MICROFIP®

FIPWARE®: ALSTOM technology for WorldFIP®

The MICROFIP chip is a low-cost ASIC and easy-to-use solution that makes it possible to design high integration WorldFIP devices. MICROFIP is designed to collect data directly from I/Os, as well as locally processed data.

MICROFIP provides all the key functions to transmit information across a number of network media at the EN 50170-3 (WorldFIP) lower standard speeds, managing the built-in redundancy as an option. Designed in 0.6μm C-MOS technology, the MICROFIP component is available in MQFP100 packaging. The communication protocols that are implemented in MICROFIP are compliant both with European standard EN 50170-3 (WorldFIP) fieldbus physical layer standard.
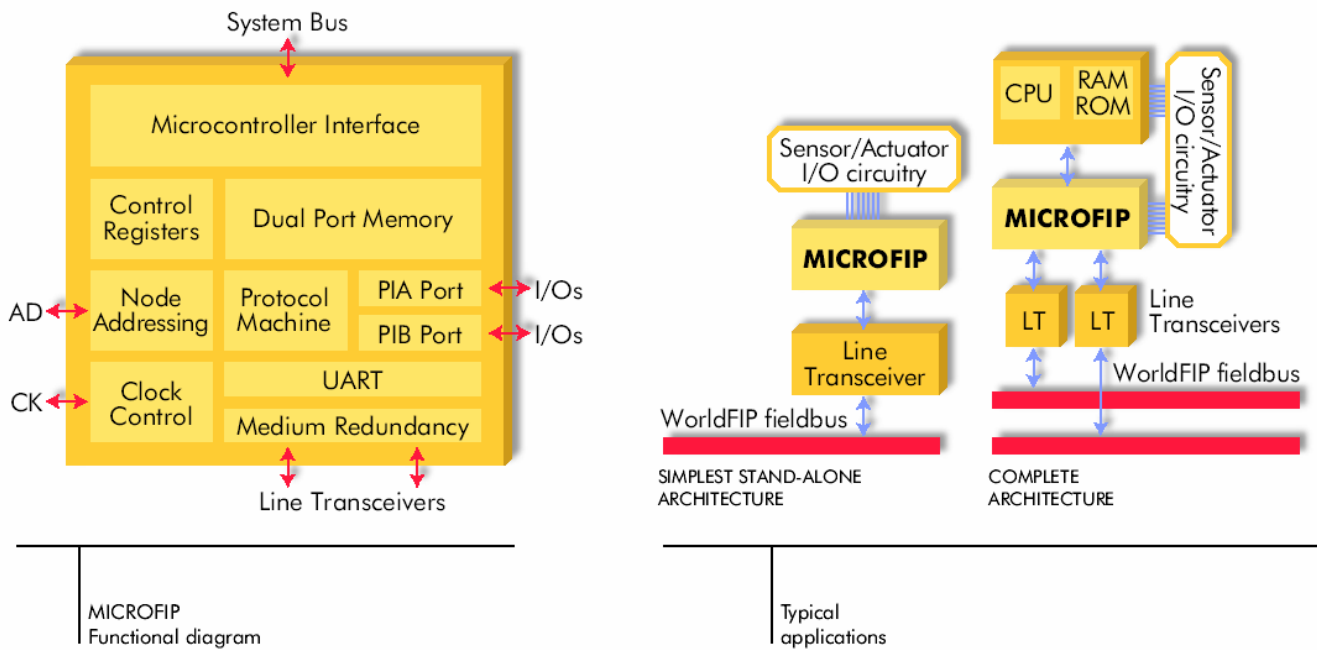
MICROFIP has been designed for small field devices which do not need to support the bus arbitrator functions. It is fully compatible with the other existing EN 50170-3 (WorldFIP) coprocessors such as FULLFIP2®.
MICROFIP provides periodic buffer transfer and data link layer messaging services. The application layer refreshment and promptness mechanisms are also supported. MICROFIP integrates an adequate set of network management services such as presence, identification and SM-MPS command variables.
MICROFIP is designed to support and manage medium redundancy without the need for another chip.

ALSTOM

System Bus

Microcontroller Interface

Control Registers

Dual Port Memory

Node Addressing

Protocol Machine

PIA Port — I/Os

PIB Port — I/Os

AD

Clock Control

UART

CK

Medium Redundancy

Line Transceivers

MICROFIP
Functional diagram

CPU | RAM ROM

Sensor/Actuator I/O circuitry

Sensor/Actuator I/O circuitry

MICROFIP

MICROFIP

LT | LT

Line Transceivers

Line Transceiver

WorldFIP fieldbus

WorldFIP fieldbus

WorldFIP fieldbus

SIMPLEST STAND-ALONE ARCHITECTURE

COMPLETE ARCHITECTURE

Typical applications

Features

Selectable frame delimiters with upwards compatibility.

512-byte on-chip memory: 120 bytes to be allocated by 8-byte blocks to a maximum of 8 MPS variables, 128-byte messaging channel capacity for full duplex exchanges.

Two programmable 8-bit I/O ports with filtering and fall-back functions.

Direct interface with the usual microcontrollers (Intel® 80C51®, 80C251®, Motorola® 68HC11®, etc.).

Selectable interface for one or two FIELDRIVE line drivers.

Address allocation: 7 node-address-based identifiers plus 1 fully configurable identifier, 16 messaging addresses, and the broadcast address for messaging.

An interrupt to notify the events associated with variable and message exchanges.

Stand-alone operation (without microcontroller) for cabling simple

Specifications	
Supply voltage (DC)	5V ± 10%
	3.3V ± 10%
Supply current (DC)	2mAmps at 31.25 kbits/s
	10mAmps at 1 Mbit/s
	20mAmps at 2.5 Mbits/s
Inputs and outputs	C-MOS level
Base frequency	31.25 kbits/s
	1 Mbit/s
	2.5 Mbits/s
Temperature range	- 40°C to + 85°C
Storage temperature	- 40°C to + 125°C
Environment	Intrinsic Safety Compatibility
Packaging	100 MQFP
Manufacturer	VLSI Technology Inc.

Intel® 80C51®, 80C251® are registered trademarks of Intel Corporation.
Motorola® and 68HC11® are registered trademarks of Motorola Inc.
WorldFIP® is a registered trademark of WorldFIP Association.

ALSTOM