P-SERIES PLC ON A CHIP®

P10 & P13 INTEGRATED CIRCUITS

- Full Featured Industrial PLC
- Fully Integrated Single IC Construction
- Programs with EZ LADDER® Software
- No Low Level Programming Required
- Easy to Embed
- Quick to Market Solutions
- Ladder Diagram with Structured Text
- Modbus Master / Slave / Modbus TCP
- Ethernet Port, Wi-Fi and Cellular Connectivity
- Large Number of I/O and Features
- CAN and Serial Ports
- SD Card Support
- SAE J1939, NMEA 2000, OptiCAN CAN Networking

FULLY FUNCTIONAL ON-CHIP PLCs

PLCHIP-P13-51220

PLCHIP-P10-51220

Designed to provide embedded intelligence in OEM products, the P10 and P13 P-Series PLC on a Chip® models are cost-effective programmable logic controllers packaged as single integrated circuits. All I/O and integrated functions are pre-assigned for use within the Divelbiss EZ LADDER® Toolkit PC based, industrial ladder diagram software. The full featured P-Series PLC on a Chip controller and EZ LADDER combination provides for solutions that are both versatile and easy to implement.

The full PLC functionality of the PLC on a Chip can be accessed by integrating it with interface circuitry for digital I/O, analog I/O, serial, CAN and Ethernet Communications; as well as other supported interface circuitry for I^2C and SPI bus.

Divelbiss Development Kits include a library of pre-designed, drop-in circuitry for I/O, power supply, communications and other supporting components. The library provides all information required to implement P-Series PLC on a Chip® integrated circuits and the peripheral circuitry, including PCB layout requirements, standard part numbers, and more.

Divelbiss also offers a cost-effective Design Program using PLC on a Chip® technology for instances when PCB design project time or expertise is not available. The Divelbiss Engineering team can develop a custom solution using PLC on a Chip® to your exact needs.

Structured Text Programming and Custom Function Blocks

P-Series PLC on a Chips® provides the ability for custom functions and function blocks using built-in Structured Text support. These custom functions and function blocks are ideal when customized functionality is needed or when customized communications drivers are required.

Advantages of a PLC on a Chip® Solution

- Adds Intelligence by Embedding the PLC
- Low Integration Cost
- Reduces Product Development Time & Costs
- Full Factory Support
- Pre-designed Circuits Library
- No Low Level Programming
- Easy to Integrate
- 2 Models based on Package Size, I/O and Features
- Rapid Design Program Available
- Protects Intellectual Property

PLC on a CHIP® Part Numbers

Part Number	Description
PLCHIP-P10-51220	PLC on a Chip Integrated Circuit (P10 Version), LQFP144 Package. See Specifications for Features details. Shipped in Trays of 60.
PLCHIP-P10-51220X1	PLC on a Chip Integrated Circuit (P10 Version), LQFP144 Package. See Specifications for Features details. Shipped as Single Piece.
PLCHIP-P10-51220X5	PLC on a Chip Integrated Circuit (P10 Version), LQFP144 Package. See Specifications for Features details. Shipped as 5 Pack.
PLCHIP-P10-51220X10	PLC on a Chip Integrated Circuit (P10 Version), LQFP144 Package. See Specifications for Features details. Shipped as 10 Pack.
PLCHIP-P13-51220	PLC on a Chip Integrated Circuit (P13 Version), LQFP208 Package. See Specifications for Features details. Shipped in Trays of 36.

20130002.4

9778 Mt. Gilead Road • Fredericktown, Ohio 43019 • Toll Free: 800-245-2327 • http://www.divelbiss.com

PLC on a CHIP® Part Numbers - Continued

Part Number	Description
PLCHIP-P13-51220X1	PLC on a Chip Integrated Circuit (P13 Version), LQFP208 Package. See Specifications for Features details. Shipped as Single Piece.
PLCHIP-P13-51220X5	PLC on a Chip Integrated Circuit (P13 Version), LQFP208 Package. See Specifications for Features details. Shipped as 5 Pack.
PLCHIP-P13-51220X10	PLC on a Chip Integrated Circuit (P13 Version), LQFP208 Package. See Specifications for Features details. Shipped as 10 Pack.

Specifications		
System Capacity	**PLCHIP-P13-51220**	**PLCHIP-P10-51220**
Flash Memory	256K Bytes Ladder Program Storage	256K Bytes Ladder Program Storage
EEPROM Memory	3500 Bytes (Internal PLC on a Chip)	3500 Bytes (Internal PLC on a Chip)
RAM Memory	32K Bytes Program Execution & Variables	32K Bytes Program Execution & Variables
Power Supply	3.3VDC	3.3VDC
Package Type	LQFP208 Package IC	LQFP144 Package IC
Temperature Range	-40ºC to 85ºC	-40ºC to 85ºC
Retentive Memory	Yes, Using Internal EEPROM or External FRAM Device	Yes, Using Internal EEPROM or External FRAM Device
Communications		
Programming Port	1 TTL Programming Port	1 TTL Programming Port
General Purpose Serial Ports	4 TTL Ports, 1 Supports Handshaking	4 TTL Ports, 1 Supports Handshaking
ASCII / RTU Communications	Yes	Yes
Modbus Master / Modbus Slave Serial	Yes	Yes
Serial Ports Baud Rate	up to 115.2K Bps	up to 115.2K Bps
CAN Ports	Yes, 2 TTL Ports	Yes, 2 TTL Ports
CAN Port Protocols	SAE J1939, NMEA 2000, OptiCAN	SAE J1939, NMEA 2000, OptiCAN
Ethernet Port	1 TTL Port, Supports Multi-Port Switch Physicals	1 TTL Port, Supports Multi-Port Switch Physicals
Modbus TCP	Yes	Yes
SD Card Support	1 SD Card Interface - requires socket	1 SD Card Interface - requires socket
Webserver	Yes, via SD Card Storage	Yes, via SD Card Storage
Cellular Modem	Yes (Supported Cellular Modem via Ports & I/O)	Yes (Supported Cellular Modem via Ports & I/O)
Wi-Fi, Bluetooth	Yes (Supported Wi-Fi Module via Ports & I/O)	Yes (Supported Wi-Fi Module via Ports & I/O)
Input / Output*		
SPI Serial Interface Port	2, TTL Level	2, TTL Level
I²C Ports	3 TTL Level, 1 Mbit/s Data Rate	3 TTL Level, 1 Mbit/s Data Rate
Analog Inputs	8 Channels, 0 to 3.3VDC Input, 12 Bit	8 Channels, 0 to 3.3VDC Input, 12 Bit
Analog Outputs	1 Channel, 0-3.3VDC Output, 10 Bit	1 Channel, 0-3.3VDC Output, 10 Bit
PWM Outputs	12 Channels (TTL), 32 Bit	3 Channels (TTL), 32 Bit
Counter / Timer Inputs	3 Inputs (TTL), 32 Bit	2 Inputs (TTL), 32 Bit
Quadrature Inputs	1 Quadrature input (TTL), A, B, Index	1 Quadrature input (TTL), A, B, Index
LCD Port	Supports LCD Display (TTL) (HD44780 Compatible) (4 Rows / 40 Columns)	Supports LCD Display (TTL) (HD44780 Compatible) (4 Rows / 40 Columns)
Keypad Port	Supports Keypad Matrix of 5 Columns / 4 Rows (TTL)	Supports Keypad Matrix of 5 Columns / 4 Rows (TTL)
Digital I/O	Up to 164 TTL Digital I/O Points	Up to 106 TTL Digital I/O Points
Programming		
Program Language	Ladder Diagram, Function Block and Structured Text using EZ LADDER®	Ladder Diagram, Function Block and Structured Text using EZ LADDER®
Function Blocks	Yes, Standard and Custom using Structured Text	Yes, Standard and Custom using Structured Text
Structured Text	Yes, Built-in EZ LADDER® Editor	Yes, Built-in EZ LADDER® Editor
Scan Time	Variable based on Features installed and Program Size	Variable based on Features installed and Program Size
Error Checking	Yes, during program compilation or verification	Yes, during program compilation or verification
Real Time Monitoring	Yes, via Programming Port / Ethernet	Yes, via Programming Port / Ethernet
Text Notes	Yes, Placeable and sizable text boxes for notes	Yes, Placeable and sizable text boxes for notes
# of Instructions / Function Blocks	> 110	> 110

* Feature Quantities shown are Maximum total (up to). Multiple feature pin functions are shared. See the P10 or P13 PLC on a Chip Data Sheet for details.