APPLICATION NOTE

DASY8 On-Site Requirements Before Installation

speag

Contents

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1 Introduction

The purpose of this application note is to provide end-users guidelines to prepare the site before installing a DASY8 system.

2 General Information

This section provides general information about the DASY8 system installation:

- installation of the DASY8 system hardware shall be conducted by trained personnel, either SPEAG engineers or approved agents only. Please do not unpack any of the delivered boxes;
- the system should be installed on a stable floor. The total system weight can be > 400 kg;
- air conditioning is required in the chamber to maintain the temperature at the desired level. The robot arm and controller dissipate heat equivalent to 2000 W;
- good ventilation or fresh air exchange will improve the working conditions in the chamber;
- the customer is responsible for preparing an available space and a 3-phase power supply (required for robot operation)!

3 Space Requirements

When determining the location for DASY8 installation, it's important to plan adequate space for the DASY8 platform and additional equipment necessary for testing. Space recommendations include a safety margin between the platform and fixed objects (walls, absorbers, etc.) and adequate space for system operation. Consider the list below when planning your space.

- distance between the rear platform chamber wall and the robot arm should exceed 0.5 m;
- distance between the access side of a phantom and the chamber wall should exceed 1 m;
- the ceiling height should be higher than 2.7 m to be compatible with all DASY8 systems and modules [1];
- other equipment stationed in the room / the chamber must also be considered, such as the robot cabinet, RF tower, PC workstation, etc;
- if absorbers are installed on the walls and / or ceiling, the distance between the robot arm and the wall must consider the absorbers.

[1] The height requirement can be lowered. Contact SPEAG for further information and customized solutions.

For tests that are required to be performed in a shielded environment with absorbers, the distance recommendations should be considered after the absorber is installed. See the figure below to determine the minimum recommended distances.

Figures 1.1 and 1.2 show two typical DASY8 platforms: one with a TX2-60 L robot and one with a TX2-90 XL robot respectively placed in a space with absorber-lined walls. Note the minimum distances for platform placement are from the tip of the absorbers to be able to use the DASY8 system efficiently.

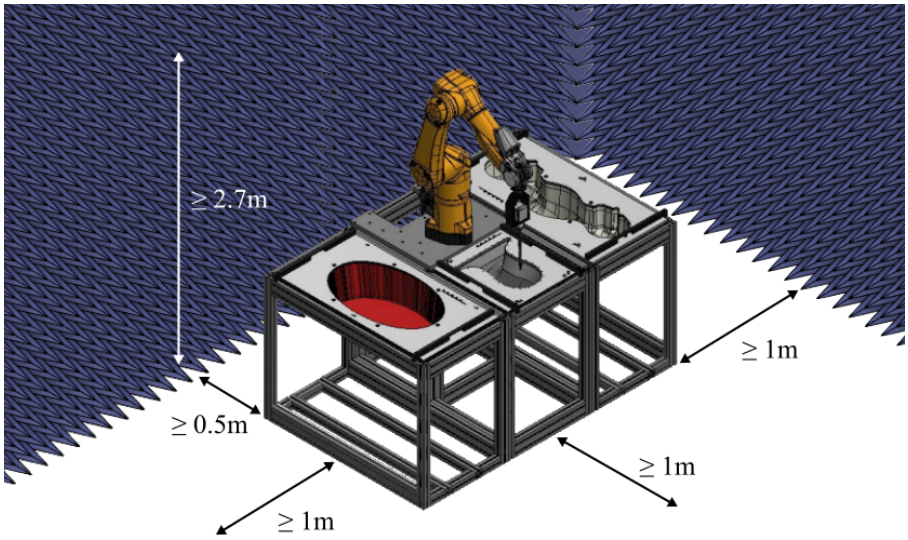

Figure 1.1: A typical TX2-60 L based DASY8 system and its placement restrictions.

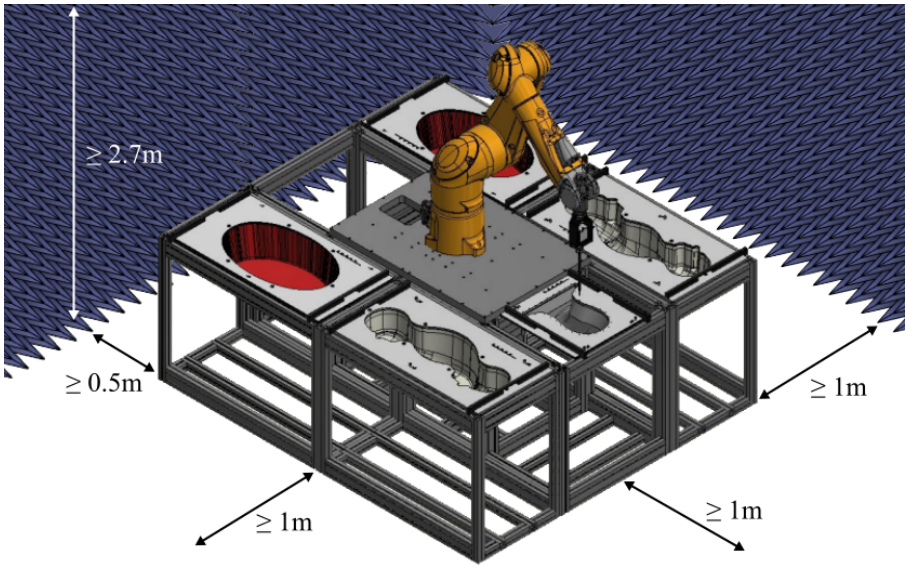

Figure 1.2: A typical TX2-90 XL based DASY8 system and its placement restrictions.

4 Electrical Requirements

This section outlines the electrical equipment of DASY8, detailing the requirements, filtering needs, and recommendations.

4.1 DASY8 equipment and peripherals

The DASY8 system consists of several components requiring a connection to the mains supply. The majority of the DASY8 components are connected using a typical wall socket using 100-240VAC:

- DASY8 PC and Peripherals
- DASY8 Measurement Server
- DASY8 HUB
- *Optional:* RF Tower and / or RF equipment
- *Optional:* Base Station Simulator

4.2 DASY8 Robot

The DASY8 system incorporates a robot controller which is equipped with a 3-phase multivolt transformer. Before system delivery, the robot controller transformer is set from SPEAG to the desired voltage. The electrical outlet must be capable of providing the following:

- 3 phases / 16 amps per phase if the voltage between 2 phases is 200 VAC to 230 VAC
- 3 phases / 10 amps per phase if the voltage between 2 phases is 400 VAC to 440 VAC.
- be no further than 10 meters away from the DASY8 system location

If the robot controller is set up in a shielded room, it is recommended to use filters with the same rating to bring the electrical power into the shielded room (see Section 4.3).
The following power cord configurations are available:

- CEE connector.
- pin terminals for alternative plug types or direct connection to a circuit breaker.

For markets that adopt the CEE connector type, the DASY8 systems are typically shipped with a connector using the following configuration, also shown in Figure 1.3:

- current rating: 16 A
- pin configuration: 3P + N + G (Three Pole, Neutral, Ground)
- clock hour position: 6h

Figure 1.3: A 16A, 6h, 3P + N + G CEE connector

4.3 Signals Filtering

The DASY8 system is compliant with the CE EMC directives. Some applications (for instance, the demonstration of magnetic resonance safety of active implantable medical devices) require the DASY8 robot and controller to be placed in a shielded room with the controlling PC outside. In that case, the cables entering the shielding room must be filtered to avoid noise propagation.

4.3.1 Signals Overview

Figure 1.4 shows the DASY8 system cabling at the shielding room interface.

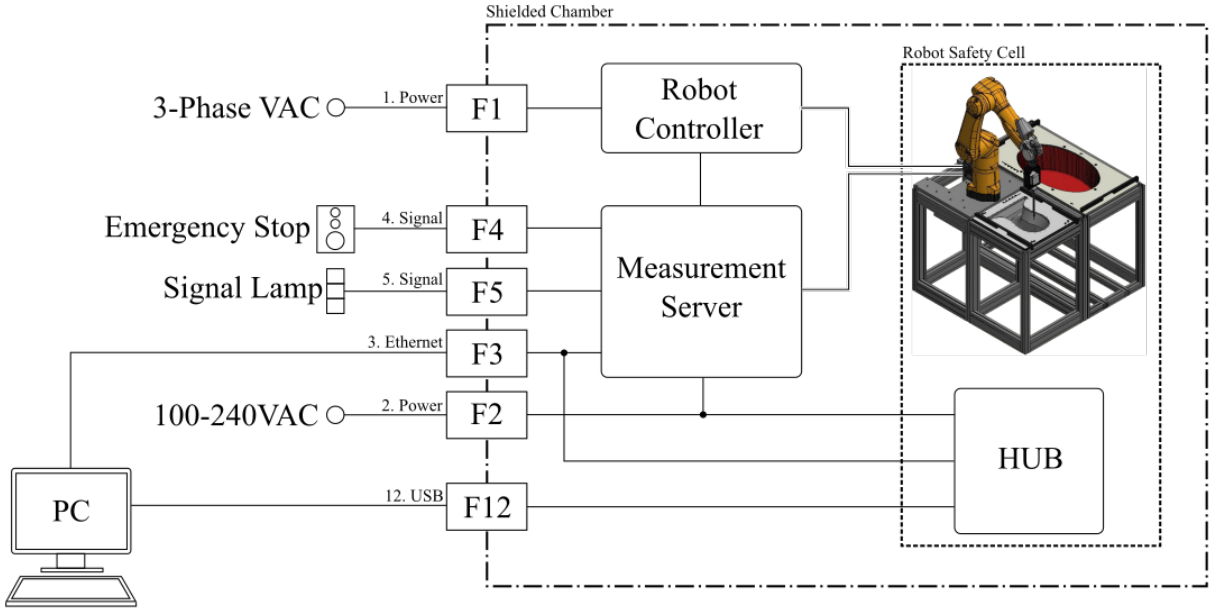

Figure 1.4: Cabling overview of a DASY8 system.

4.3.2 Filters

The filter specifications depend on the room's shielding requirements. The selections for the correct filters, signal, voltage, and current characteristics are listed below. Proper installation of the filters is essential to achieve the desired attenuation. All signals in the list must be separated from the ground (shielding). Ground connections are not included in the list or the schematic.

[h!]

Signal	Description	Filter
Robot Power (1)	Robot controller power supply. *3 phase (no neutral),* 50 Hz *to* 60 Hz *($I < 20$ A, $P < 2$ kV A),* *peak inrush current factor: 20*	Schaffner FN7612 32-M4 (F1)
Instruments Power (2)	HUB, measurement server ... power supply. *2 lines, $<$ 240 V, 50 Hz to 60 Hz, $<$ 10 A, phase and neutral (higher current depending on laboratory equipment may be required)*	Schaffner FN7612 16-M4 (F2)
Ethernet (3)	Ethernet for HUB and measurement server. *100 Mbit/s*	Icron USB 3-2-1 Raven K417-7M (F3)[2]
WMS/ES (4)	Working mode selector and emergency stop. *10 lines (24VDC, <2 A, not grounded)*	Epcos B84312C0050H031 (F4)
Signal Lamp (5)	Robot power status indicator. *4 signal lines (24VDC, not grounded, $<$ 2 A)*	Epcos B84312C0050H031 (F5)
USB (12)	USB cable from HUB/AMMI to PC. *USB 3.0*	Icron USB 3-2-1 Raven K417-7M (F12)[3]

Table 1.1: DASY8 Signals Description and Recommended Filters

The list of signals and recommended filters is given hereunder:

4.4 Environmental Requirements

The DASY8 system works best in the following environment:

- Temperature range: 15 °C to 25 °C
- Humidity 20 %–90 % noncondensing.

For compliance measurements, however, the DASY8 system must be set up in a controlled environment to maintain the temperature at $22 \pm 3°$ C.

[2]Optical media converter recommended instead of a filter.
[3]Optical media converter recommended instead of a filter.