

# Mikrocontroller

Einführung Teil 1

Externe Beschaltung



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# GLIEDERUNG

- ATTINY ATMEGA 8,16
- Vorstellung der PIN-Belegung des ATMEGA16
  - Vergleich zum Atmega8
- Die externen Beschaltung
  - Quarz Beschaltung
  - Pull-UP Widerstände
  - Glättungskondensatoren
- Watchdog Timer
- Brown-Out-Detection
- Programmer
  - Programmer Beschaltung

# ATTINY

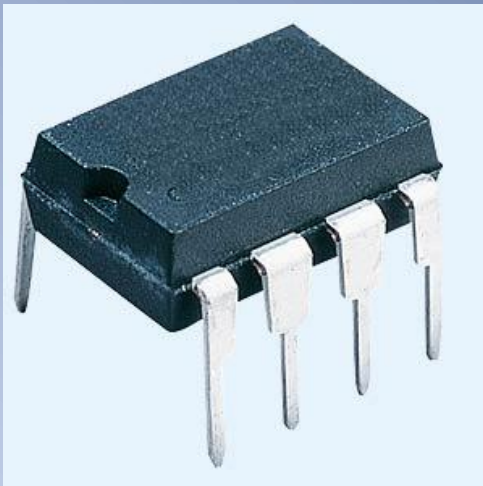
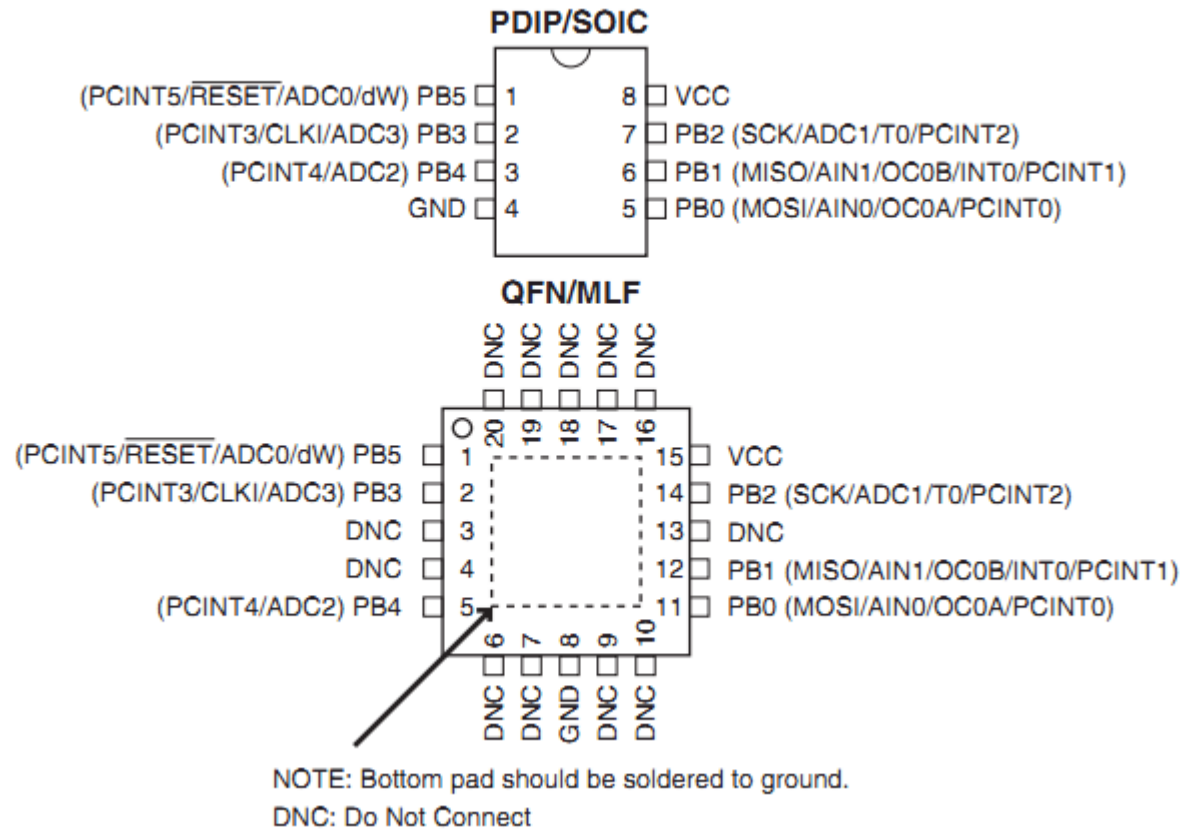


Figure 1. Pinout ATTiny13



# ATTINY

- Vorteile :
  - Kosten
  - Klein
  - Für einfache Schaltungen ausreichend
- Nachteile:
  - Weniger Ports

# ATMEGA 16

- ATMEGA 16

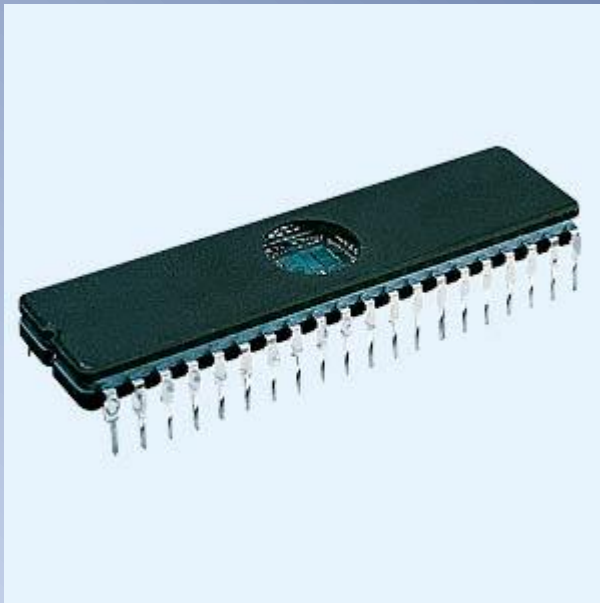
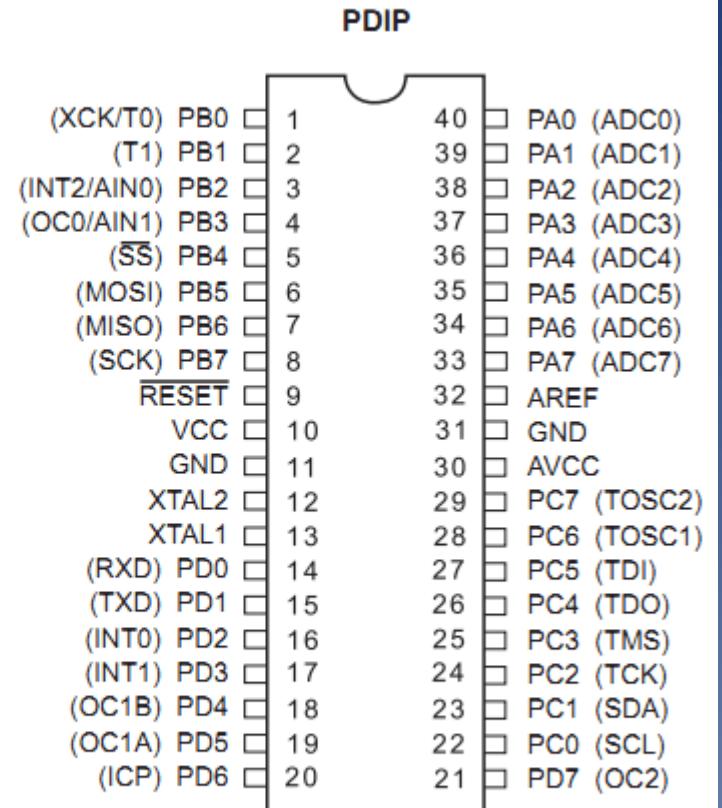
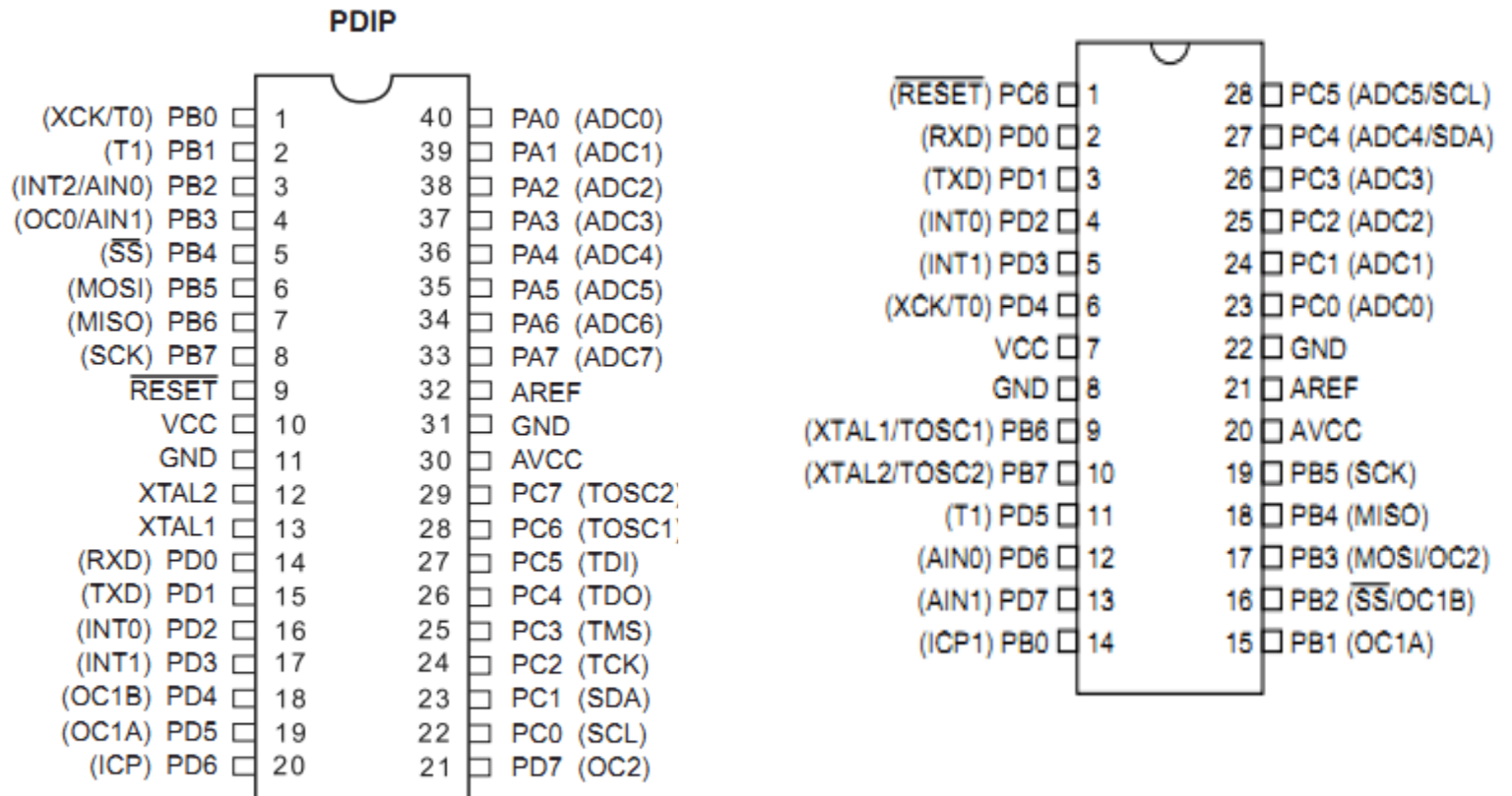


Figure 1. Pinouts ATmega16

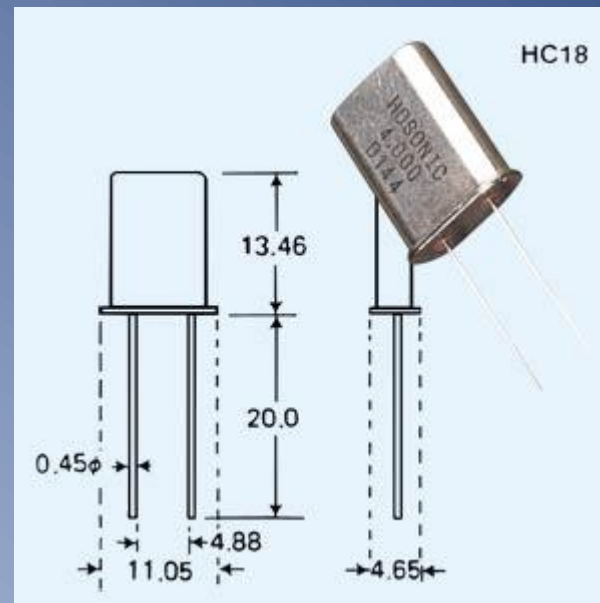
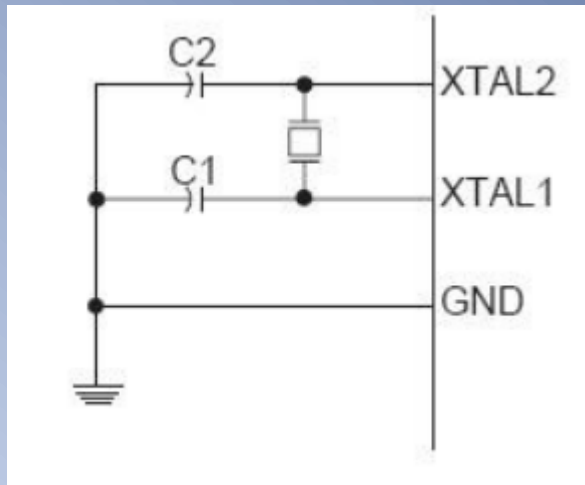


# ATMEGA 8 vs- 16

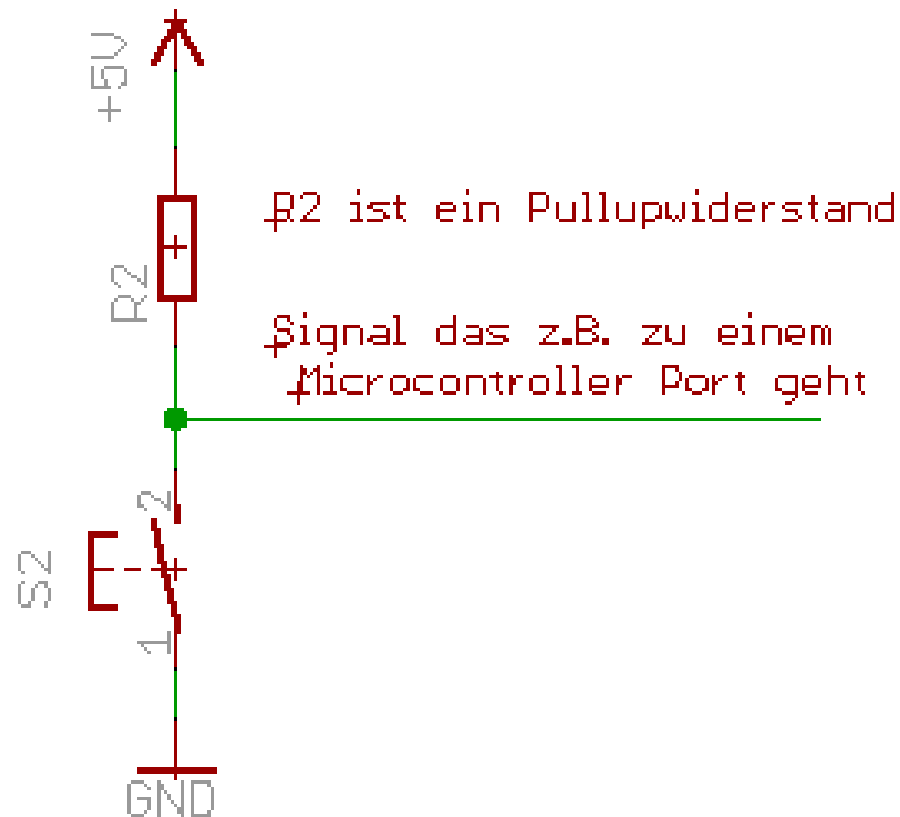
Figure 1. Pinouts ATmega16



# Quarzoszillator

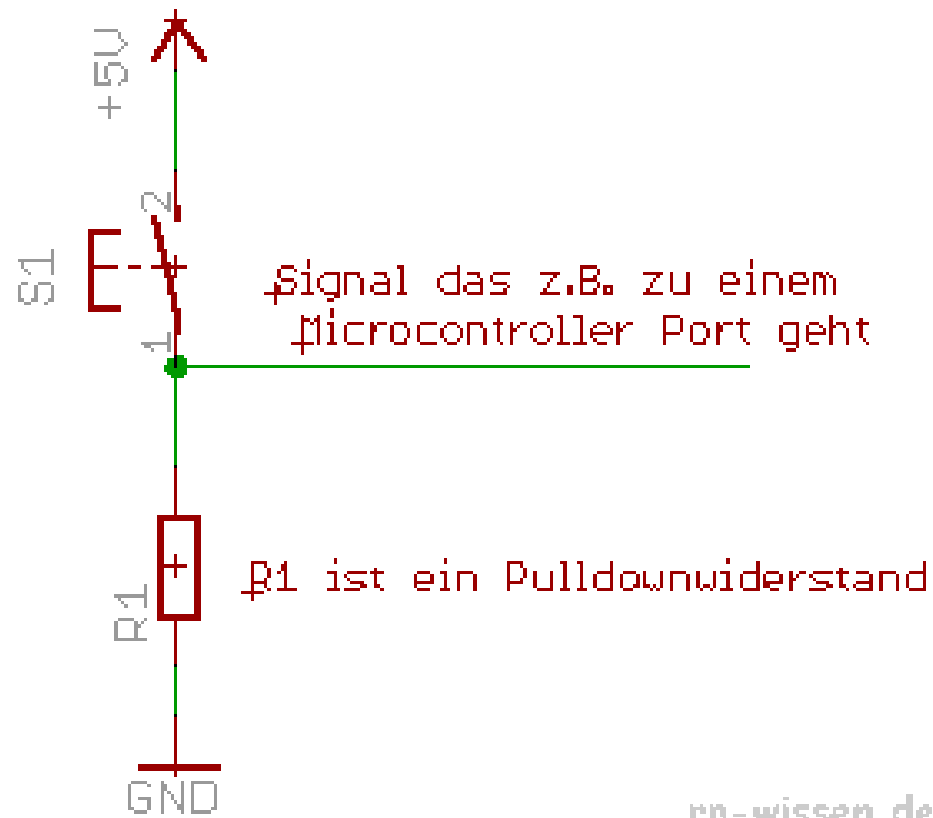


# Pull Up

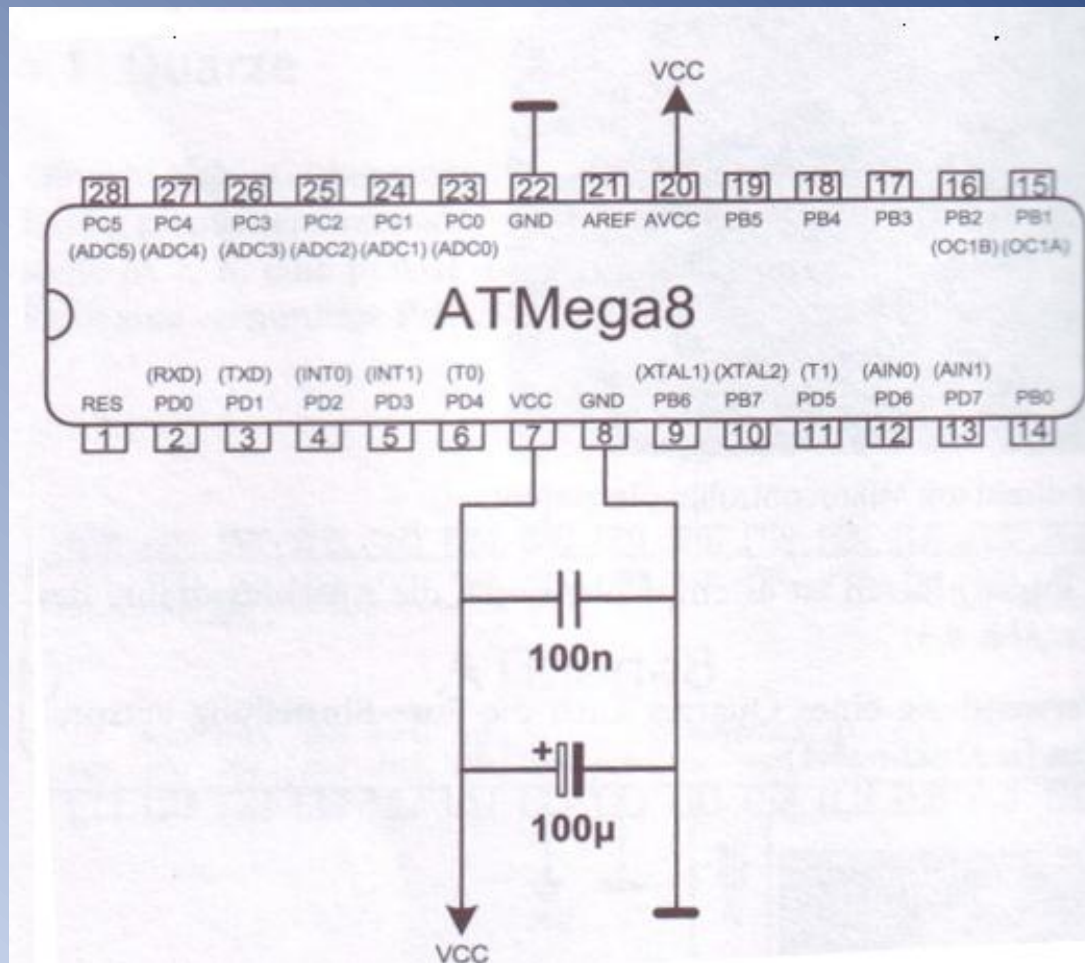




# Pull Down



# Stütz- und Abblockkondensatoren



# Watchdog Timer

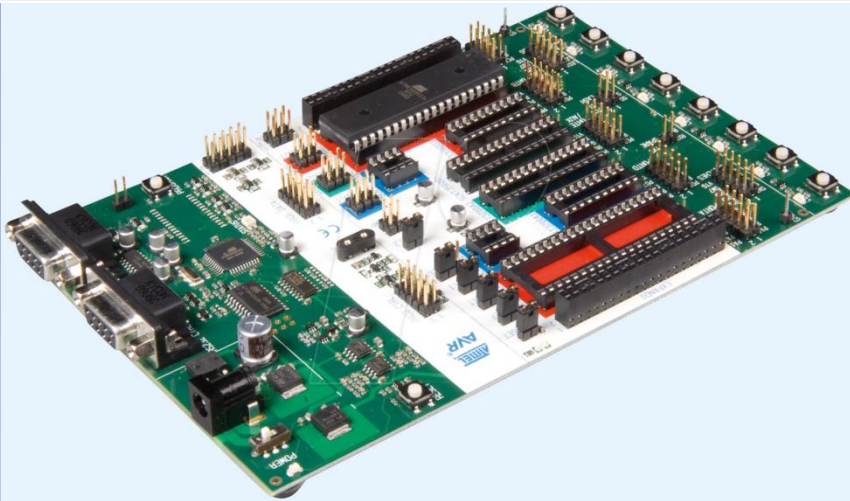
- Überwacht den Programmablauf
- Resetet bei definierten Zeiten
- Interne Software Aktivierung /Deaktivierung
- Externes Bauteil incl. Brown-Out-Detection

- Reset Beschaltung

# PROGRAMMER

STK500

45-80Euro

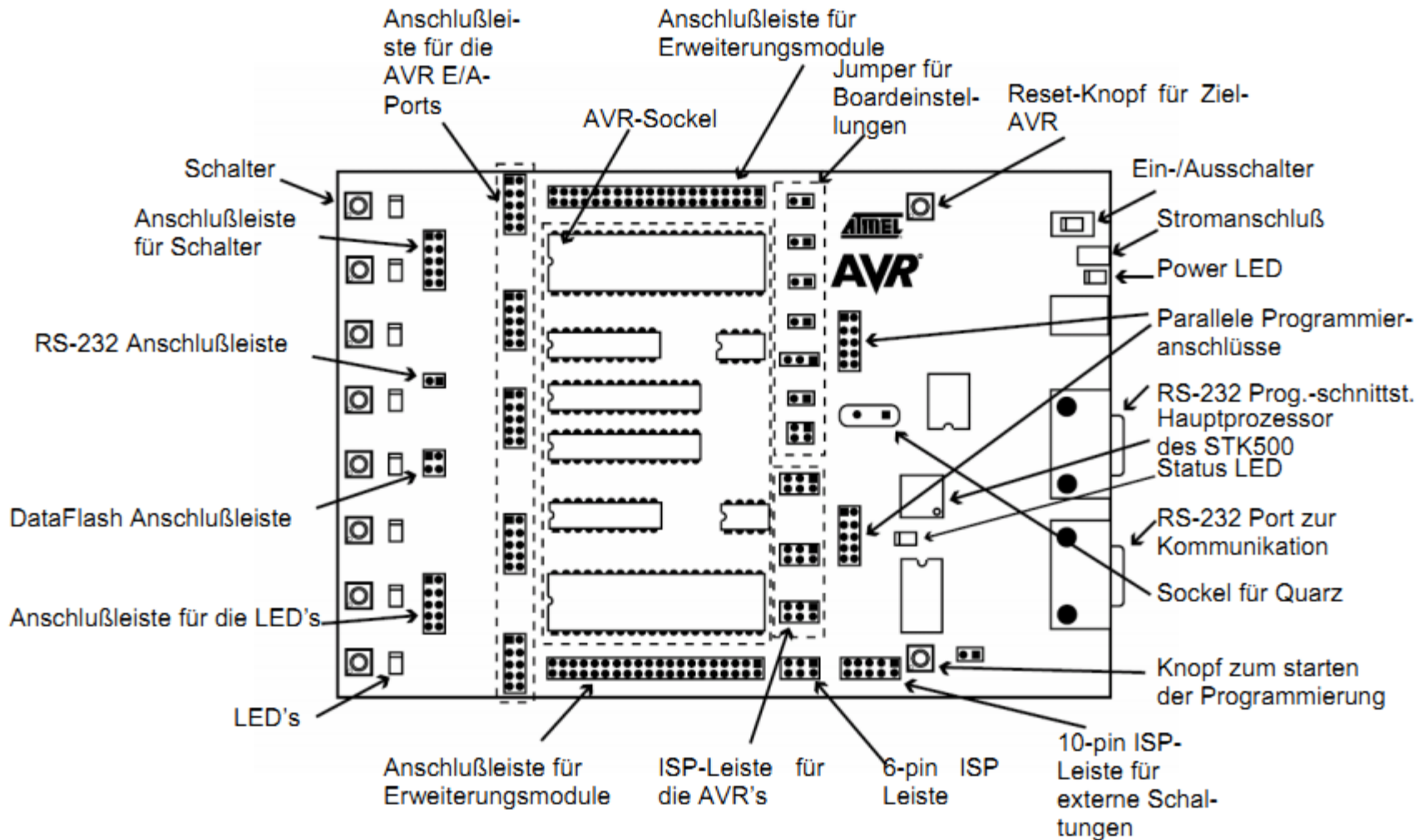


Diamex-Prog-S

Ab 5 Euro

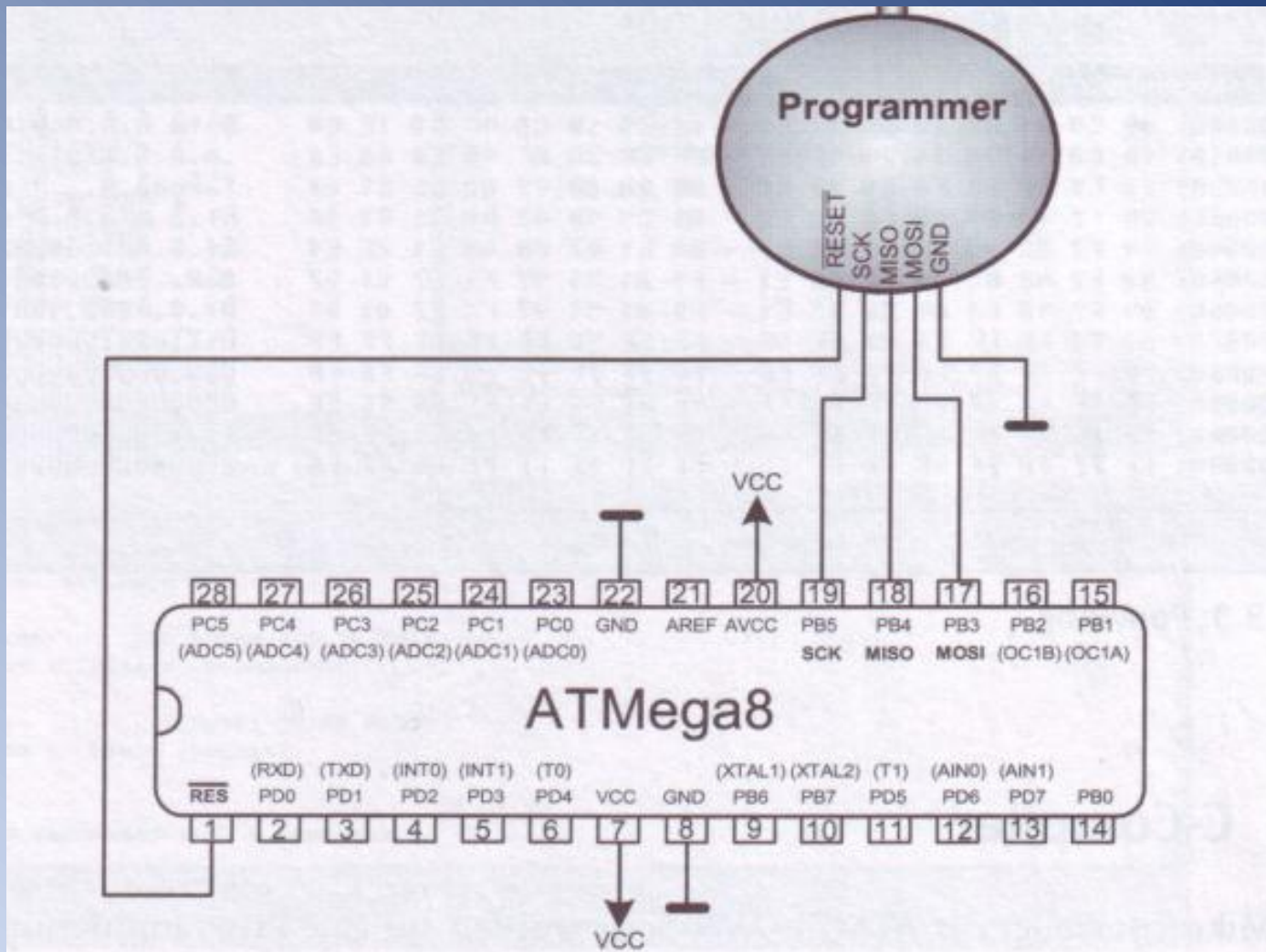


# STK500



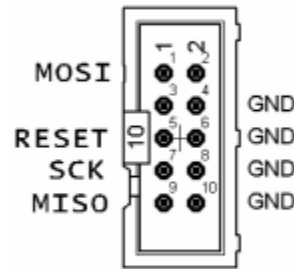
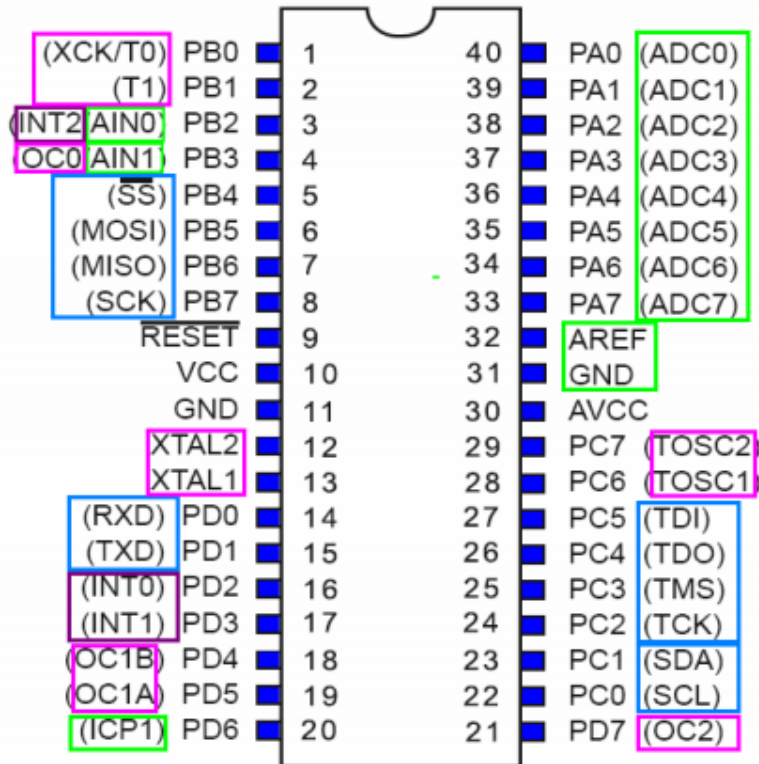


# PROGRAMMER



# Diamex-Prog-S

PDIP



10-pol. Stiftleiste	AVR-Controller
PIN1 (MOSI)	MOSI oder PDI
PIN5 (RESET)	RESET
PIN7 (SCK)	SCK
PIN9 (MISO)	MISO oder PDO



# Quellen

- <http://www.reichelt.de/>
- <http://www.mikrocontroller.net/>
- <http://www.rn-wissen.de/>
- <http://www.wikipedia.org/>