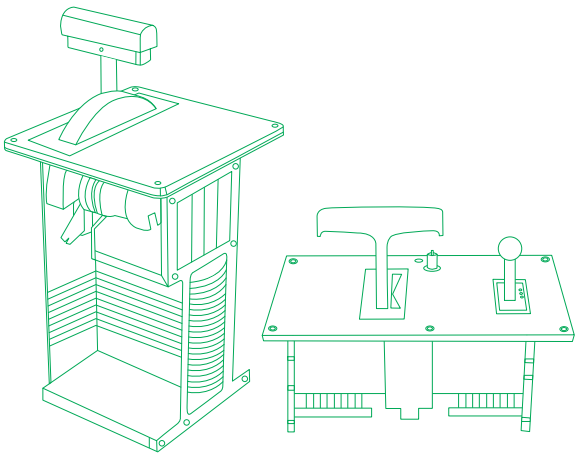
Technical Innovation for Your Safety and Easy Life

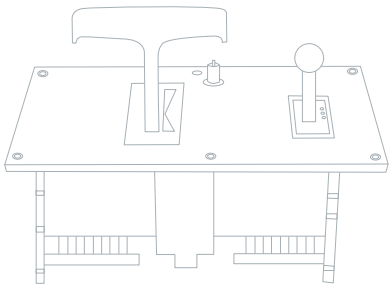
Master Controller



WOOJIN
Electric Machinery Co., Ltd.

WM Series
Master Controllers

for safe and reliable transportation



Features

Type
- Our products are designed for flush mounting on driver's desk

Structure
- Reliable mechanical structure with snap-action switch elements and camshaft control elements offers optimal satisfaction.

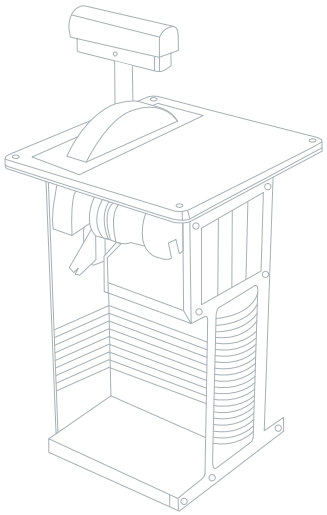
Ergonomics
- Handles, indicators and other additional devices offer comfortable operations.

Safety & stability
- WM series are capable for high shock and extreme vibration of railway applications.

Customization
- Our products are available to be designed to meet your particular requirements.

Variants

- Custom-made functions and size
- Separate or combined handles for powering, braking, forward/reversing, etc.
- Master key as option
- Dead-man function as option
- Handle type applicable as customer's demand (T-handle, ball, knob or others)
- Slot covers applicable as customer's demand (brush, bellows boot or opened type)
- Mechanical interlock system by handle or key
- Potentiometer as option
- Other additional devices



Application-
EMU for urban transportation

- Long life and minimum needs of maintenance
- Modular design for easy customization
- High reliability of switches and handles

Custom-made versions

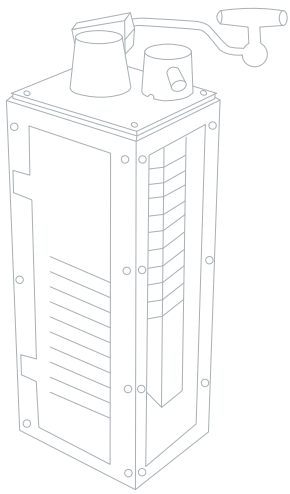
We offer variable versions of:

- Shape and dimensions
- Panel and handles
- Mechanical interlock system
- Potentiometers and encoders
- Wiring, terminals and connectors
- Quantity and type of switches
- Dead-man function

Technical data

Master Controller	Operating angle of main handle	90° ~ 100°
	Notches of main handle	13 steps
	Operating angle of reversing handle	40° max.
	Switching sequences, dimension, etc.	Customer's specification
	Mechanical life	1,000,000 cycle
	Ambient temperature range	-40℃ ~ +85℃
Snap-action switch S800/S826	Thermal current (Ith)	10A
	Contact type	SPDT
	Rated insulation voltage (Ui)	400V
	Rated impulse withstand voltage (Uimp)	4kV
	Pollution degree	3

※Other special requirement or use of particular parts are applicable as the user's specifications.



Additional devices

- Potentiometers, encoders, etc.

Handles

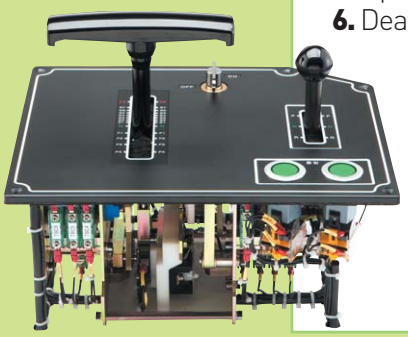
- Type of handles can be designed as customer's demand.

Switching sequences

- Reliable opening, closing or overlap operations of switches

Lineup

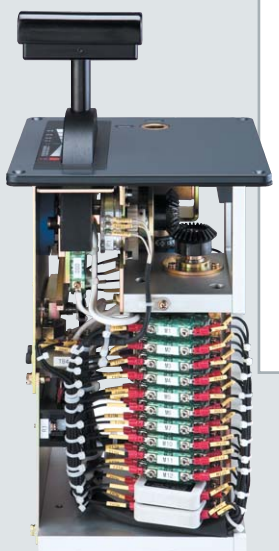
WM101 Type



1. Powering/braking control by master handle
2. Forwarding/reversing control by direction handle
3. Mechanical interlock system by key
4. Potentiometer applied
5. Optional quantity of switches
6. Dead-man function

Switches	Snap-action switch S800 or S826
Potentiometer	Contact or non-contact type
Number of handles	1 master handle
	1 direction handle
Type of handles	Master handle : T-handle
	Direction handle : Ball or knob
Slot cover	Brush or Crank

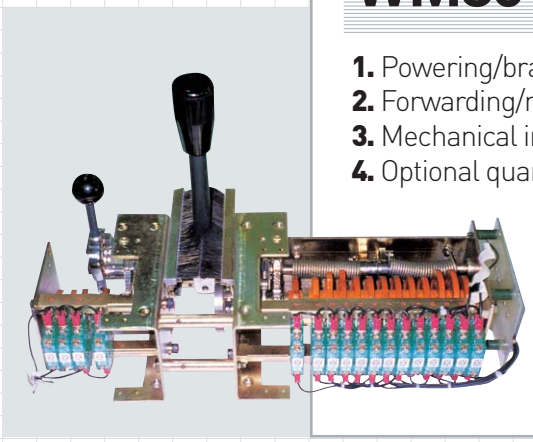
WM201 Type



1. Powering/braking control by master handle
2. Mechanical interlock system by key
3. Potentiometer applied
4. Optional quantity of switches
5. Dead-man function

Switches	Snap-action switch S800 or S826
Potentiometer	Contact or non-contact type
Number of handles	1 master handle
Type of handles	T-handle
Slot cover	Brush or Crank

WM301 Type



1. Powering/braking control by master handle
2. Forwarding/reversing control by direction handle
3. Mechanical interlock system by direction handle
4. Optional quantity of switches

Switches	Snap-action switch S800 or S826
Potentiometer	Optional
Number of handles	1 master handle 1 direction handle
Type of handles	Ball or knob
Slot cover	Brush

WM401 Type

1. Powering control by master handle
2. Forwarding/reversing control by direction handle
3. Mechanical interlock system by key
4. Potentiometer applied
5. Optional quantity of switches
6. Dead-man function

Switches	Cam switch
Potentiometer	Contact or non-contact type
Number of handles	1 master handle 1 direction handle
Type of handles	Knob

WM501 Type

1. Powering control by master handle
2. Forwarding/reversing control by direction handle
3. Mechanical interlock system by key
4. Potentiometer applied
5. Optional quantity of switches
6. Dead-man function

Switches	Cam contactor
Potentiometer	Contact or non-contact type
Number of handles	1 master handle 1 direction handle
Type of handles	Knob

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Electro-magnetic Contactor

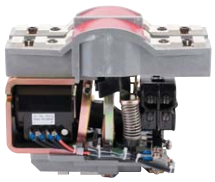
Application : Main circuit of EMU
Pole configuration : Single-pole
Main circuit voltage : 1500V DC
Main circuit current : 1000A
Control circuit voltage : 100, 110V DC
Breaking capacity : 1500V DC, 20mh, 2000A

High Speed Circuit Breaker

Application : Main circuit of EMU
Pole configuration : Single-pole
Main circuit voltage : 1500V DC
Main circuit current : 1200A
Control circuit voltage : 100V DC
Breaking capacity : 1500V DC, 0.5mh, 30kA

Auxiliary Relay

Application : DC control circuit of EMU
Contact resistance : 50mΩ or less
Operating voltage : 70~110% of rated voltage
Withstand voltage : 1200V AC, 60Hz for 1min.
Breaking capacity : 100V DC, 5A



Magnetic Switch

Application : Main circuit of diesel electric locomotive
Pole Configuration : Double-pole
Main Circuit Voltage: 1000V DC
Main Circuit Current: 1000A
Control Circuit Voltage: 74V DC

Magnetic Power Contractor

Application : Main circuit of diesel electric locomotives
Pole Configuration : Single-pole
Main Circuit Voltage: 1000V DC
Main Circuit Current: 1000A
Control Circuit Voltage: 74V DC

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