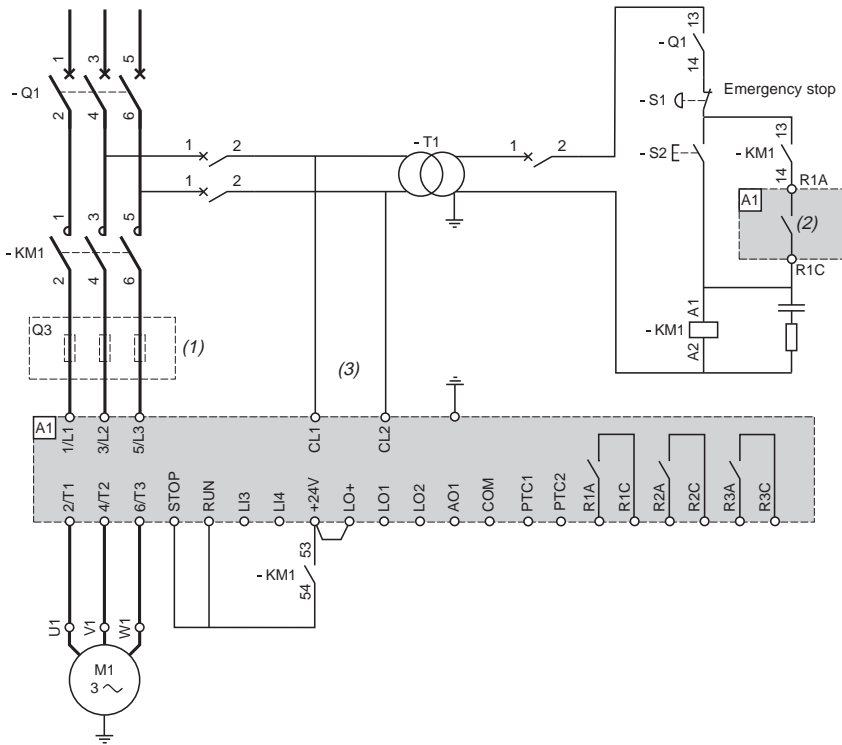


### Recommended application diagram for non-reversing unit with line contactor, type 1 and type 2 coordination



Select the components to connect, according to the descriptions on page 60524/3, from the association tables on pages 60525/2 to 60525/11.

- (1) For type 2 coordination (according to IEC 60947-4-2), install fast-acting fuses to ensure that the starter will be protected in the event of a short-circuit.
- (2) Assign relay R1 as the "isolating relay". Beware of the operating limits of the contacts (see Characteristics page 60521/2), for example when connecting to high rating contactors.
- (3) Insert a transformer if the line voltage is different to that defined for the control circuit (see page 60521/2).

#### Types of coordination

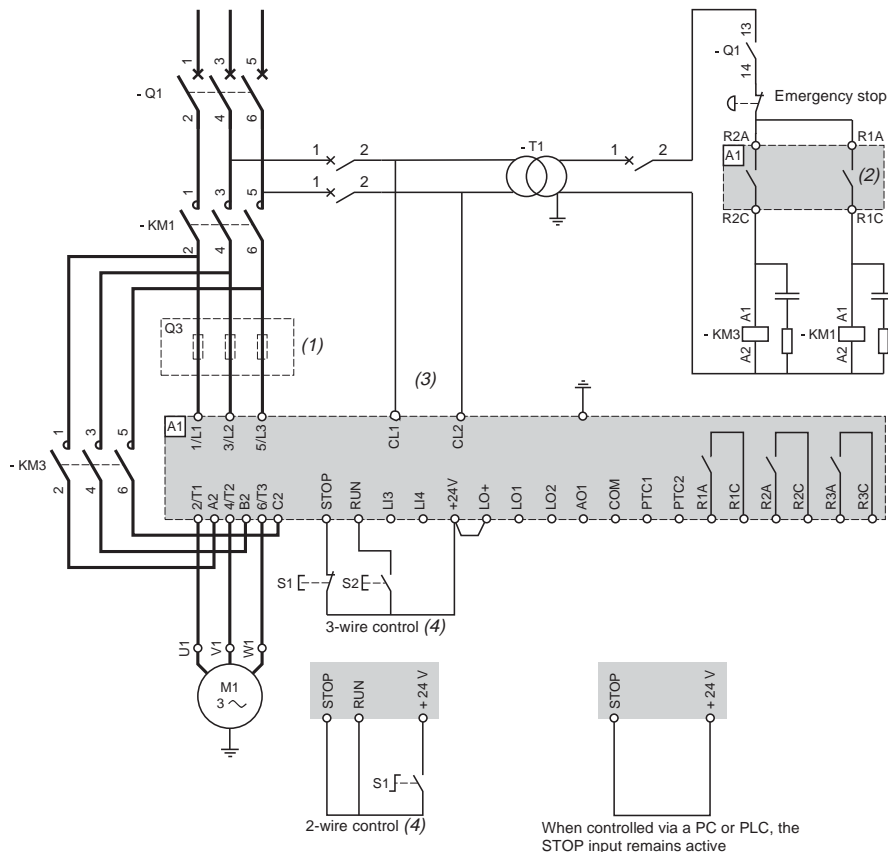
The standard defines tests for different current levels which are designed to expose the device to extreme conditions. Based on the state of the components after a short-circuit test, the standard defines 2 types of coordination.

- Type 1 coordination: Damage to the contactor and the starter is acceptable under 2 conditions:

- No risk is posed to the operator
  - Elements other than the contactor and the starter are not damaged
- Maintenance must be carried out after a short-circuit.

- Type 2 coordination: Minor soldering of the contactor contacts is permissible if they can be separated easily. The starter must not be damaged beyond repair. The protection and control devices remain operational after type 2 coordination tests. Once the fuses have been replaced, check the contactor.

**Note:** The starter will protect the motor and the cables against overloads. If this protection function is disabled, external thermal protection must be provided.

**Recommended application diagram for non-reversing unit with starter line and bypass contactors, type 1 and type 2 coordination**


Select the components to connect, according to the descriptions below, from the association tables on pages 60525/2 to 60525/11.

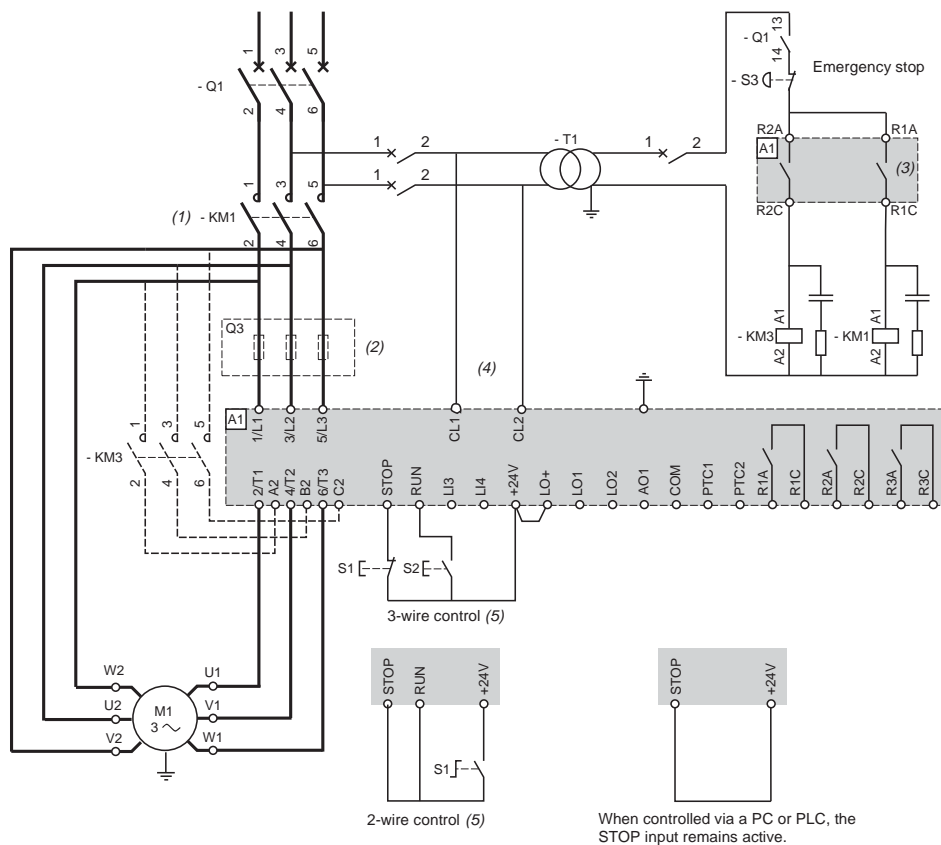
- (1) For type 2 coordination (according to IEC 60947-4-2), install fast-acting fuses to ensure that the starter will be protected in the event of a short-circuit.  
 (2) Assign relay R1 as the "isolating relay". Beware of the operating limits of the contacts (see Characteristics page 60521/2), for example when connecting to high rating contactors.  
 (3) Insert a transformer if the line voltage is different to that defined for the control circuit (see page 60521/2).  
 (4) 2-wire and 3-wire control (see page 60526/8).

**Components to connect depending on the types of coordination and voltages**

Designation	Description
M1	Motor
A1	Starter (standard applications and severe applications)
Q1	Circuit-breaker or switch/fuses
Q3	3 FA fuses
KM1, KM3	Contactors
S1, S2	Control (separate parts XB2 or XB2 M)

### Recommended application diagram for connection to the motor delta terminals, non-reversing, freewheel stop, with starter line and bypass contactors, type 1 and type 2 coordination

This type of wiring enables the starter rating to be reduced.  
ATS 48●●●Q



Select the components to connect according to the descriptions on page 60524/5 and the association tables on pages 60525/2 to 60525/11.

- (1) A line contactor must be used in the sequence.
- (2) For type 2 coordination (according to IEC 60947-4-2), install fast-acting fuses to ensure that the starter will be protected in the event of a short-circuit.
- (3) R1 must be assigned as the "isolating relay" to control contactor KM1. Beware of the operating limits of the contacts. (see Characteristics page 60521-2), for example when connecting to high rating contactors.
- (4) Insert a transformer if the line voltage is different to that defined for the control circuit (see page 60521/2)
- (5) 2-wire and 3-wire control (see page 60526/8).

#### Types of coordination

The standard defines tests for different current levels which are designed to expose the device to extreme conditions. Based on the state of the components after a short-circuit test, the standard defines 2 types of coordination.

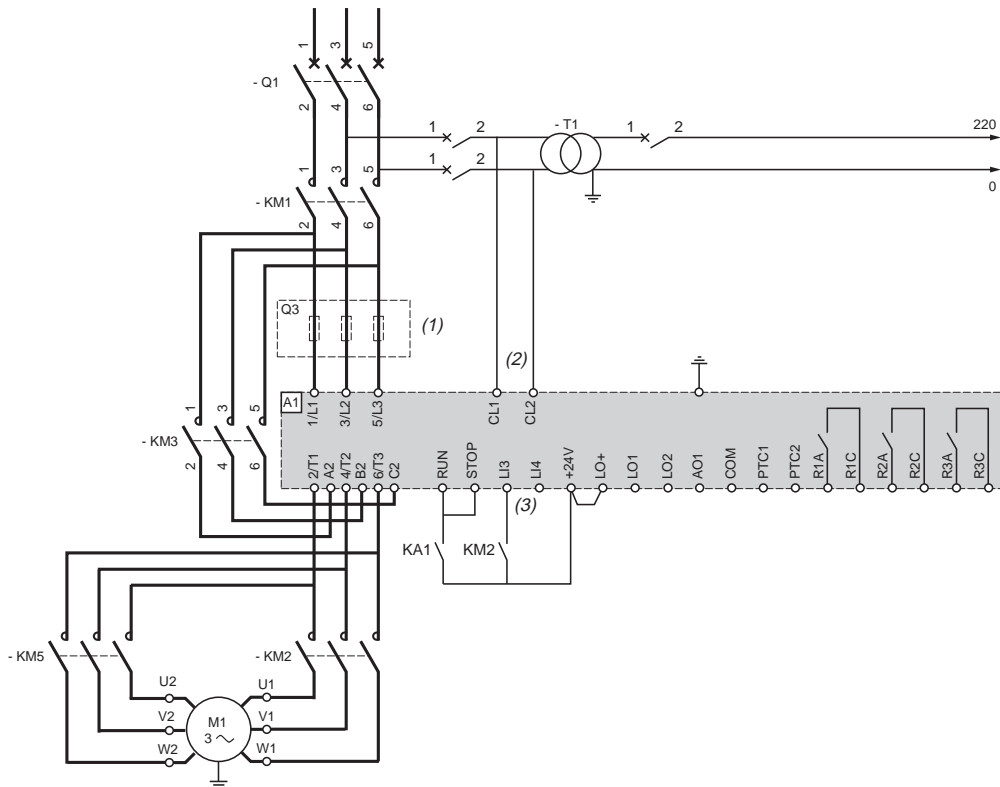
- Type 1 coordination: damage to the contactor and the starter is acceptable under 2 conditions:

- No risk is posed to the operator
  - Elements other than the contactor and the starter are not damaged
- Maintenance must be carried out after a short-circuit.

- Type 2 coordination: Minor soldering of the contactor contacts is permissible if they can be separated easily. The starter must not be damaged beyond repair. The protection and control devices remain operational after type 2 coordination tests. Once the fuses have been replaced, check the contactor.

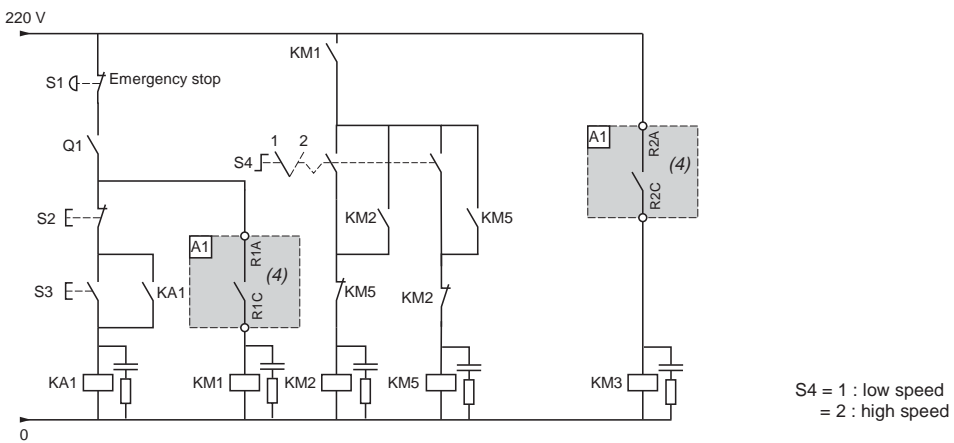
**Note:** The starter will protect the motor and the cables against overloads. If this protection function is disabled, external thermal protection must be provided.

**Recommended application diagram for LSP/HSP motor, non-reversing with starter line and bypass contactors**



Select the components to connect, according to the descriptions below, from the association tables on pages 60525/2 to 60525/11.

- (1) For type 2 coordination (according to IEC 60947-4-2), install fast-acting fuses to ensure that the starter will be protected in the event of a short-circuit.
- (2) Insert a transformer if the line voltage is different to that defined for the control circuit (see page 60521/2).
- (3) Assign logic input LI3 to "activate the adjustment functions of the 2<sup>nd</sup> motor".
- (4) Assign relay R1 as the "isolating relay". Beware of the operating limits of the contacts (see Characteristics page 60521/2), for example when connecting to high rating contactors.



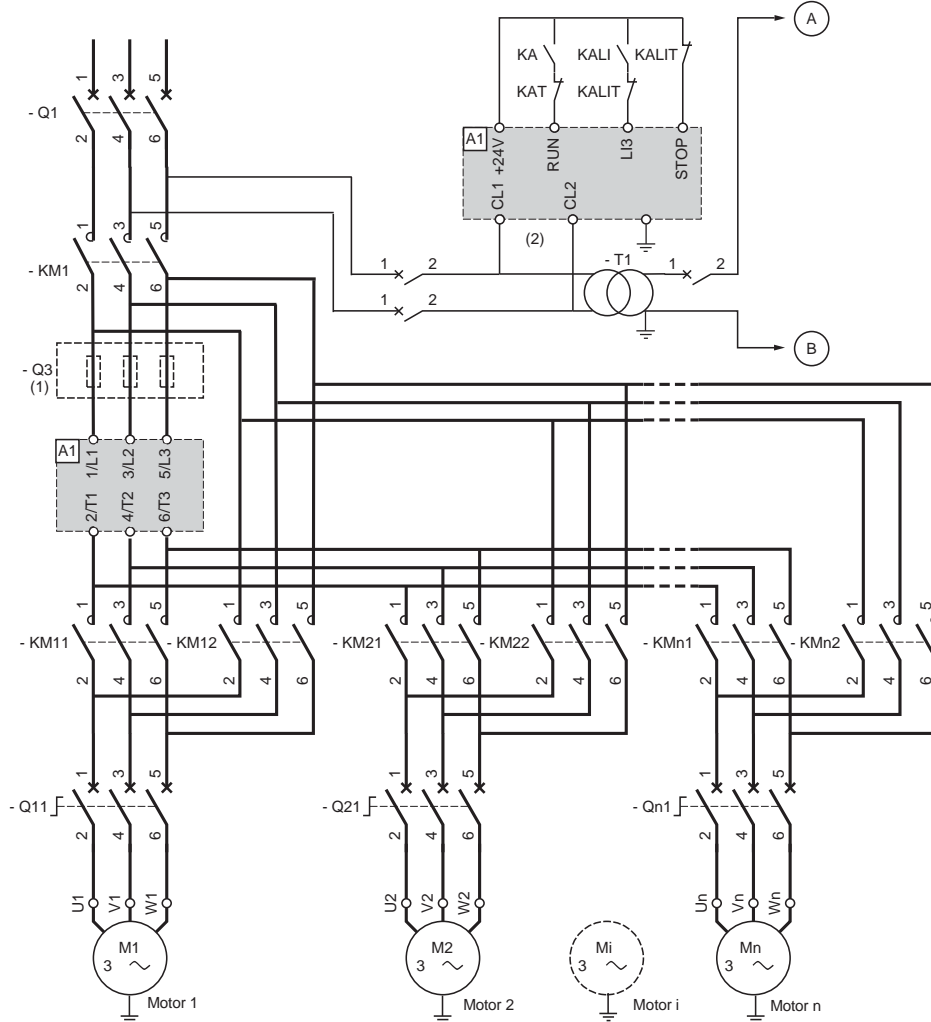
S4 = 1 : low speed  
 = 2 : high speed

**Components to connect depending on the types of coordination and voltages**

Designation	Description
M1	Motor
A1	Starter (standard applications and severe applications)
Q1	Circuit-breaker or switch/fuses
Q3	3 FA fuses
KM1, KM2, KM3, KM5, KA1	Contactors and relays
S1, S2, S3	Control (separate parts XB2 or XB2 M)

### Recommended application diagram for starting and decelerating several motors cascaded with a single Altistart 48, non-reversing and line contactor

The diagram is given as an example only. For more details, refer to the Altistart 48 user's manual.



Select the components to connect, according to the designations below, from the association tables on pages 60525/2 to 60525/11.

(1) For type 2 coordination (according to IEC 60947-4-2), install fast-acting fuses to ensure that the starter will be protected in the event of a short-circuit.

(2) Insert a transformer if the line voltage is different to that defined for the control circuit (see page 60521/2).

**Important:**

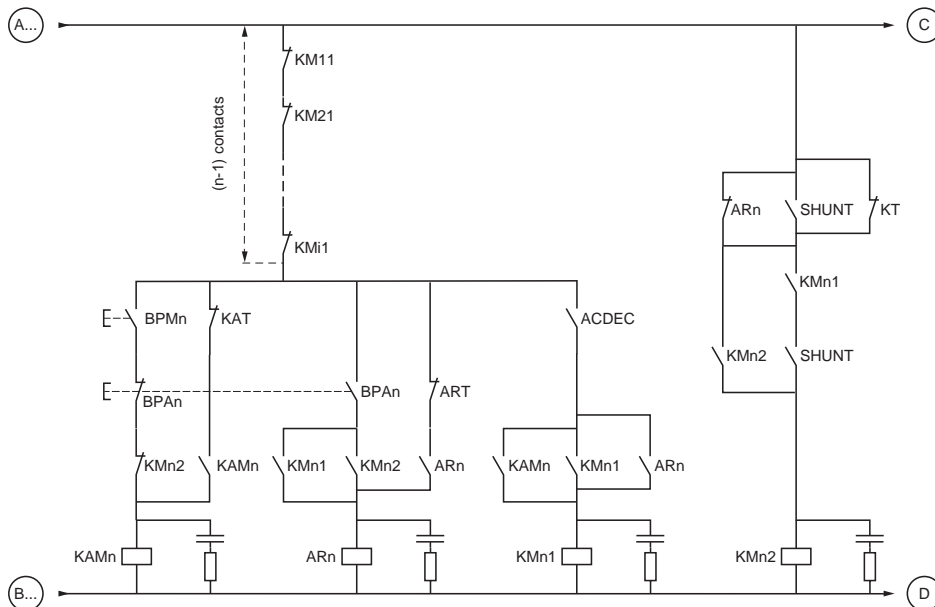
- One Altistart 48 logic input must be configured as a "cascading" input.
- In the event of a fault, it will not be possible to decelerate or brake any motors that may be running at that time.
- Adjust the thermal protection of each circuit-breaker  $Q_{n1}$  for the corresponding nominal motor current.

### Components to connect depending on the types of coordination and voltages

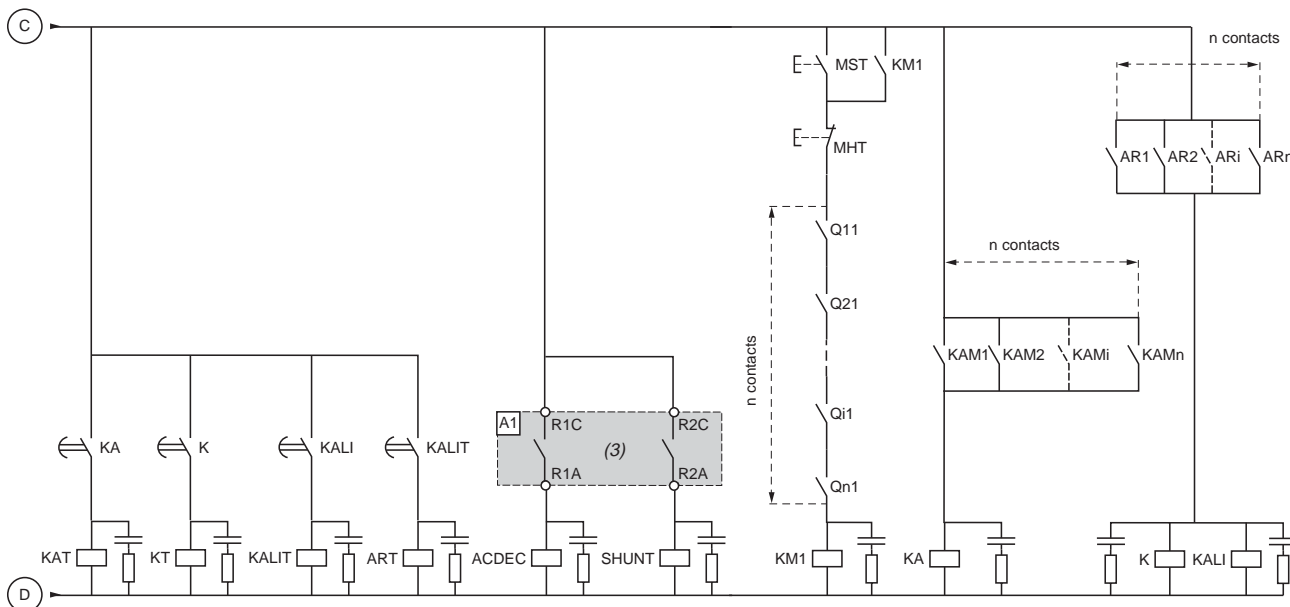
Designation	Description
M1, M2, Mi, Mn	Motor
A1	Starter (standard applications and severe applications)
KM1, KM2, ..., KMi, KMn	Contactors
Q1	Circuit-breaker or switch/fuses
Q3	3 FA fuses
Q11, Q21, ..., Qn1	Thermal magnetic circuit-breakers
KA, KAT, KALI, KALIT	Control (separate parts XB2 or XB2 M)

**Recommended application diagram for starting and decelerating several motors cascaded with a single Altistart 48, non-reversing and line contactor (continued)**

**Motor n control**



**Cascade control**



(3) Assign relay R1 as the "isolating relay". Beware of the operating limits of the contacts (see Characteristics page 60521/2), for example when connecting to high rating contactors.

- BPMn: "Run" button motor n
- BPA n: "Stop" button motor n
- MST: General "Run" button
- MHT: General "Stop" button