

Application note: Character display with the SC1x3 Controller

Introduction

This application note describes how to attach a standard HD44780 compatible character display with one or two lines to the SC1x3 Controller board via the I²C bus.

The display can be addressed directly via C or even can be used within the CoDeSys programming environment using C Routines.

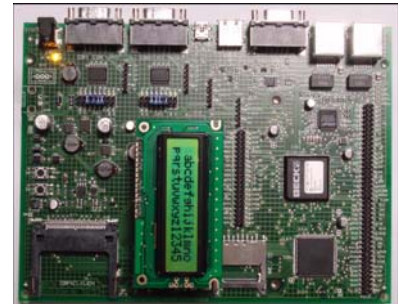
The schematic below illustrates how to connect the character display to the SC1x3's I2C Bus accessible through the pin header S30 of the DK60.

The negative voltage generator ICL7760 device provides the negative voltage needed for the display contrast. Depending on the display type, the contrast has to be adjusted manually with the potentiometer R10. The display will be accessed via the PCF8574AT I2C bus expander. According to the schematic below, the I2C address of the bus expander is 0x70 (112) (see PCF8574AT data sheet).

The Code example written in C provides a demonstration how to communicate with the display. To get along with a single PCF8574AT which provides 8 I/O lines, the display has to be addressed in nibble (4 bit) mode. That means to send the high and the low part of the instruction or data byte sequentially.

To provide display functions in CoDeSys, the display functions have to be added to the RTS and TSP. The DK61_FP_DIS target within this note is a DK61_FP target extended by the display functions.

See the CoDeSys example Ampels_LCD.pro how to implement display functions in a CoDeSys project.



Schematic

