SCHAEFFLER ENGINEERING

Technical Data

PROtroniC TargetLINE

Article-No.: 1012786

Variant XCU264

The ***PROtroniC TargetLINE*** is a powerful control unit, which can be used in prototyping or low volume series applications. With it compact dimensions and the low entry pricing, the ***PROtroniC TargetLINE*** is the ideal solution for fleet tests or cost sensitive applications. The changeover from the prototyping phase to the production will be seamless possible with it.

Basic System	
Operating Voltage:	6 to 32 VDC (12 V and 24 V supply)
Temperature Range:	-40 °C … +105 °C case temperature
Electrical Strength:	Short-circuit against Ground and V_{Bat} for all power supply terminals Power switches are also protected against overload
IP code:	IP6K7; IP6K9K according ISO 20653
Qualification:	Electrical: Similarly to LV124 (12 VDC) and ISO 16750 (24 VDC) EMC: CISPR25, ISO 11452-2/-4, ISO 7637-1/-2/-3, ISO 10605, EN 61000-4-2
External Connector:	196 ways (Bosch)
Housing:	Aluminium, 277mm x 242mm x 44mm (W x H x L)
Weight:	Approx. 1.6 kg

CPU	
Main Processor:	NXP MPC 5777C Dual-Core @ 264 MHz
Memory:	Flash: 8.25 MByte SRAM: 589 kByte plus 1 MByte ext. SRAM; optional 4 MByte ext. SRAM EEprom: 256 kByte
Watchdog:	External Window-Watchdog for system monitoring (SBC)
I/O-Prozessor:	Automotiv FPGA, Xylinx Spartan 7

For further information and a current price list, please contact us at: info@schaeffler-engineering.com

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Communication Interfaces	
Automotive Ethernet[1)]:	1 x BroadR-Reach® Ethernet; IEEE 100BASE-T1
FlexRay[2)]:	1 x FlexRay (2 channels) according to protocol specification 2.1 ■ Freescale MFR4310 Communication Controller ■ Feed-through support to avoid stubs (population option)
CAN: CAN-FD:	4 x CAN 2.0B Full-CAN Transceiver; thereof 1 x CAN wake-up capable (High-Speed, 1 MBaud max. / ISO DIS 11898) 2 x CAN FD Flexible Data Rate Transceiver up to 5 MBaud (ISO 11898-2:2016 and ISO 11898-5:2007) / CAN 2.0B Full-CAN (High-Speed, 1 MBaud max./ISO DIS 11898)
LIN[3)]:	2 x LIN, according to LIN specification 1.3, 2.0, 2.1, 2.2 Configurable as LIN-Master or LIN-Slave
SENT:	6 x SENT, according SENT specification SAE J2716 3 x SENT-Master und 3 x SENT-Slave (Hardware configurable)

Analog Inputs	
Number:	30, 5 groups each with 6 channels Standard hardware set-up: 4 x: U = 0 ... 17.50 V, fc = 1.8 kHz, typical application: load amplifier, pressure sensor 4 x: U = 0 ... 33.33 V, fc = 1.1 kHz, typical application: pressure sensor, active sensors 10 x: U = 0 ... 5.00 V, fc = 1.1 kHz, typical application: pressure sensor, active sensors 6 x: U = 0 ... 5.00 V, fc = 1.1 kHz, PULLUP = 4k99 typical application: temperature sensor 2 x: U = 0 ... 5.00 V, fc = 1.1 kHz, PULLUP = 4k99, PULLDOWN = 220 (switchable) typical application: temperature sensor, current sensor 4 x: U = 0 ... 5.00 V, I = 0...22.73 mA, fc = 1.1 kHz, PULLDOWN = 220 (switchable) typical application: active sensor, current sensor
Resolution:	12 Bit
Input Voltage:	uni-polar
Input Filter (analog):	Low-pass 1st order, cut-off frequency can be set via hardware set-up
Dynamic Behavior:	Sampling rate up to 1 MHz (depending on number of selected channels)
Signal Types:	■ Analog input ■ Digital input (with programmable threshold and hysteresis)
Sensor Supply:	3 x 5 V; 500 mA common; accuracy: +/-50 mV 1 x 5 V or optional 10 V; 200 mA

Analog Outputs	
Number:	4, one group with 4 channels
Resolution:	16 Bit
Output voltage or current:	0 – 5 V; 0 – 10 V; 0 – 12 V ; +/-5 V; +/-10 V; 0 – 20 mA; 4 – 20 mA
Dynamic:	Update rate: 70 kHz

Digital Input	
Number:	12, 2 group each with 6 channels
Input:	Pull-up or pull-down resistors are populate option Low pass 1st order Threshold configurable via population option
Signal Types:	▪ Digital input ▪ Pulse and frequency measurement input ▪ Event generation at edge change

Rotation speed input	
Number:	6, 1 group with 6 channels
Input:	6 x Hall effect rotation speed sensors with open collector or current interface Support of active or passive Hall effect sensors diagnosable
Signal Types:	▪ Rotation Speed ▪ Digital input ▪ Event generation at edge change

Digital Output	
Number:	6, 1 group with 6 channels
Output:	▪ Push/Pull output; max. 350 mA; ohmic and inductive loads ▪ Protected against Vbat and Gnd, Reverse polarity protection ▪ diagnosable
Signal Types:	▪ Digital output ▪ PWM output, 20 Hz … 50 kHz

Power Switch Outputs	
Number:	24, 4 groups with 6 channels each
Output:	▪ Low-side or High-side or Push/pull Output 5 A, 11 A Peak ▪ Parallel switching of up to 6 channels possible ▪ Load capacity of supply: max. 20 A per group ▪ Protected against Vbat and Gnd, Reverse polarity protection ▪ Chopper-Mode ▪ diagnosable

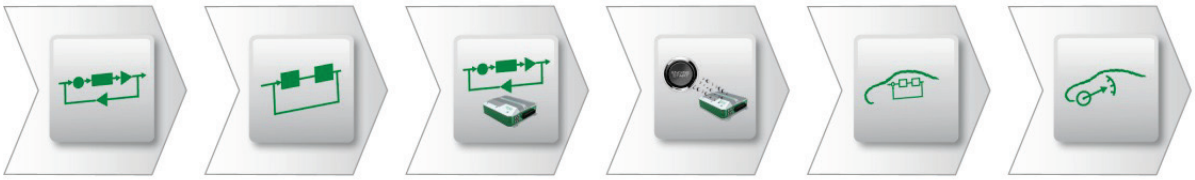
Power Switch Outputs	
Signal Types:	■ Digital output ■ PWM output, 20 Hz ... 10 kHz ■ Full bridge output, 20 Hz ... 10 kHz ■ Peak & Hold output, 20 Hz ...10 kHz ■ Pulse output, time synchronous ■ Current controlled output

Low-Side Output	
Number:	6, 1 group with 6 channels for external actuator control
Output:	■ Low-side, 2 A, 5 A Peak ■ Protected against Vbat and Gnd ■ diagnosable
Signal Types:	■ Digital output ■ PWM-output, 20 Hz ... 10 kHz

[1] Only supported by hardware, currently not supported by software.
[2] Additional software required (FlexRAY ACI-Blockset).
[3] Additional software required (LIN ACI-Blockset).

Development Environment

1. The use of development tools certified for developing according to ISO 26262.



Smooth transition from design to mass production

The development environment of the ***PRO*troniC** *TargetLINE* is based on tools that are widespread in the automotive industry. It not only offers free scope when choosing the code generator but also for measurement and calibration tools.

1 Model-based software development

- Graphical modeling of control functions with MATLAB®, Simulink® and Stateflow®.

2 Offline-Simulation

- Testing and optimization of the functional design against a plant design using offline simulation on the PC with MATLAB®, Simulink® and Stateflow®.

3 Hardware mapping

- Mapping and configuration of the control functions in the model to the inputs and outputs of the hardware using a graphic block library based on Simulink® – Application Controller Interface (ACI).

4 Auto Code generation

- Generation of highly efficient production code at the press of a button. Using ISO 265262 certificated code generators alternatively, TargetLink® or Embedded Coder™ as well as using certificated compiler.

5 Test and verification

- Downloading the generated software to the control unit with Schaeffler Engineering boot loader tool.
- Testing and verification of the new developed control functions on a test stand, in the vehicle or via hardware-in-the-loop simulation.

6 Measurement and calibration

- Fine-tuning and measurement of the control functions using a measurement and calibration tool, alternatively with **MARC I**, INCA or CANape.