

Motion-Logic
Drive based
IndraMotion MLD



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Documentation
• Brochure
• Instructions



Compact and powerful

- Certified safety technology
- Drive-integrated motion-control according to IEC 61131-3
- Electronic synchronization of up to 10 axis
- Intuitive engineering with the software framework IndraWorks
- Optional technology and communication interfaces

IndraMotion MLD combines motion and PLC functions to form a modern open automation platform for modular machine designs. The distributed control architecture establishes a compact motion-logic system, based on the scalable IndraDrive platform, so that higher-order controls are no longer necessary.

This drive-based solution is available as a single-axis control for simple applications as well as a multi-axis control for applications with a maximum of 10 axes. Ready-to-use function libraries simplify the use of the intelligent drive functions of the IndraDrive series. In addition, PLCopen-conforming function blocks provide access to standardized motion-control functions. The open technology and communication interfaces facilitate integration of IndraMotion MLD in your automation design.

Technical data

		MLD-M In-draDrive Cs	MLD-M In-draDrive C/M	MLD-S IndraDrive Cs	MLD-S IndraDrive C/M	MLD-S IndraDrive Mi
Control units						
Runtime system	integrated motion logic system	●	●	●	●	●
Multitasking		●	●	●	●	●
Data management	Code, data, remanent data, user data	●	●	●	●	●
Storage	Boot project	●	●	●	●	●
	PLC project as packed archive file	●	●	●	●	●
	User data to the internal memory and a removable storage medium	●	●	●	●	●
Support	System events	●	●	●	●	●
Touch probe with synchronization function		○	○	○	○	○
User memory	Total: Code, data	4 MB	4 MB	512 kB	512 kB	512 kB
Retentive memory	Total: System, user	32 kB	32 kB	32 kB	32 kB	32 kB
On-board diagnosis and settings						
Status display (boot, SERCOS, test)	Display	●	●	●	●	
Errors, warnings, messages, system reset	Display, keys	●	●	●	●	

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Ethernet settings (IP address)	Display, keys	●	●	●	●	
Voltage monitoring, watchdog		●	●	●	●	●
Relay output ready for operation		●	●	●	●	●
IndraMotion Service Tool		▼	▼			
Interfaces on board						
sercos III	Automation Bus (Master)	●	●	○	○	▼
	Automation Bus (Slave)	○	○	○	○	▼
Multi-Ethernet		●	●	●	○	▼
sercos II	Real-time motion bus	○	○	○	○	○
PROFIBUS	Slave	○	○	○	○	
PROFINET IO	Device (Slave)	○	○	○	○	▼
EtherNet/IP	Adapter (Slave)	○	○	○	○	▼
DeviceNet	Slave		○		○	
EtherCAT	Slave	○	○	○	○	▼
Ethernet TCP/IP		●	●	●	○	▼
ModbusTCP	Server (Slave)	○	○	○	○	▼
CANopen	Slave	▼	○	▼	◇	
RS232	On board		●		●	
Options						
Encoder	Number	max. 2	max. 2	max. 2	max. 2	max. 1
Encoder emulation	Number		max. 1		max. 1	
HMI						
IndraControl VCP, VCH	Ethernet TCP/IP, OPC	○	○	○	○	○
IndraControl VEP, VEH	Ethernet TCP/IP, OPC	○	○	○	○	○
IndraControl VSP, VPP, VSB/VDP, VPB/VDP	Ethernet TCP/IP, OPC	○	○	○	○	○
Inputs/outputs						
On board						
Digital inputs	Number	5	3	5	4	5
Digital inputs/outputs (user-defined settings)	Number	1	4	1	3	1
Fast digital inputs	Number of I/O / sample rate	2/500 μ s	2/41 μ s	2/500 μ s	1/83 μ s	2/500 μ s
Analog in-/outputs		1 / -	1 / 2	1 / -	max. 2 / -	
Locally						
Analog in-/outputs			max. 2 / 2		max. 2 / 2	
Digital inputs/outputs			max. 16/16		max. 16/16	
Distributed via Inline (IP20)						
sercos III	On board	●	●	○	○	▼
Logic-Control						
PLC runtime system						

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IndraLogic 1G kernel	Conforming with IEC 61131-3	●	●	●	●	●
Program organization	According to IEC 61131-3	●	●	●	●	●
Loading and executing IEC 61131-3 applications		●	●	●	●	●
Task management						
Freely projectable tasks (priority 0-20)	Cyclic, free-running, event-controlled, extern event-controlled	4	4	4	4	4
Cycle-synchronous processing of the I/O process image		●	●	●	●	●
sercos III synchronous processing of the I/O process image		●	●	●	●	●
min. PLC cycle time	Synchronous with system cycle	1 ms	1 ms	1 ms	1 ms	1 ms
	Synchronous with sercos cycle	1 ms	1 ms	1 ms	1 ms	1 ms
min. Motion cycle time	Setpoint generator	0.25 ms	0.25 ms	1 ms	1 ms	1 ms
PLC processing time						
Typical processing time for 1,000 instructions/ μ s	Command mix (Real, Integer, Bool etc.)	50	50	100	260	260
	Bool-Operation	50	50	100	270	270
	Word-Operation	45	45	90	240	240
Motion Control						
Number of axes	Real / virtual / encoder / grouping	1 / 10 / 2 / 1	1 / 10 / 2 / 1	1 / 1 / 2 / 0	1 / 1 / 2 / 0	1 / 1 / 2 / 0
Synchronization (ELS electronic line shaft)	real axes(Servo drives)	●	●	●	●	●
	Virtual axes(Virtual masters)	●	●	●	●	●
	Encoder axes(Real masters)	●	●	●	●	●
	real axes(Cross-communication)	●	●			
	Dynamic synchronization	●	●	●	●	●
	Master axis cascading	●	●			
Positioning	Single-axis	●	●	●	●	●
Electronic gears		●	●	●	●	●
Electronic cams	Intermediate point tables((In the drive, max. 1,024 intermediate points)	4	4	4	4	4
	Electronic motion profile(In the control, motion profiles with max. 8 segments)	2	2	2	2	2
Torque control		●	●	●	●	●
Velocity control		●	●	●	●	●

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Motion commands according to PLCopen (choice)	MC_MoveAbsolute	●	●	●	●	●
	MC_MoveRelative	●	●	●	●	●
	MC_MoveVelocity	●	●	●	●	●
	MC_CamIn, MC_CamOut	●	●	●	●	●
	MC_GearIn, MC_GearOut	●	●	●	●	●
Extended motion commands (choice)	MB_ReadListParameter	●	●	●	●	●
	MB_WriteListParameter	●	●	●	●	●
	MB_GearInPos	●	●	●	●	●
	MB_PhasingSlave	●	●	●	●	●
	MB_Home	●	●	●	●	●
	MB_ClearAllError	●	●	●	●	●
System functions (choice)						
Programmable limit switch		○	○	○	○	○
Encoder		○	○	○	○	○
Fault tolerance concerning malfunction of connected devices		●	●	○	○	○
Deactivation of	I/O	●	●	○	○	○
	Drives	●	●			
Ring Recovery and Redundancy		●	●	○	○	○
Technology functions (choice)						
Crank cinematics		○	○	○	○	○
Cross cutter		○	○			
Flying cutoff		○	○	○	○	○
Tension control		○	○			
Register Control		○	○	○	○	○
Winder		○	○	○	○	○
Smart belt		○	○	○	○	○
Diagnostic						
Diagnosis(status, warning, error)	Function blocks(Software)	●	●	●	●	●
	Parameter access to diagnostics memory(Software)	●	●	●	●	●
	Locally via display(Control hardware)	●	●	●	●	●
	Axis monitoring(e.g. capacity, encoders, limit values)	●	●	●	●	●
	Diagnostics memory(64 kB, max. 999 messages)	●	●	●	●	●
Debugging monitor for IEC applications		●	●	●	●	●
Drive systems						
IndraDrive		●	●			
IndraDrive Mi	Firmware MPB	▼	▼			

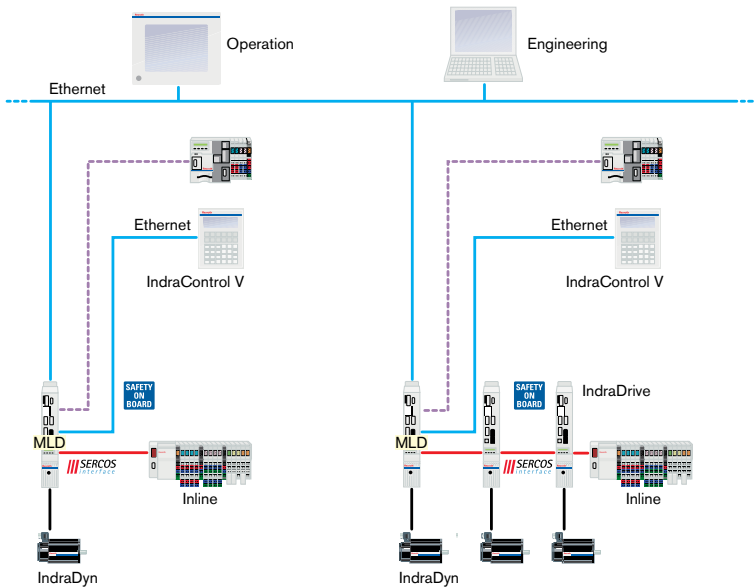
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IndraDrive Cs		●	●			
Master communication	sercos III	●	●	●	●	●
min. sercos III cycle time		0.25 ms	0.25 ms	1 ms	1 ms	1 ms
Engineering and Operation						
IndraWorks		○	○	○	○	○
IndraMotion Service Tool		▼	▼			

- Standard
- ▼ In preparation
- Option

Components



Engineering and operating

Description	Page	Details
Engineering and operating	IndraWorks	The Tool for all Engineering Tasks
Engineering and operating	CamBuilder	
Engineering and operating	VI-Composer	

HMI

Description	Page	Details
Hand-held operator panel	Controller based	IndraControl VCH
Hand-held operator panel	Embedded PC	IndraControl VEH 30

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Description	Page	Details
HMI	compact operator terminals	IndraControl VCP

I/O

Description	Page
Block I/O-Modules	SERCOS III - Analog
Block I/O-Modules	SERCOS III - Digital

Servo Drives

Description	Page	Details
Product Catalog Electric Drives and Controls	Servo Drives	IndraDrive

Servo Drives

Description	Page	Details
Valve system	HF02-LG	Direct field bus connection (BDC)
Valve system	HF03-LG	Direct field bus connection (BDC)
Valve system	HF04	Direct field bus connection (BDC)
Valve system	HF04-XF	Direct field bus connection (BDC)
Valve system	CD01/02-PI	Direct field bus connection (BDC)

Type code

Type code	Description	Part No.:
FWA-INDRV*-MPH-07VRS-D5-1-ALL-MA	Firmware IndraDrive ADVANCED with MA Option	R911328747
FWA-INDRV*-MPH-07VRS-D5-1-ALL-ML	Firmware IndraDrive ADVANCED with MA Option	R911328736
FWA-INDRV*-MPB-07VRS-D5-1-NNN-TF	Firmware IndraDrive BASIC with TF Option	R911328707
FWS-MLDTFA-RFS-05VRS-D0	Rollfeed Standard technology function for IndraMotion MLD-S, based on IndraDrive ADVANCED	R911327721
FWS-MLDTFB-RFS-05VRS-D0	Rollfeed Standard technology function for IndraMotion MLD-S, based on IndraDrive BASIC	R911327722
FWS-MLDTFA-RFE-02VRS-D0	Rollfeed Extended technology function for IndraMotion MLD-S, based on IndraDrive ADVANCED	R911319548
FWS-MLDTFA-SPF-04VRS-D0	Flying Shear technology function for IndraMotion MLD-S, based on IndraDrive ADVANCED	R911321442

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