

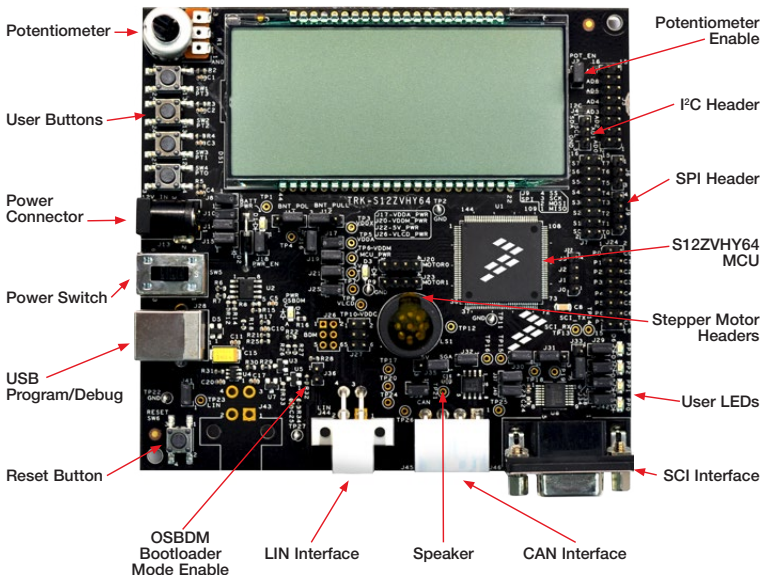


Quick Start Guide

TRK-S12ZVHY64
S12 MagniV MCU for Motorcycle
Instrument Cluster Applications



Get to Know the TRK-S12ZVHY64



Introduction and Default Settings

The TRK-S12ZVHY64 features the S12ZVHY64 MCU, an automotive 16-bit MCU for automotive and motorcycle instrument cluster applications. The S12ZVHY64 MCU integrates an S12Z CPU, a 5 V regulator system to supply the MCU, two low-power stepper motor drivers and an LCD controller on-chip.

The TRK-S12ZVHY64 board includes an on-board OSBDM programmer, a custom 160-segment LCD, a CAN transceiver, a LIN physical transceiver as well as an SCI physical transceiver. The board also features a speaker and dedicated headers for two low-power stepper motors.

This guide will show how to quickly connect the board to a host PC and execute a demonstration application preloaded in to the flash memory. Default jumper positions of the TRK-S12ZVHY64 board are shown in the figure.

Software Tools Installation

1 Install CodeWarrior Development Studio

Freescale's CodeWarrior for MCUs integrates the development tools for several architectures, including the S12Z architecture, into a single product based on the Eclipse open development platform. Eclipse offers an excellent framework for building software development environments and is a standard framework used by many embedded software vendors.

The latest version of CodeWarrior for MCUs (Eclipse IDE) can be downloaded from freescale.com/CodeWarrior.

2 Launch the Demo Program

The DVD contains a CodeWarrior project to exercise the different modules of the S12ZVHY MCU family, including the ADC, TIM, LCD, key interrupts, SCI and CAN modules.

Jumper Default Configuration

| Jumper | Setting | Description |
|--------|---------|--|
| J2 | 1-2 | Potentiometer enabled |
| J8 | 1-2 | Switch 1 enabled |
| J10 | 1-2 | Switch 2 enabled |
| J11 | 2-3 | Switch signals high when pressed (5 V) |
| J12 | 1-2 | Switch signals pulled down |
| J14 | 1-2 | Switch 3 enabled |
| J15 | 1-2 | Switch 4 enabled |
| J16 | 1-2 | Connect VDDX to its ballast transistor output |
| J17 | 1-2 | Connect VDDX to VDDA |
| J18 | 1-2 | Connect VSUP to VBATT |
| J19 | 1-2 | Connect VDDX to VDDM |
| J21 | 1-2 | Connect VDDX to VDD5V (5 V supply for the rest of the board peripherals) |
| J25 | 1-2 | Connect VDDX to VLCD |
| J29 | 1-2 | LED PP3 enabled |
| J30 | 1-2 | SCI physical transceiver enable |
| J31 | 1-2 | MCU SCI module connected to SCI transceiver |
| J32 | 1-2 | Speaker tone control enabled |
| J33 | 2-3 | MCU SCI module connected to SCI transceiver |
| J34 | 1-2 | LED PP2 enabled |
| J35 | 2-3 | Speaker amplitude controlled by SGT pin |
| J37 | 1-2 | Connect the CAN termination resistors to the CAN bus |
| J38 | 1-2 | LED PP1 enabled |
| J39 | 1-2 | Power the speaker amplification circuit |
| J40 | 1-2 | Connect the SPLIT pin to the CAN bus |
| J41 | 1-2 | LIN transceiver enabled |
| J42 | 1-2 | LED PP0 enabled |

Jumper List and Description

| Jumper | Description |
|--------|---|
| J2 | Potentiometer enable Closing this jumper connects the potentiometer signal to an ADC channel |
| J8 | Switch 1 enable Closing this jumper connects the SW to the MCU |
| J10 | Switch 2 enable Closing this jumper connects the SW to the MCU |
| J11 | Switch supply selector Pins 1-2 closed: Switches connect to GND when pressed Pins 2-3 closed: Switches connect to 5 V when pressed |
| J12 | Switch pull direction selector Pins 1-2 closed: Switches have pull-down resistors Pins 2-3 closed: Switches have pull-up resistors |
| J14 | Switch 3 enable Closing this jumper connects the SW to the MCU |
| J15 | Switch 4 enable Closing this jumper connects the SW to the MCU |
| J16 | VDDX ballast transistor to VDDX Closing this jumper connects the VDDX ballast transistor output to the VDDX power bus |
| J17 | Connect VDDX to VDDA Closing this jumper connects VDDX to VDDA |
| J18 | Connect VSUP to VBATT Closing this jumper connects the 12 V input (VBATT) to the MCU (VSUP) |
| J19 | Connect VDDX to VDDM Closing this jumper connects VDDX to VDDM |
| J21 | Connect VDDX to VDD5V Closing this jumper connects VDDX to VDD5V (5 V power supply to other on-board peripherals) |
| J25 | Connect VDDX to VLCD Closing this jumper connects VDDX to VLCD |
| J29 | LED PP3 enable Closing this jumper connects the LED to the MCU |

Jumper List and Description, cont.

| Jumper | Description |
|--------|--|
| J30 | SCI transceiver power |
| | Closing this jumper powers the SCI transceiver circuit |
| J31 | SCI TX Selector |
| | Pins 1-2 closed: MCU SCI TX pin is connected to the virtual SCI module (via OSBDM) |
| | Pins 2-3 closed: MCU SCI TX pin is connected to SCI transceiver |
| J32 | Speaker tone control enable |
| | Closing this jumper connects speaker amplifier to the MCU |
| J33 | SCI RX Selector |
| | Pins 1-2 closed: MCU SCI RX pin is connected to SCI transceiver |
| | Pins 2-3 closed: MCU SCI RX pin is connected to the virtual SCI module (via OSBDM) |
| J34 | LED PP2 enable |
| | Closing this jumper connects the LED to the MCU |
| J35 | Speaker amplitude control selector |
| | Pins 1-2 closed: Speaker amplitude controlled by SGA pin |
| | Pins 2-3 closed: Speaker amplitude is fixed to 5 V (volume is controlled by SGT pin) |
| J36 | OSBDM operating mode selector |
| | Pins 1-2 open: OSBDM in normal mode, programming and debugging capable |
| | Pins 1-2 closed: OSBDM on bootloader mode, only used for firmware update |
| J37 | CAN termination |
| | Closing this jumper connects the CAN termination resistors to the CAN bus |
| J38 | LED PP1 enable |
| | Closing this jumper connects the LED to the MCU |
| J39 | Speaker power |
| | Closing this jumper powers the speaker amplification circuit |
| J40 | SPLIT |
| | Closing this jumper connects the SPLIT pin to the CAN bus |
| J41 | LIN transceiver power |
| | Closing this jumper powers the LIN transceiver |
| J42 | LED PP0 enable |
| | Closing this jumper connects the LED to the MCU |

Headers and Connectors List

| Header/ Connector | Description |
|----------------------|--|
| J1 | GPIO header (LCD replacement option), ports A, D and F |
| J3 | GPIO header, port AD |
| J4 | I ² C header |
| J5 | GPIO header (LCD replacement option), ports B, H, G and F |
| J6 | Extended debug lines |
| J7 | GPIO header, ports T and S |
| J9 | SPI header |
| J13 | Main power barrel connector (up to 18 V) |
| J20 | Stepper motor 0 header |
| J23 | Stepper motor 1 header |
| J24 | GPIO header, ports P and C |
| J27 | S08JM60 BDM port (external program and debug interface)—OSBDM MCU |
| J28 | OSBDM USB port for programming and debugging the main MCU |
| J30 | S12ZVH128 BDM port (external program and debug interface)—Main MCU |
| J43 | LIN connector (not populated) |
| J44 | LIN connector |
| J45 | CAN connector |
| J46 | SCI connector |

Peripheral List

| Peripheral | ID | MCU Port | Description |
|---------------|-----|----------|---|
| Potentiometer | R1 | AD0 | Potentiometer connected to ADC channel 0 |
| LED | D9 | P0 | Blue LED connected to port P0 |
| | D8 | P1 | Blue LED connected to port P1 |
| | D7 | P2 | Blue LED connected to port P2 |
| | D6 | P3 | Blue LED connected to port P3 |
| | D1 | - | VBATT LED, ON when voltage is applied to the board |
| | D3 | - | MCU PWR LED, ON when the MCU is regulating the input voltage to 5 V |
| | D4 | - | OSBDM PWR LED, ON when OSBDM is successfully enumerated as USB device |
| Button | SW1 | T3 | Switch connected to port T3 |
| | SW2 | T2 | Switch connected to port T2 |
| | SW3 | T1 | Switch connected to port T1 |
| | SW4 | T0 | Switch connected to port T0 |
| | SW6 | - | Reset switch |



Support

Visit **freescale.com/support** for a list of phone numbers within your region.

Warranty

Visit **freescale.com/warranty** for complete warranty information.

For more information, visit
freescale.com/TRK-S12ZVHY64

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