Product overview

Automotive Test Solutions

GOPEL electronic

Enjoy Testing

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Single components

basic CAN · PCI · USB · PXI 6153

CAN controller

- CAN applications in the automotive industry
- up to four independent full CAN controllers
- CAN protocol acc. to specification 2.0 A/2.0 B, CAN-FD
- real-time simulation of ECUs through „intelligent“ PowerPC-based CAN interface
- freely selectable transceiver for each CAN interface
- onboard functionality such as network management, diagnostics, special signals (checksums, counters, etc.)

basic LIN · PCI · USB · PXI 6173

LIN-/K-Line controller

- LIN and K-Line applications, test systems in the automotive industry
- up to four independent LIN / K-Line interfaces
- LIN protocol acc. to specification 2.0/2.1/2.2
- K-Line in accordance with ISO 9141
- variable transceiver supply
- every LIN interface can be configured separately as a master or slave
- onboard diagnostics functions for LIN and K-Line
- all interfaces electrically isolated

basic CAR · PCI · USB · PXI 6181

Multibus controller

- suitable for CAN and LIN applications, test systems in the automotive industry
- used for multibus ECUs
- 2 x CAN and 2 x LIN or K-Line
- all interfaces electrically isolated
- freely selectable transceiver for each CAN interface
- onboard functionality such as network management, diagnostics (via CAN, LIN, K-Line), special signals (checksums, counters)

basic Flex · PCI · USB · PXI 6191

FlexRay controller

- FlexRay applications and test systems in the automotive industry
- two independent FlexRay nodes for cold-start capability
- supports A channel and B channel
- cyclical transmission of FlexRay messages
- event-based transmission of FlexRay messages
- monitoring of bus data and events with time stamp
- onboard functionality such as network management, diagnostics, special signals (checksums, counters)
- all interfaces electrically isolated

basic FlexScope 3095

FlexRay bus analysis and validation tool

- control device validation
- 4 functions: bus analyser, bus simulator, trigger unit, error simulator
- supports A channel and B channel
- connection to host via Ethernet

PXI 6141

Ethernet controller

- up to 4 BroadR-Reach interfaces
- optional gigabit Ethernet RTPGE
- test pick-up on all interfaces via TAP matrix
- high-performance Power PC as simulation processor
- gateway to CAN / CAN-FD and LIN
- trace data acquisition on all interfaces with precise hardware time stamp
- supports diagnostics over IP (DoIP)

Easy CON

BroadR-Reach media converter

- converts the physical transmission layer from 2-pin BroadR-Reach Ethernet to Standard 10Base-T/100Base-Tx Ethernet
- compact housing with protection class IP20
- status displays for transceiver and link status
- temperature range according to automotive standard
- RJ45 connector for Ethernet and BroadR-Reach (adapter to D-Sub 9-pin in scope of delivery)

basic MOST · PXI 3060

MOST25 controller

- MOST protocol with up to 25 Mbit/s
- real-time capability with intelligent MOST controller
- supports MOST High protocol
- sends and receives MOST data packets
- diagnostics via the control channel and MOST High
- LED status display
- analogue audio inputs and outputs
- unlock detection
- bypass mode
- ring break diagnostics

basic MOST · PXI 6161

MOST150 controller

- MOST protocol for 150 Mbit/s oPHY
- choice of frame rate: 44.1 kHz / 48 kHz
- MOST High protocol V2.2 on packet / control channel
- onboard diagnostics via MOST High protocol V2.2 / TP2.0
- ring break diagnostics/ECL
- additional front-panel Ethernet port
- S/PDIF – input / output
- additional triggers – front-panel inputs / outputs
- two optional CAN and/or LIN interfaces

Series 61 configuration overview

	PXI 6153 / PCI 6153	PXI 6173 / PCI 6173	PXI 6181 / PCI 6181	PXI 6191 / PCI 6191
Port 1	CAN	LIN/K-Line	CAN	FlexRay
Port 2	CAN	LIN/K-Line	LIN/K-Line	FlexRay
Port 3	Option 1	Option 1	Option 1	Option 1
Port 4	Option 1	Option 1	Option 1	Option 1
Port 5	Option 2	Option 2	Option 2	Option 1
Port 6	Option 2	Option 2	Option 2	Option 1
analogue-/digital-I/O	Option 3 / Option 4	Option 3 / Option 4	Option 3 / Option 4	Option 3 / Option 4

Option 1: an additional CAN or LIN/K-Line port / **Option 2:** an additional FlexRay port / **Option 3:** four additional digital inputs; four additional digital outputs; six analogue inputs; six analogue outputs / **Option 4:** four additional digital inputs; four additional digital outputs; four analogue inputs; four analogue outputs

smart CAR

Modular communication

- use in mobile applications and test systems
- hardware interface for diagnosis applications

Hub 4x

Multiplexer for CAN/LIN networks

- allows the multiplexing of CAN messages
- use in the testing of many similar test items (e.g. parallel, screening and endurance tests)
- compact top-hat rail module design
- parametrisation of the routing and gateway functionalities via master CAN
- connection of CAN networks of various baud rates
- optional conversion to LIN: a master CAN and n slave LINs
- galvanic isolation of assembly and transceiver
- four inputs and outputs for special signals (e.g. wakeup, trigger)

basicCON · USB · PXI 4112

LVDS multiplexer

- 4:1 multiplexer for LVDS signals up to 1.5 Gbit/s
- for distribution of LVDS signals acc. to ANSI / TIA EIA-644-1995
- signal repeater
- cascadable

basicCON · USB · PXI 4113

LVDS splitter

- 1:4 splitter for LVDS signals up to 1.5 Gbit/s
- for distribution of LVDS signals acc. to ANSI / TIA EIA-644-1995 to eight outputs simultaneously
- signal repeater
- cascadable

basic CON 4105

LVDS splitter

- 1:8 splitter for LVDS signals up to 1.5 Gbit/s
- for distribution of LVDS signals acc. to ANSI / TIAEIA-644-1995 to eight outputs simultaneously
- signal repeater
- cascadable

basic CON 4116

HDMI to APIX1/APIX2 converter

- conversion from HDMI video/audio signals to APIX (24Bit or 18Bit colour depth)
- HSD connector to test item
- RJ45 Ethernet connector for mapping of Ethernet frames on APIX
- supports Power over APIX
- USB – host interface to configuration

basic CON 4121 Video Dragon

Generation and evaluation of video data

- configurable as a frame grabber or frame generator
- broad spectrum of interchangeable serializer/deserializer types, e.g. for APIX 1/2, FPD Link I/II/III, HDMI, GMSL
- integrated onboard processor with video co-processor
- FPGA for signal processing
- time stamp (real time clock) for data recording
- saving of image data in the device or on external SSD/HDD via eSATA
- precise pixel comparison of different frames
- optional CAN or LIN interface to test item control

Modules for LVDS: PXI, USB, Ethernet – to suit your particular needs!

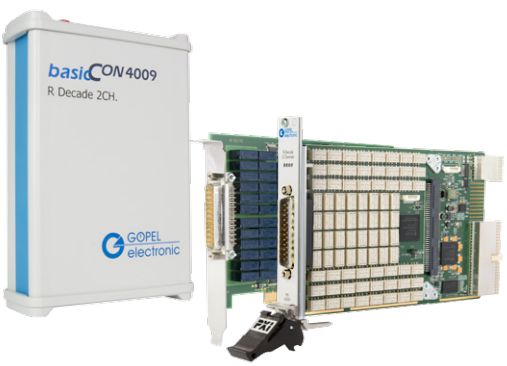
		PXI	Stand-Alone	USB
Splitter	1:8	-	basicCON 4105	-
	1:4	PXI 4113	basicCON 4113	USB 4113
Multiplexer	4:1	PXI 4112	basicCON 4112	USB 4112
Framegenerator			basicCON 4121	
Framegrabber			basicCON 4121	

PXI 3250

CVT meter

- general measurement and test systems
- function test
- signal monitoring
- measurement of currents, voltages and temperatures (PT1000) with 5-digit resolution
- autorange function for interruption-free current measurement across all measuring ranges
- up to 4 independent, electrically isolated measuring channels
- broad range of measuring probes available

basicCON · PCI · PXI 4009



Resistance simulator

- general measurement and test systems
- simulation of resistors, potentiometer with centre tap
- resistances from 1 Ω to 1 M Ω
- accuracy ±1%
- max. load 0.5 W

Compact systems

smart Commander

CAN lin K-Line

Handheld terminal

- for programmable button functions
- possible interfaces: CAN 2.0A/2.0B, LIN and K-Line as per ISO 9141
- preferred areas of use:
  - *production of motor vehicle components*
  - *vehicle final assembly*
  - *control devices and control element replacement*

magic CAR

Compact automotive tester

- affordable testing environment in development areas and in the quality assurance of automotive components
- modular structure, suitable for endurance, parallel and screening test systems
- Series 61 controller
- Supports CAN, LIN, FlexRay, K-Line, digital and analogue I/Os, transport and diagnostic protocols etc.

magic CAR TC

Compact automotive tester

- modularly scalable miniaturised test system
- affordable testing environment in development areas and in quality assurance
- in addition to magic CAR, LVDS – generators/grabbers and MOST are optionally available
- integrated programmable power supply
- integrated multimeter for electricity, voltage and resistance measurement

USB 1004 Rack

USB - rack systems/chassis

- USB backplanes with 4 slots
- preferred areas of use:
  - *measurement and control constructions*
  - *testing systems for automotive applications (end of line test, parallel/endurance test, validation and quality control...)*

(without cards)

USB 1008 Rack

USB - rack systems/chassis

- USB backplanes with 8 slots
- preferred areas of use:
  - *measurement and control constructions*
  - *testing systems for automotive applications (end of line test, parallel/endurance test, validation and quality control...)*

(without cards)

USB 1016 Rack

USB - rack systems/chassis

- USB backplanes with 16 slots
- preferred areas of use:
  - *measurement and control constructions*
  - *testing systems for automotive applications (end of line test, parallel/endurance test, validation and quality control...)*

(without cards)

Sound Checker ™

Sound analysis

- Areas of use:
  - *affordable analysis of structure-borne and airborne sound*
  - *detection of fitting faults in mechanical systems via spectral analysis*
- Supported sensors:
  - *structure-borne sensors with and without own power supply*
  - *microphones with and without own power supply*
  - *position and angle sensors*

CARoLINE

Acoustic tester

- use in development, testing and series production
- synchronised recording of up to four acoustic measurement channels
- I/O resources for triggering, door control and synchronisation
- standard interfaces for integration into complex production lines/end-of-line test systems
- comprehensive visualisation and analysis functions
- listen-in option of the acoustic data recording using headphones

Smooth Ranger

Wide range ammeter

- current measurements of test items in the sleep, operation and load area of 1µA up to 100 amp
- voltage measurement up to 100V
- measurement of reverse current
- automatic measuring range switching without signal gaps
- no influencing of test items
- no induction of interference voltage in the main current path
- Smooth Ranger desktop 1-channel
- Smooth Ranger advanced 3 ... 10-channel

Automotive electronics function test systems

CARMEN

Tester for electrical drives

- check of quality-determining features for electric drives under realistic working conditions
- measurement of electrical and mechanical parameters
- use in development, testing and series production
- configurable to customer specifics
- user administration for configuration of use rights to various programme functions
- offline data analysis for the creation/processing of test procedures using simulated measurement data

Screening tester · Run-in test systems

Function testing

- screening/run-in/parallel/endurance test
- systems for process and product optimisation for ensuring a stable delivery condition
- integration of climate and temperature systems for environmental tests
- scalable hardware resources for large quantities

Networking tester

GÖPEL electronic has specialised in the area of networking test systems for automotive control devices for many years and is the leading provider of network testers. This has resulted in the creation of a modular and OEM-independent system, which can be used across buses. In the foreground there are CAN, CAN-FD, LIN and FlexRay as well as future bus architectures such as Automotive Ethernet (BroadR Reach).

Our network testing system allows statements on the physical properties of bus interfaces, the checking of communication properties as well as the simulation of transfer fields on the individual control device, even in a group. With the combination of measurement technology and diagnosis functions within the network test system, this allows special network tests to be realised, the carrying out of which was previously often costly and not automated. The network test determines whether a control unit can send and receive data to the right specification under all possible operating conditions in the motor vehicle. Whether a control unit affects communication within the vehicle environment or in the case of disrupted communication carries out unchecked reactions can be checked with the network test system.

OsCAR smart

Seat tester

- use in development, testing and series production of seats
- modular and scalable EOL testing platform
- configurable to customer specifics
- intuitive operating concept
- high test coverage
- mechanical and electrical function test
- acoustic test/structure-borne measurement
- optical test/contour measurement
- discomfort testing
- available as a 1-channel solution
- can be used as a desktop model
- compact design

OsCAR advanced

Seat tester

- use in development, testing and series production
- modular and scalable EOL testing platform
- configurable to customer specifics
- intuitive operating concept
- high test coverage
- mechanical and electrical function test
- acoustic test/structure-borne measurement (optional)
- pneumatic test/leak testing
- optical test/contour measurement (optional)
- discomfort testing
- protection class IP54 - external IP54-protected Signal Alocation Unit (SAU) for customer-specific testing configuration
- various seat classes can be combined in a line – a test system for all seat types
- self-testing and calibration using self-test box
- independent, parallel testing of two seats – double tester

Accessories

Breakout module active for Series 61

- convenient access to Series 61 signals
- Bus signals (CAN / LIN / K-Line / Flexray) on 9-pin DSUB sockets
- conventional signals (digital /analogue / PWM / SENT) on terminal strips
- power supply via plug-in adapter
- status LEDs for operating status display
- eight pieces of potential-free relay, directly controlled by digital outputs of Series 61

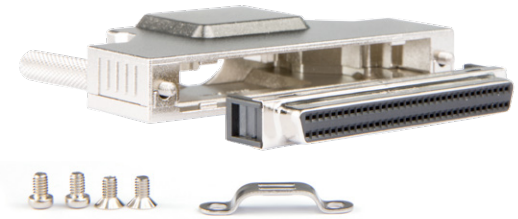
Breakout module passive for Series 61

- convenient access to Series 61 signals
- Bus signals (CAN / LIN / K-Line / Flexray) and conventional signals (digital / analogue / PWM / SENT) on D-SUB sockets

Breakout module for MOST 6161 controller

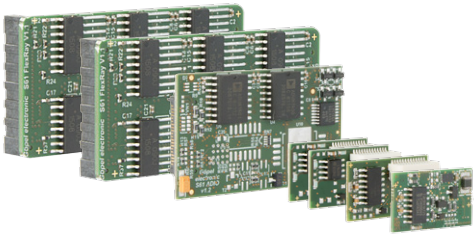
- breakout box for connecting the MOST 6161 controller using 50-pin connectors
- 2 x 9-pin D-SUB for interfaces
- 1 x 15-pin D-SUB for triggers
- external power supply (4-mm banana)
- ECL port (Electronic Control Line)
- SPDIF IN/OUT
- HDMI out

Connector kit for Series 61 controller



- 68-pin connector kit
- for assembly of customised connecting cables

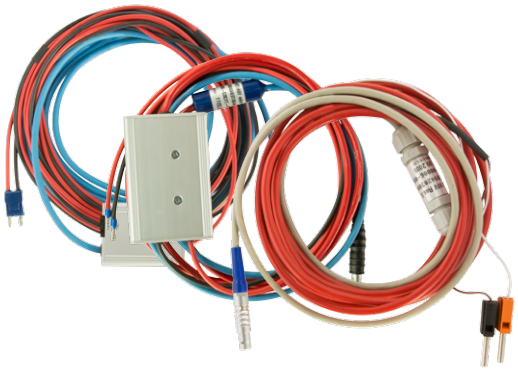
Expansion modules for Series 61 controller



- CAN transceiver modules:
  - *TJA1044GT - CAN FD*
  - *TJA1041A - High Speed CAN*
  - *TJA1054 - Low Speed CAN*
  - *NCV7356D1G - Single Wire CAN*
- LIN transceiver module TJA1020
- K-Line transceiver module L9637
- FlexRay transceiver module TJA1080
- Analogue / digital I/O modules with various voltage ranges

Further types available on request.

Measurement probes for the PXI 3250 CVT meter



- available probes:
  - *voltage measurement*
  - *current measurement*
  - *temperature measurement*

Sensors for CARoLINE and Sound Checker acoustics tester

Acoustic sensor

- structure-borne sensor, 100mV/g
- with magnetic base
- connection cable, BNC 3mtr
- microphone

Mounting clamps for active breakout module S61

- for wall-mounting

Mounting clamps for stand alone devices

- for the flexible, stable connection of stand alone devices for stacking

(please enquire about supported devices)

Software

myCAR™

Modular software suite for ECU testing

myCAR™ is a compact, easy-to-operate software suite for quick, uncomplicated daily use of control devices. The interactive software is geared to the existing interface modules and can be equipped with different communication modules.

Program generator

Test sequencer software

The program generator is software designed to create test sequences based on ready-made test steps from a macro library. Each macro can be operated via a graphical interface. A broad range of automation functions (scripting, XSLT, SQL) make programming easy and enable flexible design of test sequences and protocols.

Net2Run configurator

Residual bus simulation and gateway test

Net2Run provides an efficient solution for creating complex, signal-based residual bus simulations for heterogeneous vehicle networks.
The AUTOSAR approach of uniform signal access and the PDU concept for the CAN, LIN and FlexRay bus have been implemented here. Thus alongside the classic residual bus simulation, gateways can also be realised at the signal and PDU level.
Configuration takes place via the Net2Run configurator based on CAN, LIN or FIBEX message catalogues (*.dbc, *.ldf, *.xml)

Net2Run IDE

The Series 61 interface modules enable users to load their own made code (onboard programs) onto the card and run it directly from the card. Net2Run IDE is a complete C/C++ development environment for this purpose, in which users can develop, edit, debug and run onboard programs.
The GÖPEL API -familiar from Series 61 integration in Windows programs is available as an onboard API, which greatly simplifies the creation of the onboard programs.

GÖPEL electronic
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Product overview/E/10-2016