Quick Design Summary

- Capable of driving two PMSM or DC motors @ 48V, 20A
- Automatic overcurrent protection with adjustable current limit
- Break resistor support
- Versatile encoder interface supporting SE, RS-422 and DHTL encoders
- 3 extra +-40 inputs per motor for high voltage industrial sensors
- Motor hall sensor support
- Amplified back emf feedback for better sensorless control
- 2x CAN2.0B
- CANFD 5Mbit/s
- EtherCAT slave controller
- USB 2.0 device interface
- LCD connector
- UEXT connector for arbitrary expansion
- 8 analog 5v capable inputs supporting inductive joystick and potentiometers
- 4 analog 5v control outputs
- 8 button inputs with hardware debouncing
- 8 flexible LED outputs with programmable light patterns

STM32 Peripheral Assignments

Timers	ADC1	ADC2	ADC3
TIM1: motor 1 TIM2: motor 1 enc TIM3: motor 1 hall TIM4: motor 2 enc TIM5: motor 2 hall TIM8: motor 2 TIM10: pwm1 TIM11: pwm2	ADC1_CH0: x ADC1_CH1: x ADC1_CH2: x ADC1_CH3: cura_mot1 ADC1_CH4: curb_mot1 ADC1_CH5: vsc_mot2 ADC1_CH6: x ADC1_CH7: x ADC1_CH8: x ADC1_CH9: (curb_mot2) ADC1_CH10: vsa_mot1 ADC1_CH11: vsb_mot1 ADC1_CH12: vsc_mot1 ADC1_CH13: vsa_mot2 ADC1_CH14: cura_mot2 ADC1_CH15: vsb_mot2)	ADC2_CH0: x ADC2_CH1: x ADC2_CH2: x ADC2_CH3: (cura_mot1) ADC2_CH4: (curb_mot1) ADC2_CH5: (vsc_mot2) ADC2_CH6: x ADC2_CH7: x ADC2_CH8: x ADC2_CH9: curb_mot2 ADC2_CH10: (vsa_mot1) ADC2_CH11: (vsb_mot1) ADC2_CH12: (vsc_mot1) ADC2_CH13: (vsa_mot2) ADC2_CH14: cura_mot2 ADC2_CH15: (vsb_mot2)	ADC3_CH0: x ADC3_CH1: x ADC3_CH2: x ADC3_CH3: x ADC3_CH4: x ADC3_CH5: – ADC3_CH6: temp_mot2 ADC3_CH7: – ADC3_CH8: – ADC3_CH9: vmot ADC3_CH10: – ADC3_CH11: – ADC3_CH12: – ADC3_CH13: – ADC3_CH14: joysticks ADC3_CH15: temp_mot1

SPI	I2C	UART
SPI1: – SPI2: – SPI3: GPIO/ENC SPI4: UEXT SPI5: – SPI6: CANFD/ECAT	I2C1: POT/EE/LED I2C2: UEXT I2C3: –	UART1: DEBUG UART8: UEXT

Switch/Button IN

Button LEDs

GPIO

Analog IN 5V

Analog OUT 5V

EEPROM

USB

CAN 2.0B

LCD

UEXT

CANFD/2.0B

Encoder Interface Power SW

Brake Resistor

Supply Voltage Sense

Power

Overcurrent limit ADJ

Back-EMF ADC Pre-Amp w/ offset

Drive 1

Drive 2

Motor Sensors 1

Motor Sensors 2

EtherCAT