

AWS D16.2M/D16.2:2021
An American National Standard

Guide for Components of Robotic and Automatic Arc Welding Installations



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Guide for Components of Robotic and Automatic Arc Welding Installations

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Prepared by the
American Welding Society (AWS) D16 Committee on Robotic and Automatic Welding

Under the Direction of the
AWS Technical Activities Committee

Approved by the
AWS Board of Directors

Abstract

AWS D16.2M/D16.2, *Guide for Components of Robotic and Automatic Arc Welding Installations*, provides performance recommendations for evaluating components of a typical robotic or automatic welding installation.

Emphasis is placed on the role of the welding equipment interface. A pin arrangement and specific pin function for each location in a standardized 37-pin connector are proposed.



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Personnel

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B. C. Woomer	<i>Genesis Systems, IPG Photonics Company</i>

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J. W. Williamson	<i>ABB Robotics</i>
D. A. Wright	<i>Wright Welding Technologies</i>
M. J. Yakawich	<i>Lincoln Electric Automation</i>

Foreword

This foreword is not part of this standard but is included for informational purposes only.

The AWS D16 Committee on Robotic and Automatic Welding was organized in 1985 to provide a centralized source for the exchange of technical information between manufacturers, installers, and operators of robotic and automated equipment. It has developed a number of standards related to robotic arc welding systems and their applications (see List of AWS Documents on Robotic and Automatic Welding).

The first edition of this standard, ANSI/AWS D16.2-94 (ANSI/NEMA EW 8), set guidelines for evaluating the performance of individual components that make up a typical robotic installation. Emphasis was placed on the standardization of the welding equipment interfaces.

This fourth edition of AWS D16.2M/D16.2: 2021 was updated to include the latest terms and technology, and to meet the new AWS specifications for standards. Underlined text in clauses, tables, or figures indicates an editorial or technical change from the 2007 edition. A vertical line in the margin also indicates a revision from the 2007 edition.

Comments and suggestions for the improvement of this standard are welcome. They should be sent to the Secretary, AWS D16 Committee on Robotic and Automatic Welding, American Welding Society, 8669 NW 36 St, # 130, Miami FL 33166.

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Guide for Components of Robotic and Automatic Arc Welding Installations

1. General Requirements

1.1 Scope. This document applies to the design, integration, installation, and use of industrial welding robotic and automatic systems. This document is intended for the gas metal arc welding (GMAW), gas tungsten arc welding (GTAW), plasma arc welding (PAW), and flux cored arc welding (FCAW) processes. Pertinent parts may address additional welding processes.

Robotic and automatic arc welding systems consist of a manipulator, power source, arc welding torch and accessories, electrode feed system, wire delivery system, shielding gas delivery system, welding circuit, shielding and communication control, and grounding system. There may be other accessories that are outside the scope of this document, such as safety devices and monitoring, joint-tracking, and vision systems. A typical system is illustrated in Figure 1.

1.2 Units of Measure. This standard makes use of both the International System of Units (SI) and U.S. Customary Units. The latter are shown within brackets ([]) or in appropriate columns in tables and figures. The measurements may not be exact equivalents; therefore, each system must be used independently.

1.3 Safety. Safety issues and concerns are addressed in this standard, although health issues and concerns are beyond the scope of this standard. Safety and health information is available from the following sources:

American Welding Society:

- (1) ANSI Z49.1, *Safety in Welding, Cutting, and Allied Processes*
- (2) AWS Safety and Health Fact Sheets
- (3) Other safety and health information on the AWS website

Material or Equipment Manufacturers:

- (1) Safety Data Sheets supplied by materials manufacturers
- (2) Operating Manuals supplied by equipment manufacturers

Applicable Regulatory Agencies:

Work performed in accordance with this standard may involve the use of materials that have been deemed hazardous, and may involve operations or equipment that may cause injury or death. This standard does not purport to address all safety and health risks that may be encountered. The user of this standard should establish an appropriate safety program to address such risks as well as to meet applicable regulatory requirements. ANSI Z49.1 should be considered when developing the safety program.

2. Normative References

The following documents are referenced within this publication and are mandatory to the extent specified herein. For undated references, the latest edition of the referenced standard shall apply. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply.