



# W5300 IP 3D Camera over Single Pair Ethernet Ethernet Part

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## W5300 TCP/IP Offload Engine

The [W5300](#) circuit is a combination of reference circuits for the internal and external PHY. Switching modes is done with the ETH-MEDIA-SEL signal on the TEST\_MODE\_0 pin. One of two modes is selected: “Internal PHY Mode (Normal Operation)” or “External PHY Mode with Crystal clock”.

In internal PHY mode, there are two options selectable at the manufacturing stage: transformer and transformerless. In the transformer option, the RB1-125BAG1A socket with a transformer is mounted, in the transformerless option, an ordinary RJ45 socket and capacitors. The transformerless version should only be used for diagnostics due to the short range and lack of isolation.

In external PHY mode, the MII interface to the external PHY is used. The ADIN1100 PHY for Single Pair Ethernet is connected.

The W5300 is connected to the MCU in the direct address mode via an 8-bit data bus and a 10-bit address bus.

## ADIN1100 Single Pair Ethernet PHY

The [ADIN1100](#) provides a PHY interface for Single-Pair10Base-T1L Ethernet. It is connected to the W5300 in unmanaged mode. However, strapping pins allow configuration in any mode, also managed by the MDIO interface. MDIO is emulated in the MCU via SPI.

The input line is transformer isolated and protected against too high voltage.

The standard allows you to connect several devices on one pair of wires. Up to four devices can be connected in a multi-drop configuration. However, managed PoE cannot be used then.

## Power over Data Line

The 10Base-T1L standard allows power and data to be transferred over the same pair of wires. The power circuit is separated by a double 100uH choke.



