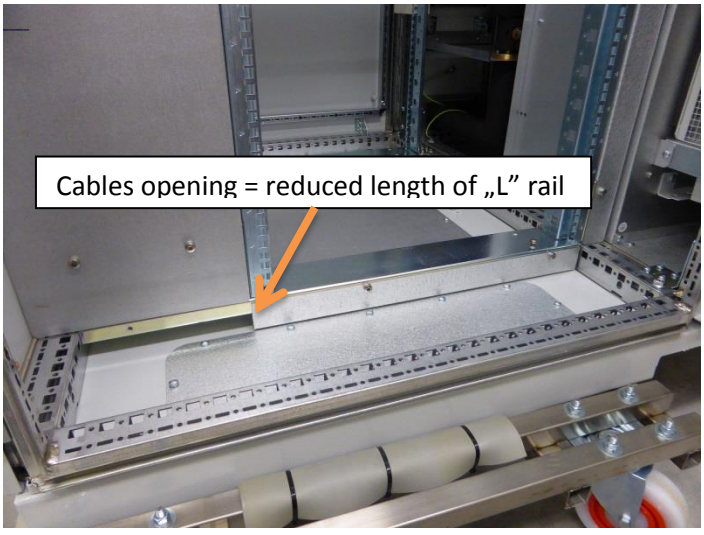
Requirements:

1. 3 Phase AC Power, 3 separate power strips (Dosenleiste),
2. Cables ducts for inner rack cabling,
3. Support bar to fix inner rack cables,
4. Opening to feed cables front-to-rear.
5. LED lamps and doors end-switches installation (Rittal duty?)

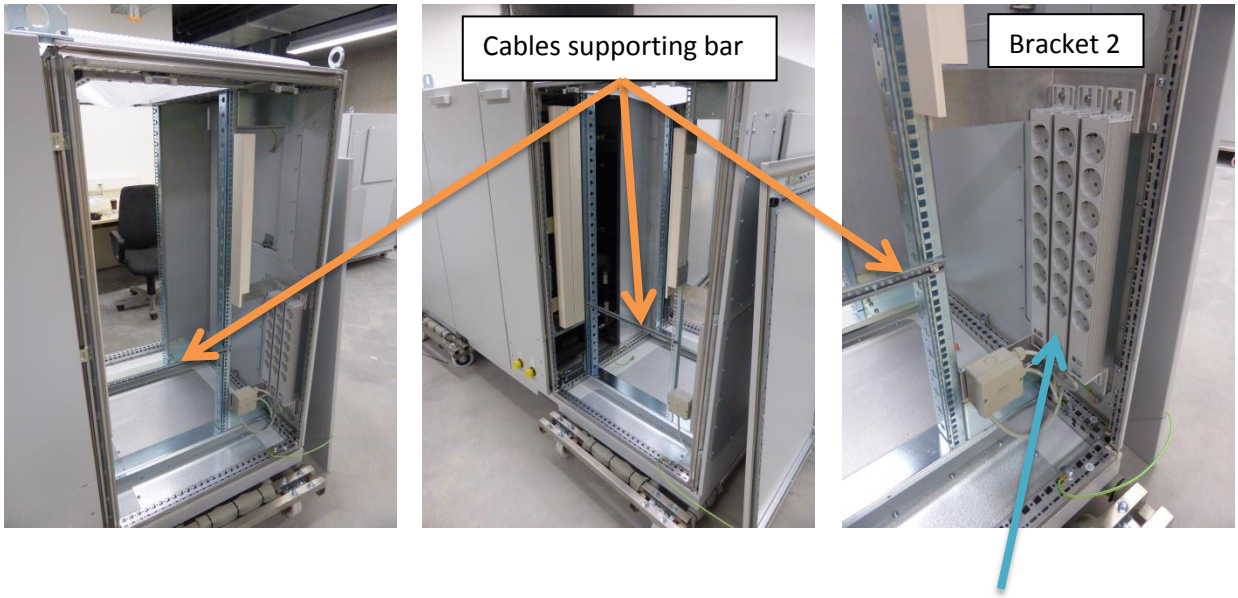
Total amount of cabinets ~46 (23 Master and 23 Slave).

AC Power Strips, cables ducts and support bars

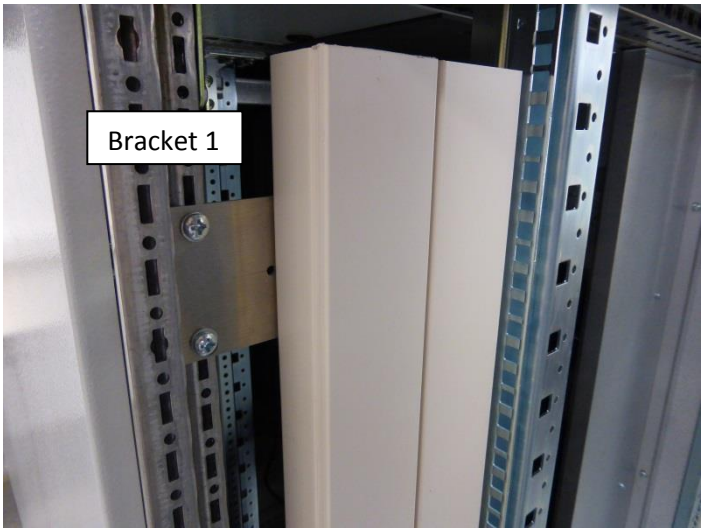
The AC Power Strips, 7 sockets for each phase, should be installed on the right side of the WP02 rack (most left from front side for Master, most right from front side for Slave). One plastic cable duct should be installed on the rear side of rack over the AC strips – this cable duct is foreseen for AC and DC power cables. Two plastic cables ducts should be installed on the rear side of the rack on the left side – those cables ducts are foreseen for signal cables.

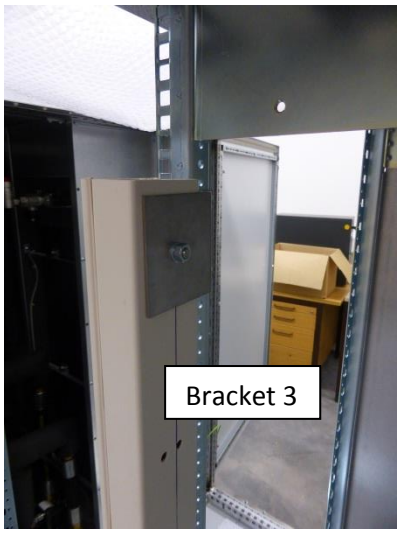


The front view of Master LLRF rack for L2&L3 (left) and opening for AC Power cables (right) for uTCA crate (and other necessary cables front-rear).

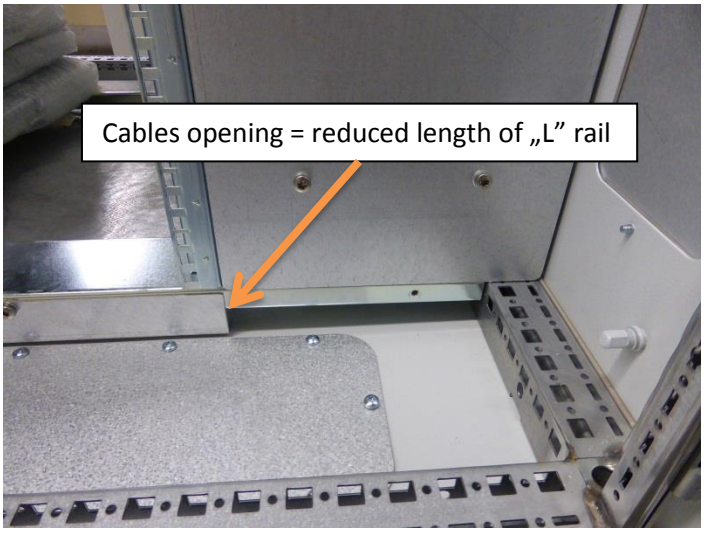


The rear view of Master LLRF rack for L2&L3 (left, middle) and AC Power stripes (right, 3 phase + connection box).

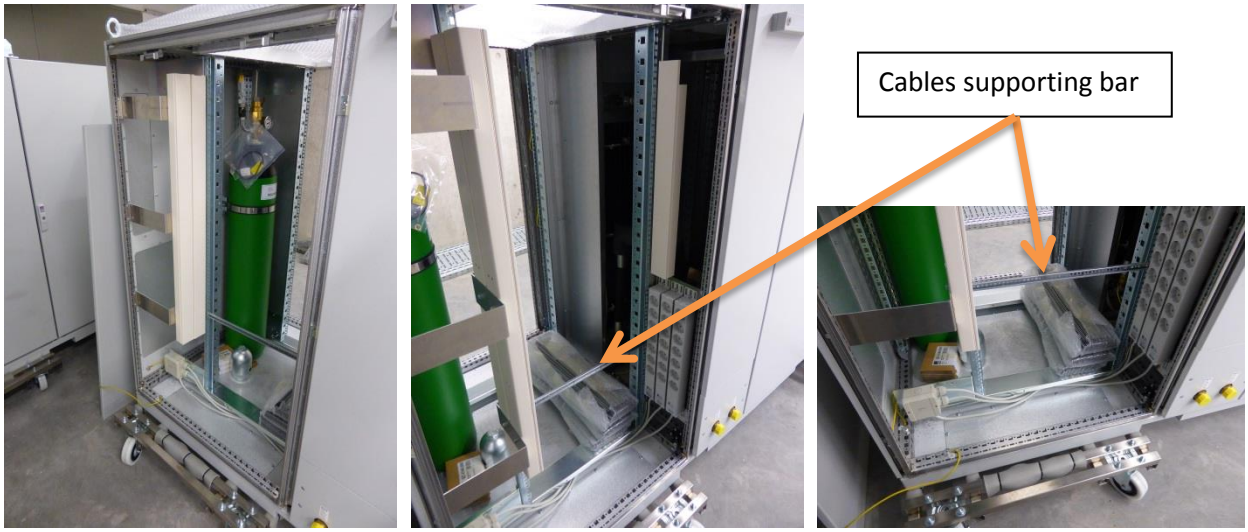




The rear view of Master LLRF racks for L2&L3 - cables ducts for signals (left) and AC/DC cables (right).



The front view of Slave LLRF rack for L2&L3 (left) and opening for AC Power cables (right) for uTCA crate (and other necessary cables front-rear).

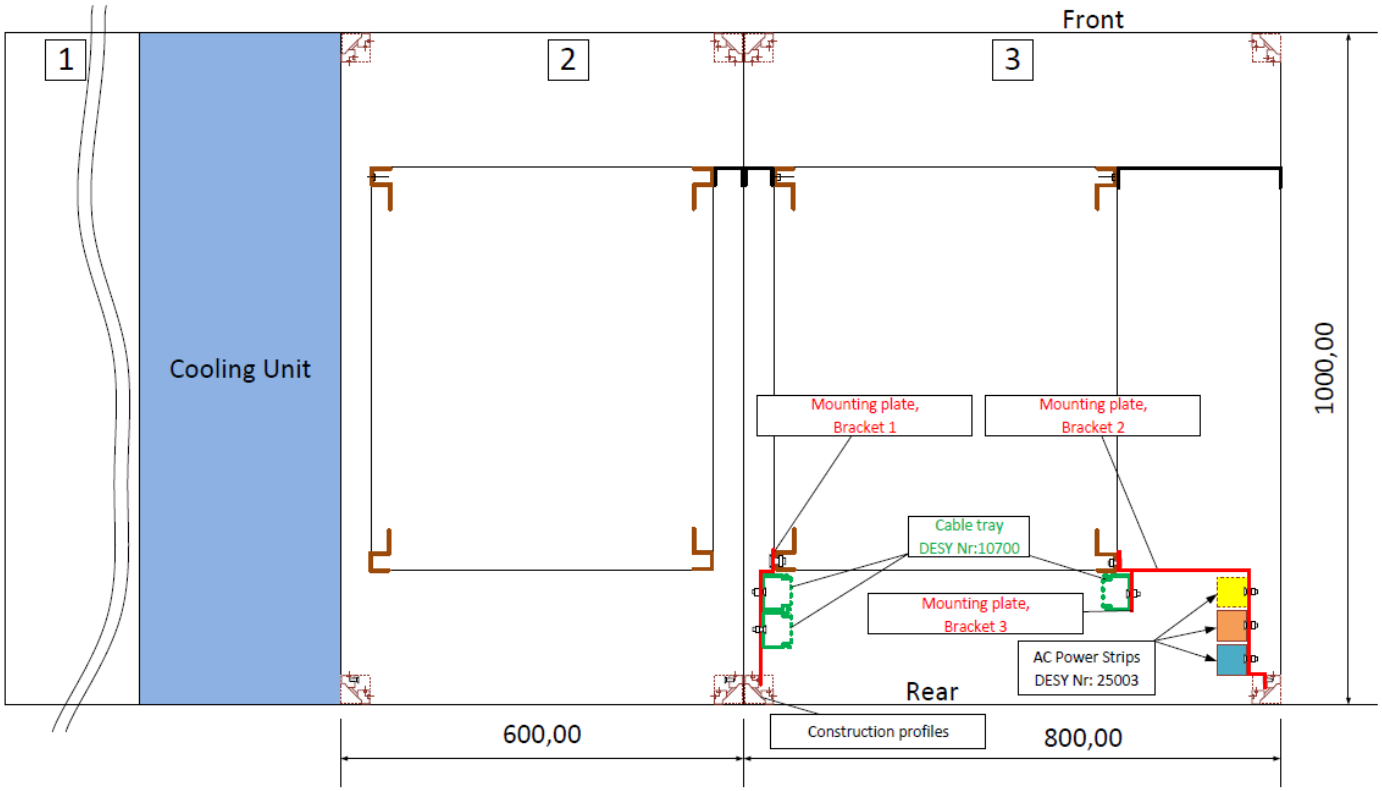


The rear view of Slave LLRF rack for L2&L3 (left, middle) and AC Power stripes (right, 3 phase + connection box).

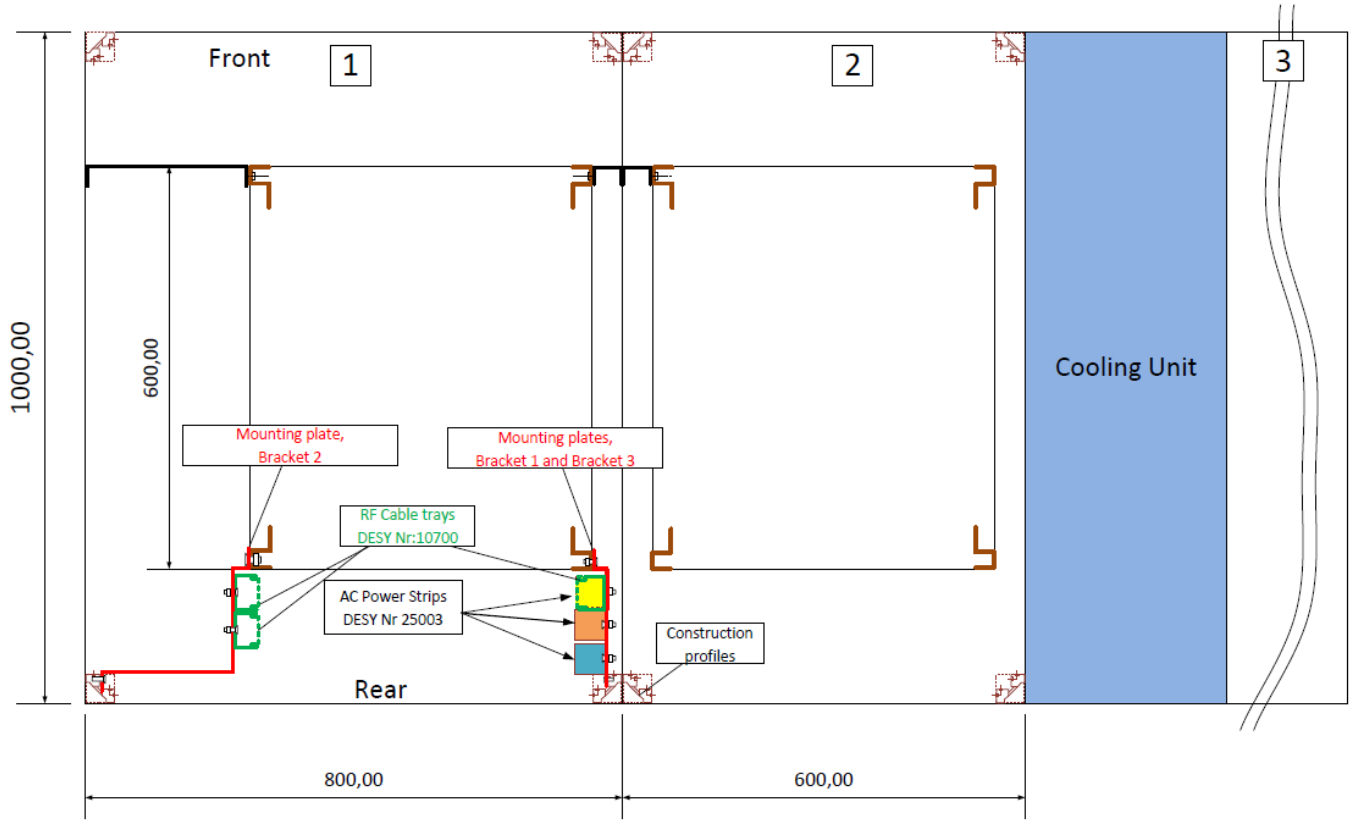
The rear view of Slave LLRF racks for L2&L3 - cables ducts for signals (left) and AC/DC cables (right).

Installation detailed drawings

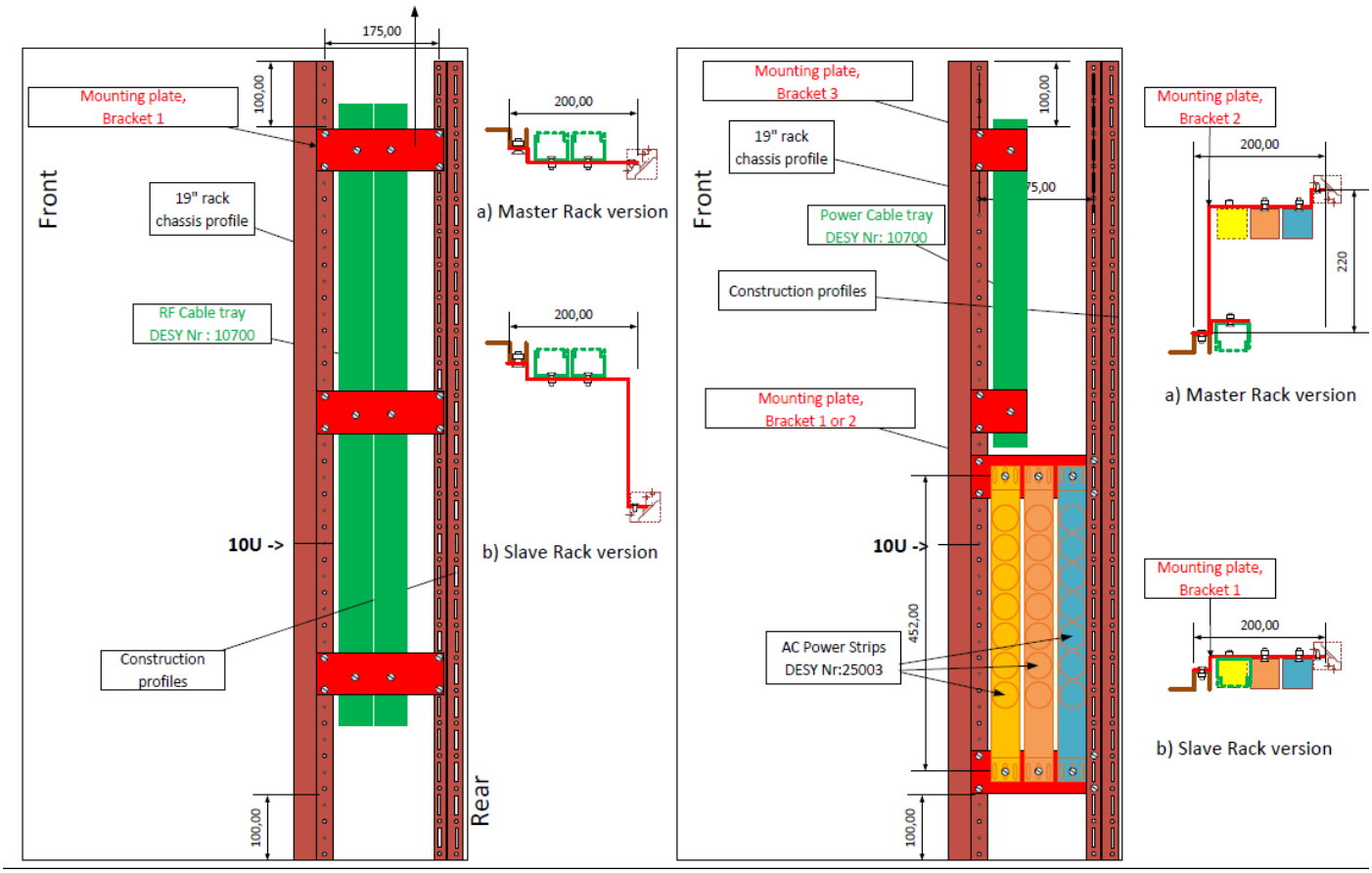
Rack cross section top view for L2 and L3 Master racks



Rack cross section top view for L2 and L3 Slave racks



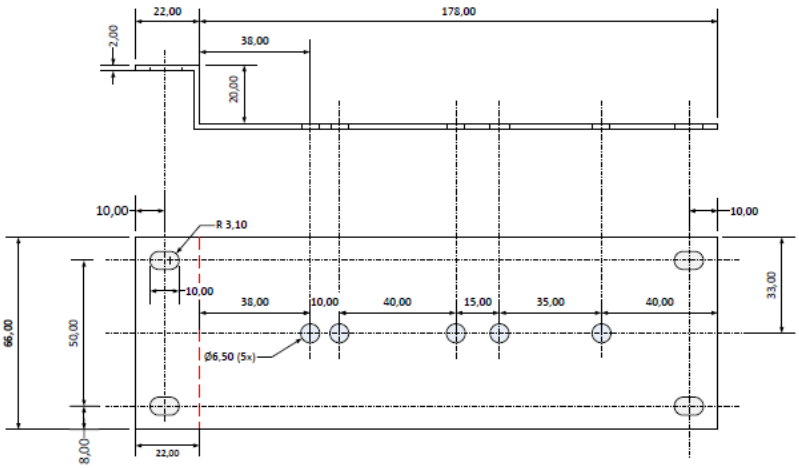
Rack cross section side view for L1, L2 and L3 racks



Brackets

The cables ducts and AC Power strips are supported by 3 types of brackets.

Drawing 1



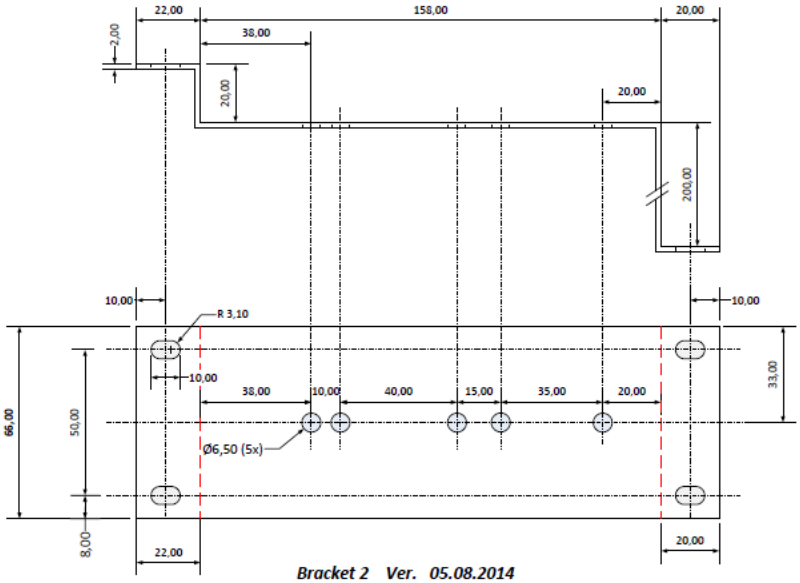
Bracket 1 Ver. 05.08.2014

Material: Aluminium-Bleche 2mm
66x220mm

Menge = ...

Bracket type 1 for support cables ducts and AC Power strips.

Drawing 2



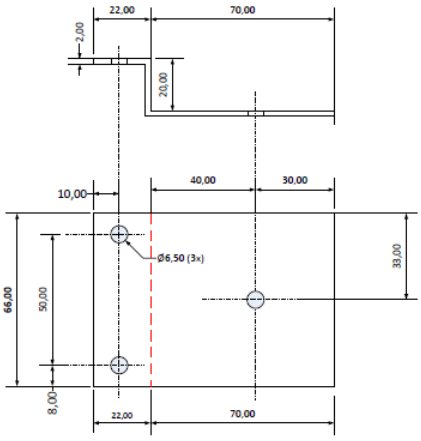
Bracket 2 Ver. 05.08.2014

Material: Aluminium-Bleche 2mm
66x420mm

Menge = ...

Bracket type 2 for support cables ducts and AC Power strips.

Drawing 3



Bracket 3 Ver. 05.08.2014

Material: Aluminium-Bleche 2mm
66 x 112mm

Menge = ... st

Bracket type 3 for support cables ducts.

Materials

1. Cables ducts are DESY 10700 (Instalations-Kanaele, halogenfrei).
2. Cables supporting bars are DESY 10220 (Profilschiene fuer Reihenschelen).
3. Brackets are made from aluminum plate ≠ 2 mm DESY 53028.
4. AC Power stripes (Dosenleiste) are 7 socket DESY 25003.

5. AC connection boxes are D9025 DESY 10095.
6. Cable glands (Kabelverscharaubungen) are M20 DESY 12702.

AC Power

1. Total AC power consumption 2415 VA (L1 = 1020 VA, L2 = 1020 VA, L3 = 375 VA).
2. Connections of diverse devices on phases will circulate among to balance phases load.
3. Each AC phase have separate 16A fuses.
4. The AC power load and type of connection (3 phase) for two other racks in one cabinet have to be discussed with MKK people.

LED lamps and doors end-switches installation

Rittal should provide LED lamps and door end-switches installation schematics.

Who is responsible for lamps and end-switches installation? (Rittal?)

Example of inner rack cabling

There are pictures of inner rack cabling.