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What is "Embedded - Microcontrollers"?

"Embedded - Microcontrollers" refer to small, integrated circuits designed to perform specific tasks within larger systems. These microcontrollers are essentially compact computers on a single chip, containing a processor core, memory, and programmable input/output peripherals. They are called "embedded" because they are embedded within electronic devices to control various functions, rather than serving as standalone computers. Microcontrollers are crucial in modern electronics, providing the intelligence and control needed for a wide range of applications.

Applications of "Embedded - Microcontrollers"

Details	
Product Status	Obsolete
Core Processor	ST10
Core Size	16-Bit
Speed	64MHz
Connectivity	ASC, CANbus, EBI/EMI, I²C, SSC, UART/USART
Peripherals	POR, PWM, WDT
Number of I/O	111
Program Memory Size	832KB (832K x 8)
Program Memory Type	FLASH
EEPROM Size	-
RAM Size	68K x 8
Voltage - Supply (Vcc/Vdd)	4.5V ~ 5.5V
Data Converters	A/D 24x10b
Oscillator Type	Internal
Operating Temperature	-40°C ~ 125°C (TA)
Mounting Type	Surface Mount
Package / Case	144-BQFP
Supplier Device Package	-
Purchase URL	https://www.e-xfl.com/product-detail/stmicroelectronics/f276-ceg-p

5.4.3 ST10 configur ation in CAN BSL

When the ST10F276E enters BSL mode via CAN, the configuration shown in Table 31 is automatically set (values that deviate from the normal reset values are marked in bold).

Table 31. ST10 configuration in CAN BSL

Function or register	Access	Notes
Watchdog timer	Disabled	
Register SYSCON	0404_H (1)	XPEN bit set
Context pointer CP	$FA00_H$	
Register STKUN	$FA00_H$	
Stack pointer SP	$FA40_H$	
Register STKOV	$FC00_H$	
Register BUSCON0	acc. to startup config.(2)	
CAN1 Status/Control register	0000_H	Initialized only if Bootstrap via CAN
CAN1 Bit timing register	acc. to '0' frame	Initialized only if Bootstrap via CAN
XPERCON	$042D_H$	XRAM1-2, XFlash, CAN1 and XMISC enabled
P4.6 / CAN1_TxD	'1'	Initialized only if Bootstrap via CAN
DP4.6	'1'	Initialized only if Bootstrap via CAN

1. In Bootstrap modes (standard or alternate) ROMEN, bit 10 of SYSCON, is always set regardless of $\overline{EA}$ pin level. BYTDIS, bit 9 of SYSCON, is set according to data bus width selection via Port0 configuration.
2. BUSCON0 is initialized with 0000h, external bus disabled, if pin $\overline{EA}$ is high during reset. If pin $\overline{EA}$ is low during reset, BUSACT0, bit 10, and ALECTL0, bit 9, are set enabling the external bus with lengthened ALE signal. BTYP field, bit 7 and 6, is set according to Port0 configuration.

Other than after a normal reset, the watchdog timer is disabled, so the bootstrap loading sequence is not time limited. Pin CAN1_TxD1 is configured as output, so the ST10F276E can return the identification frame. Even if the internal IFLASH is enabled, a code cannot be executed from it.

5.4.4 Loading the start-up code via CAN

After sending the acknowledge byte, the BSL enters a loop to receive 128 bytes via CAN1.

Hint: The number of bytes loaded when booting via the CAN interface has been extended to 128 bytes to allow the reconfiguration of the CAN Bit Timing Register with the best timings (synchronization window, ...). This can be achieved by the following sequence of instructions:

```
ReconfigureBaud rate:
    MOV   R1,#041h
    MOV   DPP3:0EF00h,R1 ; Put CAN in Init, enable Configuration Change
    MOV   R1,#01600h
    MOV   DPP3:0EF06h,R1 ; 1MBaud at Fcpu = 20 MHz
```

These 128 bytes are stored sequentially into locations 00'$FA40_H$ through 00'$FABF_H$ of the IRAM, allowing up to 64 instructions to be placed into the RAM area. To execute the loaded code the BSL then jumps to location 00'$FA40_H$, that is, the first loaded instruction. The