

Leseprobe

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Vocational training

Commissioning as per DIN VDE 0100–600



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Vocational training –

Commissioning as per DIN VDE 0100-600

Section: Training material

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Dr.-Ing. Paul Christiani GmbH & Co. KG

Foreword

Commissioning as per DIN VDE 0100-600 is a key element of the specialist tests part 1 and part 2 for “Operating technology electronics engineers” and “Mechatronic technicians”.

In addition to the execution of the necessary measurements, these tests focus primarily on the theoretical background to preparing for, performing and evaluating the individual measurements.

These tests (unlike device tests) may only be carried out by qualified electricians with test experience. This requirement exists because these kinds of tests generally need to be evaluated in the context of the system as a whole.

With this in mind, this course focuses in particular on acquiring the relevant background information. Proper preparation for the measurements and the ability to evaluate the results in the context of the specific system at hand are central qualification criteria. In-depth theoretical knowledge is essential to achieve these goals.

The training material is not intended nor able to replace a specialist textbook. However, it does enable you to quickly get to grips with the essential background information on the individual tests. This information is often the subject of the discussions that take place in parallel with the tests.

Before performing the tests, trainees should familiarise themselves with the contents of the training material in order to acquire the essential background knowledge.

The tests are generally performed after considering the following questions:

- Why is testing carried out?
- How is the system prepared for the test?
- How is the test device prepared for the test?
- Which test results are considered OK for the system?

Meaning of pictograms used

	Project: Specific task.
	Information: Brief, usually structured overview.
	Tabular book: At these points, the trainee should/must refer to the reference tables.
	Example: Primarily intended to clarify and expand on the content.

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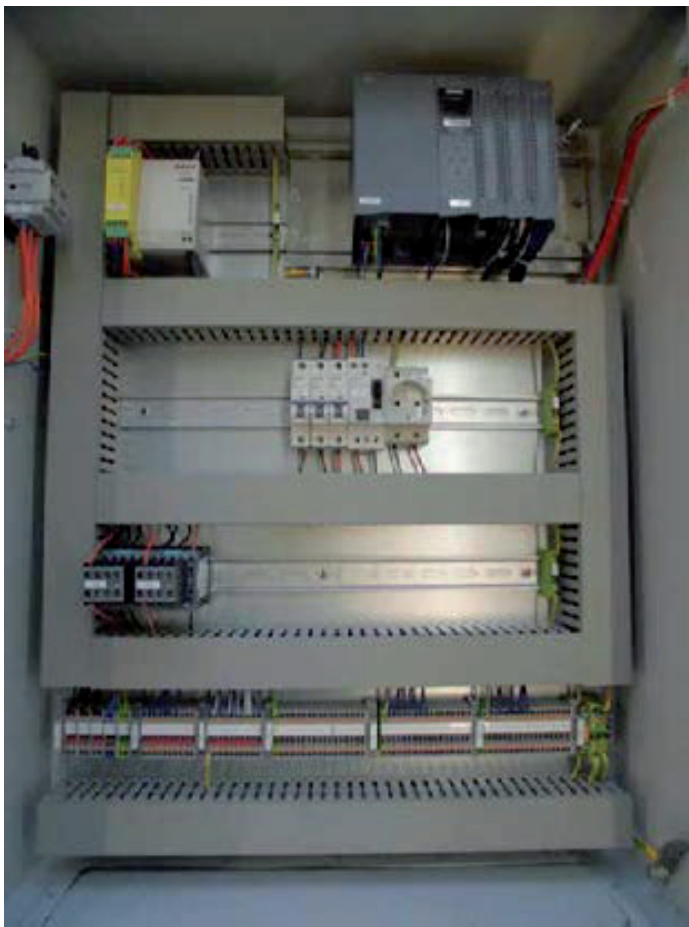
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1 Initial situation

The switch cabinet has been produced in the *basic layout* for use in the relevant application.

At this stage, it is already fitted with important *electrical operating equipment*. Before it leaves the workshop, the switch cabinet must be **commissioned in accordance with DIN VDE 0100-600**. This ensures that the switch cabinet *electrical systems are all working correctly*.



1 Basic layout of the switch cabinet

By *testing electrical systems*, we can ensure that they are *functional and safe* to operate. To perform these tests, we must apply appropriate testing and measurement procedures and use suitable measurement devices.

The test results must be *logged*.

This test may only be carried out by a **qualified electrician**. Often, the test results cannot be evaluated with a simple *yes/no decision*; instead, they must be evaluated in the context of the specific electrical system in question. A person *who has been instructed cannot (is not allowed to) do this*.

■ Section 6.1 of DIN VDE 0100-600

(Setting up low-voltage systems) contains requirements for the initial testing of these systems.

This stage is also referred to as *Pre-commissioning testing*.

The objective of the test is to determine that the requirements of the standards have been complied with during system setup and that the setup will remain electrically safe if an existing system is expanded.

■ Qualified electrician

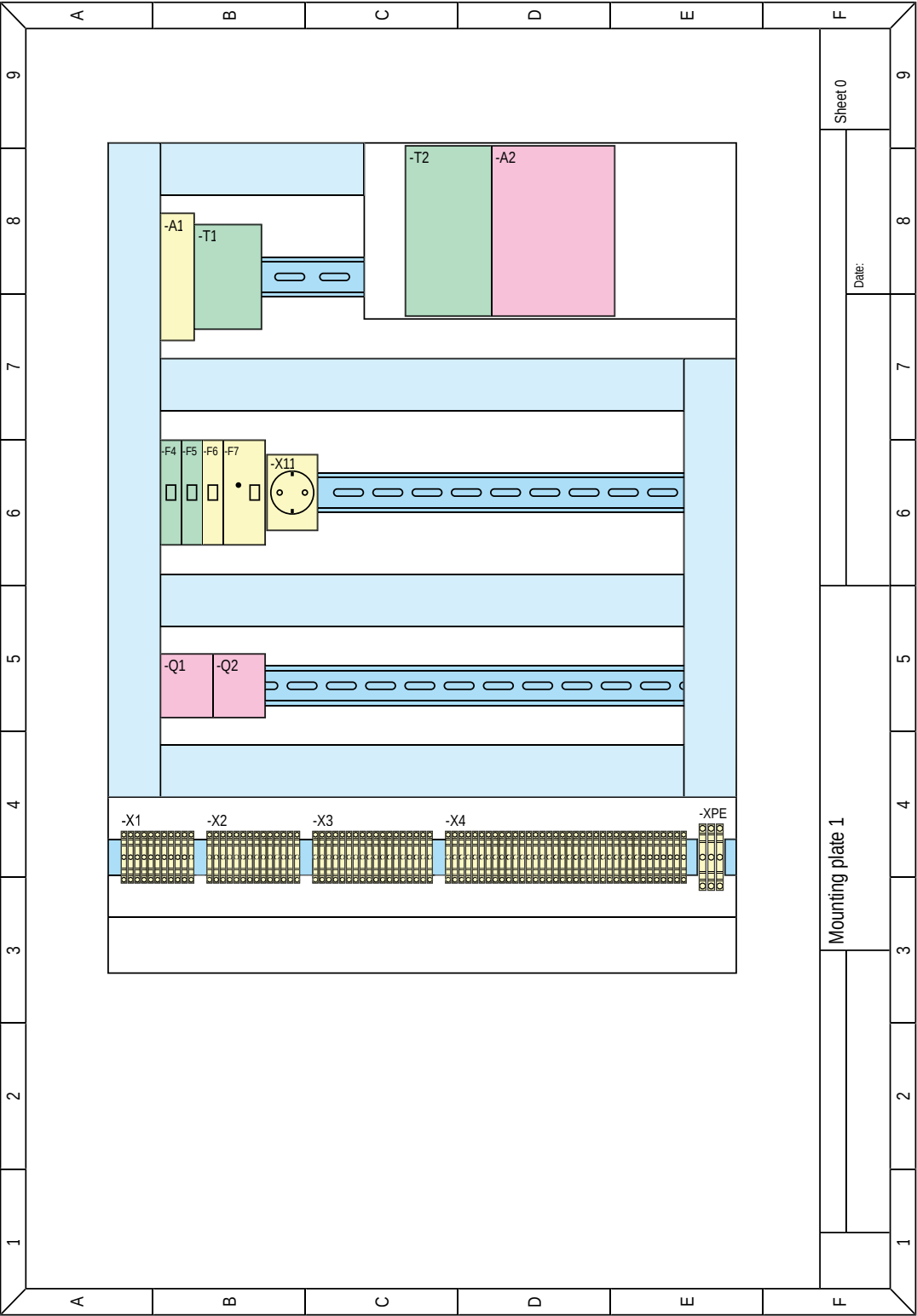
Person with the specialist qualifications required to set up, modify and repair electrical systems and operating equipment, who possesses sufficient knowledge on the testing of systems and operating equipment and the health and safety measures required during the performance of such tests.

■ Tests

as defined in DIN VDE 0100-600 encompass all measures implemented to prove that the entire system satisfies the requirements of the DIN VDE 0100 series of standards.

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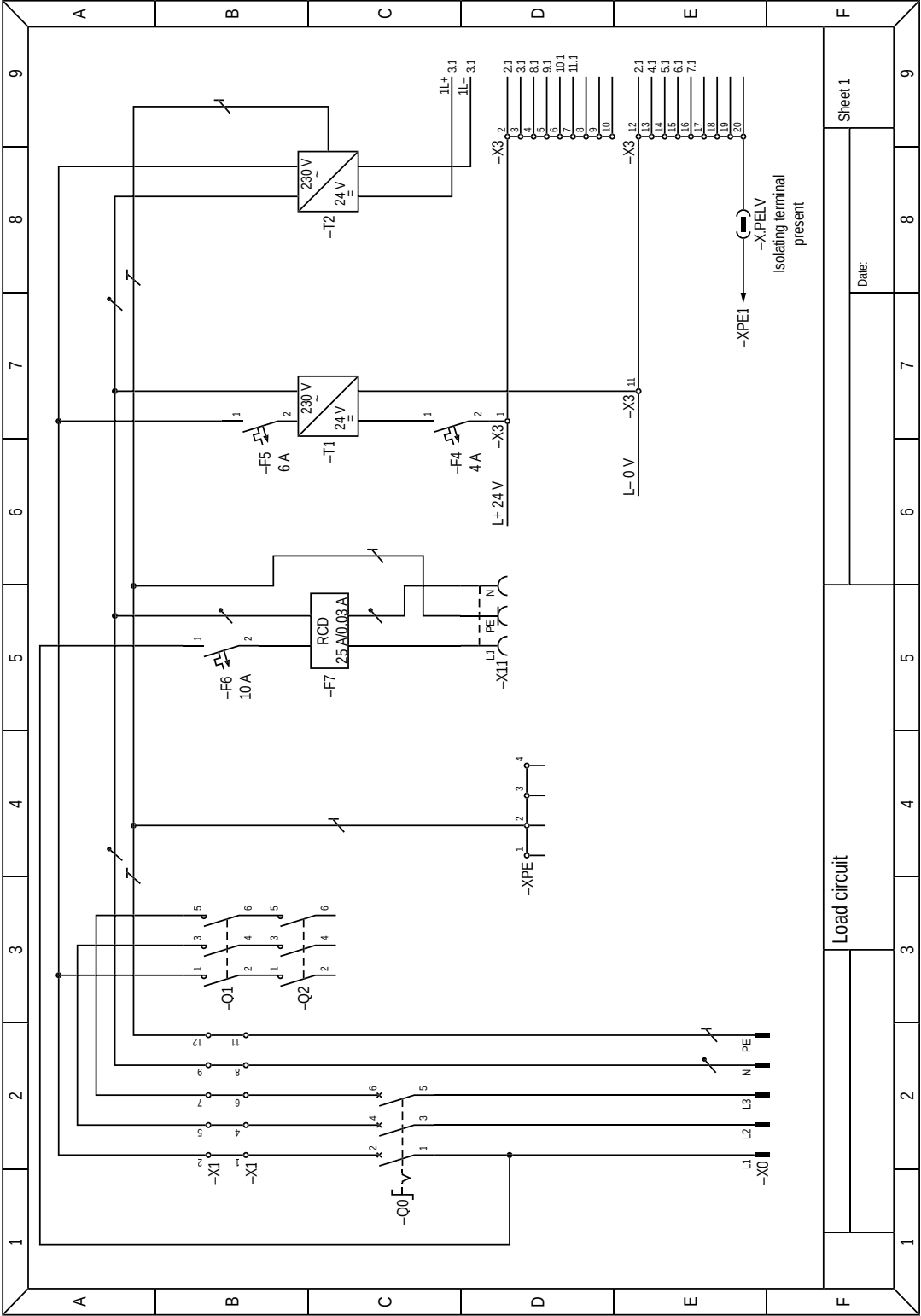
Initial situation



2 Control cabinet in "unfinished" state, general layout plan

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3 Control cabinet in "unfinished" state, excerpt from circuit diagram documentation

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Initial situation, inspection

■ Testing and measurement

engl.: testing, term used in latest version of standard

■ Initial testing

is prescribed after the completion of a new system or the expansion or modification of a system.

■ Modification and expansion

Proof of conformity with the standard must be provided. Proof that system safety is not compromised must also be provided.

The practical significance of the test is clear and undisputed.

It is a central element of the practical tests "Electronics engineers for operating technology" and "Mechatronic technicians".

In the *national standard VDE 0100-600:1987-11*, the test is comprised of *three* parts

- *Inspection*
- *Testing*
- *Measurement*

Following the *Europe-wide harmonisation* of the standard, this division into three parts no longer exists. The *current standard* therefore only has two sections

- *Inspection*
- *Testing and measurement*

However, in *practice*, it is more logical to divide the process into *three parts*.

In the German text of the standard, the English term "testing" has been translated as "Erproben" and "Messen", depending on the context. This standard also uses the familiar *three sections*.

Summary



Electrical systems must be tested during installation, after completion and prior to use.

The test must be completed by a qualified electrician.
The results of the test must be evaluated.

If the test results are unsatisfactory, the tests must be repeated once the issues have been rectified.

The test results must be documented. A test report must be compiled for this purpose.

The test must not cause any danger to persons, animals or operating equipment.



4 Measurement device for tests in accordance with DIN VDE 0100-600, example