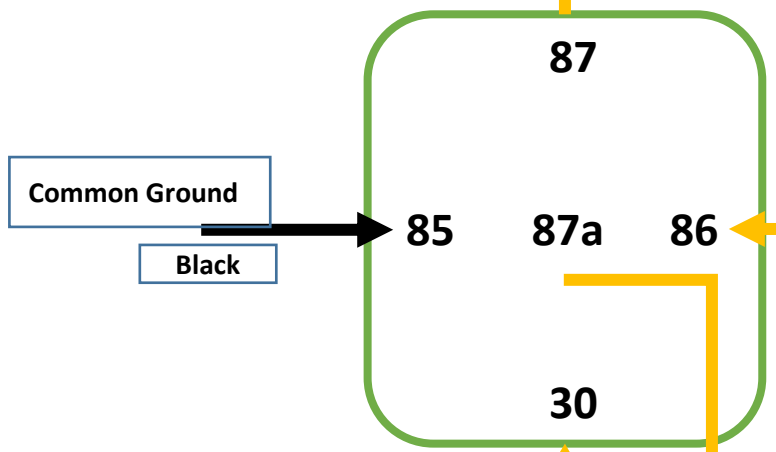
DC Output Relay (RDC_Output)



Yellow

12V Output From Relay to operate all 12V Component included Aux Battery Charging.

Common Ground

Black

Yellow/Red

12V Supply From Ignition Switch (I02)

Yellow

12 V Supply to Cluster Relay at Pin no 87a only Charging time.

Yellow/Black

12 V Supply From DC Convertor output Via Fuse Box F12V. Supply at Vehicle on and Charging time.

Note :- 12V 5 Pin Relay.

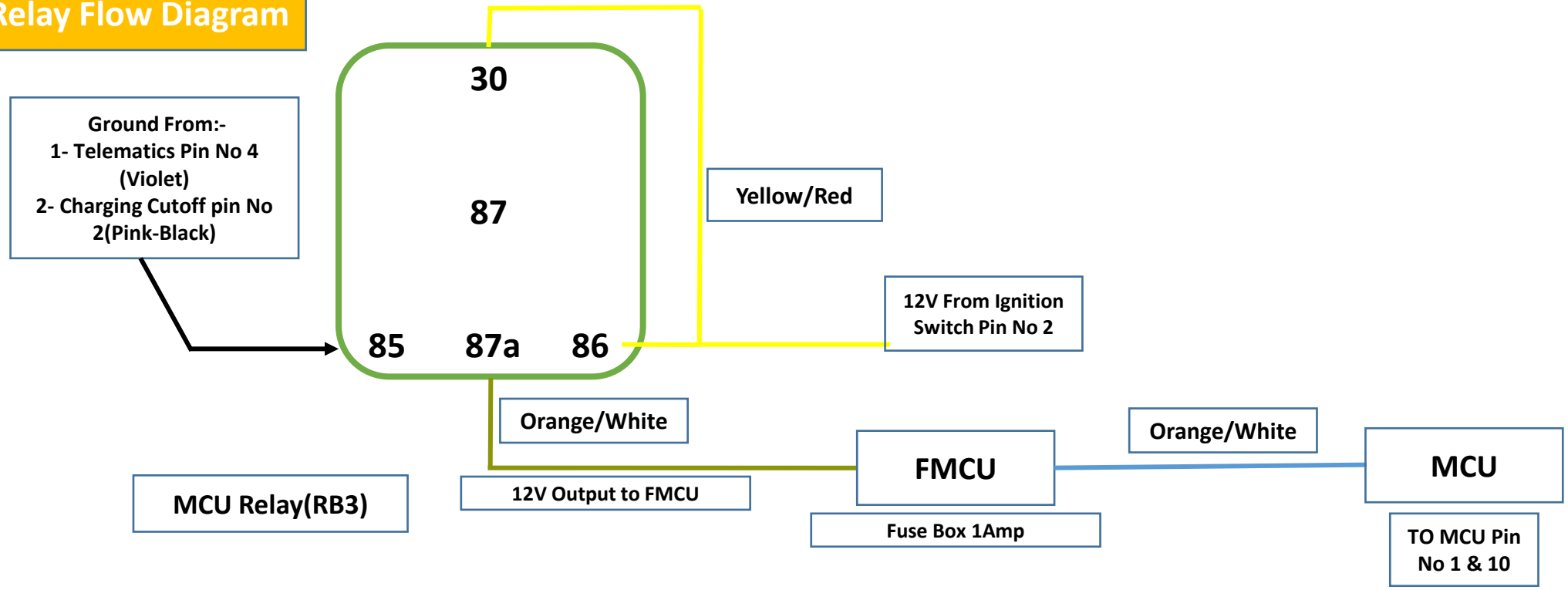
Matel Power Train Vehicle Start Sequence:-

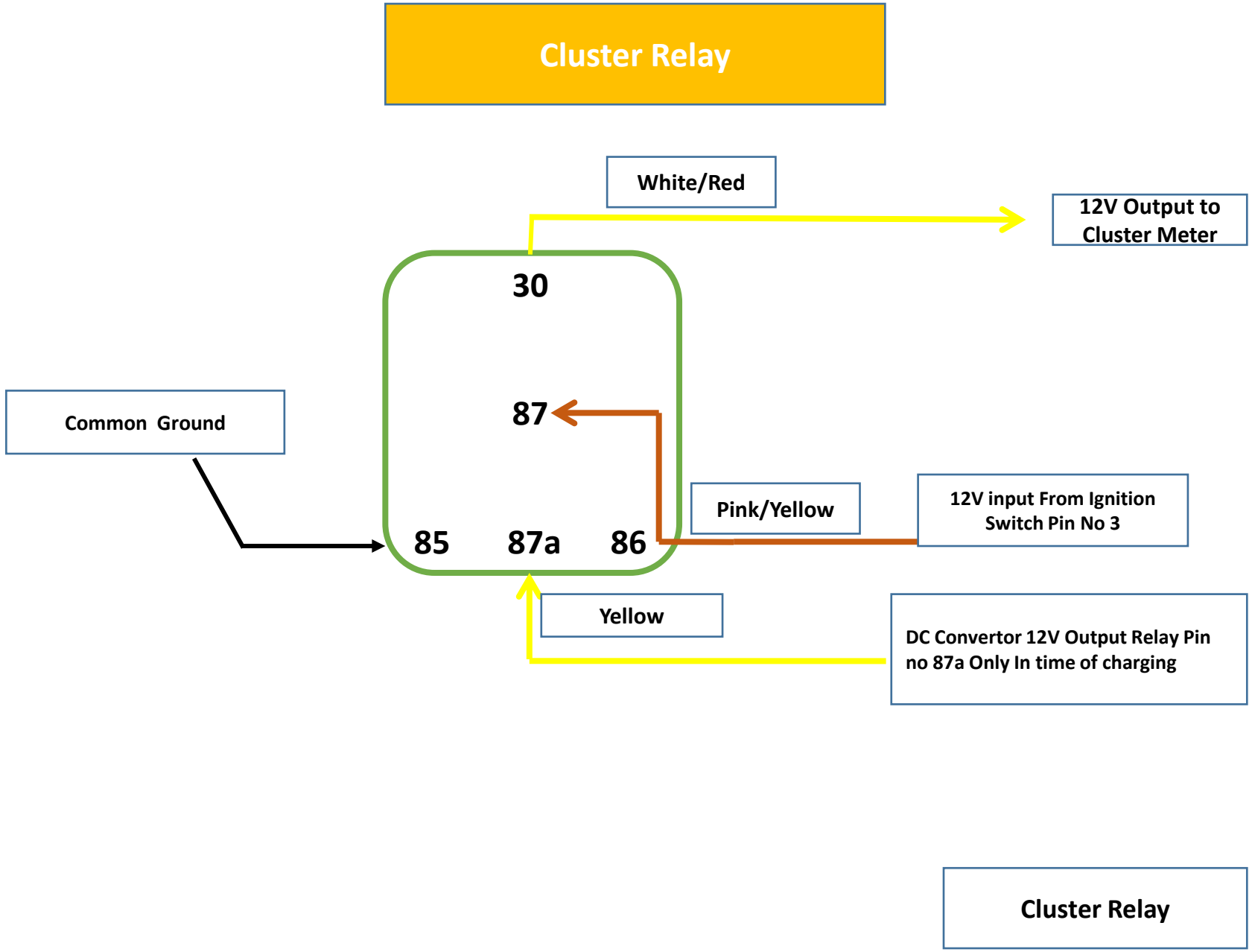
1- Ignition Switch Have 2 Step. In 1st Step Only Battery is getting on and in 2nd Step MCU is getting On.

Note:- Aux Battery to Fuse Box input, Fuse Box output to Emergency Switch input, Emergency Switch Output to Ignition

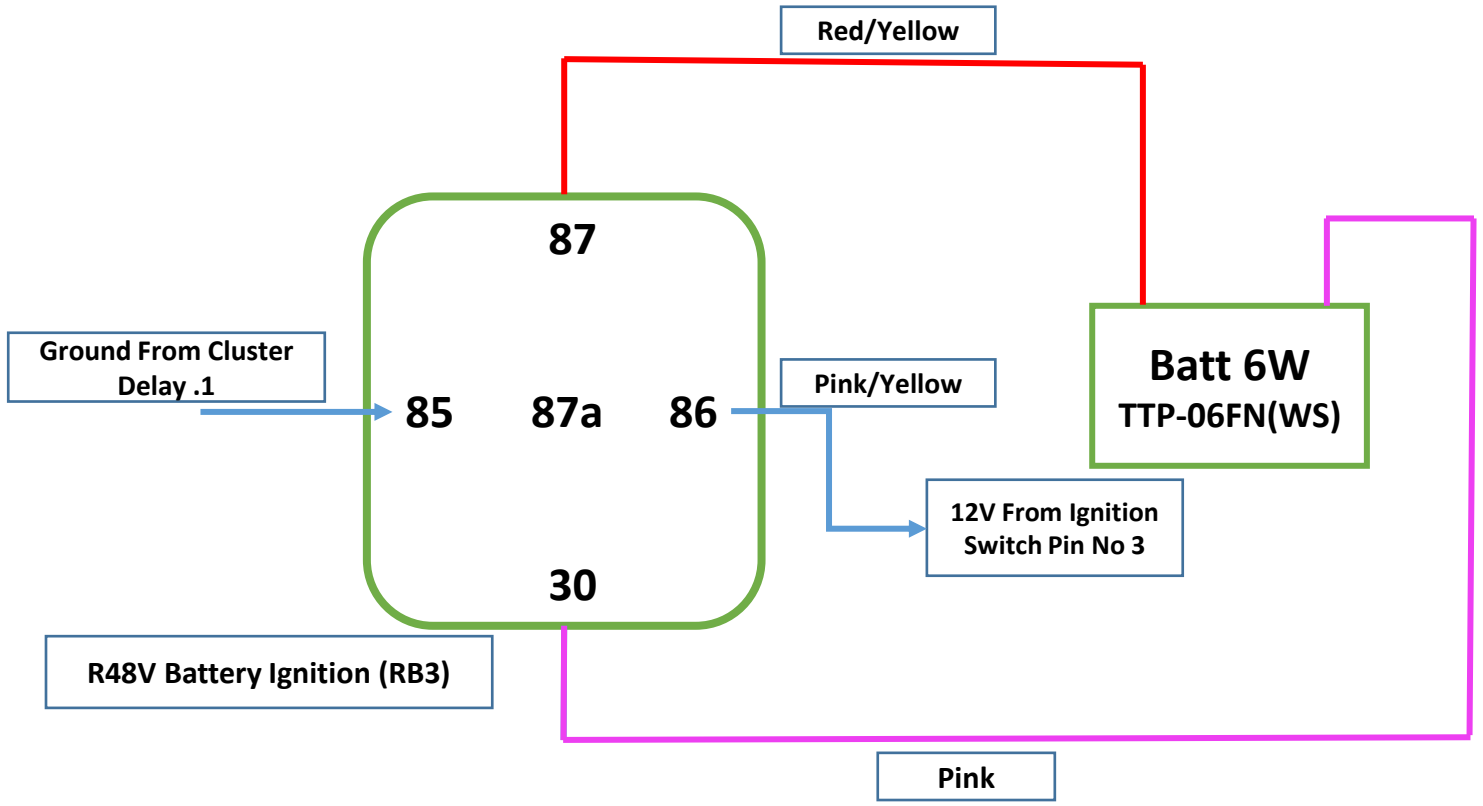
Switch Input, Then Battery Relay and MCU relay.

Matel MCU Relay Flow Diagram

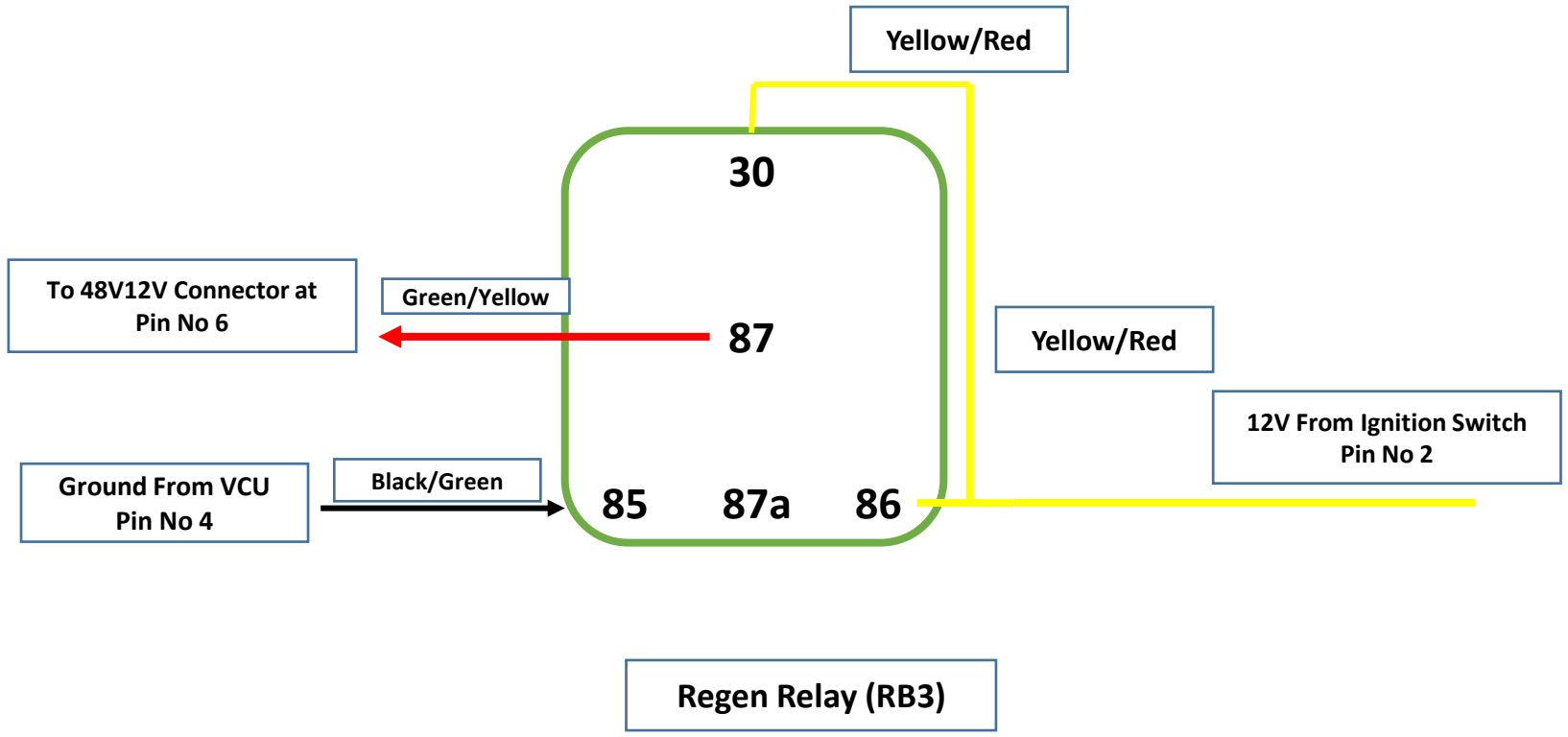



Cluster Relay
White/Red
12V Output to Cluster Meter
30
87
Common Ground
Pink/Yellow
12V input From Ignition Switch Pin No 3
85
87a
86
Yellow
DC Convertor 12V Output Relay Pin no 87a Only In time of charging
Cluster Relay

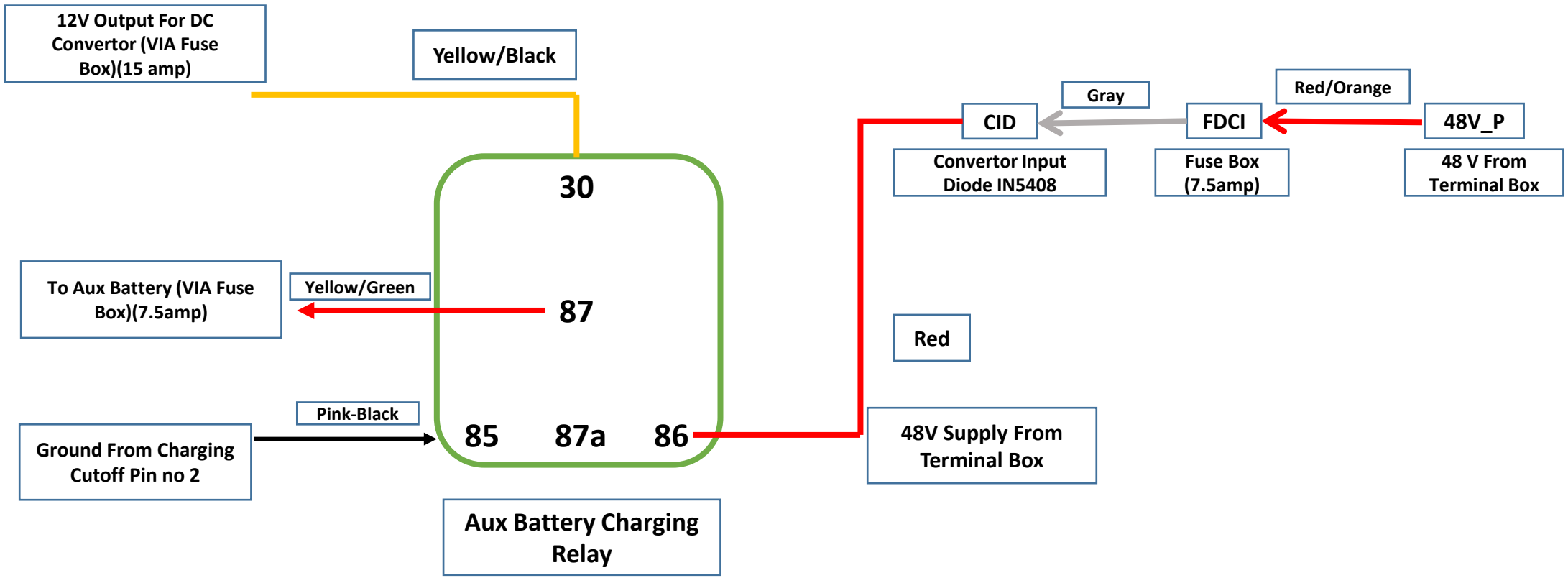
48 V Battery Ignition Circuit



Regen Relay(RR)



Relay Aux Battery Charging



Fuse Box Belongings & Uses

1- F12V – Fuse Box For DC Convertor Output (12V). Fuse Using 15 amp as per Max Load on DC output

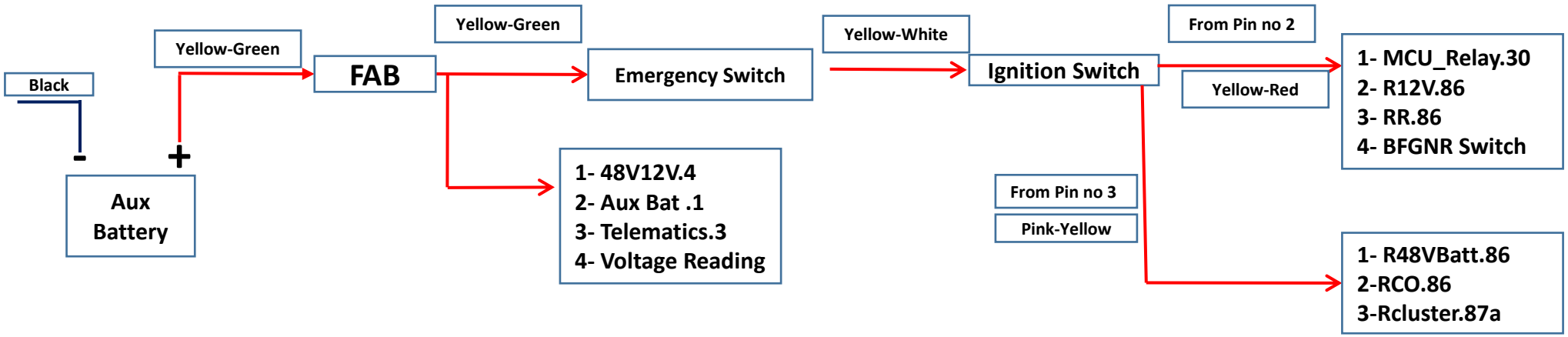
2- FAB – Fuse Box For Aux Battery Protection. Fuse used 7.5amp Which is Sufficient for Aux Battery.

3- FMCU – Fuse Box For MCU Ignition Line For MCU Protection. Fuse Used 1 amp Max.

4- FDCI – Fuse Box For DC Convertor Input. Fuse used 7.5amp,

5- FFP – 12V Aux Connector near Batt 6W Connector. Fuse Used 1 amp Max For Protection.

Vehicle Ignition Circuit Diagram



Note:-

1- In This Wiring Harness Architecture Aux Battery is Main Source of Battery Ignition & MCU Ignition. If Aux Battery is Discharge in Vehicle that Condition Vehicle is not Getting ON.

2- Cluster Delay is Working in Sloki Cluster ONLY, if Virya Cluster Used In Vehicle that Time Cluster Delay Connector Connect to VC Coupler. If Not Connector then 48V Battery is not Getting ON.

3- BFGNR Switch Working on 12V which is Coming From Aux Battery.

4- Aux Battery output have 1 Fuse box include 7.5-amp Fuse. So Power is going From Aux Battery positive to Fuse Box than Fuse Box to Emergency switch input Pin no 1, then Emergency switch output Pin no 2 to ignition switch Input pin no 1.

Mode Switch Connection

1- BFGNR Switch Pin No 1 – 12V Input From Ignition Switch.
2- BFGNR Switch Pin No 2 to VCU Pin No 3 Wire Colour (Orange-Green) Mode – Forward.
3- BFGNR Switch Pin No 3 to VCU Pin No 8 Wire Colour (Gray-Black) Mode – Boost.
4- BFGNR Switch Pin No 4 to VCU Pin No 6 Wire Colour (Red-Green) Mode – Neutral.
5- BFGNR Switch Pin No 5 to VCU Pin No 1 Wire Colour (White) Mode – Reverse.
6- BFGNR Switch Pin No 6 to VCU Pin No 12 Wire Colour (Brown-White) Mode- Gradient.
Note:- Once we switch mode to Neutral to Forward Mode only that time 12V is going to MCU for Forward Mode. This is same for Every Mode. Switch to mode and get 12V Respectively.

Diode Uses

1- CID – Convertor Input Diode Connected in DC Convertor Input 48V line. For Single direction Current Flow.
2- CC- Charging Cutoff Diode Connected in Charging Cutoff Line.
3- AUX BAT- Using For Aux Battery Charging Through DC Convertor Output(12V) Diode Max Rating 10Amp.

VCU & MCU Connection

MCU:-

1- From Ignition (12V) Operated
7- XGND (Ground) to Encoder Pin no 1.
8- XGND (Ground) to Encoder Pin no 7.
10- From Ignition (12V) Operated
11- Can High
12- Can Low
15- Cos N to Encoder Pin no 4.
16- Cos P to Encoder Pin no 3.
17- Sin P to Encoder Pin no 5.
18- Sin N to Encoder Pin no 6.
19- XDRP (5V From MCU To Encoder) to Encoder Pin no 2.
20- Motor Temperature to Encoder Pin no 8.

Note:-
Pin No 15,16,17,18,19,20,7,8 Belongs to MOTOR Encoder. These Wire Goes to MOTOR Encoder.

VCU:-

1- Reverse Mode
2- Throttle First Signal
3- Eco Mode
4- Ground From Controller to Regen Relay
6- Neutral Mode
8- Boost Mode
9- XGND (Ground From Controller)
10- XDRP (5 V From Controller)
11- 2nd Throttle Signal
12 – Gradient Mode
14 – Brake Pot Signal

Note :- VCU & MCU Connector Pin Position as Per Printed over Connector. For Encoder Pin Position Counting From Right to Left Side

Basic Relay Function

Pin No 85 – Relay Coil Ground
Pin No 86 – Relay Coil Power
1- Pin No 87a & 30 Normally Closed if Coil Have No Power
2- Pin No 87 & 30 Normally Open if Coil have No Power
3- Pin No 87a & 30 Normally Open if Coil have Power
4- Pin No 87 & 30 Normally Close if Coil have Power.

Relay Working

1- Relay Aux Battery Charging – 48V Relay For DC Convertor. 48 V Coming on this Relay Via CID & FDCI at Pin no 86. Then Loop to Pin no 30. Ground is Coming From Charging Cutoff Pin no 2. Pin no 30 have output supply From DC Convertor output Via Fuse Box. Pin no 87 is Connected to Aux Battery. In Time of Vehicle Charging, relay is getting on Once Relay is getting on after that DC Convertor 12V Supply goes to Aux Battery, For Aux Battery Charging.

2- RDCO – 12V Operated Relay. Relay Pin 86 have 12 Supply after ignition switch pin no 2. Pin no 85 is connected to Cluster relay pin no 2. Pin no 30 have 12v Supply from DC Convertor Output. Pin no 87a is connected to Cluster relay at pin no 87a. Pin no 87 is connected to 12V Component and Aux Battery Charging Diode.

3- RR-12V Operated Relay For Regen activation. 12V Coming From ignition Switch(Pin no 2) at Pin no 86 of Relay. Ground Coming From VCU Pin no 4 and Connected in 85 No in Relay. 86 to 30 Loop. When Regen is Activated that Time Ground is Coming on Relay then Relay is Activated after relay activation 12 V From Pin no 87 going to 48V12V Connector at pin no 6. After that 12V is going to Brake light.

4- R48VBatt- 12V Operated ,48V Battery Ignition Relay. Batt6W Pin no 1 & 3 Connected to Relay respectively Pin no 87 & 30. Ground For Pin no 85 Coming From Cluster Delay Pin no 1. When we turn on the ignition , 12V Coming (From Pin no 3) to 48V Batt relay at Pin no 86. When relay goes on that time Battery ignition wire got Short and battery is getting ON.

5- MCU Relay – 12V Operated Relay For MCU Ignition. 2 Different function works on this relay.
1- 12V Supply on pin no 86 Coming From Ignition Switch from pin no 2 . Then loop to pin no 30. When we turn on Ignition relay is not getting on but 12V is directly going to Pin no 87a then MCU via Fuse Box. In this Condition MCU Relay pin no 85 have no ground so relay coil is not getting on.
If Some one give Immobilization Command through IOT that Pin no 85 at relay have ground supply so that relay is going to activate a MCU Getting Offline. Connected to Telematics Pin no 4 (For Power Train)
2- When we put our Vehicle into Charging that time Pin no 85 at Relay – Connected to Charging Cutoff at Pin no 2 (For Power Train Cutoff While Charging Main Battery). So if any case if any one turn on the Vheicle during Charging MCU is not getting on.
6- Cluster Relay – 12V Operated Relay For Cluster. 2 Different Function Work on this Relay .

(I) – In Case of Vehicle Ignition On- When we turn on Ignition that time 12V Comes from pin no 3 to Pin no 86 at relay From ignition Switch . Pin no 86 & 87 is short so 12V Jumps from Pin no 86 to Pin no 87. Also pin no 85 is connected to common Ground. After Receiving 12V From Ignition Switch 12V goes to Cluster through Pin no 30.

(II) - In Case Of Vehicle Charging. 12V Comes in Pin no 87a From DC Convertor output relay pin no 87a. Than 12V jumps to Pin no 30. And cluster gets On.

Notes:-

1- There are 2 Step in Ignition Key, When we turn on Key That time Pin no 1 & Pin no 3 going to Short. When we turn on the Key that time Pin no 1, 2 & 3 get Short.

2- 120 Ohm Can Termination Available in Cluster and MCU. Battery don't have any 120 Ohm Termination. Also, in Vehicle architecture all CAN included Cluster, MCU & Battery are parallel Connected. So, When we check CAN Termination along with the all Component Connected, we got 60-ohm termination. Charger don't have any Can Termination.

3- If We are Charging our 48V Main Battery Pack without Connect to the Vehicle that time we need to Add 120 Ohm Resistance in Battery Can Line.

4- 120 ohm Can Resistance required if We Charge our main battery without connected to the Vehicle. Also Please ensure Vehicle can and Charger Can are Parallel Connected.

5- If we are Charging our 48V Main Battery in Vehicle that time 60 Ohm Resistance comes in can line. Also, all can lines are Parallelly connected.

6- For Matel Odometer Saving, Please Ensure

When we turn on 1st Step – 48V Main Battery need to ON also MCU Should not be turn on in 1st Step.

When we turn on 2nd step – 48V main Battery and MCU need to ON.

If this Function Miss match or Battery or MCU are getting on same time Odometer reading is not going to Save.

Ignition Switch include 2 step.

For Checking Purpose Do one Thing Turn on key 1 step than check, only battery should be on. And when we do 2nd step that time MCU need to be ON. If Both are getting On at the same time, also check ignition switch pin no 2 & pin 3 have supply or not. It Pin no 2 & 3 Both have supply. Means may be that MCU relay creating issue so replace the relay and Check again.