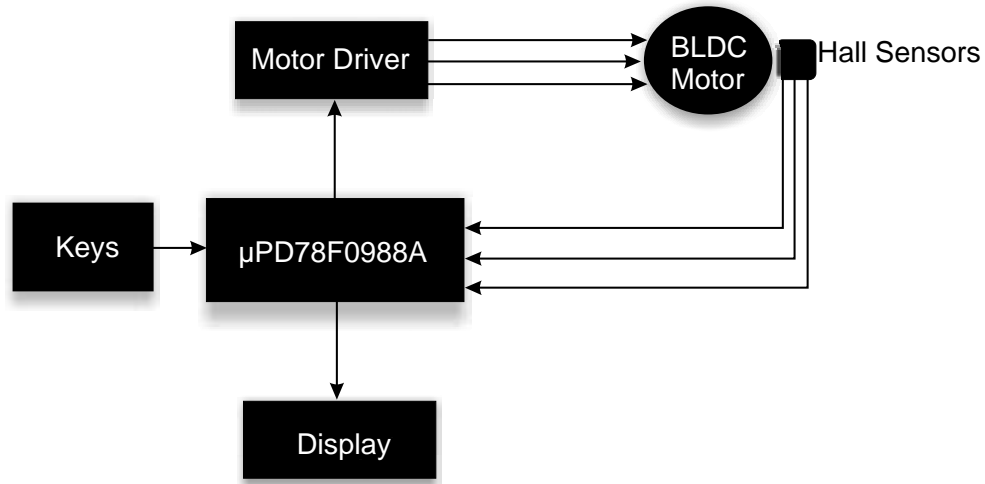NEC uPD78F0988A   3   BLDC

3.1 System Concept

Figure 3-1 shows the principal block diagram of the system concept for the BLDC motor control.

```
                    ┌──────────────┐         ⬤ BLDC    ▪ Hall Sensors
                    │ Motor Driver │ ──────▶    Motor
                    └──────────────┘
                           ▲
                           │
  ┌──────┐         ┌──────────────┐
  │ Keys │ ──────▶ │ µPD78F0988A  │ ◀────────
  └──────┘         └──────────────┘
                           │
                           ▼
                    ┌──────────────┐
                    │   Display    │
                    └──────────────┘
```

The µPD78F0988A processes the feedback from the sensor to control the motor driver that supplies the 3-phases of the BLDC motor. At the same time the speed of the BLDC motor is derived from the sensor signals and used to provide velocity feedback for the closed speed loop. The actual motor speed is indicated on the display.

3.2 System Configuration

Figure 3-2 shows the system configuration and the peripherals of the µPD78F0988A device used for the BLDC motor control.

Figure 3-2:   System Configuration with the peripherals of the µPD78F0988A
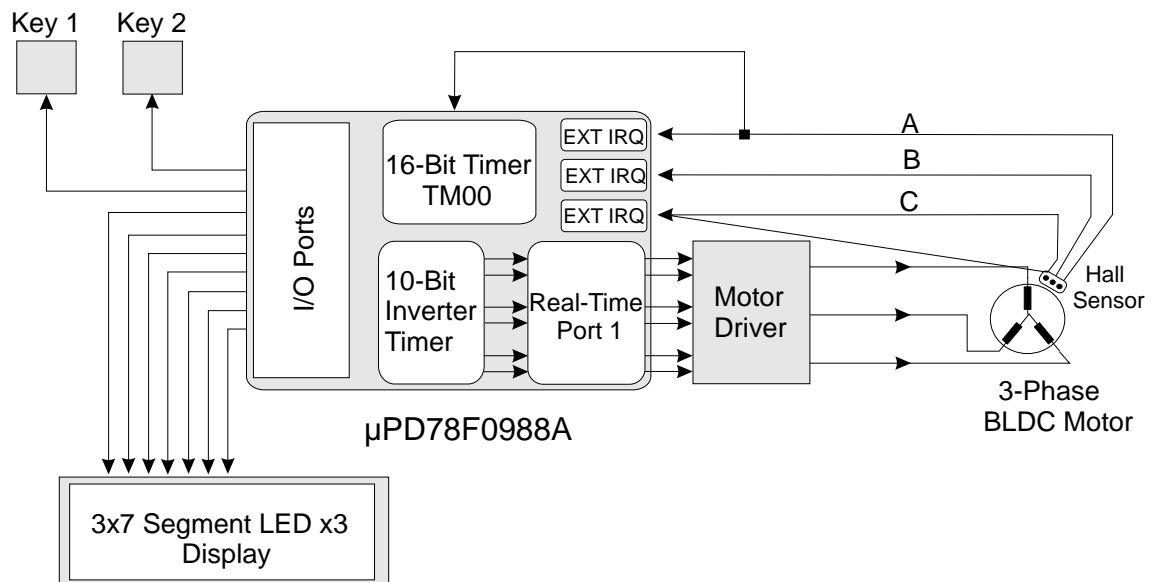
The rotor position information delivered from the Hall sensor of the BLDC motor is estimated with the 3-external interrupts of the device. The speed of the motor is measured with the 16-bit timer TM0 and the appropriate control signal for the BLDC motor is generated with the 10-bit inverter timer and the Real-Time Port 1of the device. The System configuration shows how the requirements of the BLDC motor control are fulfilled with the µPD78F0988A device. The function from each of the peripherals is described in the next chapter.
The system topology with the relationship between the hardware and software of the system is shown in Figure 3-3.

Figure 3-3:   System topology and relationship between the control software and hardware of the system