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REGULATORS

The schematic diagram illustrates the regulator section of the circuit, featuring two integrated circuits (ICs):

- IC2: LMR14050SSQDDARQ1** (5V Regulator):
 - Input:** VIN (Pin 1) is connected to V_PWR through a 4.7uF/50V capacitor (C5) and a 0.22uF/50V capacitor (C6).
 - Output:** SW (Pin 8) is connected to 5V_REG through a 47uF capacitor (C11) and a 16V Zener diode (X7R).
 - Feedback:** FB (Pin 5) is connected to GND through a 100k resistor (R5).
 - Compensation:** A 744325550 capacitor (C10) is connected between SW (Pin 8) and BOOT (Pin 2). A 59k resistor (R4) and a 22nF capacitor (C8) are connected between RT/SYNC (Pin 4) and SS (Pin 6).
 - Other Components:** R_ENB (Pin 3) and R_ENT (Pin 2) are connected to GND. A 100nF capacitor (C7) is connected between VIN (Pin 1) and EN (Pin 3).
- IC1: NCV8187AMT330TAG** (3.3V Regulator):
 - Input:** IN (Pin 1) is connected to +5V through a 1uF capacitor (C4).
 - Output:** OUT (Pin 6) is connected to +3.3V through a 10uF capacitor (C9).
 - Feedback:** SNS (Pin 5) and PG (Pin 4) are connected to GND through a 10uF capacitor (C2).
 - Other Components:** EN (Pin 2) is connected to GND.

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The diagram illustrates a power and charging status indicator circuit. It features four LEDs connected to a +3.3V supply through resistors and diodes. The LEDs are labeled PWR_LED, VCHG_LED, and VCHG_LED. The diodes are labeled D3, D4, D5, and D6. The resistors are labeled R9, R18, R19, and R20. The supply is labeled +3.3V. The ground is labeled GND.

The diagram shows 14 pin headers and their connections:

- J8:** Robotis_1. Pins 1 (V_PWR), 2 (TTL_DATA), 3 (GND).
- J9:** Robotis_2. Pins 1 (V_PWR), 2 (TTL_DATA), 3 (GND).
- J10:** Robotis_3. Pins 1 (V_PWR), 2 (TTL_DATA), 3 (GND).
- J17:** RANGE_4. Pins 4 (+5V), 3 (RANGE_4_TRIG), 2 (RANGE_4_ECHO), 1 (GND).
- J13:** RANGE_2. Pins 4 (+5V), 3 (RANGE_2_TRIG), 2 (RANGE_2_ECHO), 1 (GND).
- J12:** RANGE_1. Pins 4 (+5V), 3 (RANGE_1_TRIG), 2 (RANGE_1_ECHO), 1 (GND).
- J16:** RANGE_3. Pins 4 (+5V), 3 (RANGE_3_TRIG), 2 (RANGE_3_ECHO), 1 (GND).
- J5:** SPI_SLAVE. Pins 6 (GND), 5 (SPI1_SCK), 4 (SPI1_MISO), 3 (SPI1_MOSI), 2 (SPI1_NSS), 1 (GND).
- J6:** SPI_MASTER_1. Pins 6 (+3.3V), 5 (SPI2_SCK), 4 (SPI2_MISO), 3 (SPI2_MOSI), 2 (GPIO_EXT_1), 1 (GND).
- J24:** SPI_MASTER_2. Pins 6 (+3.3V), 5 (SPI2_SCK), 4 (SPI2_MISO), 3 (SPI2_MOSI), 2 (GPIO_EXT_2), 1 (GND).
- J7:** UART_DEBUG. Pins 4 (+3.3V), 3 (USART2_RX), 2 (USART2_TX), 1 (GND).
- J20:** UART_1. Pins 4 (+3.3V), 3 (USART1_RX), 2 (USART1_TX), 1 (GND).
- J18:** I2C_MASTER_2. Pins 4 (+3.3V), 3 (I2C1_SCL), 2 (I2C1_SDA), 1 (GND).
- J19:** I2C_MASTER_1. Pins 4 (+3.3V), 3 (I2C1_SCL), 2 (I2C1_SDA), 1 (GND).
- J22:** EXT_1. Pins 6 (+3.3V), 5 (PWM1), 4 (PWM2), 3 (GPIO_EXT_3), 2 (GPIO_EXT_4), 1 (GND).
- J23:** EXT_2. Pins 6 (+5V), 5 (+3.3V), 4 (GND), 3 (GND), 2 (GND), 1 (GND).

DYNAMIXEL

The diagram shows two 74VHC1G125GV125 inverters (IC4 and IC5) used for signal conditioning. IC4's output (pin 4) drives the RX pin of the USART6 module. IC5's output (pin 4) drives the TX pin of the USART6 module and is also connected to the DATA pin of the TTL module through a 10k resistor (R21). Both inverters are powered by a +3.3V supply and have their inputs pulled up to +5V. IC5 has a 100nF capacitor (C29) connected to its output.

MEMORY

EEPROM

Address: 1010000

+3V3

C15
1uF

GND

1 A0
2 A1
3 A2

4 GND

5 SDA
6 SCL
7 WP

U6 24LC256

U2

5 12C1_SDA
6 12C1_SCL

SWITCHES

The diagram shows two switch components, S2 and S1, each with four pins: T1, T2, SHD, and GND. Switch S2 is labeled 'S2 RESET' and switch S1 is labeled 'S1 USER'. For S2, pin 1 is connected to NRST, pin 4 to GND, and pin 5 to GND. For S1, pin 1 is connected to USER_BTN, pin 4 to GND, and pin 5 to GND.

- Issues:
- USB needs HSE
- Boot0 not pulled low