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# Design and Application of Hybrid Network Control System Based on CAN Bus and GPRS

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# Points of Interest

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- CAN Bus
- GPRS
- TMS320F2812
- Hybrid Network
- Heat Exchange Station



# CAN Bus

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- What?
  - A message based protocol
  - Specifically for automotive applications
  - Developed by Robert Bosch GmbH.
  - A multi-master broadcast serial bus protocol.
  - Connects Nodes.
- Why?
  - High Cost Performance Ratio
  - Error Handling
  - Fine Fault Confinement
- How?
  - Host Processor and CAN Controller.



# GPRS

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- What?
  - A Packet oriented mobile data service.
  - Supports P2P, IP and X.25 protocols
- Why?
  - Covers hundreds of kilometers.
  - Mobility.
  - Quick and Easy.
- How?
  - Uses TDMA.
  - Down-link is on first come first serve basis.
  - Up-link is based on reservation ALOHA.



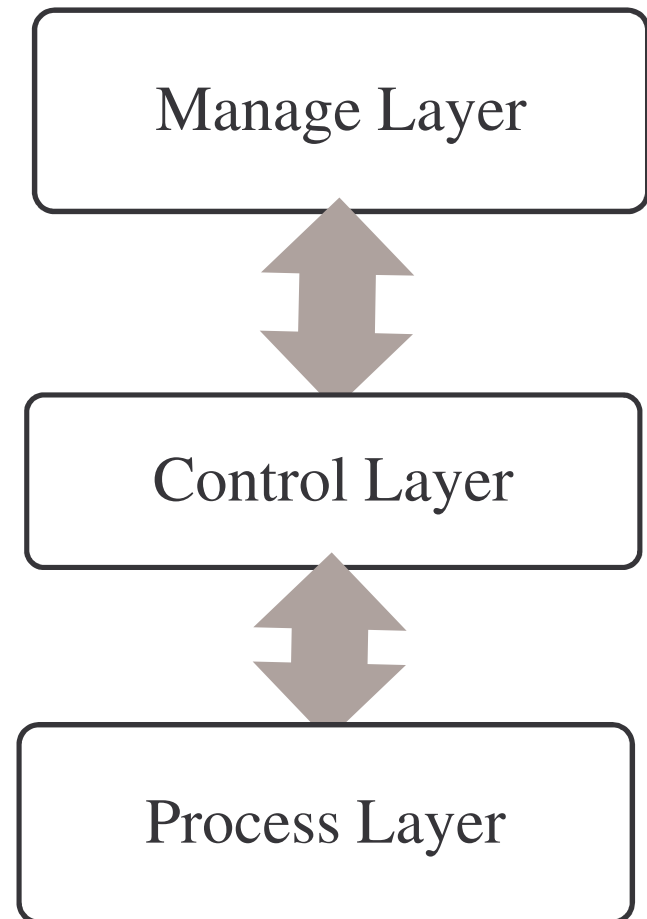
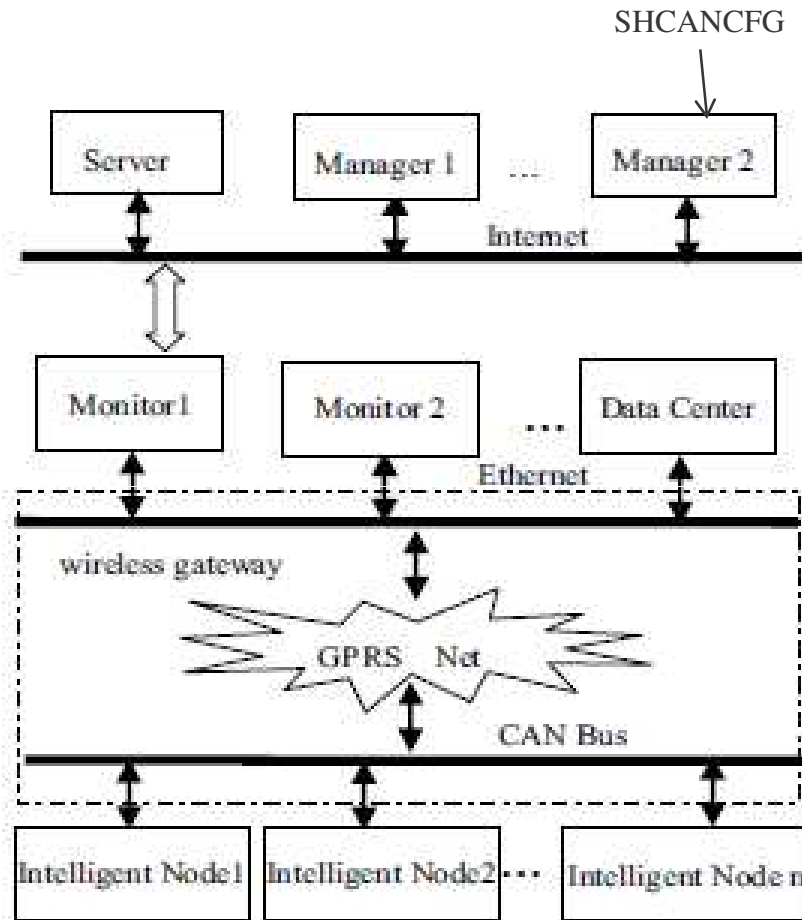
# TMS320F2812

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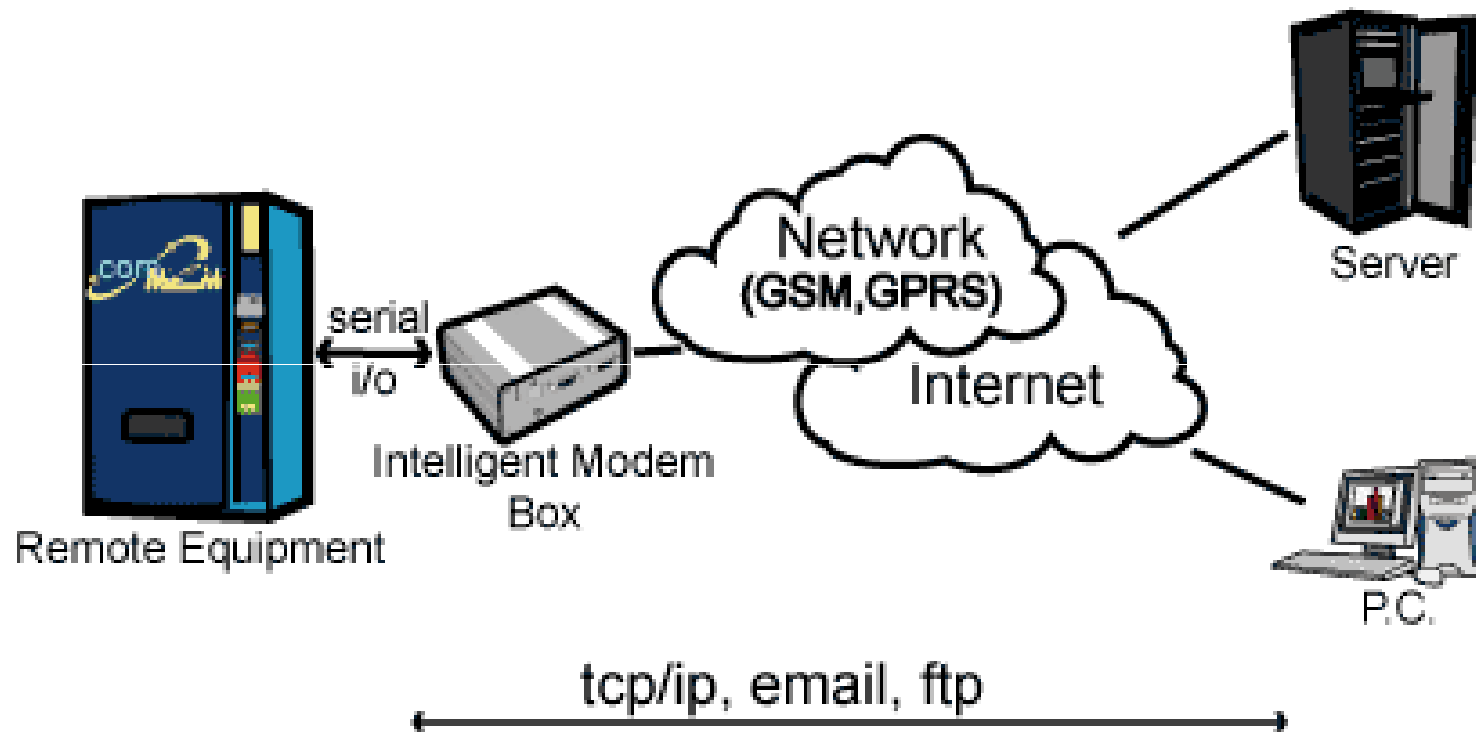
- What?
  - TMS - DSP Generation, F2812 – Flash Device.
  - By Texas Instruments.
- Why?
  - Harvard Architecture
  - Low Power Design
  - Shorter Instruction Cycle
- How?
  - I/O part is used to realize different functions

# Hybrid Network

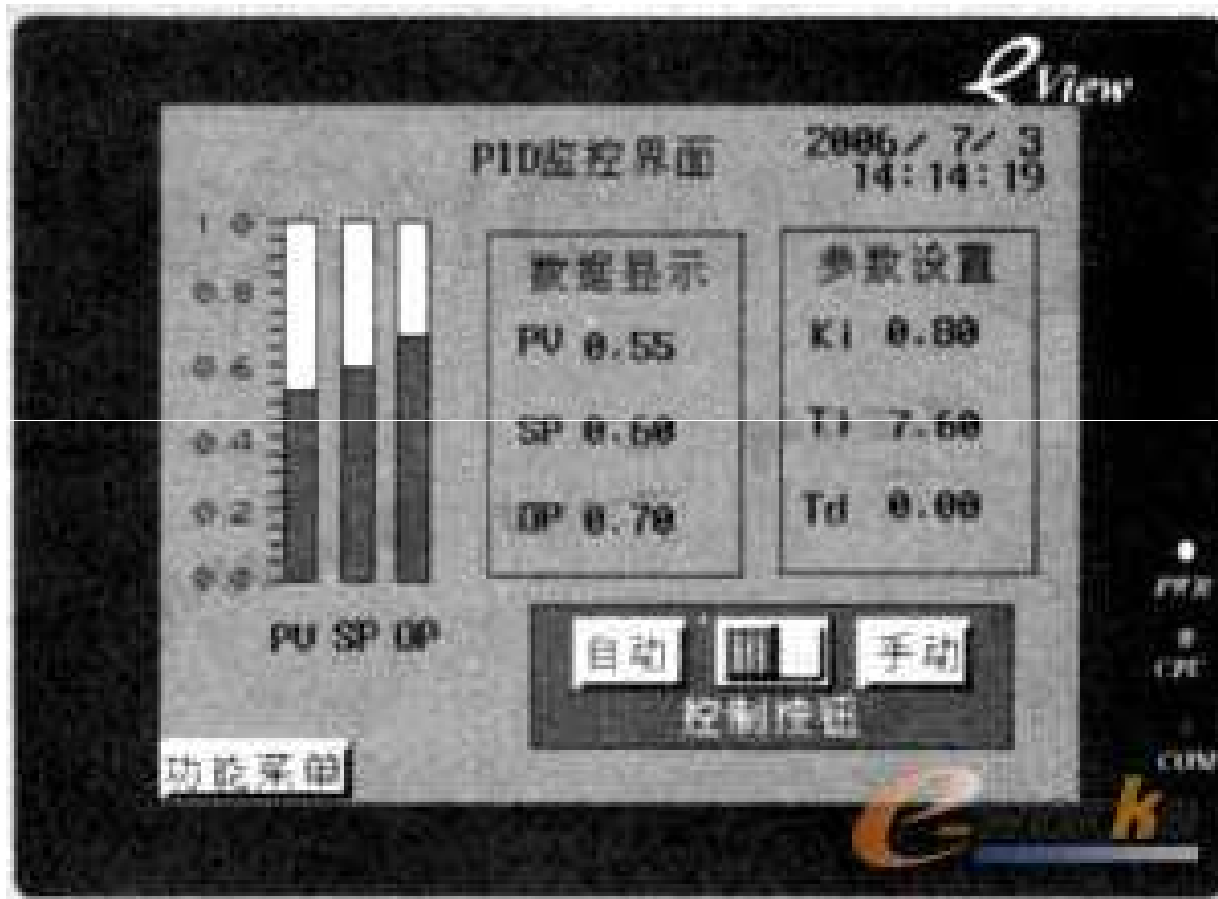
## Structural Framework



# GPRS IP Modem

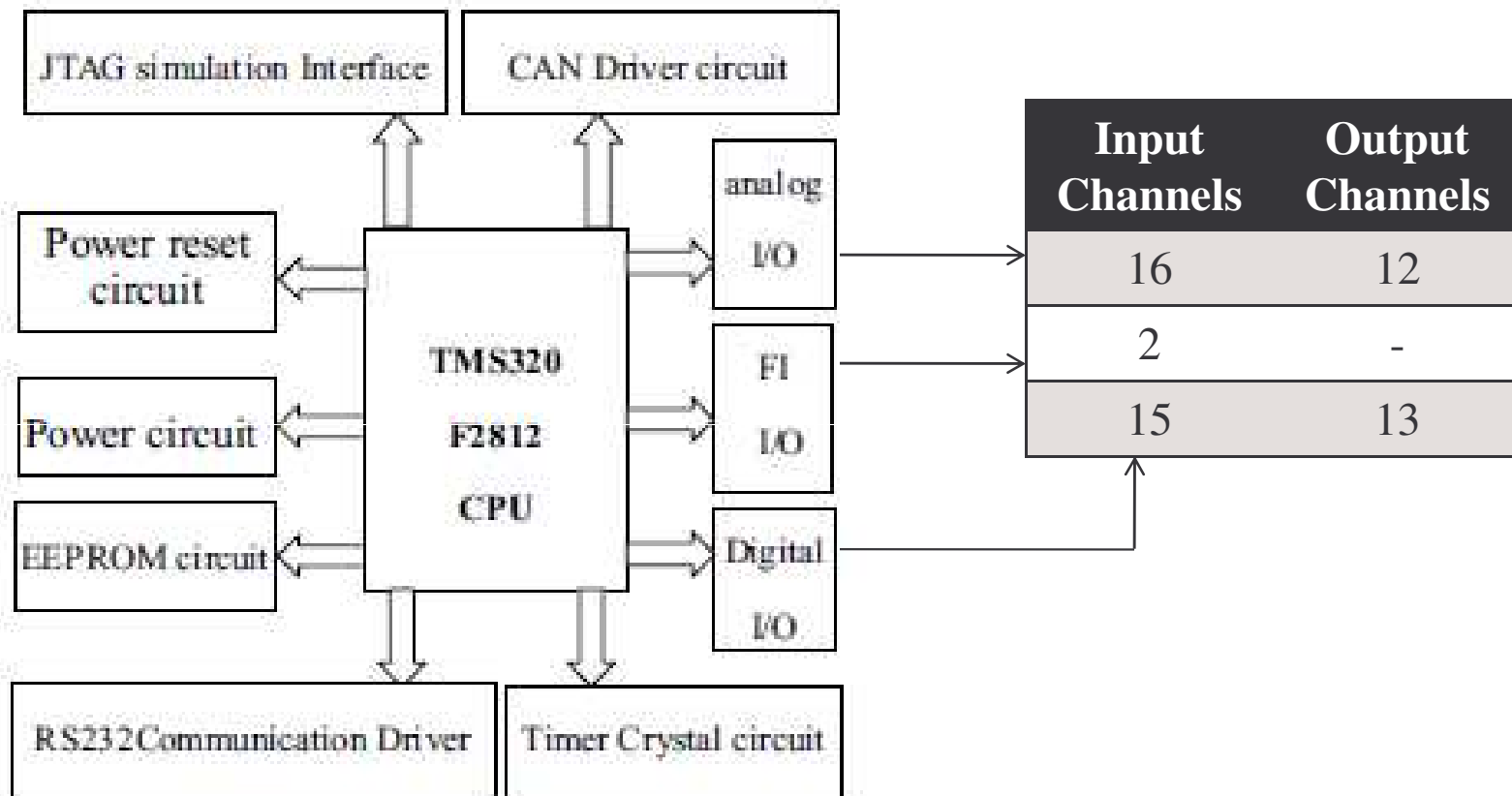


# SHCANCFG

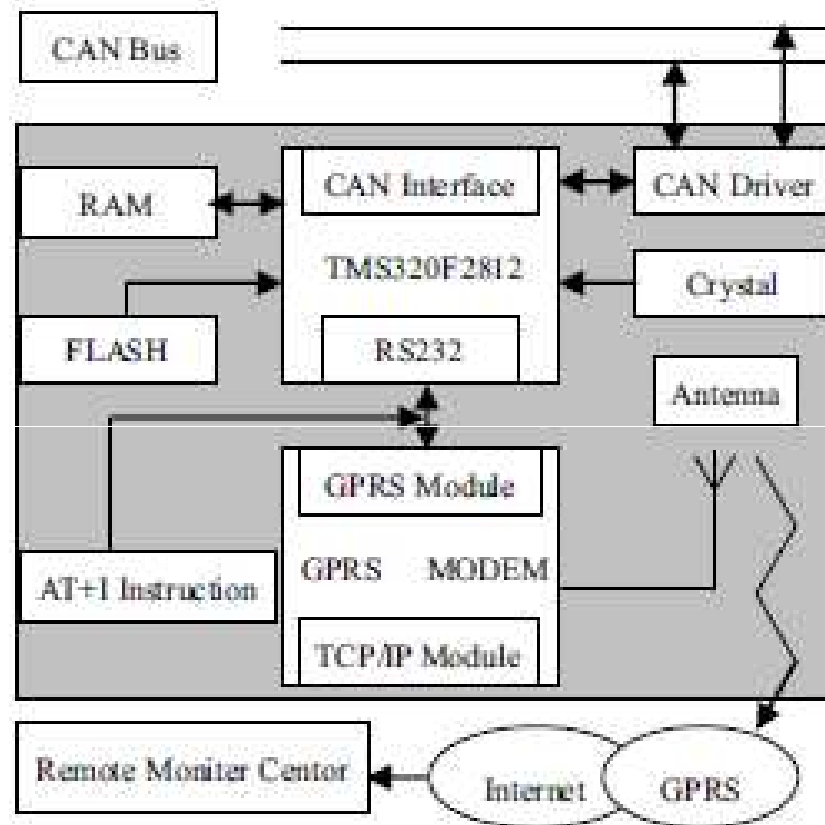




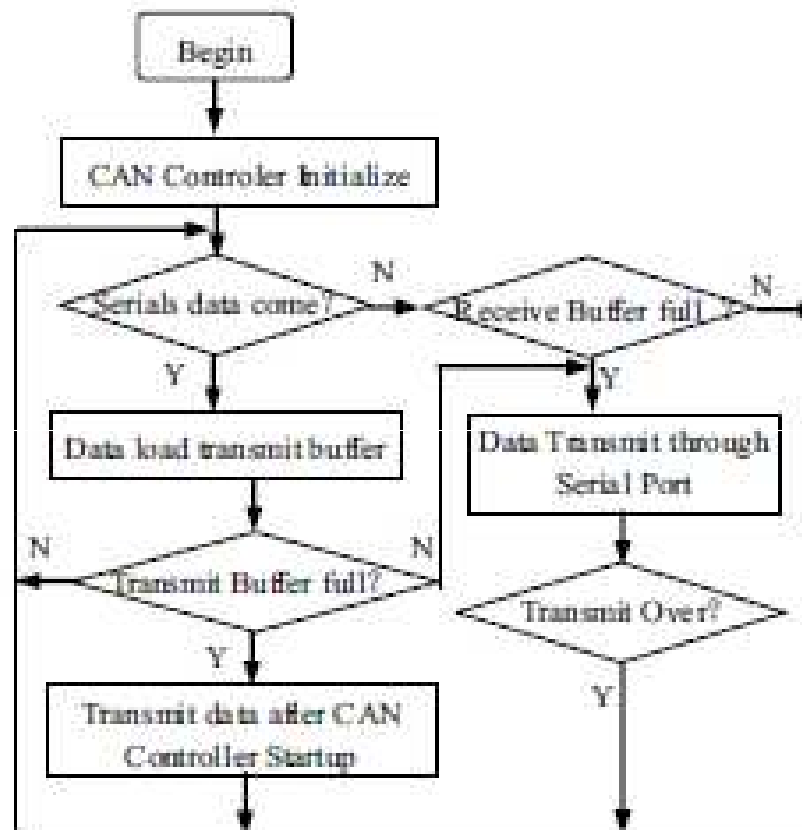
# Intelligent Node



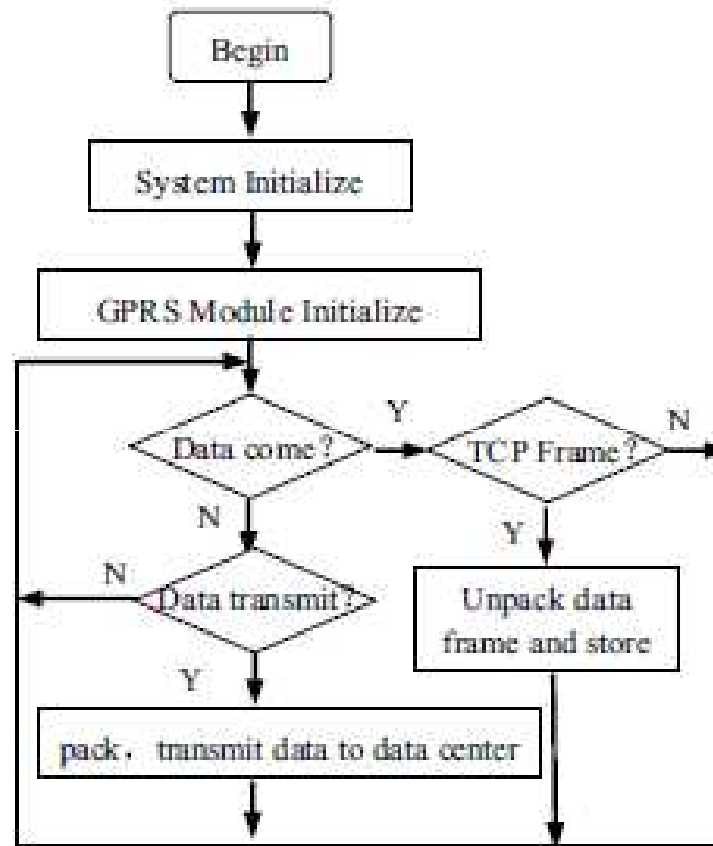
# Wireless Gateway



# CAN Communication Software Flow



# GPRS Communication Software Flow



# Applied Instance

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- Heating Center in Dalian City
- System Function
  - § Data Acquisition and Control
  - § Data Display and Analysis
  - § Alarm
  - § Data Storage and Retrieval
  - § Security

# References

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