

2025

# *Welding & cutting*

*Be smart – join the initiative!*



*Profile for arc welding and plasma cutting*

*Mapping to the standardized GANopen technology*

*Improving worker safety and regulatory compliance*

*Industry initiative "Weldbus"*

*We shape the future!*

[www.can-cia.org](http://www.can-cia.org)



## Standardized interface framework for welding and cutting

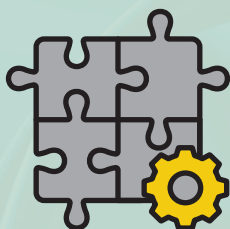
### Benefits of the standardized application profile for welding and cutting

In June 2023, the nonprofit CAN in Automation (CiA) association established the Special Interest Group (SIG) Welding and cutting. This SIG is developing the CiA 464 application profile tailored for advanced manual arc welding and plasma cutting systems. The group includes members from multiple equipment manufacturers. The application profile enables plug-and-play capabilities for core system configurations, including a physical layer specification for cables and connectors.

### *This approach has several benefits:*



*Safety and compliance:* enhancing worker protection and supports regulatory conformity by integrating functions that automatically maintain required process parameters — for example, ensuring adequate fume extraction flow during arc ignition and operation.



*Interoperability:* enabling plug-and-play system setup and flexible device configuration. Supports vendor-independent device exchange, contributing to extended equipment life cycles and circular economy goals.



*IoT integration:* providing standardized, structured data for upper-layer protocols like CANopen (EN 50325-4). This allows consistent system-level insights, regardless of device manufacturer, and enables seamless integration into industrial IoT environments.



*Cost efficiency:* As an open, royalty-free specification, CiA 464 reduces integration effort, avoids vendor lock-in, and lowers total cost of ownership — supporting long-term, sustainable investment decisions.



*Investment protection:* The CiA 464 specification is intended to be submitted to ISO for international standardization, securing long-term accessibility and stability of the specification.



*Technological flexibility:* Defined as a CiA profile, it is mappable to CANopen. Functional units within the system — such as power sources and wire feeders — can be deployed as separate devices or integrated into a single unit, offering design freedom for manufacturers.



# *CiA Special Interest Group (SIG) welding and cutting*

## **Scope of the CiA 464 application profile**

The CiA 464 document applies to networks for advanced manual arc welding and plasma cutting systems. Interfaces to robots or overarching automation platforms are out of scope. The profile defines plug-and-play functionality for basic setups, including standardized cables and connectors, and enables consistent, contradiction-free data exchange with the Asset Administration Shell (AAS) to support regulatory compliance and worker protection. Security features specified in the application profile are supplementary and do not replace existing mechanisms. Each device remains individually responsible for functional-safe operation. The specified functionality is not classified as safety-related in the context of functional safety.

## **Interfaces to be specified**

The CiA 464 document will specify a system architecture and communication model for advanced manual arc welding and plasma cutting systems. In addition, it specifies functional interfaces for the following device types:

- ◆ Power sources, wire feeders, cooling units, and calibration units
- ◆ Human-machine interface (HMI) components
- ◆ Welding torches
- ◆ Fume extraction units

This structured approach ensures reliable data exchange, supports modular system design, and enables seamless integration of components from different manufacturers.

## **Mapping to CANopen FD**

The standardized interfaces specified in CiA 464 are mapped to CANopen FD, the successor to CANopen CC (classic). CANopen FD is built on the CAN FD protocol as specified in the ISO 11898 series, offering higher data throughput and improved efficiency.

By leveraging CANopen FD, the application profile enables reliable real-time communication, stream-lined device interoperability, and enhanced support for modular and scalable system architectures.

This mapping ensures that all specified device interfaces — from power sources to fume extraction units — can be seamlessly integrated into modern networked welding and cutting systems.

## **Contributing and adopting**

CiA 464 is an open industry specification designed to future-proof welding and cutting systems. By contributing to its development, companies gain early influence, align with industry trends, and strengthen their innovation leadership.

Adopting the CiA 464 application profile supports faster integration, cross-vendor compatibility, and long-term cost efficiency — key advantages in a competitive and increasingly connected market.

## **Partners and liaisons**

CiA (CAN in Automation), the international users' and manufacturers' group for CAN-based technologies, develops the CiA 464 document. CiA has some 750 member companies worldwide and maintains key specifications such as CANopen CC (CiA 301) and CANopen FD (CiA 1301).

To support alignment with industry needs, CiA cooperates with ZVEI (German Electro and Digital Industry Association) and other stakeholders in the welding and cutting domain.



## CAN in Automation (CiA) membership contract

This contract applies to the current calendar year. The annual fee depends on the company size as given below. Parties applying for membership after July 1<sup>st</sup>, pay 50 percent of the membership fee for that year.

If you do not cancel the membership by December 31<sup>th</sup> of the current calendar year in written form, the contract is renewed automatically for the next calendar year. This means that the membership fee is due for the following calendar year.

Company:*	.....	E-mail:*	.....
First name:*	.....	Phone:*	.....
Last name:*	.....	Fax:	.....
Street:*	.....	URL:	.....
Zip, City, State:*	.....	VAT number:*	.....
Country:*	.....	<input type="checkbox"/> We do accept CiA's IP policy*. (As to be seen on CiA's public website <a href="http://www.can-cia.org">www.can-cia.org</a> )	
Date:*	.....	Authorized signature:*	.....

\* mandatory

### Please check off:

Number of employees at your company:	Annual fee	incl. 19 % German VAT
<input type="checkbox"/> More than 100.000 employees:	9.900,00 EUR	11.781,00 EUR
<input type="checkbox"/> 10.000 to 99.999 employees:	7.200,00 EUR	8.568,00 EUR
<input type="checkbox"/> 5.000 to 9.999 employees:	5.600,00 EUR	6.664,00 EUR
<input type="checkbox"/> 1.000 to 4.999 employees:	4.300,00 EUR	5.117,00 EUR
<input type="checkbox"/> 500 to 999 employees:	3.200,00 EUR	3.808,00 EUR
<input type="checkbox"/> 100 to 499 employees:	2.350,00 EUR	2.796,00 EUR
<input type="checkbox"/> 50 to 99 employees:	1.700,00 EUR	2.023,00 EUR
<input type="checkbox"/> 10 to 49 employees:	1.100,00 EUR	1.309,00 EUR
<input type="checkbox"/> 1 to 9 employees:	700,00 EUR	833,00 EUR
<input type="checkbox"/> Schools and universities (nonprofit):	550,00 EUR	654,50 EUR



CAN in Automation e. V.  
 Kontumazgarten 3  
 DE-90429 Nuremberg  
 Phone: +49-911-928819-0  
 Fax: +49-911-928819-79  
[headquarters@can-cia.org](mailto:headquarters@can-cia.org)  
[www.can-cia.org](http://www.can-cia.org)