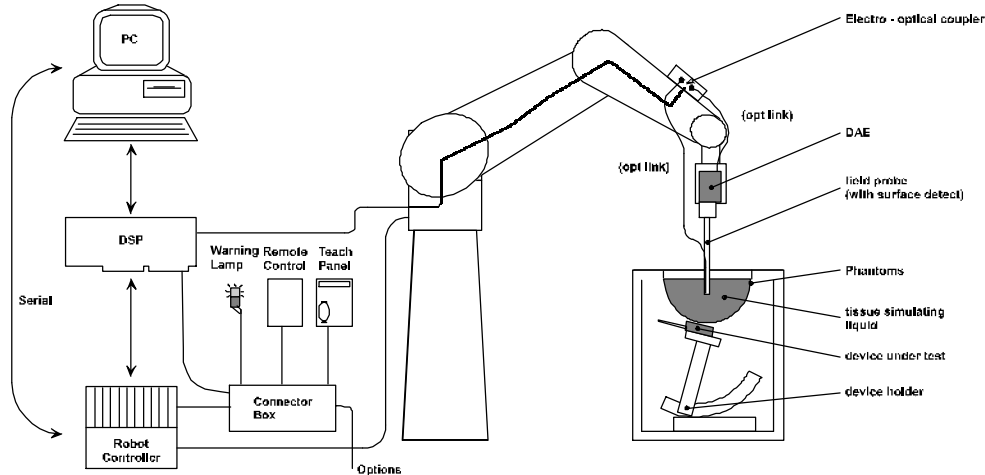


Application Note: System Description and Setup

System Description



The DASY3 system for performing compliance tests consist of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- An unit to operate the optical surface detector which is connected to the EOC.
- The Electro-optical coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the PC plug-in card.
- The functions of the PC plug-in card based on a DSP is to perform the time critical task such as signal filtering, surveillance of the robot operation fast movement interrupts.
- A computer operating Windows 95 or larger
- DASY3 software
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes (see Application Note).
- System validation dipoles allowing to validate the proper functioning of the system.

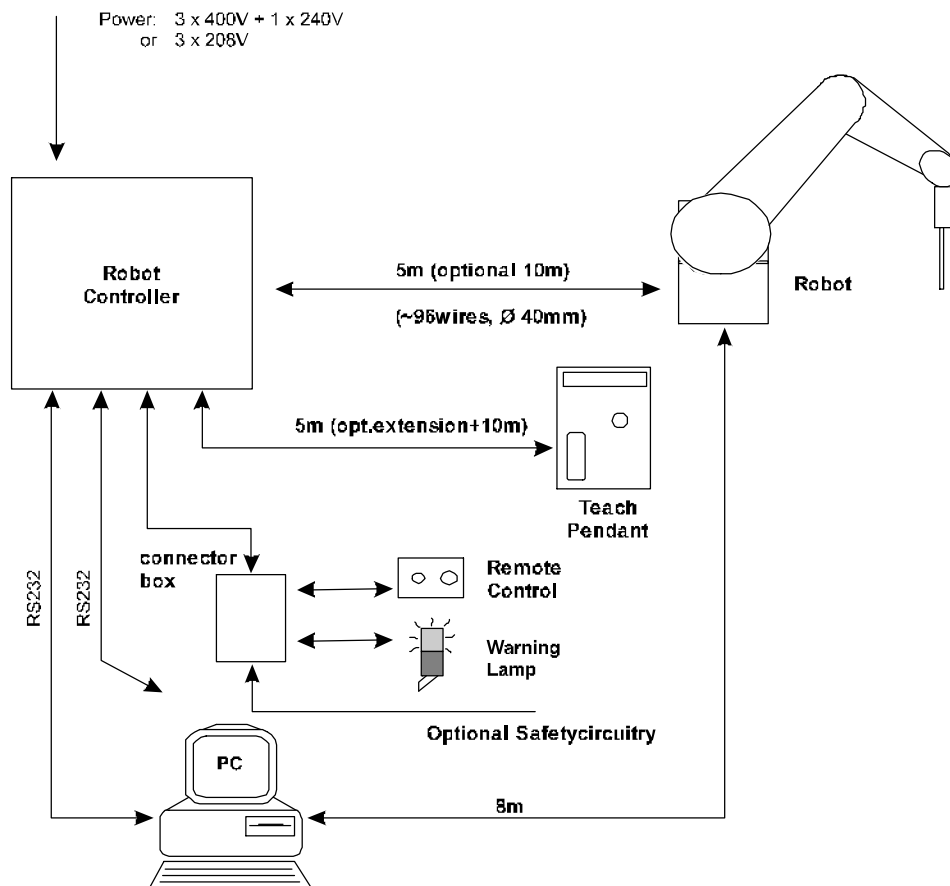
Options:

- Isotropic E-field probe optimized and calibrated for E-field measurements in free space
- Isotropic H-field probe optimized and calibrated for H-field measurements in any non-magnetic media
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning (necessary for probe calibration).
- Whole-Body Phantom (only for body-mounted transceivers operating below 400 MHz)

Additional utilities for SAR-measurements not provided by SPEAG:

- System to operate the device in a defined mode. For compliance testing, no cable should be attached. This is usually accomplished with a tester communication with an air link or by special device software.
- System to measure the dielectric properties of the tissue simulating liquids. For the time being we recommend the usage of the HP 85070 dielectric probe kit. An alternative is the slotted coaxial line method. Both methods require a network analyzer (average usage 5-10 minutes a week).
- Signal generator, amplifier, power meter (precision $<0.1\text{dB}$), coupler and cable in order to perform the validation. A power level of larger than 14 dBm is required (preferable 20-25 dBm).
- Utilities to prepare tissue simulating solution
 - Stirrer (Magneto-stirrer with heating plate is recommended)
 - Balance (1g accuracy, 500 to 2000g range)
 - Glass flask 3l to 10l for mixing liquid

System Setup



Requirements for the room

- Approximate constant room temperature is recommended (because of the sensitivity of the liquid parameters). The floor should be easy to clean (liquid in phantom), stable, flat and vibration free.
- The circuit breaker for the 3-phase power for the robot needs 10 Amp (robot controller itself has 10 Amp circuit breaker).

RF-absorber in operating room or laboratory

For dosimetric measurements, you do not need any RF-absorbers. If you perform free space measurements not only in the immediate near-field, moveable absorbers are useful to avoid reflections from the walls, robot etc. Shielding and absorbers might be necessary to avoid interference with other devices (e.g. sensitive measurement systems, base stations).

Wiring for power connection in USA

We deliver an open ended 5 wire cable for the power connection with the following configuration:

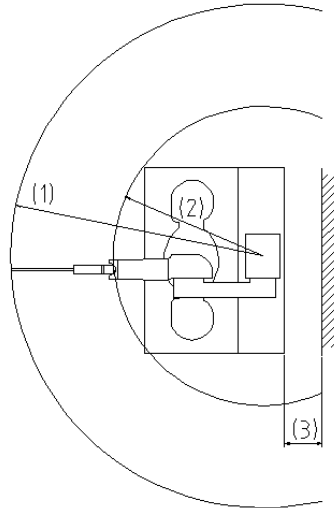
- _____ 3 phases Δ 208V
- _____ Neutral (0V center)
- _____ Ground (Safety Ground)

We need a wall mounted plug and a corresponding connector for the installation (The neutral wire can be omitted, but then you cannot use the 120V outlets in the controller cabinet).

Wiring for power connection in Europe

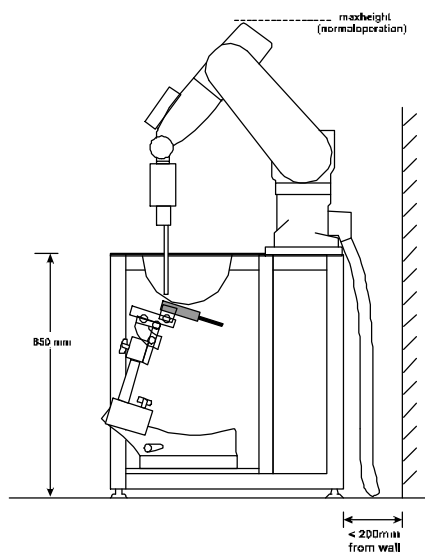
A standard CEE 16 Amp plug connector is delivered (3-phase + neutral + pw).

Dimension DASY3 Compact Version



Top View:

- (1) Range for horizontal aligned probes (e.g. free space measurements): 1350 mm
- (2) Range for vertical aligned probes (max distance to phantom): 800 mm
- (3) Minimum distance from wall or absorber: 200 mm



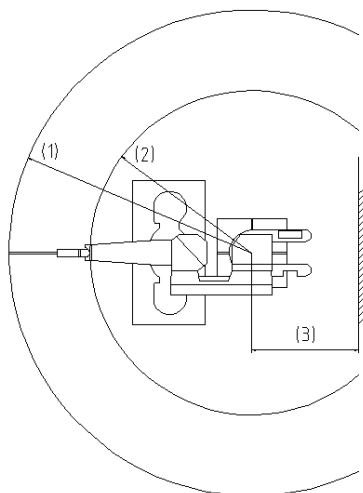
Side View:

- (1) Minimum free height: approx. 1700 mm
- (2) Height of table: 850 mm

Typical Shipping Dimensions

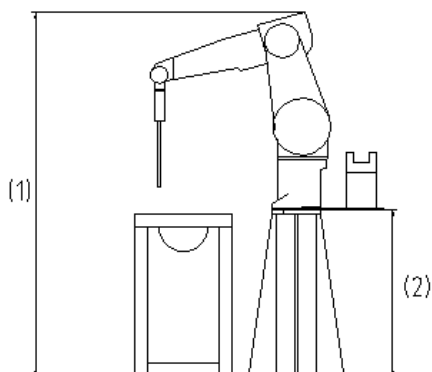
From robot company or SPEAG:	47x68x72cm 55 kg, 90x80x100cm 145 kg
From Schmid & Partner Engineering AG:	2 Euro - Palettes (120x80x100cm) total 200 kg

Dimension DASY3 Professional Version



Top View:

- (1) Range for horizontal aligned probes (e.g. free space measurements):
RX90L: 1590 mm, RX90: 1390 mm
- (2) Range for vertical aligned probes (max distance to phantom):
RX90L: 1100 mm, RX90: 900 mm
- (3) Minimum distance from wall or absorber:
750 mm



Side View:

- (1) Minimum free height: approx. 1900 mm
- (2) Height of robot socket: 850 mm

Typical Shipping Dimensions

From robot company or SPEAG:	85x65x121cm 140 kg, 90x80x100cm 143 kg
From Schmid & Partner Engineering AG:	3 Euro - Palettes (120x80x100cm) total 350 kg