from the inverter INV. The force of the motor M is transmitted by rotation to the wheels (not illustrated) through an axis. The motor M includes a fire detector (not illustrated). When a fire is detected by the fire detector, the passing power source supply line is electrically disconnected.

The storage battery apparatus 200 includes a plurality of battery modules MDL, a battery management unit (BMU) 16, a safety supervisor unit (SSU) 18, a current sensor 15, contactors 12p and 12n, contactor drive apparatuses 10p and 10n, a relay circuit (switch) 20, an input terminal TI, and an output terminal TO. A battery module MDL respectively includes an assembled battery BT and a cell monitoring unit (CMU) 11.

A current sensor 15 is provided in a current line at a low potential side, detects an output current of the storage battery apparatus 200, and outputs detected information to the battery management unit 16 and the safety supervisor unit 18.

The contactor 12p is provided on a high potential side current line extending between a positive electrode terminal of the battery module MDL of a highest potential side and a high potential side external output terminal (p). The contactor 12n is provided on a low potential side current line extending between a negative electrode terminal of the battery module MDL of the lowest potential side and a low potential side external output terminal (n). The contactors 12p and 12n include a normally open contact, and are closed when the battery module MDL charges or discharges.

The contactor drive apparatus 10p drives the contactor 12p in response to a signal from the battery management unit 16 and the safety supervisor unit 18. The contactor drive apparatus 10n drives the contactor 12n in response to a signal from the battery management unit 16 and the safety supervisor unit 18.

The battery management unit 16 is configured to be communicable between the non-illustrated upper control apparatus and the cell monitoring unit 11, and a relay circuit 20 and the connector drive apparatuses 10p and 10n are controlled in response to the signal from the upper control apparatus, the current sensor 15, and the cell monitoring unit 11. The battery management unit 16 performs calculations etc. of SOC (state of charge) or SOH (stage of health) for each assembled battery BT (or each battery cell) by using information of voltage and temperature received from the cell monitoring unit 11 and a value based on information of current received from the current sensor 15. The battery management unit 16 performs safety supervision of battery cells from the information of voltage and temperature received from the cell monitoring unit 11, and information of current received from the current sensor 15. The battery management unit 16 includes for example, a processor such as an MPU (Micro Processing Unit), etc. and a memory.

The safety supervisor unit 18 is configured to be communicable with the battery module MDL and controls the

electrode side and the negative electrode side of the plurality of battery modules MDL; however, there is no need to provide contactors to both sides of the positive electrode side and the negative electrode side. The contactor can be a contactor that switches connection between the main circuit with at least one side of the positive electrode side or the negative electrode side of the plurality of battery modules MDL.

While certain embodiments have been described, these embodiments have been presented by way of example only, and are not intended to limit the scope of the embodiments. Indeed, the novel embodiments described herein may be embodied in a variety of other forms; furthermore, various omissions, substitutions and changes in the form of the embodiments described herein may be made without departing from the spirit of the invention. The accompanying claims and their equivalents are intended to cover such forms or modifications as would fall within the scope and spirit of the invention.

REFERENCE SIGNS LIST

10n: contactor driving apparatus, 10p: contactor driving apparatus, 11: cell monitoring unit (CMU), 11A: temperature detection circuit, 11B: voltage detection circuit, 12n: contactor, 12p: contactor, 15: current sensor, 16: battery management unit (BMU), 18: safety supervisor unit (SSU), 20: relay circuit (switch), 40: fire detection indicator light (indicator light), 100: cab, 200: storage battery apparatus, 300: vehicle driving main circuit, TI: input terminal, TO:

CLAIMS

1. A vehicle characterized by comprising:

a storage battery apparatus comprising an input terminal and an output terminal;

an inverter capable of converting a direct current supplied from the storage battery apparatus to an alternating current and outputting the alternating current;

a motor rotated by the alternating current supplied from the inverter;

a fire detection line extending in a loop shape via the input terminal and the output terminal of the storage battery apparatus, and having one end and another end that become a non-conductive state when an over-temperature state is detected in the storage battery apparatus, and

a main circuit electrically connected to the one and another ends of the fire detection line for supplying voltage to the fire detection line, wherein the main circuit includes a comparator for comparing a voltage of the fire detection line with a predetermined threshold and supplies a fire detection signal to a fire detection indicator light when a difference between the voltage of the fire detection line and the predetermined threshold becomes equal to or greater than a predetermined value.

2. The vehicle according to claim 1, wherein the fire detection line extends in a loop shape from the main circuit via the storage battery apparatus, the inverter and the motor.