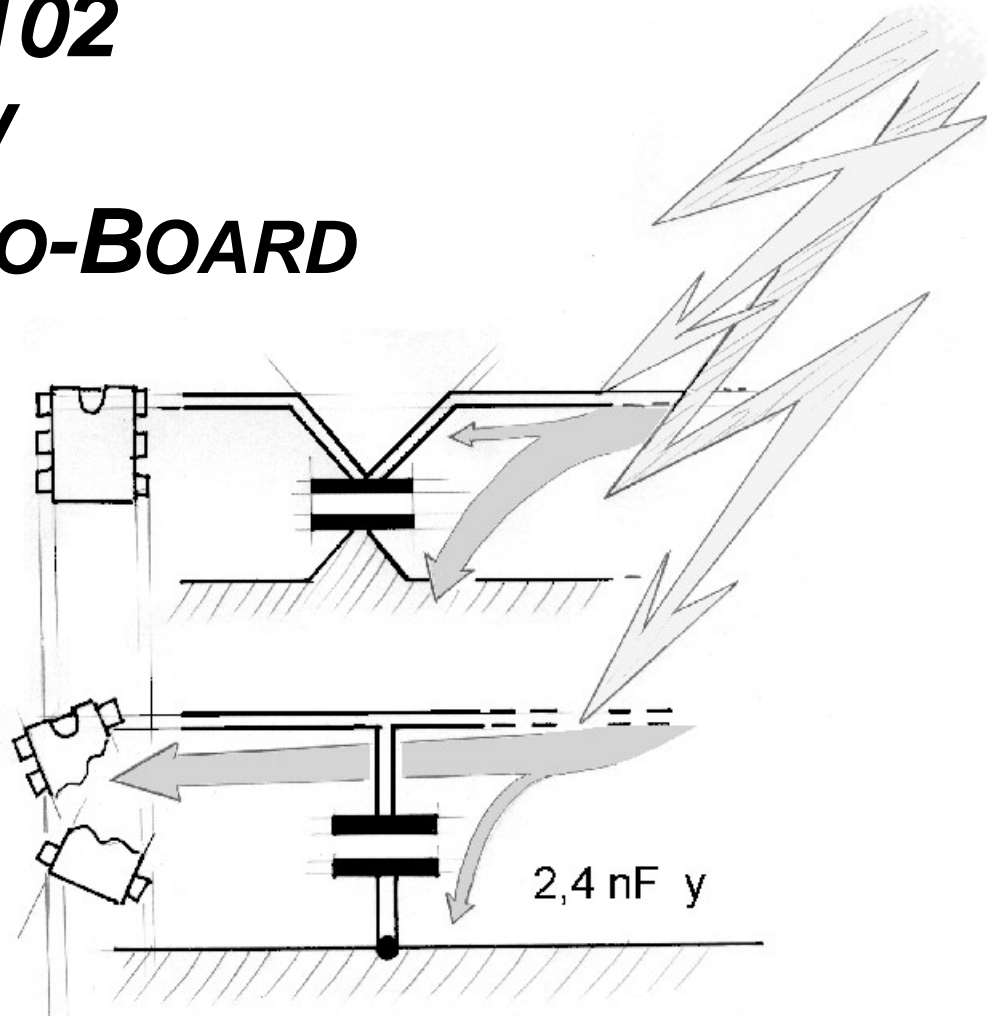
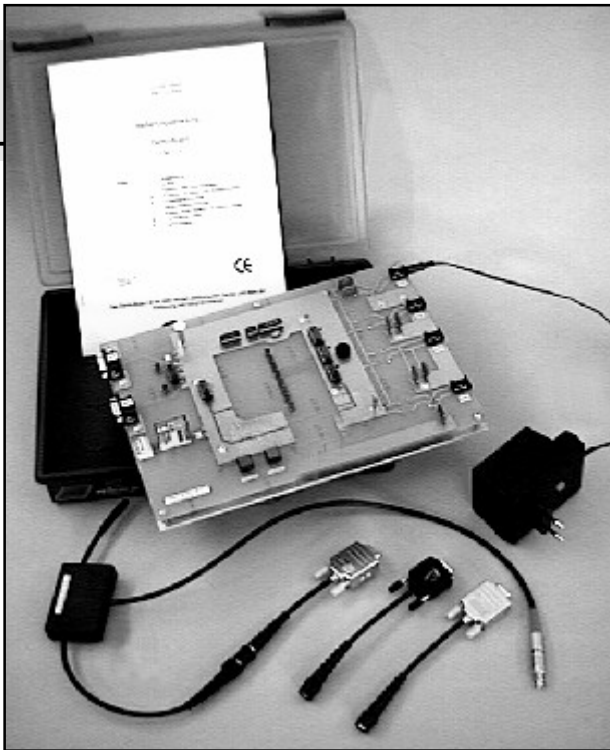


VM 102 EMV DEMO-BOARD



- Visual presentation of the EMC characteristics of electronic equipment.
- Permits the demonstrative teaching of disturbance immunity problems.
- Demonstrates the effect of different EMC measures.
- Flexible variation of screening and filtering.
- Usage of pulse rate disturbance quantities.
- Considers the different sensitivities of IC's.



Demo-Board VM 102

LANGER
EMV-Technik

Contents:

- 1 Main unit with electronic circuit and practical EMC measures H1-H4 and S1-S2.
- 1 Interface cable with integrated coupling clamp
- 4 plug-connectors with different screening A1 to A4
- 1 AC/DC mains adapter
- Operating instructions
- Case (338x260x57)mm

DEMO-BOARD VM 102

The **Demo-Board VM 102** serves for the visual presentation of the EMC characteristics of electronic equipment. It was designed for the teaching and demonstration of disturbance immunity problems and is arranged for the influencing with fast transient disturbance quantities (Burst, EN 61000-4-4).

The Demo-Board can be used, for teaching in Higher Education Establishments and Universities, in industry for the presentation of measurement and test equipment for EMC, in seminars and workshops.

There are two main areas of use:

1. As a **teaching aid** for the practical demonstration of the effect of disturbance quantities and EMC measures.

Usage occurs in conjunction with:

- Disturbance quantity generators
 1. Burst generator meeting EN 61000-4-4
 2. Pulse rate generator (EMC Training Station of the Langer company)
 - Probes for the coupling of fast transient pulse fields (field sources)
 - Probes for capturing fast transient pulse fields.
- EMC sensors for creating a closed measurement circuit between the unit under test and the disturbance quantity generator.

2. As a **UUT** (Unit under Test) for the demonstration of measurement and test equipment for EMC.

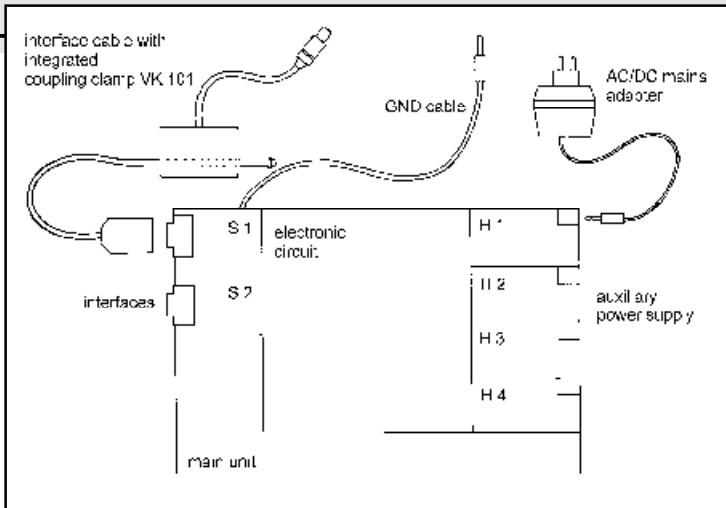
The effects of generators, probes, sensors and detectors can be demonstrated with the Demo-Board.



Sensor S 21

The Demo-Board has two defined disturbance immunity weak spots. Reproducible function failure occurs when it is subjected to disturbance quantities.

VM 102



Technical data

Demo-Board VM 102

312x215x45 mm / ca. 1000 g
 Auxiliary energy Plug-in power supply unit:
 DC, 12 Volt, 800 or 1000 mA
 Variable EMC measures:
 4x auxiliary energy supply H1-H4
 2x data interface S1-S2
 4x shielding A1-A4
 Weak points: 1x central 2x interface

Coupling clamp VK 102:

Generator plug 4 mm
 Data plug 9-pol. D-Sub

Coupling clamp NK 102:

Generator plug 4 mm
 12 Volt 2,5 mm jack

Function: The disturbance quantities which infiltrate the electronic circuit via the interface cable or the auxiliary supply are weakened by the EMC measures, S1-S2, A1-A4 or H1-H4. The quality of the selected EMC measure determines the immunity of the arrangement. A specific measure is selected by appropriate cable connection and insertion of links. The physical effect is visible from the layout arrangement.

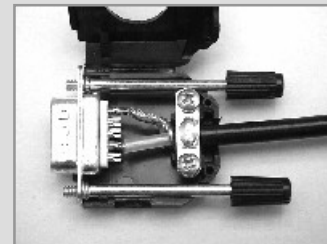
DESIGN AND FUNCTION OF THE EMC DEMO-BOARD

Arrangement features of the VM 102:

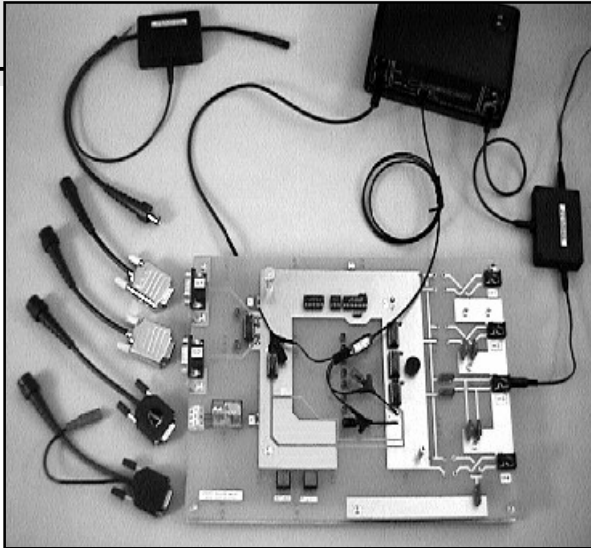
- The EMC measures of the Demo-Board have elementary character. They contain the basic principles of EMC.
- The EMC measures are well arranged and visible on the PCB surface and their functions are self-evident
- The evaluation of the EMC measures can occur through the internal electronic circuit or EMC sensors.
- Function failure of the internal circuit is clearly recognizable through the acoustic and optical indicators.
- The disturbance immunity weak spots of the electronic circuit (track run), locatable with field sources, are very visibly arranged on the surface of the PCB.
- EMC sensors can be adapted for definition of disturbance reference threshold levels. The exceeding of disturbance reference threshold levels is signaled over fiber optic.
- In conjunction with EMC sensors, an automated measurement station can be set up (supplementation through UUT Monitoring System (PÜW) and burst generator or an EMC Training Station set-up)

Two groups of EMC measures:

1. Bypass capacitors H1-H4
 Different types of bypass capacitors (SMD / wired) and typical layout arrangements are used. Apparently minor differences in the arrangement of the bypass paths can produce detrimental effects
2. Screening S1-S2 and bypass A1-A4 at the plug connectors
 The screen bypass is constructed in two versions, S1 and S2. It can be clearly shown that minor shortcomings in the layout or mechanical construction produce significant influence on the disturbance immunity.
 There are four versions of plug connector screening. Particularly interesting is the low immunity of the pigtail versions.



Workplace PPL 01



Contents:

- 1 Demo Board VM 102
- 1 Burst generator SGZ 21
- 1 Coupling clamp auxiliary energy NK 102
- 1 Coupling clamp interface VK 102
- 4 Interface connectors A1-A4
- 1 EMC-Sensor S31 with 7 different IC's
- 2 Field sources ES 05D / BS 04DK
- 1 Plug-in power supply unit
- Accessoires
- 3 Operating instructions
- Metal case

EMC-LABORATORY WORKPLACE PPL 01

EMC- laboratory workplace

- The essential parts of the laboratory workplace are, the Demo-Board, a Burst generator, a capacitive coupling clamp, a coupling network, EMC sensors and field sources.
- The system employs the pulse rate procedure developed by the Langer company.
- The effectiveness of EMC measures can be presented quickly (measurement time of 1 sec.), economically and with little space.

