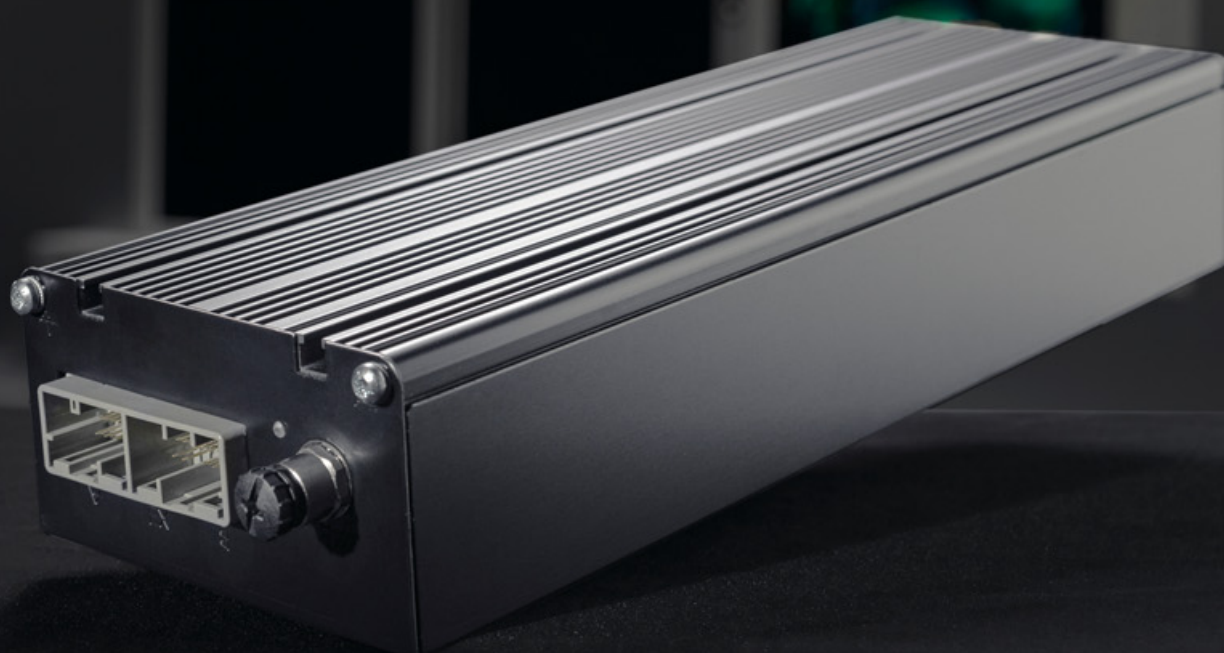


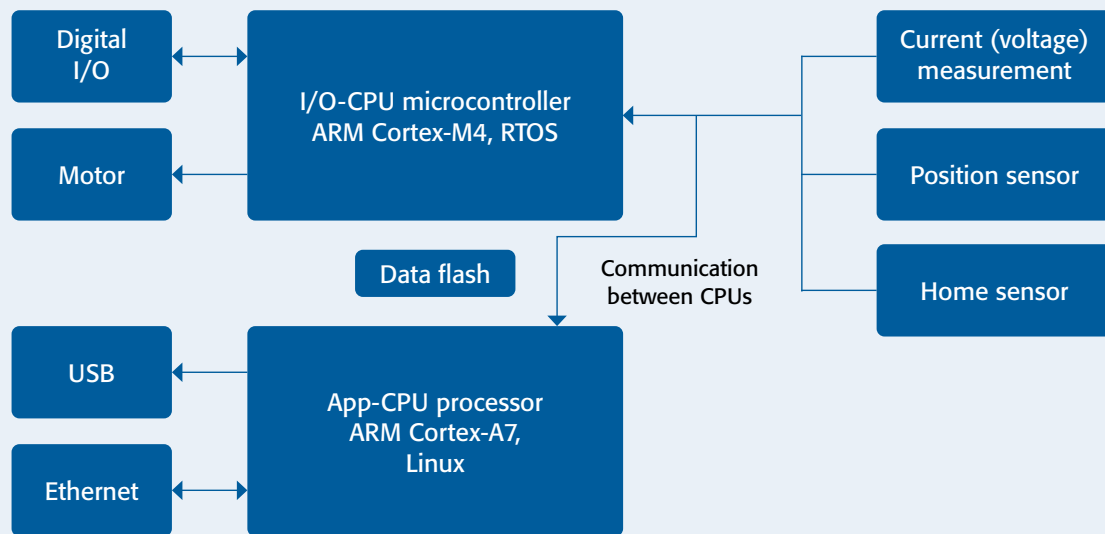
Control Unit **D56**



D56

The new D56 door control unit is designed for controlling electrical internal doors in trains. The DCU is designed for flexible purposes controlling the train passenger flow for vestibule, saloon, catering, universal toilet and gangway fire doors with different needs for functionality and features. In addition to door motor controlling the D56 module has several digital inputs and outputs for controlling auxiliary functions of a door.

D56 is designed to have compatibility for existing and future fieldbus applications in the train: Ethernet UDP, TRDP, Profinet, Sibas, CIP, Webmaint, IPTCom using commercial proven in use protocol stacks and modules. User interface is designed to facilitate web services/UI/diagnostics and allow cybersecurity features to be built in.



D56 provides a modern platform for communication, diagnostics, maintenance and data collection within the train environment:

Input/Output- CPU microcontroller for safety related controls (common for all projects)

- ARM Cortex- M4 352KB RAM, 2MB program memory
- This software will mainly be kept unedited during the lifetime
- Coded mainly in RTOS with CODESYS development environment per IEC61131
- Basic door functionality is controlled here; motor control, position sensors, home sensor current measurement, obstacle detection and I/O control

Linux-based Application CPU for project-specific applications

- ARM Cortex- A7 256MB RAM, 4GB program memory
- All project-specific functionalities, diagnostics and communications are controlled here
- Supports CODESYS-based application development
- Linux-based architecture provides a flexible foundation for communication protocols, maintenance applications, data exchange and customer-specific integrations

D56 MAIN FEATURES		
General inputs and outputs:		
Digital inputs:	14 pcs	11 pcs can be used as analogue inputs
Isolated inputs:	2 pcs	EN50124-1:2017, Functional insulation
Digital outputs:	16 pcs	6 outputs PWM capable
Communication interfaces:	USB 2.0 interface	Maintenance interface
	Ethernet 10/100BASE-TX	Maintenance/TCMS communication
SECONDARY FEATURES		
Motor controller:	Full H-bridge motor controller	
Power supply: isolated push-pull DC-DC converter	72/110Vdc voltage input. For 24/36Vdc projects possibility to use separate voltage converter.	
	Output voltage +24,5V	
	50% Improved current consumption 50W	
	Maximum output power (3A) for 3s time	
Clock:	Real time clock with capacitor backup	
Dimensions:	Outer dim. 338 x 118 x 62	
CONNECTORS		
Power input	Wago 734-164/108-000	
Main I/O	Jae Connectors MX31070NFC	
Ethernet	Standard M12 female, D-coded Tyco	Maintenance/TCMS communication interface
USB 2.0	Standard Type B female shielded	Maintenance interface
STANDARDS COMPLIANCE		
DC power supply range	EN50155 Class C1, Table 8, Performance criterion A Class S2, Table 6	Minimum voltage: 0,7 Un Nominal voltage: Un (72/110 Vdc) Rated voltage: 1,15 Un Maximum voltage: 1,25 Un In-Rush X times nominal
Electrical	EN50155:2026	Separated extra-low voltage (SELV)
Vibration	EN50155:2026	IEC 61373:2010, Category 1, Class B
EMC	EN50155:2026	EN 50121-3-2:2016
Temperature	EN50155:2026 Cooling EN 60068-2-1, Dry heat EN 60068-2-2, Damp heat EN 60068-2-30	Class OT4, -40 °C to +70 °C Class ST1, OTx + 15 °C Class H1
Humidity	EN50125-1:2014	Yearly average ≤ 75 % relative humidity, 30 consecutive days in the year: 95 % relative humidity.
IP	EN60529:2014	IP20
Software	EN50128:2011 EN50657:2017 EN 50716:2023	SIL 0 Basic Integrity Basic Integrity
MTBF	EN 61709:2017	FIT=250 000h
Manufacturing	EN 60695-2-10 (-12, -13) IPC-A-610E IPC-A-600 IPC J-STD-001E EN45545-2:2015 2011/65/EU EN50155-1:2026	PCB FR4-grade glass-reinforced epoxy laminate Class 2 Class 2 Class 2 RoHS II Sockets and edge connectors Class K1 Protective coating PC2, Programmable component list of documents M0
Cybersecurity	IEC 62443-4-2 SL2 cybersecurity capabilities	Role-based user access control, HTTPS/TLS protected communication, signed and encrypted software updates, support for centralized authentication, security package management, security event logging/monitoring support, secure boot functionality and project-specific cybersecurity feature support
Cyber Resilience Act	Regulation (EU) 2024/2847	CRA readiness support and project-specific cybersecurity documentation

Comparison between D55 and D56 main features

	D55	D56
Architecture	Single processor	Dual-processor architecture with cybersecurity features

I/O periphery

Input voltage	24, 36, 72, 110VDC	72, 110VDC
Digital inputs 2,4mA / 24V	8	14
Isolated inputs	8	2
Outputs nominal 100mA/800mA total output 2A,	4 x 800mA outputs with PWM 12 x 100mA outputs	4 x 800mA outputs with PWM 12 x 100mA outputs
USB 2.0	1	1
Ethernet 10/100Base-TX M12F	1	1

Networks

Ethernet	Modbus over ethernet Ethernet with customer specification	Ethernet UDP, Ethernet, Modbus, Profinet, Sibas, CIP, Webmaint, IPTCom
CAN	x (add on card)	NA
MVB	x (add on card)	NA
RS485	x (add on card)	NA

Standards and compliances

DC power supply EN50155	-30/+25%	Class C1, Table 8, A Class S2, Table 6
Clearance and creepage EN 50124-1:2017	C	C
Electrical safety	Galvanic isolation	Separated extra-low voltage (SELV) compatibility
EMC EN 50121-3-2:2016	C	C
MTBF EN 61709:2017	FIT 215000	FIT 250000
IP EN60529:2014	IP20	IP20
Temperature EN50155	TX	Class OT4, -40 °C to +70 °C Class ST1, OTx + 15 °C Class H1
Vibration EN 61373:2010, Category 1, Class B	C	C
Humidity EN 50125-1:2014 Yearly average ≤ 75 % relative humidity	C	C
EN50128:2011 EN50657:2017 EN 50716:2023	SIL 0 NA NA	SIL 0 Basic Integrity Basic Integrity
Productional IPC-A-610, Class 2 IPC-A600, Class 2 EN45545-2:2015 EN50155-1:2017	C	C

Dimensions

L x W x H (mm), Weight (g)	226 x 118 x 70, 1375	PCB 338 x 118 x 62
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HMI

User interface for investigation and service	Separate Java programme	Web-based maintenance interface with role-based access control
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