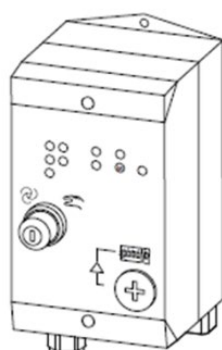
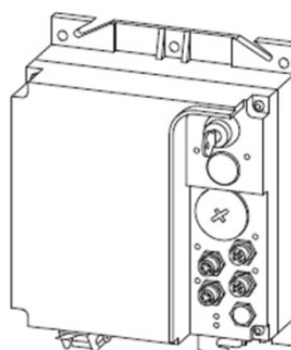


Rapid Link RAMO

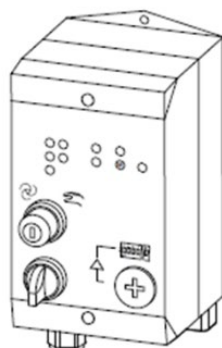
Generation Change from RA-MO to RAMO 4.0



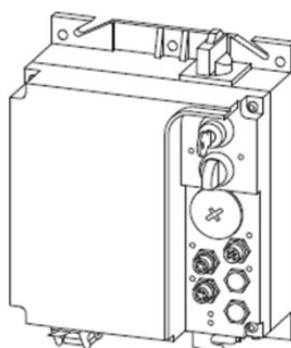
RA-MO-DA...



RAMO-D...



RA-MO-W...



RAMO-W...

Level 3	1 – Fundamental – No previous experience necessary 2 – Basic – Basic knowledge recommended 3 – Advanced – Reasonable knowledge required 4 – Expert – Good experience recommended
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Original Application Note

Original document is the German version of this document.

Translation

All non-German language versions of this document are translations of the original application note.

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Subject to alteration.



DANGER!
DANGEROUS ELECTRICAL VOLTAGE!

- Disconnect the power supply of the device.
- Ensure that devices cannot be accidentally restarted.
- Verify isolation from the supply.
- Cover or enclose any adjacent live components.
- Follow the engineering instructions (AWA/IL) for the device concerned.
- Only suitably qualified personnel in accordance with EN 50110-1/-2 (VDE 0105 Part 100) may work on this device/system.
- Before installation and before touching the device ensure that you are free of electrostatic charge.
- The functional earth (FE, PES) must be connected to the protective earth (PE) or the potential equalization. The system installer is responsible for implementing this connection.
- Connecting cables and signal lines should be installed so that inductive or capacitive interference does not impair the automatic control functions.
- Suitable safety hardware and software measures should be implemented for the I/O interface so that an open circuit on the signal side does not result in undefined states.
- Deviations of the mains voltage from the rated value must not exceed the tolerance limits given in the specification, otherwise this may cause malfunction and/or dangerous operation.
- Emergency stop devices complying with IEC/EN 60204-1 must be effective in all operating modes. Unlatching of the emergency-stop devices must not cause a restart.
- Devices that are designed for mounting in housings or control cabinets must only be operated and controlled after they have been properly installed and with the housing closed.
- Wherever faults may cause injury or material damage, external measures must be implemented to ensure a safe operating state in the event of a fault or malfunction (e.g. by means of separate limit switches, mechanical interlocks etc.).
- The used device may have hot surfaces during and immediately after operation.
- Removal of the required covers, improper installation or incorrect operation of motor or device may destroy the device and may lead to serious injury or damage.
- The applicable national safety regulations and accident prevention recommendations must be applied to all work carried on live device.
- The electrical installation must be carried out in accordance with the relevant electrical regulations (e. g. with regard to cable cross sections, fuses, PE).
- Transport, installation, commissioning and maintenance work must be carried out only by qualified personnel (IEC 60364, HD 384 and national occupational safety regulations).
- Installations containing device must be provided with additional monitoring and protective devices in accordance with the applicable safety regulations. Modifications to the device using the operating software are permitted.
- All covers and doors must be kept closed during operation.
- To reduce the hazards for people or equipment, the user must include in the machine design measures that restrict the consequences of a malfunction or failure of the device (increased motor speed or sudden standstill of motor). These measures include:
 - Other independent devices for monitoring safety related variables (speed, travel, end positions etc.).
 - Electrical or non-electrical system-wide measures (electrical or mechanical interlocks).
 - Never touch live parts or cable connections of the device after it has been disconnected from the power supply. Due to the charge in the capacitors, these parts may still be alive after disconnection. Consider appropriate warning signs.

Disclaimer

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1 General

This Document instructs a change from the RA-MO-DA2 and RA-MO-W... series to the new RAMO-D/W... series. (Rapid Link 4.0)

The devices are functionally identical.

The following section describes the differences to be taken into account when expanding an existing system or configuring a new one with RAMO-... Profile 7.A.E (Rapid Link 4.0) as well as the replacement of devices of the RAMO-... Profile 7.4 are shown.

The devices differ in the following main points:

- Dimensions
- AS-Interface profile

The handling and functions of the operating elements have remained unchanged.

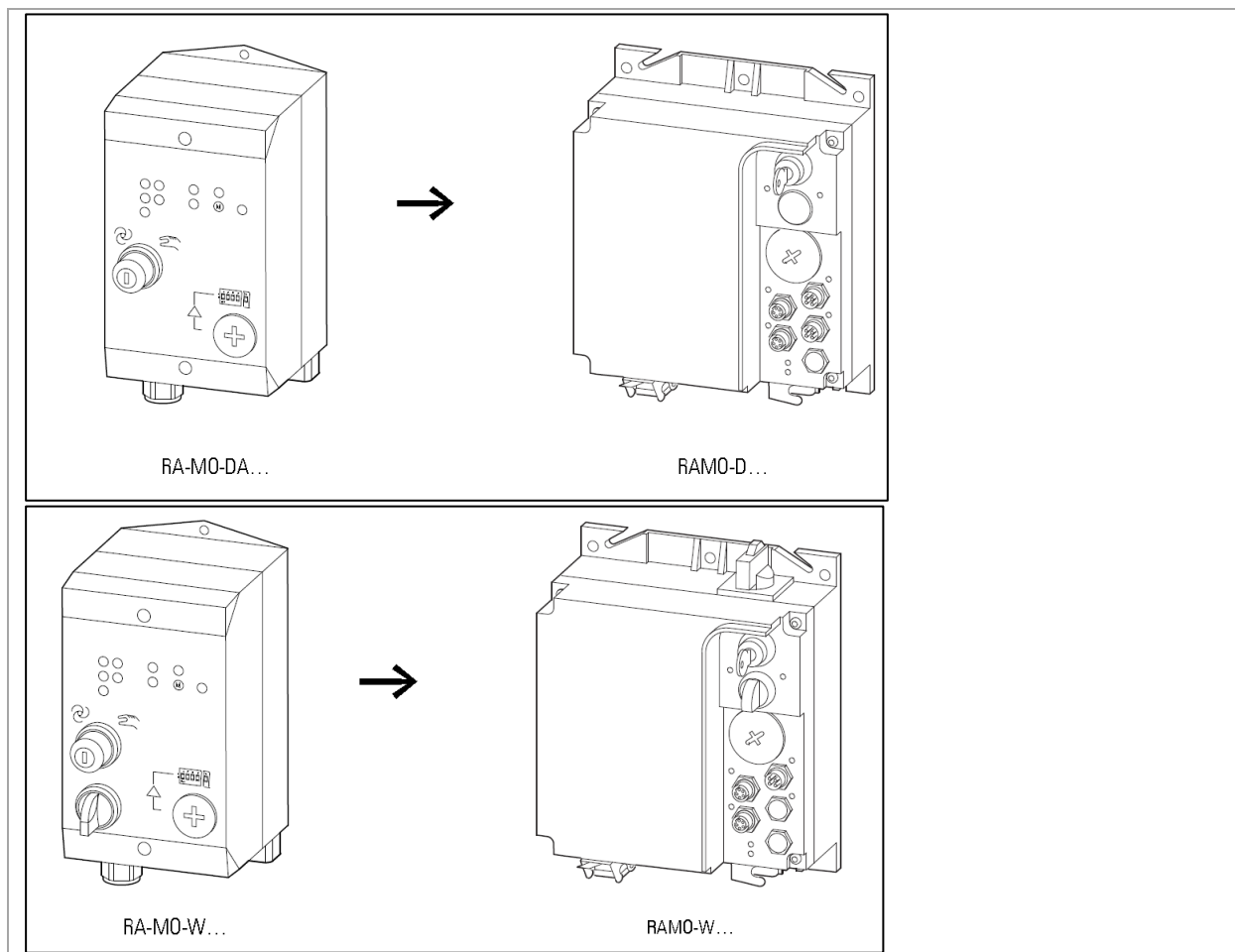


Abbildung 1: Design of RA-MO and RAMO 4.0

2 Dimensions

Device exchange for RAMO devices:

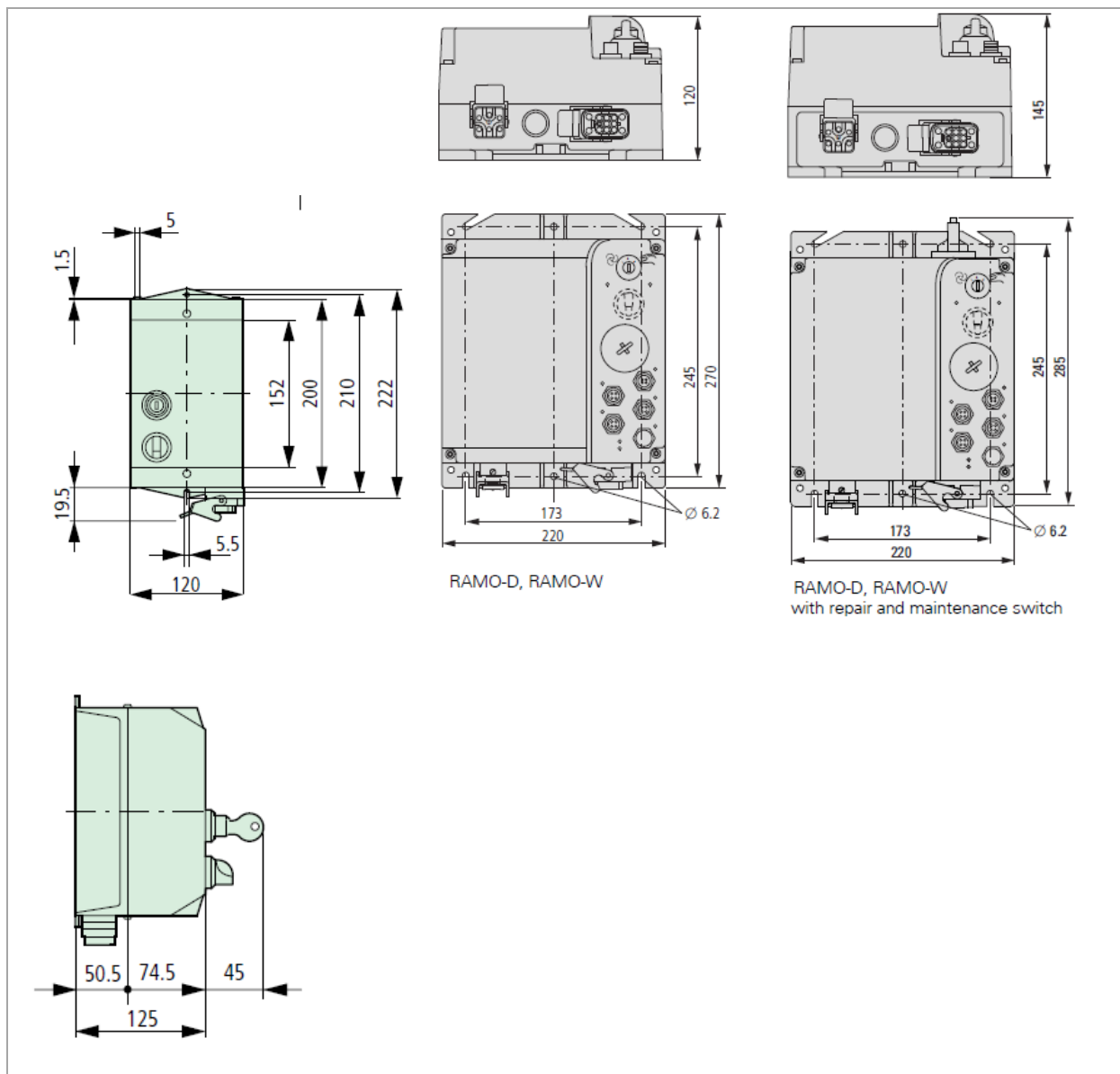


Abbildung 2: Dimensions of RA-MO and RAMO 4.0

3 AS-i-Profile

The RAMO-...AI1S has the AS-I profile S-7.4.

The RAMO-...AI2S has the AS-I profile S-7.A.E.

Due to the extended AS-i-Profile a new initialization must be done when replacing an old RA-MO with the old profile against a new RAMO with new profile. For this purpose, the AS-I master is switched to the configuration mode. In this mode the AS-I master recognizes the type and profile of the connected AS-I slaves on the AS-I line.

The profile is “burned in” to the slave modules during manufacturing and cannot be changed. Normally this configuration mode can only be activated at a PROFIBUS/AS-I gateway if there is no active communication to PROFIBUS.

The I/O assignment and data bits at Rapid Link are unchanged. The PLC program doesn’t need to be reworked.

4 Exchange

1. Read the address of the RA-MO

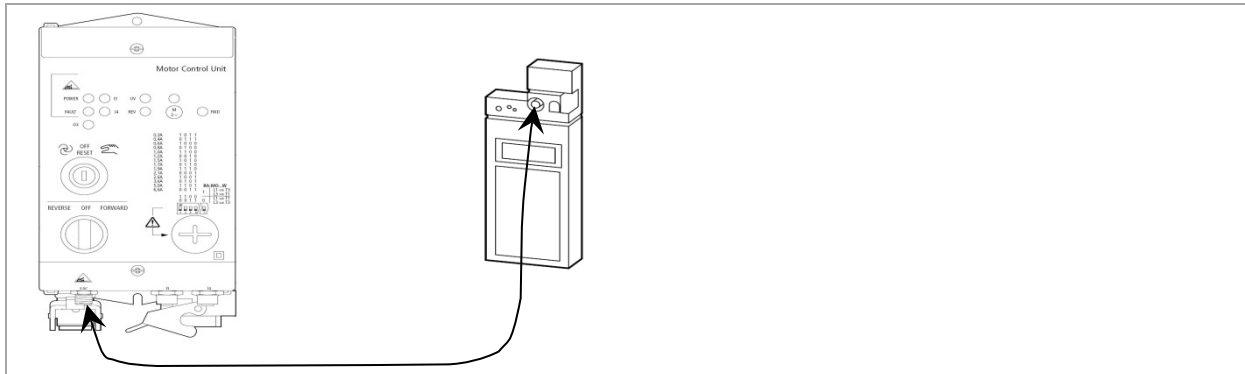


Abbildung 3: RA-MO exchange process

2. Record the DIP-switch settings of the RA-MO
3. Disconnect the motor, power, ASi, sensor and actuator connection from old RA-MO
4. Turn the key switch to manual mode
5. Give the address to RAMO. The address of the old RA-MO must be taken over (see chapter “Addressing the AS-I slave via the addressing service”)

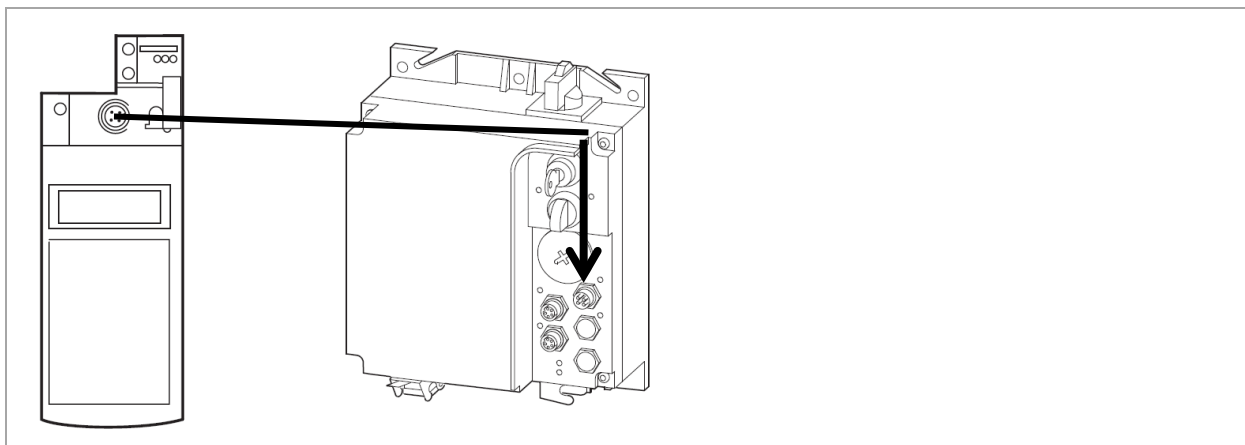


Abbildung 4: RA-MO exchange process

6. Set the DIP switches of the new RAMO
7. Reconnect all the required components from RAMO-... and make the connections. (400 V AC, AS-Interface, Motor and if necessary, Sensors)
8. When the mains voltage is switched on, the UV LED will light up in green. If the red motor LED lights up, a collective fault message is present.
9. Start manually or via the head control (new AS-I configuration must be performed)

	Caution! Before commissioning the RAMO-... it must be made sure, that the motor is connected properly and the motor cable is plugged in correctly.
---	--

5 DIP Switches

Before commissioning the Motor Control Unit (RAMO), the current monitoring must be set to the rated motor current. It is deactivated in the delivery state and would cause a fault message when switching on the mains voltage (motor LED lights up). To set the DIP switches, the screw plug (M40x1.5) must be opened.

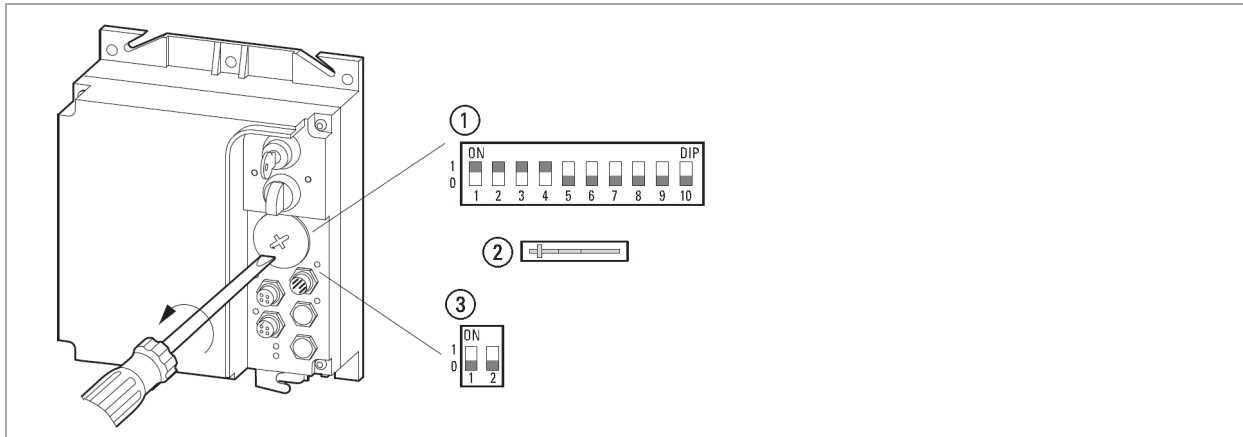


Abbildung 5: Accessing the DIP switches

- ① Current limits and functions, DIP-switches
- ② Thermistor and motor cable monitoring (wire bridge)
- ③ Reserve (currently only internal function, do not switch!)

	CAUTION The DIP and wire jumper switches under the screw plug may only be operated when the key switch is in the OFF/RESET position. Switching during operation can cause an unintentional motor start.
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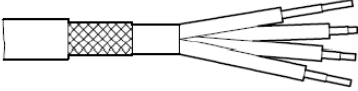
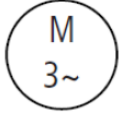
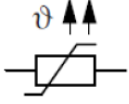
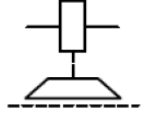
The position of switch ③ (=OFF) must not be changed!

The wire jumper (DIP Switch ②) is opened in the factory settings. In closed state, the fault message of the thermistor and motor cable monitoring is deactivated. (See manual section “Thermistor and motor cable monitoring”, manual MN03406003Z-EN).

For detailed information, refer to the MN03406003Z-EN.

6 RAMO motor cable (RAMO-CM1-...)

The motor is connected using the unshielded motor cable RAMO-CM1-... (8x1.5mm²) that conforms to DESINA.

				
1	1	U1		
Coding	-			
3	3	W1		
4	5			B1
5	6		T1	
6	4			B2
7	2	V1		
8	7		T2	
PE	PE*	PE		

*PE = green-yellow

Abbildung 6: RAMO motor cable

7 References

Documentation		
	RAMO	LINK
Manual RAMO...	MN034004EN	DownloadCenter
Instruction Leaflet RAMO...	IL034084ZU	DownloadCenter

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