BLUEPIRAT Rapid 100+ LIGHT

**High-performance multi-bus data logger for modern vehicle bus architectures based on Automotive Ethernet.
With 3 TB internal memory and high recording performance.
Low power consumption, robust and compact.**
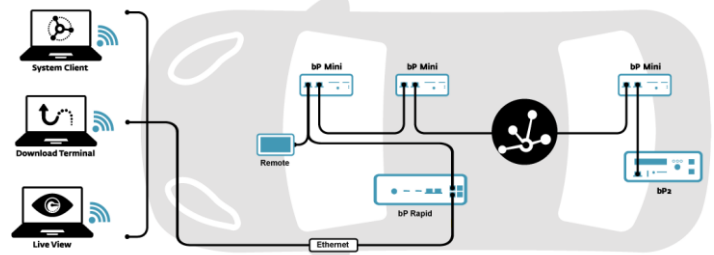
BLUEPiRat
:BY MAGNA

APPLICATIONS

- Functional testing:
  ECU tests, function validation, endurance tests, field tests, quality control

- Connectivity/integration assessment in the context of architecture validation

- Key aspects:
  Validation of vehicles/production series, testing of infotainment, driver assistance systems and power train in continuous operation for vehicle development and testing

AUTOMOTIVE ETHERNET

Due to the increasing complexity of driver assistance systems and the growing number of infotainment applications, the data traffic between ECUs in the most recent vehicle models has grown significantly. Consequently, besides the various classic bus systems, modern vehicle architectures are based on Automotive Ethernet according IEEE 802.3 100Base-T1 (BroadR-Reach), which can keep up with the growing bandwidth demand.

HIGH PERFORMANCE, ALL-IN-ONE

Until now, several different data loggers were required for logging the entire in-vehicle data communication. The high-performance multibus data loggers BLUEPIRAT Rapid for vehicle development and testing solve this problem. They enable the analysis of Automotive Ethernet-based vehicle architectures by capturing all data traffic in real time with a consistent synchronous time base. Selected data sections can be saved separately by manually or automatically configured triggers and filters.

With just a single device, data traffic can be recorded on up to 10 Automotive Ethernet links, conventional vehicle bus architectures, standard Ethernet, USB, and serial interfaces as well as digital and analog inputs.
With up to 3 TB of internal memory and high logging performance, the BLUEPIRAT Rapid data loggers can easily manage the large data quantities typical for Automotive Ethernet. The easily accessible front ports allow connection of optional accessories such as network cameras, GPS and cellular modules.

ROBUST AND RELIABLE

BLUEPIRAT Rapid data loggers fulfill the requirements on shock and vibration resistance for use in the car when driving. The compact all-metal enclosure with no fan or rotating data storage device, as well as the lack of protruding parts, make the Rapid maintenance-free and extremely robust in daily operation.

ADVANTAGES

- Maximizing efficiency:
  Only a single device is required for parallel recording of 100Base-T1, CAN, CAN FD, LIN, FlexRay

- Precise analog measurements with no additional devices

- Large data quantities can be stored and long test drives are possible thanks to the memory capacity of up to 3 TB

- Fast data download

- Low space requirements due to the compact design

- Robust and maintenance-free: All-metal enclosure with no fan or rotating hard drives

- Minimal vehicle board load due to low operating and standby power consumption
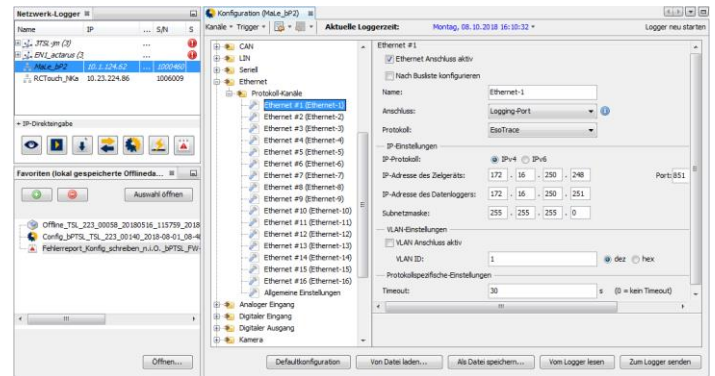
SYSTEM LINK TECHNOLOGY

The System Link Technology (TSL) enables the connection of logical devices with all BLUEPIRAT data loggers along with the Remote Control Touch via Ethernet. Furthermore, the TSL is able to automatically detect and incorporate any additional data loggers connected to the existing network. The data logging for all blue PiraT devices occurs in a timely synchronized manner with an accuracy of 1 μs.

SYSTEM CLIENT

The System Client ensures the management of BLUEPIRAT data loggers, both online and offline. With the software, it is also possible to define the configuration of all logging interfaces, to manage triggers and filters, visualize data traffic in the online monitor as well as to download and convert the previously recorded data. In the offline mode, you can directly edit system configurations without the presence of a test vehicle or test environment. The System Client is directly available upon acquisition of a blue PiraT data logger along with a Windows compatible version and a portable version, which allows the installation of the software package without any administrator rights.
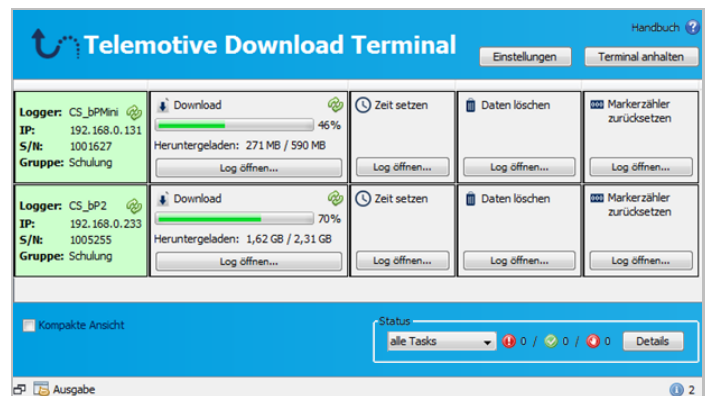

LIVE VIEW

The Live View feature allows visualization of selected logger data. Based on standard web browser interface connected via LAN or WLAN, this functionality is available for notebooks, tablets and smartphones, independent of the specific operating system in use. Supported data sources range from every available bus system (including Automotive Ethernet) to digital and analog inputs, GPS modules and logging statuses. Users easily and intuitively can configure the data as well as create and organize bar and line charts along with different analog and digital signal displays. Additionally, Live View enables the visualization of all selected logging markers as well as the status of every available logging interface including the bus system overload.

DOWNLOAD TERMINAL

The Download Terminal is responsible for the comprehensive automation of data download and conversion. It also enables distribution and synchronization of data along with visualization and update of configurations, firmware versions, licenses and reading data logger status reports. Upon detection of the BLUEPIRAT data loggers, the download terminal is able to trigger the user-defined workflows. This happens automatically or according to a previously configured time schedule. The management of BLUEPIRAT data loggers, in particular in test vehicle fleets, is thus significantly simplified and the instruction of the test driver is no longer necessary.

TECHNICAL DATA

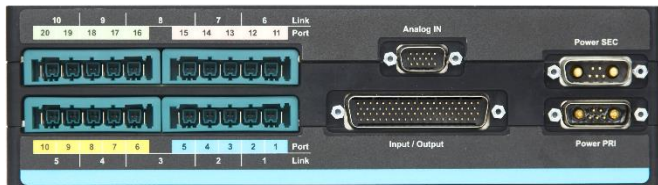|	
Logging interfaces	20x 100Base-T1 (Automotive Ethernet/BroadR-Reach), PHY: NXP TJA1100
	4x UART (configurable TTL/RS232 12V), 1.200 - 921.600 Baud
	1x FlexRay, Channel A/B
	17x CAN (16x CAN FD up to 2 or 5 MBaud; 1x CAN-LS up to 125 kBaud)
	22x LIN (V1.3/2.0/2.1; 1,200/2,400/4,800/9,600/19,200/20.000 Baud, 1x galvanic isolated)
	4x digital inputs (switching threshold 7 V; max. sampling rate 4 kHz)
	6x analog inputs:
	- Differential measurement with sampling rates of 1 Hz to 4 kHz
	- Measuring ranges/resolution per bit: ±6 V/1 mV, ±30 V/5 mV, ±60 V/10 mV
	1x supply voltage
	2x USB 3.0 (5 V/900 mA per port for external devices)
	4x 1000Base-T on front, modes: TAP and SPY
Connection-oriented logging	Features, partially optional:
	- Ethernet, protocol based: such as GN-Log, DLT, EsoTrace, TCP/UDP, Raw
	- CCP/XCP on CAN(-FD) and Ethernet
	- RTSP video streams of supported Axis LAN cameras
Additional interfaces	4x Digital-Out (requires primary power, 1x 5V, 3x supply voltage, max. 1 A)
	2x wakeup line out (0-20 V; max. 100 mA; 1-4 pulses)
	Clamp 15
	2x 10GBASE-T (on front) for data download and System Link
Time-stamp resolution	CAN, LIN, FlexRay: 1 µs
	Serial: 1 ms
	Ethernet: 1 µs in TAP mode, 100 ms with protocol based logging
Wake-up capability	Via CAN, LIN, FlexRay, Digital-In
Start-up time	Start of recording:
	- 100Base-T1: <350ms from standby
	- CAN FD, serial, LIN, Digital-In, FlexRay: <4 s, depending on interface and protocol
Operating/display elements	1x illuminated trigger button (setting markers and triggering pre-defined activities)
	4x status display LEDs
Internal memory	Up to 2.88 TB, thereof 480 GB for system & connection-oriented logging
	SSD endurance per SSD according JEDEC (enterprise workload):
	- Drive Writes Per Day (DWPD): <0.51 (service life: 3 years)
Data performance	High-speed logging (FPGA based):
	- Recording with up to ~ 1 Gbit/s, depending on logger memory configuration
	- Data download up to 1(1.5) Gbit/s with 1(10)G network interface card; depending on HW & SW configuration of used PC/notebook, application notes on request
	Connection-oriented logging (CPU based):
	- Recording up to 150 Mbit/s
	- Data download up to 150 Mbit/s
Configuration, data download/ management	System Client PC software for Windows 7 and 10, 64-Bit
	Output formats: ASCII [*.txt], Autosar DLT [*.dlt], Vector Binary Logging [*.blf], CANCorder [*_CANCORDER.asc], CANoe ASCII [*.asc], Eso Trace File [*.esotrace], Ethernet Raw [*.raw], Extended Telemotive Trace [*.xtmt], GN-Log [*.(x)aa], GPS Exchange [*.gpx], KML/KMZ Google Maps [*.kml/*.kmz], MDF Log/Signal v3.3/v4.1 [*.log/*.mdf/*.mf4], MPEG 4/raw [*.mpeg4/*.ts], NMEA – ASCII GPS [*.nmea], Optolyzer [*.op2], TCPdump [*.pcap]
Power supply	Dual (redundant) power supply, protected against overvoltage and polarity reversal
	Supply voltage range: 6–30 V, startup at 7-28V
	Power consumption: 35 W (typ.)
	Standby current (sleep mode): < 2 mA
Ambient conditions	Relative humidity: 10 % to 90 % without condensation
	Storage temperature: -40 °C to +85 °C
	Operating temperature: -15 °C to +65 °C (external active cooling may be required)
Dimensions	Approx. 252 x 70 x 200 mm (W x H x D)
Weight	~4 kg
Installation	Four mounting points with M5 inside threads for stable mounting.
	Adequate circulation of air is to be ensured.
Certifications & standards	CE (EN55032, EN55035, RoHS/WEEE)

Image:
BLUEPIRAT Rapid rear view

ORDERING INFORMATION

10002431	**BLUEPIRAT Rapid 100+ LIGHT 3TB**

High Performance multi-bus data logger BLUEPIRAT Rapid for Automotive Ethernet 100Base-T1- Pre-Release Product

- 2.88 TB internal memory capacity for recording, thereof 480 GB reserved for system & connection oriented logging
- 2x 10GBase-T for data download and System Link
- Logging Interfaces: Automotive Ethernet 20x 100Base-T1, 16x CAN(-FD), 1x CAN-LS, 22x LIN, 1x FlexRay A/B, 4x UART/Serial, 4x Digital-In/Out, 2x Wakeup Out, 6x Analog-In, Clamp 15

Including System Link und Live View technology, PC software System Client for configuration and data download as well as 1-year Firmware Care service package for extended support and free SW updates/upgrades.
Without cables/connectors.
Delivery in rugged carrying and storage case.

This item is a pre-release product of the BLUEPIRAT Rapid 100+ 3TB with reduced functionality and limited quantities. The technical data are in its entirety defined in the datasheet "BLUEPIRAT Rapid 100+ LIGHT" as of 3/27/2020 (this document).
Magna Telemotive does not provide hardware upgrades for these pre-release products. An exchange for subsequently available standard products (series products) is explicitly excluded.
Selective firmware / software functions may not yet have been fully implemented and will be added as part of product maintenance.
Magna Telemotive guarantees that the pre-release products comply with the technical specifications of the data sheet "BLUEPIRAT Rapid 100+ LIGHT"; any further warranty beyond this is explicitly excluded. The warranty period is 1 year.

10001854 **CAB BP Rapid Power PRI**
Primary power cable for BLUEPIRAT Rapid, Hybrid D-SUB and 2x Digital-Out, 1 m, DSUB-7W2 to 4x banana plug/jack (4mm)
The secondary power cable CAB BP Rapid Power SEC is required in order to get access to all available Digital-Out interfaces.

10001850 **CAB BP Rapid Power SEC**
Secondary power cable for BLUEPIRAT Rapid, Hybrid D-SUB and 2x Digital-Out, 1 m, DSUB-7W2 to 4x banana plug/jack (4mm)

10002005 **CAB BP Rapid Analog-In**
Analog-In harness for BLUEPIRAT Rapid, 1 m, DSUB15 to 12x banana plug (4mm)

10002004 **CAB BP Rapid I/O 78-Pol**
CAN/LIN/FlexRay/Serial/T15/Digital IO harness for BLUEPIRAT Rapid, 1 m, DSUB78 to DSUB9/banana plug/jack (4mm)

10001890 **SET BP Rapid UTP Frame, 5x CAB 1G f/f 2m**
Automotive Ethernet 5x UTP connection set, consisting of one 5-port Tyco Electronics MATEnet frame and five unshielded 1Gbit/s cable assemblies, 2 m

10001914 **SET Connector BP Rapid**
Connector set for BLUEPIRAT Rapid, consisting of 2x DSUB-7W2 power connectors, 1x DSUB15 connector and 1x DSUB78 connector – allows users to manufacture own cable assemblies

OPTIONAL BLUEPIRAT RAPID 100+ LIGHT FEATURE ENHANCEMENTS

91000341	**License BP Rapid CCP**	
	Optional SW license for CCP recording	
91000342	**License BP Rapid Video**	
	Optional SW license for video recording via video servers or network cameras	
91000343	**License BP Rapid XCP**	
	Optional SW license for XCP support via Ethernet and CAN	
91000352	**License BP Rapid QXDM**	
	Optional SW license for recording of QXDM messages	
91000344	**License BP Rapid Mobile Network**	
	Optional SW license. When combined with a 3G/4G cellular module, it enables the data logger to send SMS messages. Cellular module not included.	
91000363	**License BP Rapid Download Terminal**	
	Optional SW license for workflow automation with the Download Terminal	
91000353	**License bP Rapid GPS**	
	Optional SW license for capturing the vehicle position using a USB GPS module. GPS module not included.	
91000355	**License bP Rapid WLAN**	
	Optional SW license for WLAN access with System Client Software. WLAN module not included.	

SUPPLEMENTAL ACCESSORY PRODUCTS

10002162	4G/LTE Network Module for regions Europe, Middle East & Africa (EMEA)
10002164	4G/LTE Network Module for regions Asia, Australia
10002163	4G/LTE Network Module for North America
91000354	**SET BP Rapid Option GPS**
	GPS-Module (occupies one USB 3.0 port), incl. SW license
	Allows the data logger user to link recorded data with respective logger location
91000356	**SET BP Rapid Option WLAN**
	WLAN-Module (occupies one USB 3.0 port), incl. SW license
	This set includes hardware and software license to connect the data logger to your WLAN network for management, display and data download in conjunction with the System Client software

SERVICES

91000346	**FC BP Rapid (12 Months)**
	Time based Firmware Care for one BLUEPIRAT data logger; Maintenance and Service package with extended support plus free SW updates, upgrades, and major upgrades
	Duration: One (1) year to the end of the calendar quarter (starting with delivery)
91000347	**FC BP Rapid (24 Months)**
	Time based Firmware Care for one BLUEPIRAT data logger; Maintenance and Service package with extended support plus free SW updates, upgrades, and major upgrades
	Duration: Two (2) years to the end of the calendar quarter (starting with delivery)
TBD	**FC BP Rapid Upgrade**
	Version based Firmware care for one BLUEPIRAT data logger
	One-time software upgrade incl. 12 months of extended support (starting with delivery)
TBD	**FC BP Rapid Major Upgrade**
	Version based Firmware care for one BLUEPIRAT data logger
	One-time software major upgrade incl. 12 months of extended support (starting with delivery)
On Demand	**TOOLS-SERVICE**
	On-site introduction, training and commissioning support

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