

Example: Diesel Generator startup controller

- A backup diesel generator is always used in hospitals, malls, and super markets.
 - The main objective of using such generators, is to feed the place with required electricity when government electricity is switched off.
 - It's required to build a controller that senses the electricity power status, when electricity switches off, card starts up the DG.
 - To startup the DG,
 - Firstly, switch on the fuel pump (by connecting 12 volts form DG battery to starter) to feed the DG with required fuel.
 - secondly, starter (march) switches on (by connecting 12 volts form DG battery to starter), for a convenient period say 30 seconds.
 - During that, card monitors the DG's dynamo feedback (which is used to charger up battery and feed currents to fuel pump during DG work)
 - If controller detects a 12V feedback from dynamo, it knows that DG started working and switch off the starter (disconnect 12 volts battery from starter)
 - If 30 seconds passed and no feedback is detected from dynamo, controller switch off starter and fuel valve for convenient period say 30 seconds then tries again
 - Controller make three trails before giving up, stop trying to start DG, to
 - Save battery power
 - Most properly DG has a problem and need maintenance
 - Controller keep watching the AC feedback, when government power switched on, it stopped DG, by disconnecting power from fuel valve.
1. Write code
 2. Build convenient interfaces to
 - a. AC government power
 - b. Fuel valve
 - c. Starter
 - d. dynamo
 - e. fault alarm (3 trials failure)

consider the following

MC pin	Interfaced to	Direction
RA0	Government AC power status	Input
RA1	Fuel valve	Output
RA2	starter	Output
RA3	dynamo	Input
RA4	fault	output

Status	MC input
Government AC power status on	0
Government AC power status off	1

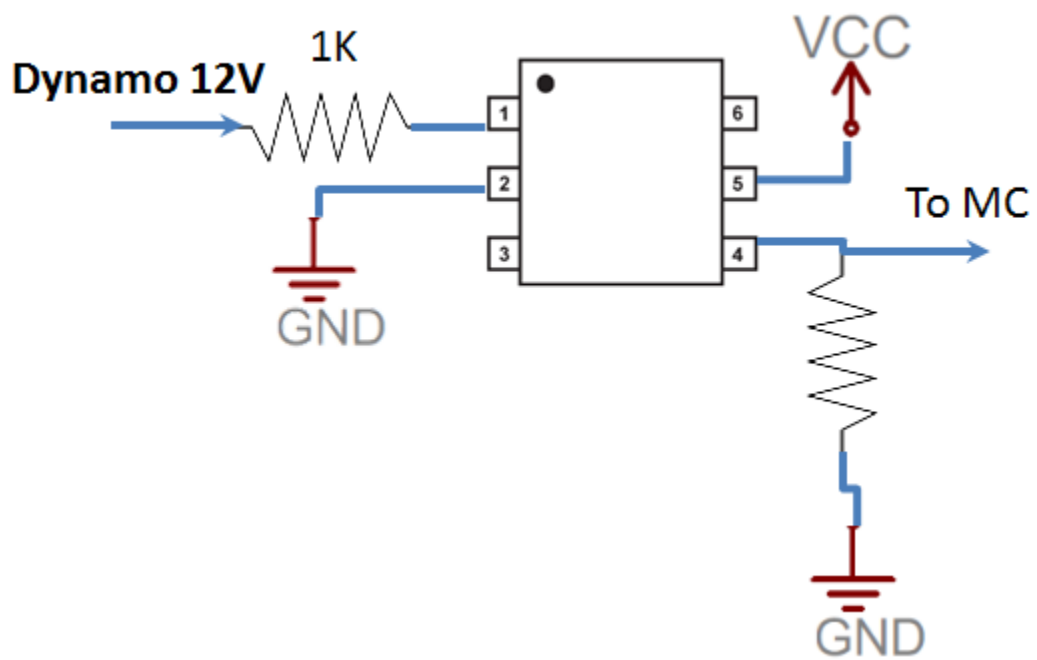
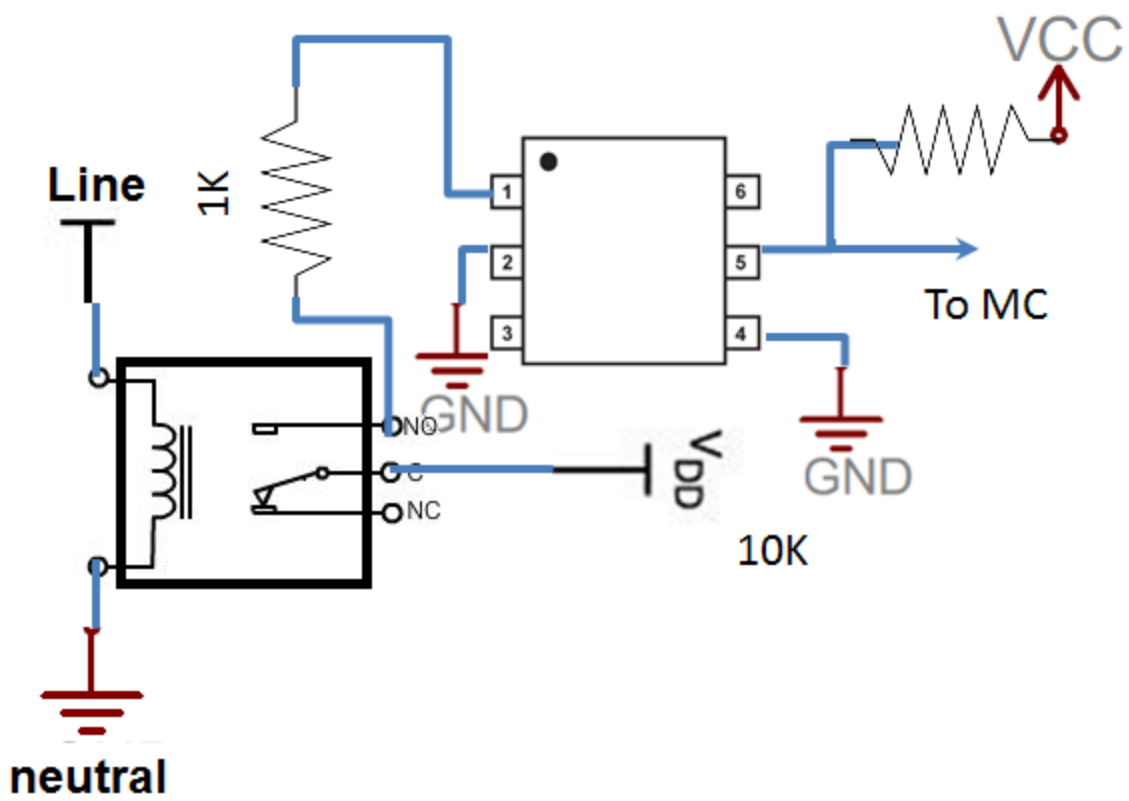
Status	MC output
Fuel valve on	1
Fuel valve off	0

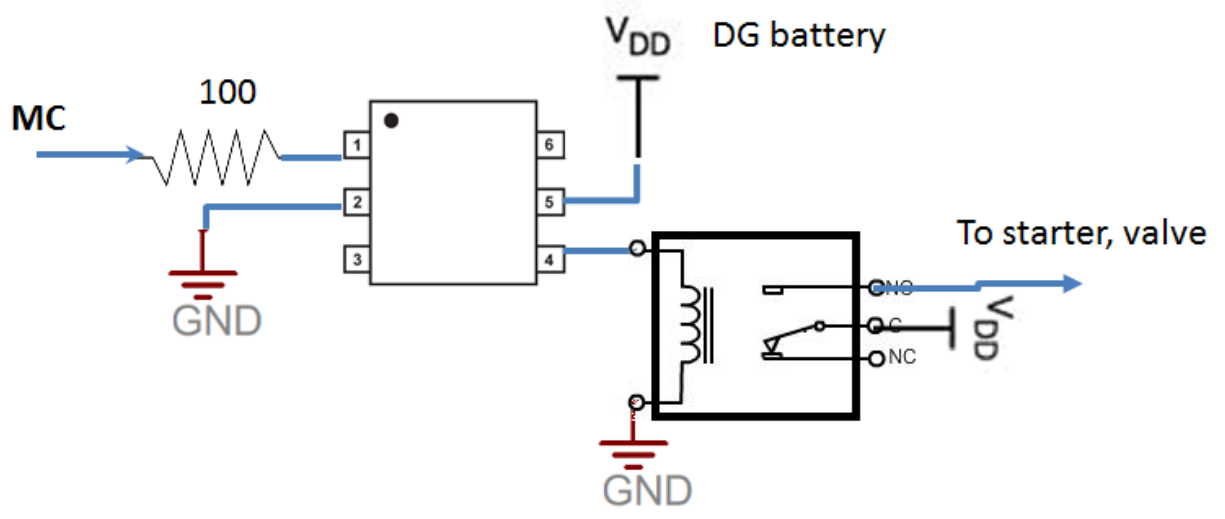
Status	MC output
Starter on	1
Starter off	0

Status	MC output
Fuel valve on	1
Fuel valve off	0

Status	MC input
dynamo on	1
dynamo off	0

Status	MC output
fault on	1
fault off	0






```
        RA4=1;
    }
}
// check for normal operation mode
else if(RA3==1)
{
    while(1)
    {
        RA1=1;
        RA2=0;
        RA4=0;
        // check AC
        if(RA0==0)
            break;
    }
}
}
}
}
```