

## STARTING SYSTEM

**1462-01**

### GENERAL INFORMATION

#### 1. SPECIFICATIONS

Item	Category	Specifications
Starter motor	Rated voltage(ISG)	12 V 0.9 kw(12 V 1.4 kw)

ENGINE  
GENERALENGINE  
ASSEMBLFUEL  
SYSTEMIGNITION  
SYSTEMINTAKE  
SYSTEMEXHAUST  
SYSTEMLUBRICA  
TIONCOOLING  
SYSTEMCHARGIN  
GSTARTIN  
GCRUISE  
CONTROENGINE  
CONTRO

E E M

Modification basis	
Application basis	
Affected VIN	

STARTING SYSTEM

TIVOLI 2016.03

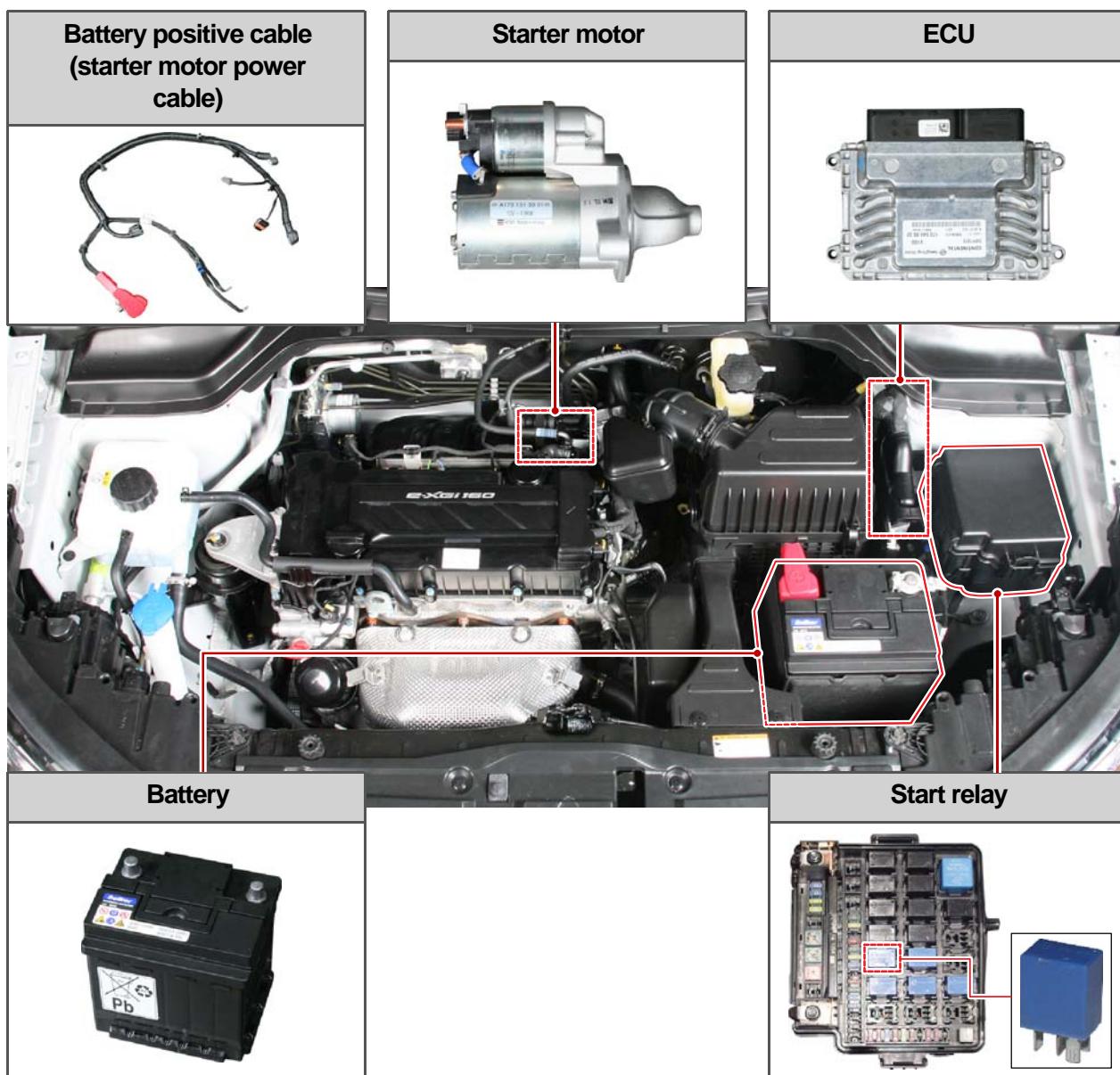
## OVERVIEW AND OPERATING PROCESS

### 1. OVERVIEW

The engine cannot start by itself. It needs starter motor which operates the crankshaft using external force. The starter (starter motor) starts the engine with rotational power by converting the electric energy to the mechanical energy.

When the engine is cranking, the pinion gear meshes with the ring gear. If the ring gear overruns, the pinion gear clutch overruns to protect the pinion gear.

### 2. COMPONENTS



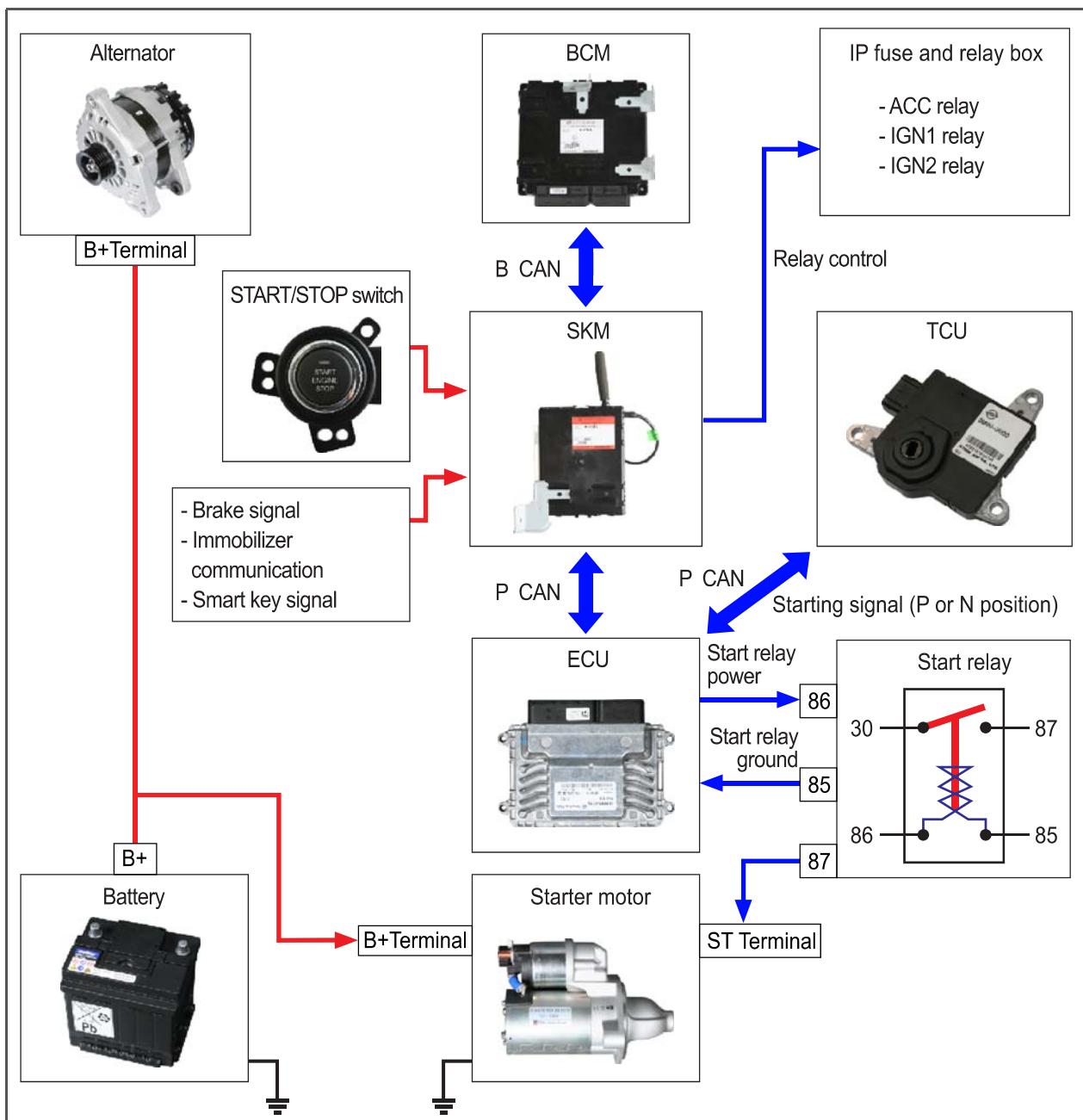
Modification basis	
Application basis	
Affected VIN	

### 3. OPERATING PROCESS

#### 1) For a Vehicle with Smart Key

When the START/STOP button is pressed with the brake pedal applied and gear selector lever in P or N position, the SKM performs the immobilizer verification. If it is valid, SKM sends the engine START request signal to the ECU through the P-CAN and vehicle power status signal to the BCM through the B-CAN. After the START signal from the SKM has been received, the ECU controls the start relay to drive the starter motor.

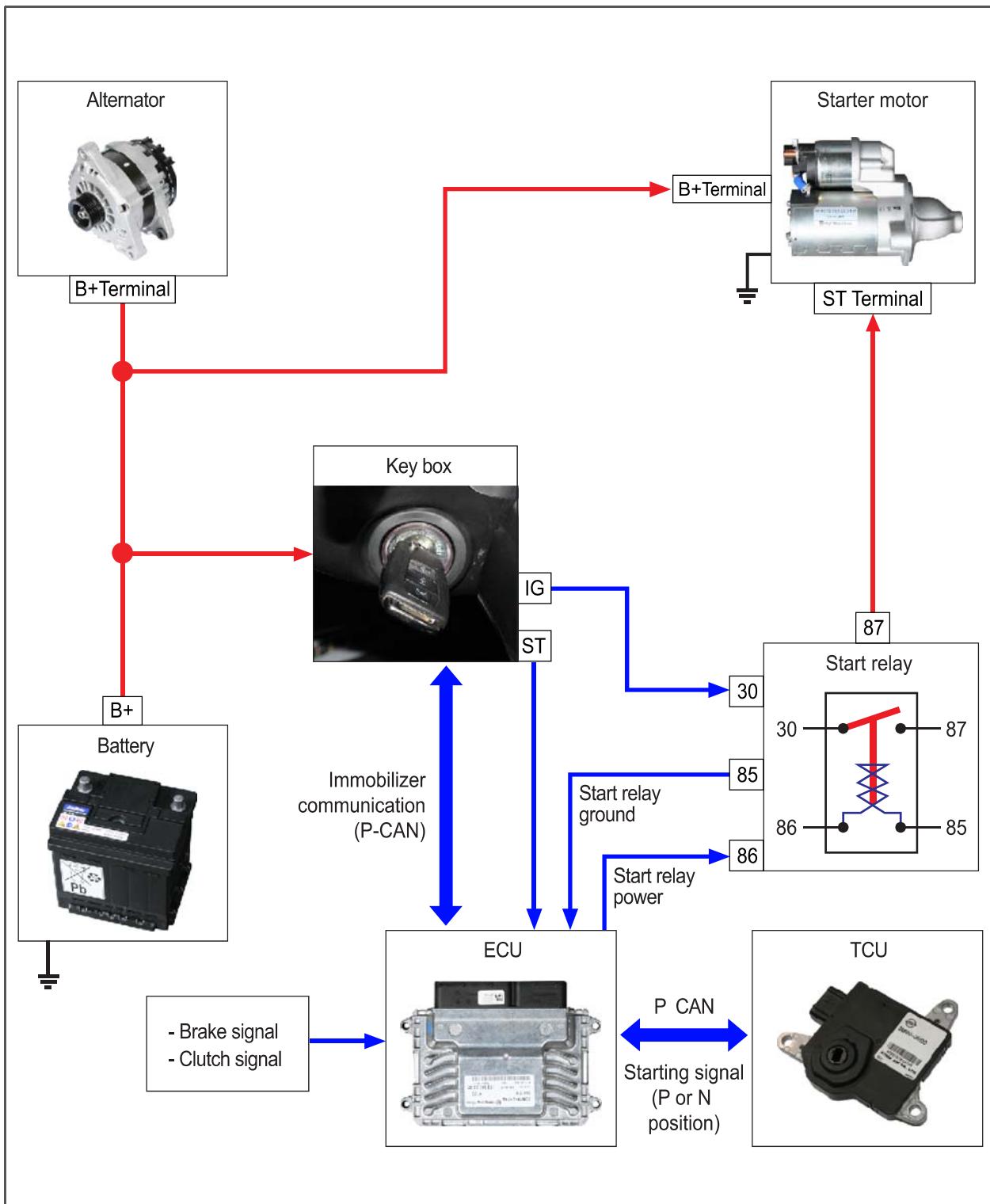
The SKM cuts the power for IGN2 and ACC relays while the engine is cranking because cutting the unnecessary electric load is required.



Modification basis	
Application basis	
Affected VIN	

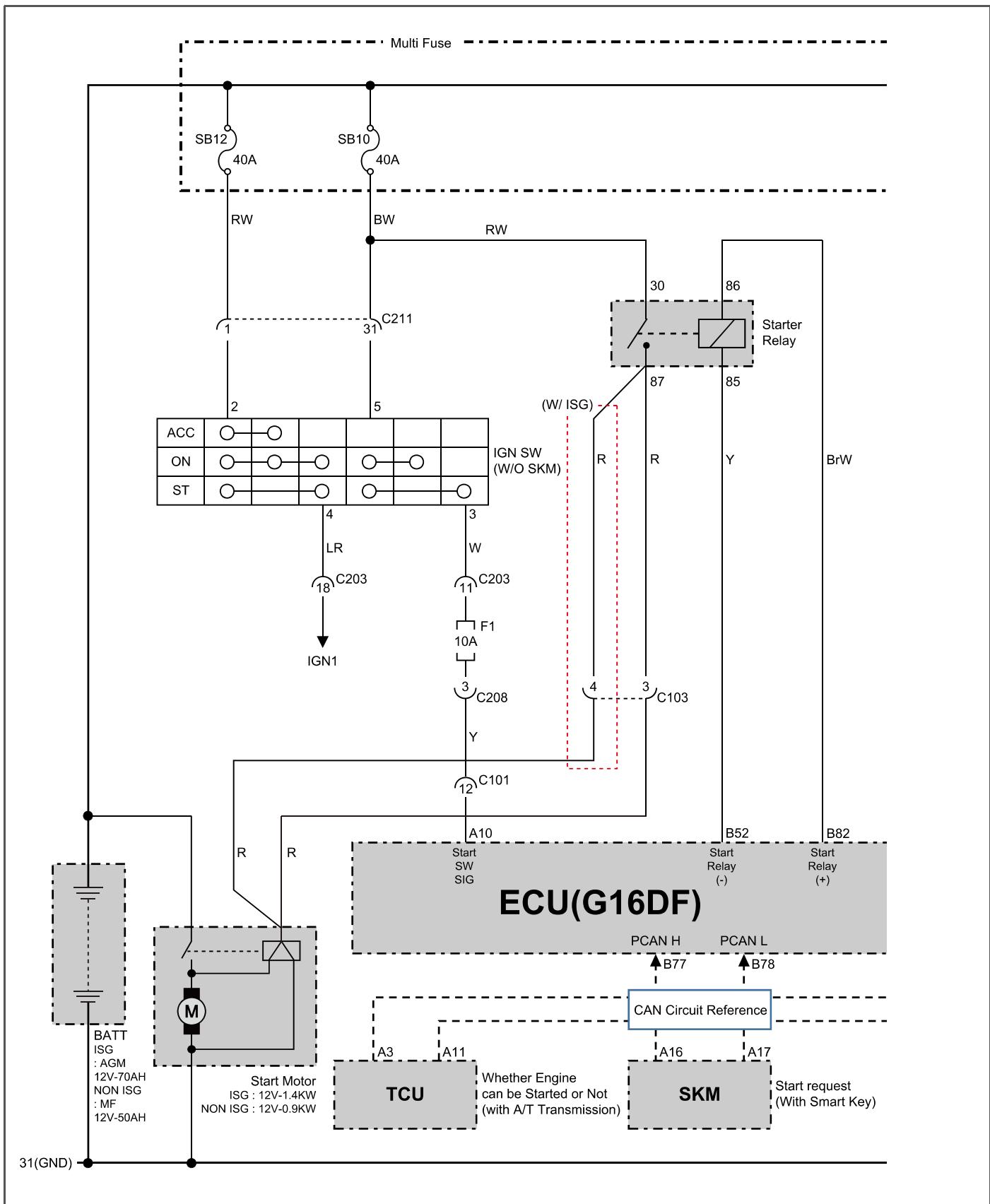
## 2) For a Vehicle with Ignition Key

When the ignition key is turned to ST position with the brake pedal (for a vehicle A/T) or clutch pedal (for a vehicle M/T) applied and gear selector lever in P or N position, the TCU sends the engine START signal to the ECU through the hard wire. The ECU controls the start relay to drive the starter motor.

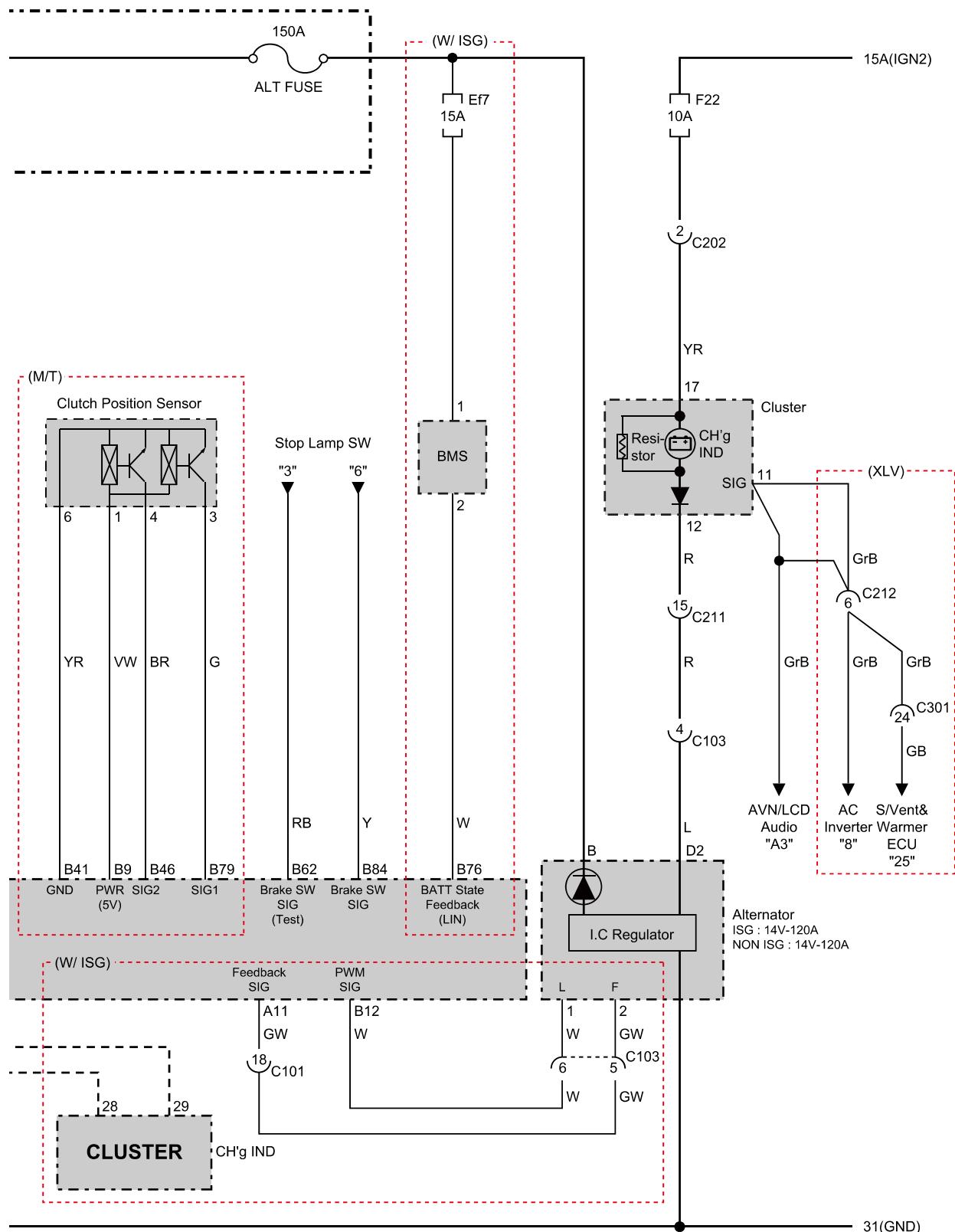


## Memo

## 4. CIRCUIT DIAGRAM



Modification basis	
Application basis	
Affected VIN	



Modification basis	
Application basis	
Affected VIN	