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1985 NISSAN Micra 3 Doors OEM Service and Repair Workshop Manual

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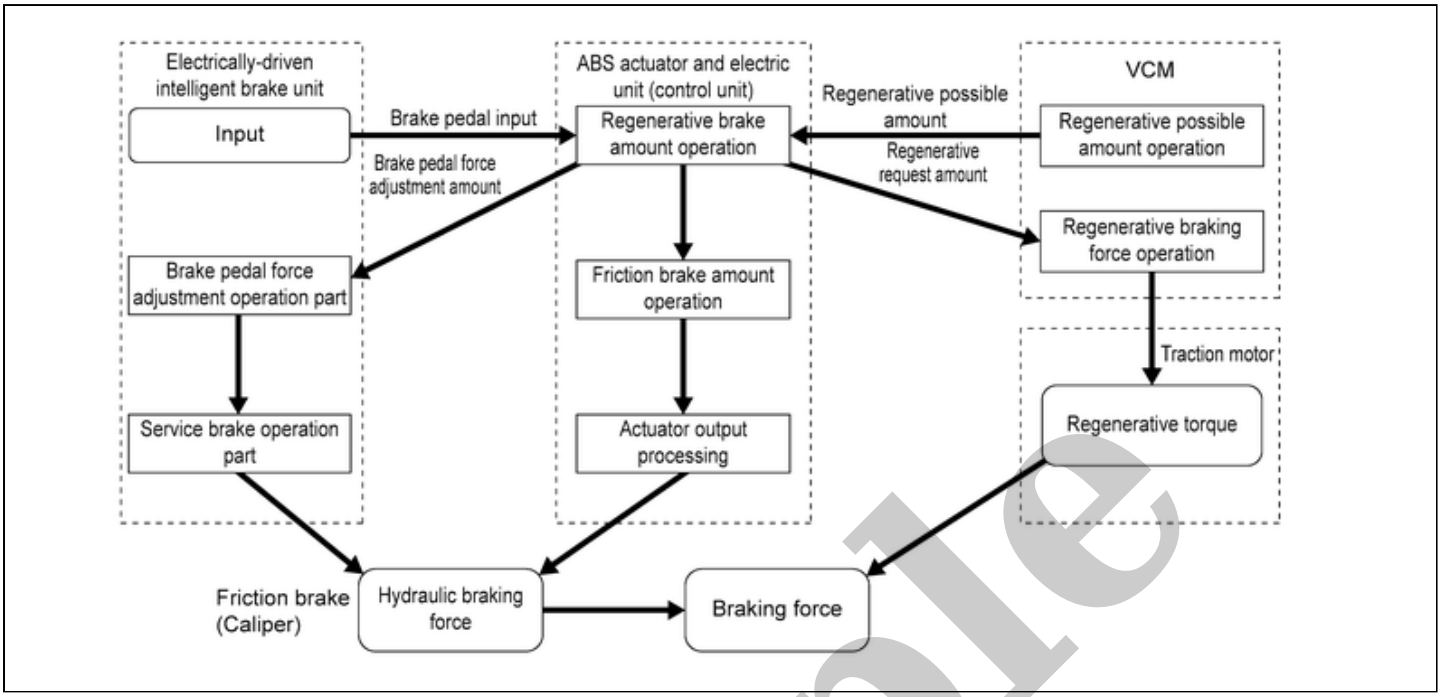
SIEMD-7262698

COOPERATIVE REGENERATIVE BRAKE CONTROL



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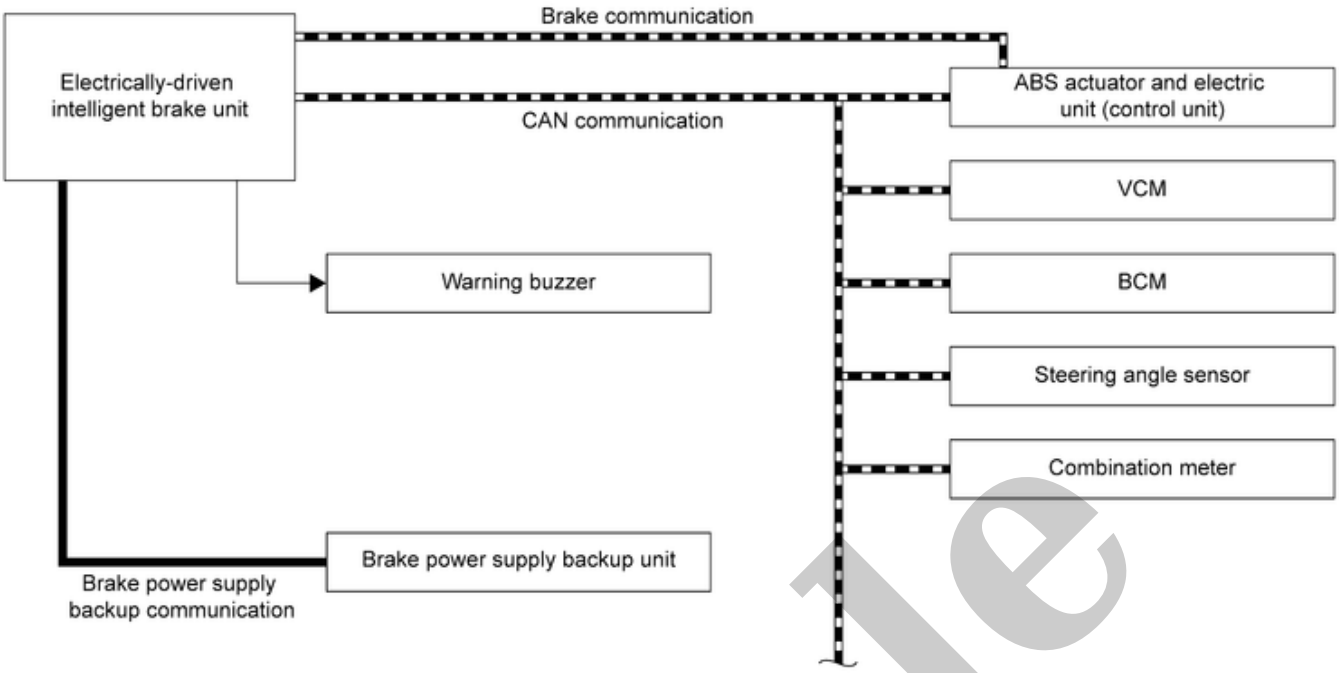
- A regenerative brake drives the traction motor to act as an alternator, and converts the kinetic energy produced by rotation of the tires into electrical energy. The converted electrical energy charges the Li-ion battery.
- When the brakes are operated (during driving), the electrically-driven intelligent brake unit calculates the required braking force based on the input value from the stroke sensor (indicating the amount of brake pedal operation), and it sends the result to the VCM. At the same time, it calculates the hydraulic braking force needed to produce the required braking force.
- The VCM calculates the regenerative braking force needed to produce the required braking force, and sends the result to the electrically-driven intelligent brake unit. At the same time, the traction motor inverter uses the traction motor to perform regenerative braking.
- The electrically-driven intelligent brake unit and ABS actuator and electric unit (control unit) calculates the hydraulic braking force again based on the regenerative braking force result from the VCM and the calculated result for hydraulic braking force.
- Electrically-driven intelligent brake unit controls brake pedal force according to calculated amount of regenerative braking torque.

NOTE:
The fluid pressure signal applied to the master cylinder part is transmits the electrically-driven intelligent brake unit from ABS actuator and electric unit (control unit) via brake communication (CAN communication).

- The fluid pressure generated by the master cylinder is sent to each brake.
- When the cooperative regenerative brake is operating, the motor inside the electrically-driven intelligent brake unit moves the piston of master cylinder part according to the amount of regeneration.
- Moving the piston of master cylinder part increases the fluid pressure applied to the ABS actuator and electric unit (control unit). (The brake pedal stroke does not change.)
- When brake control is stopped (immediately before vehicle stop or while vehicle is stopped), cooperative regenerative brake control is not performed.

SYSTEM DIAGRAM



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INPUT SIGNAL AND OUTPUT SIGNAL

Major signal transmission between each unit via communication lines is shown in the following table.

Component	Function
Electrically-driven intelligent brake unit	Refer to Component Description.
Warning buzzer	Refer to Component Description.
Brake power supply backup unit	Refer to Component Description.
Steering angle sensor	Mainly transmits the following signal to electrically-driven intelligent brake unit via CAN communication. • Steering angle sensor signal
Combination meter	Mainly receives the following signals from electrically-driven intelligent brake unit via ABS actuator electric unit (control unit) via CAN communication. • Brake warning lamp signal • Brake system warning lamp signal
ABS actuator and electric unit (control unit)	Mainly transmits the following signals to electrically-driven intelligent brake unit via CAN communication. • ABS actuator and electric unit (control unit) control signal • Vehicle speed signal • Front LH wheel speed signal • Rear LH wheel speed signal

Component	Function
	• Front RH wheel speed signal • Rear RH wheel speed signal • Yaw rate signal • Side G sensor signal • VDC malfunction signal • VDC OFF signal • Brake fluid pressure signal Mainly receives the following signals from electrically-driven intelligent brake unit via CAN communication. • Electrically-driven intelligent brake control signal • Brake assist request signal • Brake power supply backup unit operation signal • Brake power supply backup unit operation request signal • Brake warning lamp request signal • Brake system warning lamp request signal
VCM	Mainly transmits the following signals to electrically-driven intelligent brake unit via CAN communication. • VCM control signal • Current regenerative torque signal • VCM status signal • Shift position signal Mainly receives the following signal from electrically-driven intelligent brake unit via CAN communication. • Target braking force signal
BCM	Mainly transmits the following signals to electrically-driven intelligent brake unit via CAN communication. • Sleep wake up signal

Component Parts Location

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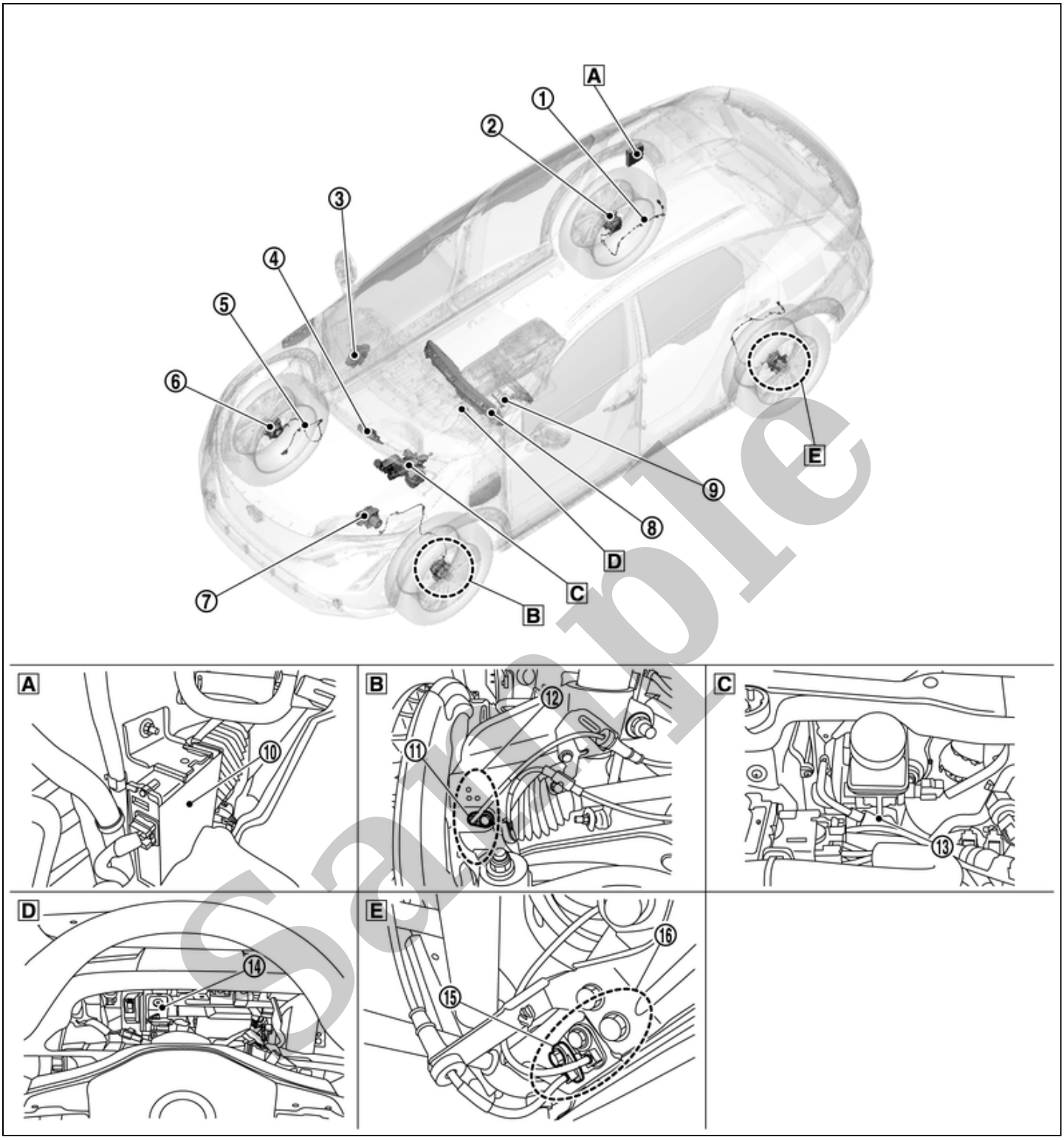

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A	Luggage side lower finisher RH	B	Steering knuckle	C	Motor room (LH)
D	Back side of combination meter	E	Rear axle housing		
①	Rear RH wheel sensor*	②	Rear RH sensor rotor*	③	BCM Refer to Component Parts Location for detailed installation location.
④	VCM Refer to Component Parts Location for detailed installation location.	⑤	Front RH wheel sensor*	⑥	Front RH sensor rotor*

⑦	ABS actuator and electric unit (control unit) Refer to Component Parts Location for detailed installation location.	⑧	Combination meter Refer to Component Parts Location for detailed installation location.	⑨	Steering angle sensor Refer to Component Parts Location for detailed installation location.
⑩	Brake power supply backup unit	⑪	Front LH wheel sensor*	⑫	Front LH sensor rotor*
⑬	Electrically-driven intelligent brake unit	⑭	Warning buzzer	⑮	Rear LH wheel sensor*
⑯	Rear LH sensor rotor*				

*: Models with ProPILOT Assist 2.0

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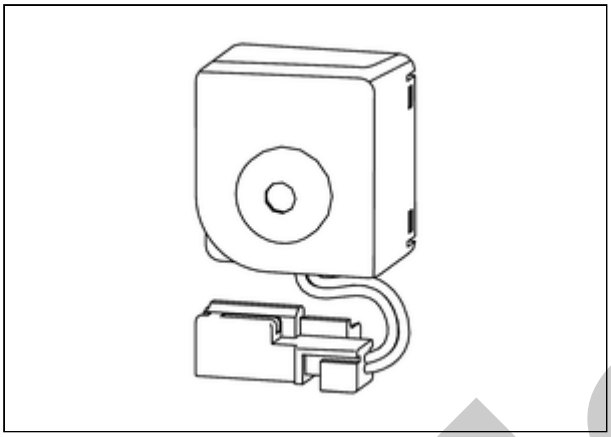
FUNCTIONS WITHIN THE SYSTEM

The warning buzzer operates based on the signal from the electrically-driven intelligent brake unit to notify the driver of the change in power supply circuits.



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INDIVIDUAL FUNCTIONS WITHIN THE SYSTEM

The warning buzzer operates based on the signal.

INDIVIDUAL OPERATION

Refer to System Description.

PARTS LOCATION

Refer to Component Parts Location.

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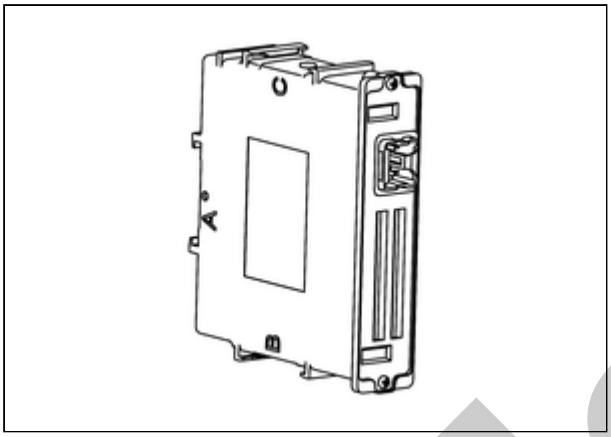
FUNCTIONS WITHIN THE SYSTEM

When there is a malfunction in the power system of the electrically-driven intelligent brake unit (no voltage is generated), this unit temporarily supplies voltage to the electrically-driven intelligent brake unit.



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INDIVIDUAL FUNCTIONS WITHIN THE SYSTEM

In preparation for the malfunction in the power system of the electrically-driven intelligent brake unit (no voltage is generated), electric power is stored.

INDIVIDUAL OPERATION

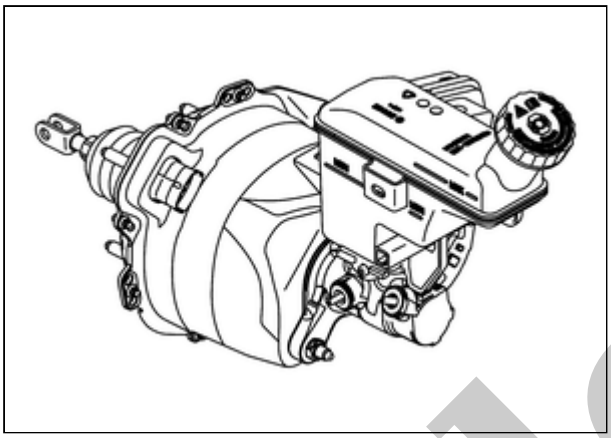
Refer to System Description.

PARTS LOCATION

Refer to Component Parts Location.

FUNCTIONS WITHIN THE SYSTEM

Integrates the control module, master cylinder, brake booster, and stroke sensor and it controls the fluid pressure that is sent to the ABS actuator and electric unit (control unit).



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INDIVIDUAL FUNCTIONS WITHIN THE SYSTEM

Integrates the control module, master cylinder, brake booster, and stroke sensor.

CONTROL MODULE

- Controls the fluid pressure that is applied to the brake calipers, based on the signals from each sensor and unit.
- Performs cooperative regenerative brake control.
- When a malfunction is detected, the system enters fail-safe mode.

MASTER CYLINDER

- Generates brake fluid pressure according to the amount of piston movement.
- The fluid pressure generated by the master cylinder is sent to the ABS actuator and electric unit (control unit).

BRAKE BOOSTER

- Contains a motor and generates boost force according to the amount that the brake pedal is depressed and the amount of cooperative regenerative brake control.
- Uses the boost force to generate fluid pressure in the master cylinder.

INDIVIDUAL OPERATION

- Brake control: Refer to System Description.
- Cooperative regenerative brake function: Refer to System Description.

PARTS LOCATION

Refer to DTC Index.

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APPLICATION ITEM

CONSULT can display each diagnostic item using the diagnostic test modes as follows.

Diagnosis mode	Note
Self Diagnostic Result	Display DTC which electrically-driven intelligent brake unit memorizes
Data monitor	Displays electrically-driven intelligent brake unit input/output data in real time
Active test	Enables an operational check of a load by transmitting a driving signal from the electrically-driven intelligent brake unit to the load
ECU Identification	Displays electrically-driven intelligent brake unit part number
Replace ECU	Write the vehicle specification when replacing electrically-driven intelligent brake unit

SELF DIAGNOSTIC RESULT

Refer to DTC Index.

When “CRNT” is displayed on self-diagnosis result

- The system is presently malfunctioning.

When “PAST” is displayed on self-diagnosis result

- System malfunction in the past is detected, but the system is presently normal.

Freeze frame data (FFD)

When DTC is detected, a vehicle state shown below is recorded and displayed on CONSULT.

Item	Unit	Description
Error code	—	Displays but not used.
ODO/TRIP meter	km	Displays the total mileage (Odometer value) of the moment a particular.
DTC count	—	Displays the number of times DTC is detected.

DATA MONITOR

NOTE:

- **The following table includes information (items) inapplicable to this vehicle. For information (items) applicable to this vehicle, refer to CONSULT display items.**
- **Perform all self-diagnosis and delete stored DTC after execute Data monitor.**

Item	Unit	Note
Input rod position	mm	Displays the input rod position.
Output rod position	mm	Displays the output rod position.
Temperature 1	℃	Display the control unit temperature of electrically-driven intelligent brake unit.
Temperature 2	℃	Display the control unit temperature of electrically-driven intelligent brake unit.